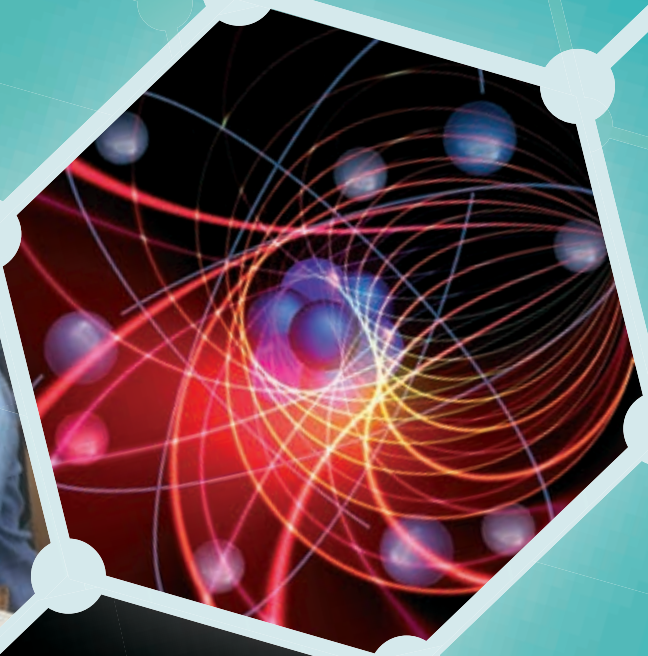
Dublin Institute for Advanced Studies

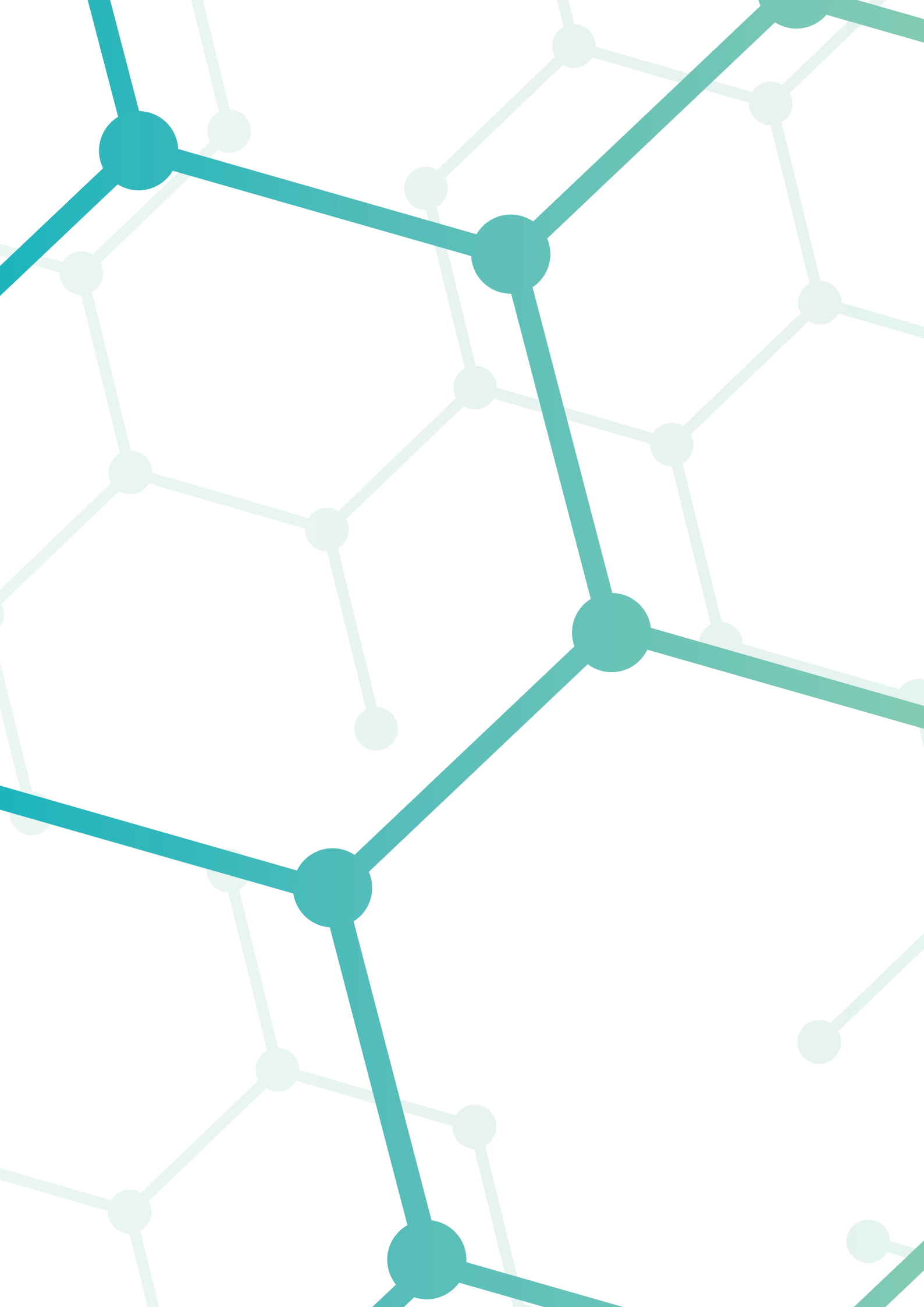
Annual Report 2018

DIAS
Institiúid Ard-Léinn Bhaile Átha Cliath | Dublin Institute for Advanced Studies

Institiúid Ard-Léinn Bhaile Átha Cliath

Tuairisc Bhliantúil 2018





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DIAS AT A GLANCE 2018

Our Team

Overview Profile

15% Administration[1]

85% Research[2]

1. Administration + General Technical Support
2. Research + Specialist Technical Support

Origin of Researchers

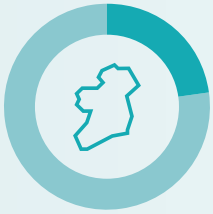
18% Non–EU

82% EU

Note
Total number of countries are 22

Scholars

REST OF WORLD
77%



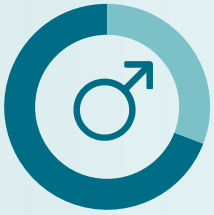
IRELAND
23%

Fellows/Project Staff

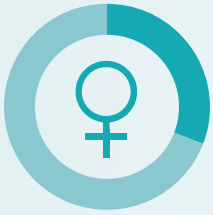
REST OF WORLD
74%

IRELAND
26%

Gender



MALE
69%



FEMALE
31%

Our Financial Resources

Funding Sources

Funding Expenditure

€6.731m
Oireachtas Grant
(Department of Education and Skills)

€5.2m
Other Sources

Our Partners

Island of Ireland Collaborations

NUIG	DIT
TCD	WIT
UCD	AIT
UCC	Irish Astronomical Society
DCU	The Discovery Programme
NUIM	Armagh Planetarium
RIA	National Library of Ireland
QUB	IT Tallaght
UL	IT Tralee

Individual Research Associates

45
National

12
International

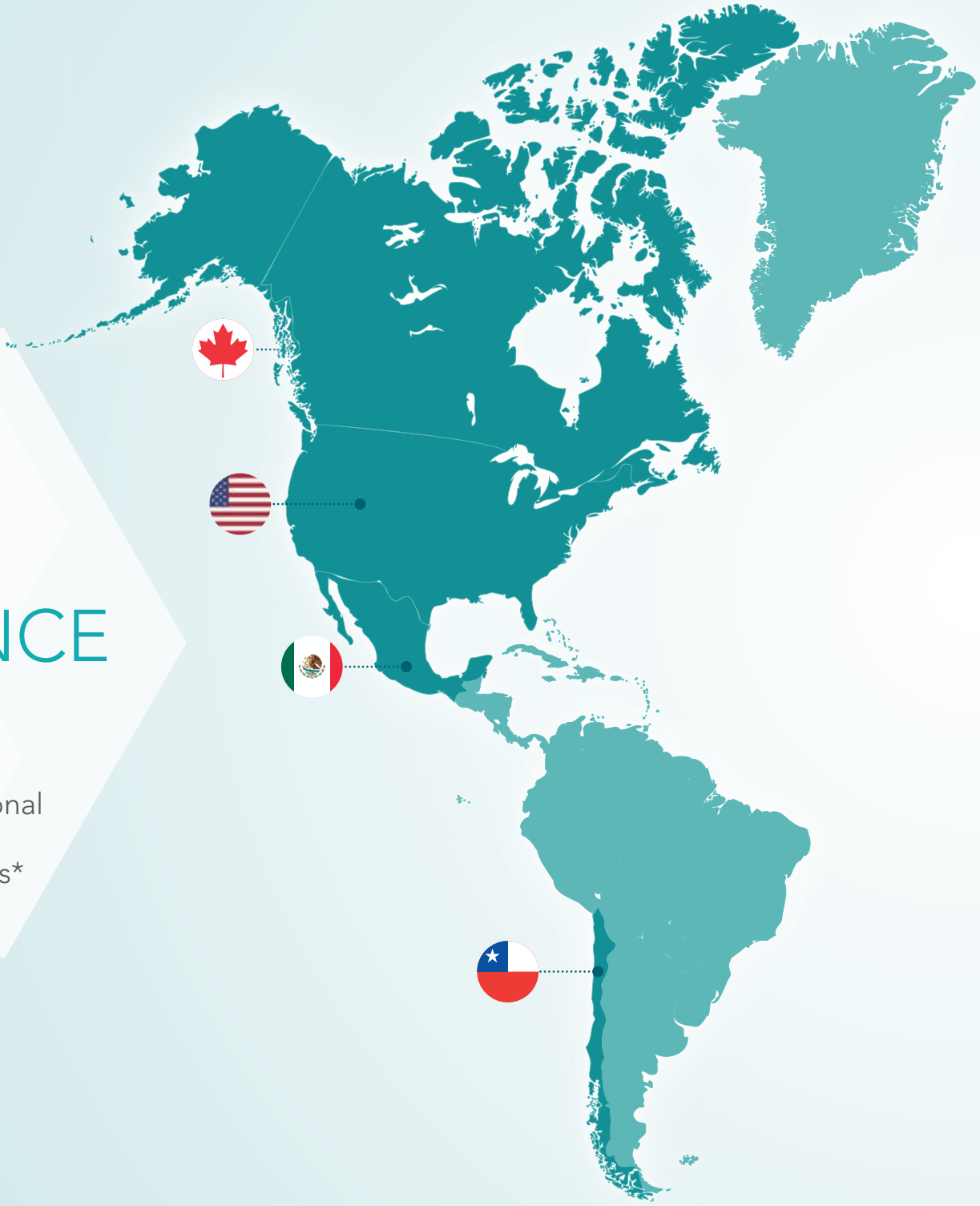
International Research Visitors

179
Research Visitors *from*

22
Countries

DIAS AT A GLANCE 2018

Our International Research Collaborations*



EUROPEAN AND GLOBAL INFRASTRUCTURE PARTICIPATION

esa

H.E.S.S.

RadioNet

EPOS EUROPEANPLATEOBSERVINGSYSTEM

LOFAR

JWST

JAXA

ESO

Ráiteas an Chathaoirligh

Tá lúcháir orm gur mise atá ag tabhairt an réamhrá ar Thuarascáil Bhliantúil DIAS arís eile i mbliana. Bliain an-suntasach ab ea 2018 d'Institiúid Ard-Léinn Bhaile Átha Cliath. Bliain a bhí ann inar tháinig an institiúid le chéile mar aon chun straitéis nua a leagadh amach don todhchaí, dá príomhspriocanna agus dá misin, agus inar bhreathnaigh siar ar an tionchar atá againn, ar bhonn áitiúil agus idirnáisiúnta araon. Bliain a bhí ann ina ndearnadh a lán mhachnaimh agus comóradh tábhachtach, bliain ina tharla athrú agus forbairt ó bhonn.

Níos tábhachtaí fós, seoladh straitéis nua ceithre bliana le haghaidh DIAS i mí na Samhna, agus ag an seoladh sin cuireadh béim den athuair ar an creidiúint dhaingean atá agam go bhfuil an tiomantas seasmhach buan don taighde ar thús cadhnaíochta atá in Éirinn, agus atá ann le fada an lá, go léirithe go breá soiléir in DIAS.

Agus sinn i mbun an straitéis nua againn a chur i bhfeidhm, tá DIAS ag tosú ar an gcéad chéim eile dár bhforbairt ag am a bhfuil an neamhchinnteacht gheopholaitiúil ag dul i méid ar fud an domhain. Tá borradh ag teacht faoin imní atá ann faoi inbhuanaithe an phláinéid seo againne agus tá dúil láidir ann chun tuiscint níos fearr a fháil ar ár gcóras gréine, ar ár nDomhan agus ar na córais nádúrtha a bhaineann leis. Ní raibh gá riamh ann go dtí seo a bhí chomh géar is atá sé anois dul chun cinn a dhéanamh maidir leis an tuiscint atá againn ar na prionsabail bhunúsacha dár saol.

Anuas ar na saincheisteanna sin, tá coincheap na féiniúlachta agus an tuiscint ar an aimsir atá imithe siar agus ar cé sinn mar dhaoine - cibé acu ar bhonn áitiúil, is é sin a rá ar an oileán seo againne, ar bhonn Eorpach, nó fiú ar bhonn dhomhanda - ag dul chun cinn mar mhórthéama sa dioscúrsa poiblí.

Tá a leithéid de mhórcheisteanna le brath san obair atá déanta ag taighdeoirí den scoth dhomhanda atá ag DIAS sna dtrí Scoil san Institiúid, is iad sin Scoil an Léinn Cheiltigh, Scoil na Fisice Teoiriciúla agus Scoil na Fisice Cosmaí. Cé go bhfeidhmíonn na Scoileanna seo i réimsí éagsúla den chinnteoireacht agus den taithí dhaonna, tá comhchuspóir acu go léir chun na teorainneacha eolais agus tuisceana a leathnú - agus chun an anailís chriticiúil a chothú.

I ndeireadh na dála, neartófar Éire mar ionad don cheannaireacht intleachtúil, don fhiosrúchán criticiúil neamhspleách agus don taighde nuálach ar thús cadhnaíochta leis an obair a dhéanaimid. Tá obair déanta in DIAS - agus leanfar ar aghaidh leis an obair sin - ar na rúin atá le fáil i lámhscríbhinní ársa agus ar na clocha oghaim, ar an mbonn teoiriciúil leis an ríomhaireacht chandamach agus ar na meicníochtaí chun bolcáin agus imeachtaí seismeacha ar thalamh nó san aigéan a thuar. Chun tacú leis an obair dheiridh sin, táimid tar éis bonneagar seismeastar éisteachta/ breathnóireachta a chur i bhfeidhm ag bun an aigéin amach ón gcósta le déanaí.

Is iondúil go dtagann níos mó ceisteanna, agus fiosracht chun cinn mar gheall ar na bearta a dhéanaimid maidir le rúndiamhracht ár staire, an domhain agus na cruinne. Leanfaimid orainn ag iarraidh aghaidh a thabhairt ar na ceisteanna seo ar mhaithe le gach aon duine.

https://www.dias.ie/2018/11/20/dias-launches-ambitious-strategy-to-establish-ireland-as-home-for-intellectual-leadership/

Ba í 2018 comóradh 75 bliain ón tráth ar tugadh na léachtaí "What is Life?" ["Cad é an Saol?"] de chuid Schrödinger.

I mí Mheán Fómhair rinneadh comóradh 75 bliana den léacht sin a cheiliúradh i gColáiste na Tríonóide Baile Átha Cliath, le comhdháil a tionóladh ann darbh ainm **75 bliana i ndiaidh Schrödinger — Todhchaí na Bitheolaíochta**. Ba í an phríomhaidhm a bhí ag an gcomhdháil sin ná spiorad meon na léachtaí a thug Schrödinger a tharraingt den athuair trí óstáil a dhéanamh ar 6 buaiteoirí duais Nobel chun aghaidh a thabhairt ar na ceisteanna a bhaineann leis an mBitheolaíocht sa lá atá inniu ann.

Chairmans Statement

I am delighted to once again provide the introduction to DIAS' Annual Report. 2018 was a year of notable change for the Dublin Institute for Advanced Studies. It was a year where the institute came together to define a new strategy for the future, its key goals and missions in addition to looking back on its local and international impacts. A year of reflection and important anniversaries, a year of evolution and development.

Most importantly a new four-year strategy for DIAS in was launched in November, and at the launch I reiterated my firm belief that DIAS provides a clear demonstration internationally of Ireland's long and continuing commitment to frontier research.

With our new strategy, DIAS is embarking on the next phase of our development at a time of increasing geopolitical uncertainty worldwide. There is growing concern about the sustainability of our planet and a strong desire to understand our solar system, our Earth and its natural systems better. Never before has there been such an imperative for progress in terms of our understanding of the underpinning principles for our existence.

Pictured is DIAS Chariman Professor Vincent Cunnane with D.G. Yukiya Amano, who is Director General of the International Atomic Energy Agency (IAEA). D.G. Amano visited DIAS in 2018 and gave a lecture.

Sa phictiúr, tá Cathaoirleach DIAS, an tOllamh Vincent Cunnane, i gcuideachta D.G. Yukiya Amano, atá ina Ard-Stiúrthóir ar an nGníomhaireacht Idirnáisiúnta d'Fhuinneamh Adamhach (IAEA). Thug D.G. Amano cuairt ar DIAS in 2018 agus thug sé léacht nuair a bhí sé ann.

Alongside these issues, the concept of identity and the understanding of our past and ourselves as a people – whether on our own island, as part of Europe or as global citizens – are also growing themes in public discourse.

Such major issues reflect the work conducted by world-leading researchers across our three Schools of Celtic Studies, Theoretical Physics and Cosmic Physics at DIAS. While these Schools operate in different areas of human thought and experience, they have the common purpose of extending the boundaries of knowledge and understanding – and of fostering critical analysis.

Ultimately, our work will strengthen Ireland as a home for intellectual leadership, independent critical enquiry and innovative frontier research. DIAS has worked – and will continue to work – on, the secrets of ancient manuscripts and ogham stones, the theoretical basis for quantum computing and mechanisms forecasting volcanos and seismic events whether on land or in the ocean. To support this latter work we recently launched a major off shore ocean bottom listening/observation seismometer infrastructure.

Our activities in essence often lead to more questions, and curiosity surrounding the mysteries of our history, planet and universe. We will continue to strive to address these questions for the betterment of all.

https://www.dias.ie/2018/11/20/dias-launches-ambitious-strategy-to-establish-ireland-as-home-for-intellectual-leadership/

2018 also marked the 75th anniversary of Schrödinger's "What is Life?" lectures.

Ráiteas an Chathaoirligh (ar lean)

Ba é an tOllamh Christof Koch a thug an Eochairléacht Schrödinger i mbliana, agus labhair sé ar cad atá ar na bacáin maidir le ceist na comhfheasa. Bhí an-áthas ar DIAS a bheith in ann páirt a ghlacadh ann agus an eochair-réamhrá á thabhairt ag Príomhfheidhmeannach agus Cláraitheoir na heagraíochta, an Dr Eucharia Meehan. Chuir an tOllamh Werner Nahm, Ceann na Fisice Teoiriciúla reatha le deireadh na comhdhála agus labhair sé ar Schrödinger agus na scileanna cumarsáide den scoth a bhí aige.

Ar bhonn inmheánach, rinne DIAS an t-imeacht a phlé i Léacht Reachtúil Phoiblí Scoil na Fisice Teoiriciúla 2018, a thug an tOllamh Terry Rudolph in Acadamh Ríoga na hÉireann. Ghlac an tOllamh Rudolph, garmhac Erwin Schrödinger páirt freisin i searmanas beag sa Little Museum, áit ar thug DIAS an litir ó Francis Crick (an duine a rinne an fhionnachtain, i gcomhar le James Watson, inar tugadh faoi deara an héilics dúbailte, struchtúr dréimire-dúbailte DNA) chuig a sheanathair ar iasacht le taispeáint go poiblí.

Mar chuid den Chomóradh 75 bliain, bhí áthas orainn a bheith mar chuid den chlár faisnéise "Thinking outside the Box" ["Ag féachaint ar rudaí ar bhealach nua"] a craoladh ar RTÉ. Tugadh tús eolais gairid sa chlár faisnéise ar conas a tháinig Schrödinger go hÉirinn agus ar an tionchar a bhí ag an saothar a rinne sé anseo.

http://www.newdecade.ie/portfolio/schrodinger/

Agus an deis seo ann le tapú agam, ba mhaith liom buíochas a ghabháil leis an Ollamh Luke Drury as an díograis gan staonadh atá aige don institiúid, tar éis dó dul ar scor i mí an Mheithimh 2018. Chuir an tOllamh Drury, a bhí ina Ollamh Sinsearach sa Réaltfhisic le 32 bliain anuas, go mór leis an bplasma-fhisic teoiriciúil.

Tá os cionn 220 páipéar mheasúnaithe foilsithe aige agus is mór an urraim atá ar a chuid oibre, agus breis is 15,000 tagairt déanta air. Thug an tOllamh Drury ceannaireacht do Réaltfhisic DIAS le linn tréimhse dhúshlánach agus chinntigh sé go ndearnadh Réadlann Dhún Since a chothabháil agus a chosaint. Tá borradh tagtha ar an Rannóg mar thoradh ar an gcáil láidir idirnáisiúnta agus an timpeallacht intleachtúil a chothaigh an tOllamh Drury thar na blianta. Mar cheann de na bearta deiridh a rinne sé agus é fós ag feidhmiú mar Cheann na Rannóige, rinne sé a chinntiú gur aithin an European Physical Society (EPS) Réadlann Dhún Since DIAS mar Láithreán Staire de chuid an EPS an 23 Meitheamh. Rinne Mary Mitchell O'Connor TD, an tAire Stáit um Ard-Oideachas, agus an tOllamh Rüdiger Voss, Uachtarán Chumann Fisiciúil na hEorpa, plaic a nochtadh chun an sonrúchán sin a chomóradh.

Agus an tOllamh Drury ag seasamh síos, bhíothas in ann fáilte mhór a chur roimh an Ollamh Peter Gallagher mar Ollamh Sinsearach agus Ceann na Réalteolaíochta agus na Réaltfhisic in DIAS. Tá gairm bheatha láidir ag an Ollamh Gallagher i gColáiste na Tríonóide, Baile Átha Cliath, chomh maith le ceannaireacht a thabhairt d'fhorbairt an chéad áis réalteolaíochta nua-aimseartha in Éirinn, an Irish Low Frequency Array [an Stáisiún Eagair Ísealmhinicíochta Éireannach] (I-LOFAR) ag Caisleán Bhiorra i gCo. Uíbh Fhailí. Tá grúpa gníomhach taighde tugtha chun DIAS ag an Ollamh Gallagher, a dhíríonn ar réimsí na fisice gréine agus na haimsire sa spás. Ní hamháin go bhfuil pleananna uaillmhianacha aige maidir leis an rannóg, ach le forbairt Réadlann Dhún Since DIAS chomh maith agus táimid ag súil le dul chun cinn suntasach a bheith bainte amach sna blianta atá amach romhainn.

Méala mór bás an Ollaimh Anders Ahlqvist dúinn, a d'imigh ar shlí na fírinne i mbliana. D'fhóin an tOllamh Ahlqvist mar Chathaoirleach ar Bhord Rialaithe an Léinn Cheiltigh ann ó 2005 i leith. Bhí gairm bheatha den scoth bainte amach ag an Ollamh Ahlqvist, fuair sé PhD i nDún Éideann, caith sé seal in Institiúid Ard-Léinn Bhaile Átha Cliath, agus blianta fada ina dhiaidh sin in OÉ Gaillimh. Ar dheis Dé go raibh a anam uasal.

Agus sinn ag brathrú siar ar 2018, tá roinnt éachtaí suntasacha a sheasann amach dúinn:

Cuireadh **DAIR** (DIAS Access to Institutional Repository) [Rochtain ar Thaisclann Institiúideach DIAS] i mbun, stór institiúideach d'fhoilseacháin taighde, tionscnamh de chuid Leabharlann an Léinn Cheiltigh, ina ndéanfar sárthaispeántas den aschur taighde a dhéanann na hOllúna, an fhoireann agus na scoláirí ar fad san Institiúid. Is éard atá á choimeád sa taisclann ná cóipeanna leictreonacha de pháipéir acadúla, bíodh siad sin réamhphriontaí (páipéar oibre nó leagan de pháipéar a chuirtear isteach le haghaidh piarmheasúnú) nó iarr-phriontaí (an leagan deiridh piarmheasúnaithe, a bhfuiltear tar éis glacadh leis le bheith curtha i gcló) nó ábhar comhchosúil amhail caibidlí leabhair, páipéir chomhdhála, páipéir oibre, tuarascálacha teicniúla agus araile.

ARIEL Roghnaigh an ESC spásárthach an Atmospheric Remote-sensing Infrared Exoplanet Large-Survey [an tSuirbhé Mhór Infridhearg Atmaisféarach Ciandbhraiteachta Eiseapláinéid] (ARIEL) i mí an Mhárta 2018 mar an chéad mhisean eolaíochta meán-aicmiú eile a bheith aige. Tá sé beartaithe le bheith seolta in 2026. Beidh foireann Réaltfhisic DIAS freagrach as na scoláirí agus scagairí léis uile.

Chairmans Statement (continued)

In September Trinity College Dublin's commemorated the anniversary with a conference called **Schrödinger at 75—The Future of Biology**. The main aim of the conference was to recapture the spirit of Schrödinger's lectures, in hosting 6 Nobel prize winners to address the burning issues around Biology today.

The Key Note, Schrödinger Lecture of this year was given by Professor Christof Koch, and spoke to the future of consciousness. DIAS was delighted to participate with a Key Note introduction provided by CEO and Registrar Dr Eucharia Meehan. Professor Werner Nahm, the current Head of Theoretical Physics contributing to the closing of the conference and he spoke on Schrödinger and his excellent communication skills.

Internally, DIAS marked the event with the School of Theoretical Physics' 2018 Statutory Public Lecture, which was given by Professor Terry Rudolph at the Royal Irish Academy. Professor Rudolph, the grandson of Erwin Schrödinger also participated in a small ceremony at the Little Museum, where DIAS loaned the letter from Francis Crick (who in partnership with James Watson discovered the double helix, the twisted-ladder structure of DNA) to his grandfather for public display.

As part of the 75th Anniversary we were also delighted to be a part of the "Thinking outside the Box" documentary that aired on RTÉ. The documentary gave a brief introduction as to how Schrödinger ended up in Ireland and the seminal impact of his work here.

http://www.newdecade.ie/portfolio/schrodinger/

I will take this opportunity to thank Professor Luke Drury for his tireless dedication to the institute, following his retirement in June of 2018. Professor Drury, a Senior Professor in Astrophysics for 32 years, has made major contributions to theoretical plasma physics. He has published over 220 refereed papers and his work is highly regarded, receiving over 15,000 citations. Professor Drury led DIAS Astrophysics through challenging times and has ensured that Dunsink Observatory has been maintained and protected. The Section has experienced some expansion as a result of the strong international reputation and intellectual environment that Professor Drury has nurtured over the years. One of his last Acts as Head of Section was to ensure that DIAS Dunsink Observatory was identified by the European Physical Society (EPS) as an Historical Site on June 23. A plaque to commemorate the designation was unveiled by Mary Mitchell O'Connor TD, Minister of State for Higher Education, and Professor Rüdiger Voss, President of the European Physical Society.

As Professor Drury, took a step down, we were able to warmly welcome Professor Peter Gallagher as a Senior Professor and Head of Astronomy and Astrophysics to DIAS. Professor Gallagher has had a strong career to date with Trinity College Dublin, as well as heading up the development of Ireland's first major modern astronomy facility, the Irish Low Frequency Array (I-LOFAR) at Birr Castle in Co. Offaly. Professor Gallagher has brought an active research group to DIAS, focusing on the areas of solar physics and space weather.

He has ambitious plans in relation to not only the section, but also the development of DIAS Dunsink Observatory and we look forward to what we hope will be impressive advances in the years to come.

We regret deeply the passing of Professor Anders Ahlqvist, in this year. Professor Ahlqvist served as Chairman of its Governing Board of Celtic Studies from 2005. Professor Ahlqvist had a distinguished career in Celtic Studies, following a PhD at Edinburgh with a spell at Dublin Institute for Advanced Studies, and many years at NUI Galway. Ar dheis Dé go raibh a anam uasal.

When we look back at 2018, some notable achievements stand out:

The launch of **DAIR**, (DIAS Access to Institutional Repository), an initiative of the School of Celtic Studies Library, is an institutional repository of research publications which showcases the research output of professors, staff and scholars from across the entire Institute. The repository holds electronic copies of academic papers, which can be either preprints (a working paper or the version of a paper submitted for peer review) or postprints (the final peer reviewed version, which has been accepted for publishing) or similar material such as book chapters, conference papers, working papers, technical reports and so on.

Ráiteas an Chathaoirligh (ar lean)

Cuibhreannas d'institiúidí Eorpacha atá bunaithe sa Ríocht Aontaithe, sa Fhrainc, san Iodáil, san Íslitír, i bPoblacht na Seice, sa Pholainn, sa Bheilg, san Ostair, sa Dhanmhairg, sa Phortaingéil agus in Éirinn a rinne ARIEL a fhorbairt. Treiseofar na naisc idirnáisiúnta atá againn mar gheall air seo, go deimhin, ach go háirithe beimid ag obair go dlúth le hOllscoil Phrág agus leis na Saotharlanna Rutherford Appleton in Oxford, toisc go bhfuilimid i dteannta a chéile freagrach as an optaic choiteann, mar a thugtar air.

iMARL: Seoladh iMARL (Insitu Marine Laboratory for geosystems Research) [(Saotharlann Muirí In Situ i gcomhair an Taighde Gheochórais)] an 18 Aibreán i bhfoirgneamh Choimisinéirí Soilse na hÉireann i nDún Laoghaire. Seán Kyne, an tAire Stáit um Ghnóthaí Tuaithe agus Acmhainní Nádúrtha, a sheol an Bonneagar náisiúnta seo. Labhair Ard-Stiúrthóir SFI an tOllamh Mark Ferguson agus Stiúrthóir GSI, Koen Verbruggen ag an seoladh freisin. Cuirfidh iMARL breathnuithe díreacha fadtéarmacha ar an idirghníomhaíocht idir an aigéan agus an Domhan soladach ar fáil. Éascóidh an trealamh an tógáil d'íomhánna réigiúnacha 3T fo-dhromchla, braite i bhfad níos fearr ar chreathanna talún amach ón gcósta, an cumas chun súnámaithe a bhrath agus geolaíocht an domhain agus na mara a chomhtháthú. Mar thoradh air seo beidh tuiscint níos fearr ann ar conas a idirghníomhaíonn talamh agus duibheagán an domhain lena chéile, i bhfad amach ón gcósta. Rinne Geoifisic DIAS an tsaoráid a óstáil agus ba é SFI a rinne í a mhaoiniú, le tacaíocht ó Shuirbhéireacht Gheolaíochta na hÉireann (www.imarl.ie)

ESO: Rinneadh Éire ina comhalta de Réadlann Spáis na hEorpa go hoifigiúil ar an 1 Deireadh Fómhair. D'fhógair an Rialtas go raibh an tOllamh Tom Ray ón DIAS ceaptha mar ionadaí na hÉireann ar Chomhairle ESO.

Mar thoradh air sin, anois tá rochtain againn ar shaoráidí den scoth agus is féidir linn cláir a threorú ar ábhair dála fhisic an ghéis agus an deannaigh sna réaltra, bhreith na réaltaí agus na bpláinéad, idirghníomhú na ndúpholl le réaltaí coimhthíocha i córais dhéréalta, agus an tslí inar cruthaíodh na gcéad réaltraí.

Mar bhuile scoir, thar ceann gach uile dhuine in DIAS, aithnímid obair chrua agus díograis na mball a fhreastalaíonn ar Chomhairle DIAS agus ar bhoird Rialaithe na Scoileanna don fhoireann acadúil ardchaighdeáin atá toilteanach a gcuid ama agus saineolais a chur ar leataobh chun cuidiú linn inár n-iarrachtaí. Ár mbuíochas ó chroí as an tacaíocht leanúnach atá faighte uathu. Chomh maith leis sin, ba mhaith liom buíochas ar leith a ghabháil lenár gcomhaltaí idirnáisiúnta a thagann anseo cúpla uair sa bhliain go dtí Baile Átha Cliath le haghaidh cruinnithe agus imeachtaí eile.

Leanfaidh DIAS ar aghaidh leis an fhorbairt ar aon dul leis an straitéis nua. Ba mhaith liom buíochas a ghabháil le gach aon duine a raibh baint acu le DIAS, as an obair taighde ar thús cadhnaíochta atá déanta acu agus as a dtiomantas chun próifíl DIAS a ardú, ar bhonn áitiúil agus náisiúnta, agus go hidirnáisiúnta fiú.

Chairmans Statement (continued)

ARIEL The Atmospheric Remote-sensing Infrared Exoplanet Large-survey (ARIEL) spacecraft was selected by ESA in March 2018 as it's next medium-class science mission. It is due for launch in 2026. DIAS Astrophysics will be responsible for all beam splitters and filters. ARIEL has been developed by a consortium of European institutes based in the UK, France, Italy, the Netherlands, the Czech Republic, Poland, Belgium, Austria, Denmark, Portugal as well as Ireland. This, of course, will strengthen our international links but in particular we will be working particularly closely with the University of Prague and the Rutherford Appleton Laboratories in Oxford, as collectively we are responsible for the so-called common optics.

iMARL: iMARL (Insitu Marine Laboratory for geosystems Research) was launched on the 18th April in the Commissioners of Irish Lights building in Dun Laoghaire. Seán Kyne, Minister for State of Rural Affairs and Natural Resources, launched this national Infrastructure. SFI Director General Prof Mark Ferguson and GSI Director, Koen Verbruggen also spoke at the launch. iMARL will provide direct long term observations of the interaction between the ocean and solid Earth. The equipment will facilitate the constructing of regional 3D sub-surface images, much improved detection of off-shore earthquakes, the ability to detect tsunamis and the integration of solid earth and marine geoscience. This will lead to a better understanding of how the land and the deep ocean interact with one another, far offshore. The facility hosted by DIAS Geophysics and funded by SFI with support from the Geological Survey, Ireland (www.imarl.ie)

ESO: Ireland officially became a member of the European Space Observatory on the 01st October. The Government announced the appointment of Prof Tom Ray from the DIAS as the Irish representative on the ESO Council.

Arising from this, we now have access to world-class facilities and we can lead programmes on such topics as the physics of the gas and dust in our galaxy, the birth of stars and planets, the interaction of black holes with exotic stars in binary systems, and the formation of the first galaxies.

Finally on behalf of DIAS as a whole we recognise the hard work and dedication of the members who serve on the DIAS Council and Governing School boards. To the academics of distinction who are willing to give of their time and expertise to our endeavours. Our sincere gratitude for their continuing support. Also a particular note of thanks to our international members who travel a few times a year to Dublin for meetings and other events.

DIAS will continue to develop on the back of the new strategy. I would like to thank everyone involved at DIAS for not only their frontier research work but their dedication to raising DIAS' profile, locally, nationally and internationally.

Ráiteas an Chláraitheora & POF

Mar an chéad institiúid ard-léinn san Eoraip, ón tráth ar bunaíodh é go dtí seo, beagnach 80 bliain ó shin, meallann DIAS cuid de na scoláirí is fearr atá ar fáil in Éirinn agus ar fud an domhain; agus déanann sé taighde ar thús cadhnaíochta den scoth a stiúradh agus a fheidhmiú, as a thagann fionnachtana móra san eolaíocht, agus fágann sé sin go léir go bhfuil sé ag baint amach an misean atá aige mar eagraíocht.

Faoin straitéis nua atá againn don tréimhse 2018-2022, táimid chun aghaidh a thabhairt ar cheisteanna móra taighde chun léargas a fháil ar an tSochaí Cheilteach agus ar an oidhreacht atá aici, chun cur leis an tuiscint atá againn ar ár bplainéad féin agus ar an gcruinne iomlán agus chun na prionsabail bhunúsacha atá taobh thiar den nádúr a nochtadh chomh maith. Beifear ag cur leis an oidhreacht shaibhir ata againn leis an straitéis nua atá againn, agus beifear ag lorg réimsí nua spéise leis chomh maith, agus ar an mbealach sin déanfar cinnte de go leanfar leis an DIAS fionnachtana a dhéanamh a mbeidh tionchar acu don chine daonna san fhadtéarma.

DIAS hosted the International Women's Forum (Irish Chapter) at DIAS Dunsink Observatory in Summer 2018.

Reáchtáil DIAS Fóram Idirnáisiúnta na mBan (Caibidil na hÉireann) ag Réadlann Dhún Sinche DIAS i rith an tsamhraidh in 2018.

Tá lúcháir orm a fheiceáil go raibh fás ann in 2018, ní amháin fíon líon Taighdeoirí atá againn, ach sa líon Cuairteoirí Taighde a bhí ann I mbliana chomh maith. Tá súil agam go leanfar leis an treocht seo sna blianta beaga atá amach anseo sna réimsí uile. Baineann an chuid is mó den fhás seo leis an gcáil idirnáisiúnta atá orainn, de bharr nach as Éire iad roinnt mhaith de na Scoláirí agus de na comhaltaí. Amach anseo leagfar béim ar an gcothromaíocht inscne laistigh den institiúid a fheabhsú, agus chun ár gcomhpháirtíochtaí a mhéadú i raon leathan réimsí, chun forfheidhmiú ár straitéise nua a chur chun cinn.

Ní mór tuiscint níos fearr a bheith ann ar na gníomhaíochtaí a dhéanann an DIAS chomh maith leis an tionchar atá aige, agus sin é an fáth go bhfuilimid ag obair lena chinntiú go leanfar ar aghaidh le fás a bheith ag teacht faoin tionchar dearfach atá againn, ní hamháin ar fud an domhain, ach ar gceantar áitiúil chomh maith.

Ní mór go mbeadh an obair iontach agus ceannródaíoch a dhéantar sa DIAS sna disciplíní éagsúla atá ann tiontaithe ina dtionscnaimh eolais ghinearálta ar nós Samhain agus Science [An Eolaíocht], chomh maith le páirt a ghlacadh gach uile bhliain i bhféilte sa cheantar áitiúil agus beidh sé de chuidiú dúinn é sin uile a dhéanamh an sraith de léachtaí poiblí Reachtúla dár gcuid a fhorbairt.

Cuirfear leis na spriocanna atá againn sa réimse seo le forbairt straitéise cumarsáide chomh maith, agus beidh an athnuachan branda atá déanta againn le déanaí le DIAS a chur ar aghaidh mar institiúid chomhtháite.

Beidh gá ann san aonú haois is fiche go mbeadh láithreacht chumarsáide láidir i meáin chumarsáide thraidisiúnta chomh maith leis na meáin digiteacha agus na meáin sóisialta.

Statement of Registrar & CEO

Ever true to its mission since its establishment, almost 80 years ago, as the first institute for advanced studies in Europe, DIAS attracts some of Ireland's and the world's best scholars; and it champions and performs excellent frontier research, leading to major scientific breakthroughs.

Under our new 2018-2022 strategy we will further tackle big research questions to gain insights to Celtic Society and its legacy, to progress our understanding of our planet and the universe and to decipher the underpinning mathematical principles of nature. Our new strategy will build on our rich legacy, as well as pursue new areas of interest, ensuring DIAS will continue to make discoveries that have long-term impact for humankind.

In 2018 I am delighted to see a growth not only in our Researcher numbers, but also in Research visitors. I hope this trend will continue into future years for all sections. The majority of this growth is linked with our international reputation, as many of the new Scholars and fellows are from outside Ireland. A focus going forward will be to enhance the gender balance within the institute, and to increase our partnerships in a broad range of areas, to advance the implementation of our new strategy.

DIAS' activities and impacts must be better understood and so we are working to ensure that our positive contribution continues to grow not just globally but locally. DIAS' fantastic and seminal accomplishments in its various disciplines must become general knowledge initiatives such as Samhain agus Science, in addition to annual participation in local festivals and evolving of our Statutory public lectures series will aid us in these endeavours.

The development of a communications strategy will further our goals in this area also, and our recent brand refresh will help DIAS move forward as an integrated institution.

The twenty-first century calls for a strong communications presence in traditional as well as digital and social media channels. Our audiences both nationally and globally in these new areas continues to grow.

In 2018 we were honoured to welcome the late DG Yukiya Amano of the International Atomic Energy Agency, who gave a keynote address on "IAEA: Atoms for Peace and Development" as part of his visit to Ireland. DIAS hosted members of the diplomatic corps and guests from the Department of Foreign Affairs and Trade, and a range of other government agencies on that occasion.

Dr Eucharia Meehan speaking at What is Life Conference hosted by Trinity College Dublin in the National Concert Hall in September 2018.

An Dr Eucharia Meehan ag labhairt ag an gComhdháil *What is Life* a d'eagraigh Coláiste na Tríonóide, Baile Átha Cliath, agus a reáchtáladh sa Cheoláras Náisiúnta i Meán Fómhair 2018.

Ráiteas an Chláraitheora & POF (ar lean)

Tá an lucht féachana agus éisteachta atá againn, sa tír seo agus ar fud na cruinne chomh maith, ag fás i gcónaí.

Ba mhór an onóir dúinn in 2018 fáilte a chur roimh DG Yukiya Amano, nach maireann, ón nGníomhaireacht Idirnáisiúnta d'Fhuinneamh Adamhach, a thug eochairléacht ar "IAEA: Atoms for Peace and Development" [An Ghníomhaireacht Idirnáisiúnta d'Fhuinneamh Adamhach: Adaimh don Síocháin agus don Fhorbairt] mar chuid dá chuairt go hÉirinn. Bhí DIAS ina óstach do chomhaltaí den chór taidhleoireachta agus d'aíonna ón Roinn Gnóthaí Eachtracha agus Trádála, chomh maith le roinnt gníomhaireachtaí rialtais eile ar an ócáid sin.

Tugadh na haíonna seo a leanas cuairt orainn le linn 2018 freisin:

- A Oirirce, an Dr Helmut Freudenschuss, Ambasadóir na hOstaire in Éirinn
- A Oirirce, an tUasal Miguel Malfavón, Ambasadóir Mheicsiceo in Éirinn
- A Oirirce, Vijay Thakur Singh, Ambasadóir Phoblacht na hIndia in Éirinn

Chomh fada is a bhaineann le hoideachas sna Scoileanna, ar mhaithe lenár ndisciplíní, ar leibhéal náisiúnta, reáchtáil Scoil na Fisice Teoiriciúla agus Scoil an Léinn Cheiltigh seimineáir i rith na bliana, a raibh idir chainteoirí náisiúnta agus chainteoirí idirnáisiúnta i láthair acu. I rith na tréimhse seo d'fhoilsigh Scoil an Léinn Cheiltigh trí leabhar agus príomh-irisleabhar an Léinn Cheiltigh, Celtica:

DIAS hosted the GENERA Consortium meeting in May 2018.
Reáchtáil DIAS cruinniú Chuibhreannas GENERA i mBealtaine 2018.

Chomh maith leis sin, reáchtáil Scoil na Fisice Cosmaí, na ranna Réalteolaíochta & Réaltfhisice agus Geoifisice léachtaí go rialta.

Cuireadh dlús leis an obair atá ar bun againn le scoileanna freisin. I Meán Fómhair leag SEA SEIS agus Roinn na Geoifisice roinnt seismiméadar ar bhun aigéan an Atlantaigh. Tugadh cuireadh do mhic léinn ó gach chearn d'Éirinn chun páirt a ghlacadh i gcomórtas chun ainm a chuma do na seismiméadair roimh dóibh a bheith imlonnaithe.

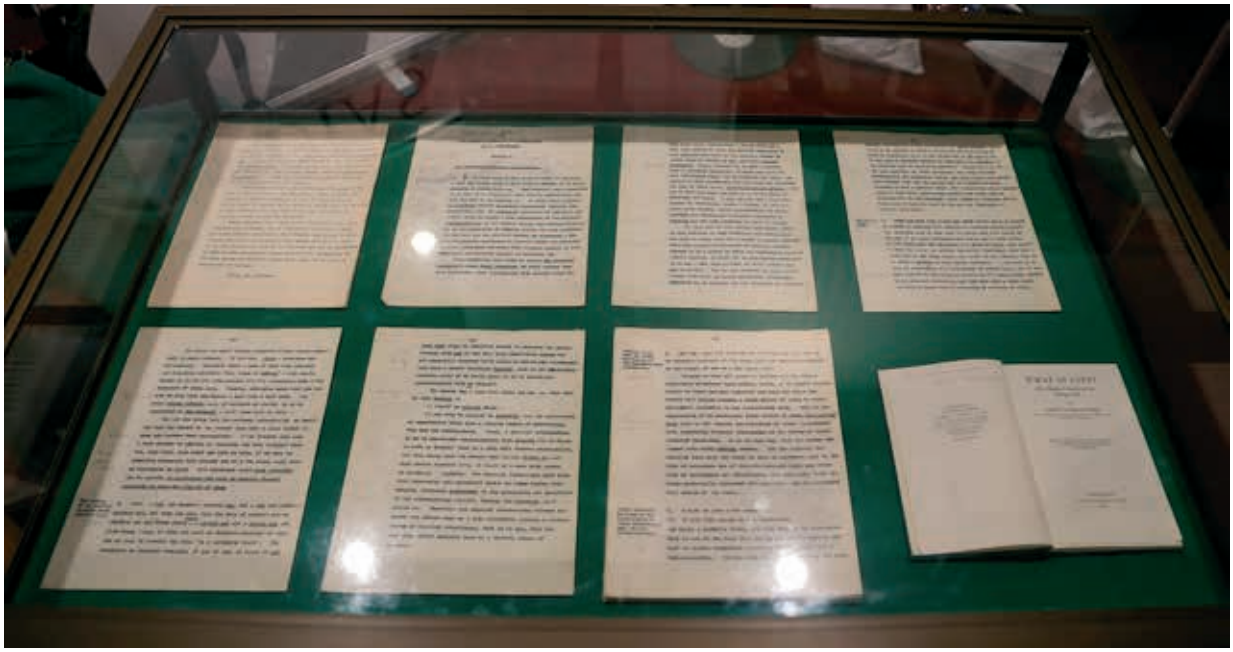
Tháinig fás faoi rannpháirtíocht ár scoileanna chomh maith. Chuir SEA SEIS roinnt seismiméadair bun farraige i mbun san Atlantach i mí Mheán Fómhair. Tugadh cuireadh do mhic léinn ó gach chearn d'Éirinn chun páirt a ghlacadh i gcomórtas chun ainm a chuma do na seismiméadair roimh dóibh a bheith imlonnaithe.

Mar fhocal scoir, ba in 2018 a chuaigh Éire isteach mar bhall de Réadlann Eorpach sa Leathsféar Theas (ESO), agus bhí sé sin an-suntasach do na glúnta de thaighdeoirí DIAS a bheidh ann amach anseo, agus do na taighdeoirí Réalteolaíochta agus Réaltfhisice uile in Éirinn. Ba mhaith liom comhghairdeas a dhéanamh leis an Ollamh Tom Ray as a cheapachán mar ionadaí thar cheann na hÉireann ar Chomhairle Eolaíochta an ESO.

Tá tuilleadh eolais faoin obair agus faoi na gníomhaíochtaí spéisiúla atá ar bun ag na Scoileanna le fáil sa tuarascáil seo agus molaim daoibh féachaint ar na rannóga seo.

Táimid ag tnúth go mór le bheith ag obair i gcomhar a chéile libh go léir in 2019, bliain a bheidh chomh táirgiúil agus chomh spéisiúil is mar a bhí i mbliana, le cúnamh Dé.

Statement of Registrar & CEO (continued)



Professor Erwin Schrödinger's lecture notes on display at the What is Life Conference, hosted by Trinity College Dublin in the National Concert Hall in September 2018.

Nótaí léachta An tOllamh Erwin Schrödingers ar taispeáint ag an gComhdháil What is Life a d'eagraigh Coláiste na Tríonóide, Baile Átha Cliath, agus a reáchtáladh sa Cheoláras Náisiúnta i Meán Fómhair 2018.

We were also in 2018 visited by:

- His Excellency Dr. Helmut Freudenschuss, Ambassador of Austria to Ireland
- His Excellency Mr. Miguel Malfavón, Ambassador of Mexico to Ireland
- Her Excellency Vijay Thakur Singh, Ambassador of the Republic of India to Ireland

In terms of education in the Schools, for the benefit of our disciplines nationally the School of Theoretical Physics and the School of Celtic Studies held seminars over the course of the year, involving both national and international speakers. Celtic Studies in this timeframe published three books and the leading Celtic Studies journal, Celtica.

The School of Cosmic Physics, both Astronomy & Astrophysics and Geophysics also held regular lectures.

Our schools engagement also grew. A number of ocean bottom seismometers were deployed in the Atlantic by SEA SEIS in September by DIAS Geophysics. Students from across Ireland were invited to participate in a competition to help name the seismometers before deployment.

Finally 2018 was when Ireland joined the European Southern Observatory (ESO), and this was hugely significant for future generations of DIAS researchers, and for all Irish Astronomy and Astrophysics researchers. I congratulate Professor Tom Ray on his appointment as Ireland's representative on the ESO Scientific Council.

More details on the interesting outputs and activities of the Schools can be found in this report and I strongly encourage you to view those sections.

We look forward to engaging with you all for an equally productive and interesting 2019.

Journal of Engagements/Dialann Imeachtaí

January 23rd Her Excellency Ambassador Vijay Thakur Singh, Ambassador of the Republic of India Embassy of India in Ireland visited DIAS on the 23rd of January as part of a conference hosted by the School of Theoretical Physics titled: **Quantum Physics: Fields, Particles & Information Geometry** is organised in honour of A. P. Balachandran on the occasion of his 80th birthday. (l-r Professor Denjoe O'Connor, Prof. A. P. Balachandran, Ambassador Vijay Thakur Singh, Professor Werner Nahm).

An 23 Eanáir A Oirirce an tArd-Ambasadóir Vijay Thakur Singh, Thug Ambasadóir Phoblacht na hIndia in Éirinn cuairt ar DIAS an 23 Eanáir mar chuid de chomhdháil a d'eagraigh Scoil na Fisice Teoiriciúla dar teideal: **An Fhisic Chandamach: Réimsí, Cáithníní & Geoiméadracht na Faisnéise Eagraítear** ar eagraíodh é in onóir A. P. Balachandran chun a 80ú bhreithlá a chomóradh. (ó chlé go deas, an tOllamh Denjoe O'Connor, an tOllamh A. P. Balachandran, an tAmbasadóir Vijay Thakur Singh, an tOllamh Werner Nahm).

March 15th Austrian Ambassador, His Excellency Dr. Helmut Freudenschuss visited DIAS, where he met with researchers from each of the Schools and reviewed the legacy of former DIAS Professor, Erwin Schrödinger. (l-r Professor Werner Nahm, Ambassador Dr. Helmut Freudenschuss, Dr Eucharia Meehan, Professor Luke Drury).

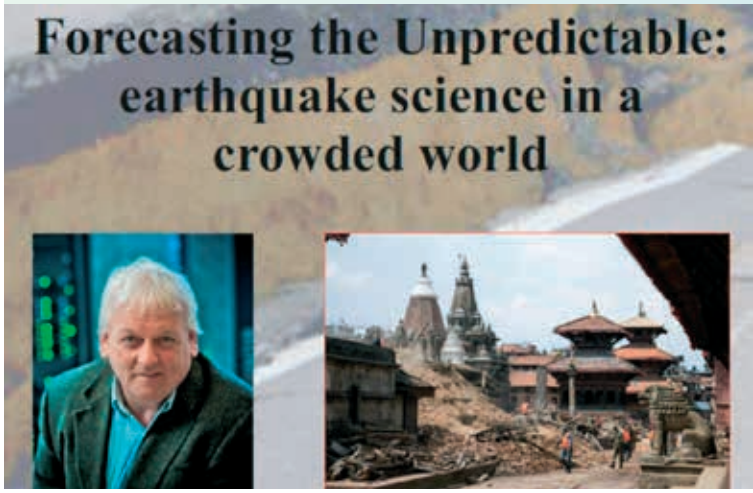
An 15 Márta Thug Ambasadóir na hOstaire, a Oirirce an Dr. Helmut Freudenschuss cuairt ar DIAS, áit ar bhuail sé le taighdeoirí ó gach aon cheann de na Scoileanna ann agus rinne sé athbhreithniú ar oidhreacht an iar-Ollamh sa DIAS, Erwin Schrödinger. (ó chlé go deas an tOllamh Werner Nahm, an tAmbasadóir an Dr. Helmut Freudenschuss, an Dr Eucharia Meehan, an tOllamh Luke Drury).

April 10th Mr Richard Moat was formally welcomed as a Friend of DIAS. (l-r Professor Dervilla Donnelly & Richard Moat).

An 10 Aibreán Tugadh fáilte roimh an Uasal Richard Moat mar Chara de chuid DIAS go foirmeálta. (ó chlé go deas an tOllamh Dervilla Donnelly & Richard Moat).

December 12th Forecasting the unpredictable: earthquake science in a crowded world" by Prof. John McCloskey of the University of Edinburgh, organised by DIAS and held in the Schrödinger theatre, Trinity College Dublin on 12 December.

An 12 Nollaig *Forecasting the unpredictable: earthquake science in a crowded world* leis an Oll. John McCloskey ó Ollscoil Dhún Éideann, eagraithe ag DIAS agus reáchtáilte i dtéatar Schrödinger, Coláiste na Tríonóide, Baile Átha Cliath ar an 12 Nollaig.



June 13th Schrödinger's grandson, Professor Terry Rudolph, met with Ruairí Ó Cuív, grandson of Éamon de Valera at a special event organised by DIAS in the Little Museum of Dublin. The event took place as part of a year-long programme of DIAS events marking the 75th anniversary of Schrödinger's famous 'What is Life?' lecture series.

An 13 Meitheamh Bhuail garmhac Schrödinger, an tOllamh Terry Rudolph, le Ruairí Ó Cuív, garmhac de chuid Éamon de Valera ag ócáid speisialta a d'eagraigh an DIAS i Músaem Beag Bhaile Átha Cliath. Bhí an ócáid mar chuid de chlár bliana d'imeachtaí DIAS chun 75 bliain a chomóradh ón uair ar tugadh an tsraith cháiliúil léachtaí sin de chuid Schrödinger ar a dtugtar 'What is Life?' [Cad é an Saol?].

June 23rd Dunsink Observatory was selected by the European Physical Society (EPS) as a site of historical significance primarily in recognition of the genius of Sir William Rowan Hamilton, who lived and worked at Dunsink from 1827 until his death in 1865. (l-r Prof. Luke Drury, Rüdiger Voss (President of the EPS), Mary Mitchell-O'Connor T.D., Prof Vincent Cunnane, Dr Eucharia Meehan, Cllr. Anthony Lavin (Fingal County Council Mayor).

An 23 Meitheamh Roghnaigh an European Physical Society [Cumann Fisice na hEorpa] (EPS) Réadlann Dhún Since mar shuíomh a bhfuil tábhacht stairiúil leis, go háirithe mar aitheantas ar an saineolaí An Tiarna William Rowan Hamilton, a mhair agus a d'oibrigh i nDún Since ó 1827 go dtí go bhfuair sé bás in 1865. (ó chlé go deas an tOllamh Luke Drury, Rüdiger Voss (Uachtarán an EPS), Mary Mitchell-O'Connor TD, an tOllamh Vincent Cunnane, an Dr Eucharia Meehan, an Comhairleoir Anthony Lavin (Méara Chomhairle Contae Fhine Gall).

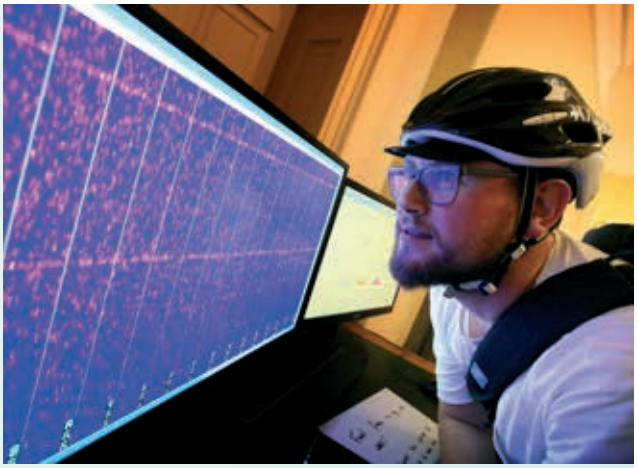
November 2nd 'Poetry on the edge: marginal verses in mediaeval Irish manuscripts' was presented by DIAS Senior Professor Liam Breatnach as part of the Tionol conference.

An 2 Samhain Thug an tOllamh Sinsearach den DIAS Liam Breatnach, an léacht 'Poetry on the edge: marginal verses in mediaeval Irish manuscripts' ['An Fhilíocht ar an imeall: rannta imeallacha i lámhscríbhinní meánaoiseacha'] mar chuid den chomhdháil Tionól.

20 June 2018 Professor Xavier Barcon, President of the European Southern Observatory (ESO), keynote speaker at the 2018 DIAS School of Cosmic Physics Summer School.

An 20 Meitheamh 2018 An tOllamh Xavier Barcon, Uachtarán na Réadlainne Eorpaí sa Leathsféar Theas (ESO), an príomhchainteoir ag Scoil Samhraidh Fisic Chosmach 2018 DIAS.

Journal of Engagements/Dialann Imeachtaí (continued)



July 19th As part of the Festival of Curiosity, DIAS Dunsink Observatory hosted an event titled "The Moon Cycle". Cyclists travelled by moonlight out from town and along the Royal Canal to the Observatory. There were a number of speakers on the night, and guests had the opportunity to view the moon through a number of historic and more contemporary telescopes.

An 19 Iúil Mar chuid den Feistival of Curiosity [Féile ar an Fhiosracht], bhí Réadlann Dhún Since DIAS ina óstach d'ócáid dar teideal "The Moon Cycle" ["Ciogal na Gealaí"]. Chuaigh rothaithe amach ón mbaile faoi sholas na gealaí cois na Canála Ríoga go dtí an Réadlann. Bhí roinnt cainteoirí ann ar an oíche, agus bhí deis ag aíonna féachaint ar an ngealach le roinnt teileascóip, idir cinn stairiúla agus cinn nua-aimseartha araon.

July 30th John Halligan TD, Minister of State for Skills, Training, Innovation, Research and Development, unveiled a plaque to commemorate the contribution of Thomas Grubb to astronomy in Ireland and worldwide. (l-r John Halligan T.D., Dr Eucharia Meehan, Tom Parlon (Construction Federation of Ireland), Professor Tom Ray).

An 30 Iúil Rinne John Halligan TD, an tAire Stáit a bhfuil freagracht aige as Scileanna, an Oiliúint, an Nuálaíocht, Taighde agus an Fhorbairt, plaic a nochtadh chun comóradh a dhéanamh ar an méid a chuir Thomas Grubb le léann na réalteolaíochta in Éirinn agus ar fud an domhain. (ó chlé go deas John Halligan T.D., an Dr Eucharia Meehan, Tom Parlon (Cónaidhm Foirgníochta na hÉireann), an tOllamh Tom Ray).

04 October 2018 Festival of History event: Erwin Schrödinger - Ireland's adopted son, Pictured L-R Professor Luke O'Neill (biochemist), Dr Marianne Leitner (mathematician), Mr. Arthur Riordan (playwright), Dr Cormac O'Raifeartaigh (physicist & science historian), Dr Jessamyn Fairfield (physicist & comedian).

04 Deireadh Fómhair 2018 Imeacht Fhéile na Staire: Erwin Schrödinger - mac altrama na hÉireann, Sa ghrianghraf Clé-Deas An tOllamh Luke O'Neill (bithcheimiceoir), An Dr Marianne Leitner (matamaiticeoir), An tUasal Arthur Riordan (drámadóir), An Dr Cormac O'Raifeartaigh (fisiceoir & staraí eolaíochta), An Dr Jessamyn Fairfield (fisiceoir & fuirseoir).

October 19th The Everyone @DIAS day 2018 took place in Dunsink Observatory. This brought all schools and sections together for one day for institutional updates, as well as training.

An 19 Deireadh Fómhair Reáchtáladh Lá Do Chuile Dhuine @DIAS 2018 i Réadlann Dhún Since. Tugadh gach aon scoil agus rannóg le chéile ar feadh lá amháin le chun gach aon duine a chur ar an eolas is deireanaí faoin institiúid, agus chun oiliúint a chur ar fáil dóibh chomh maith.

His Excellency Mr. Miguel Malfavón, Ambassador of Mexico to Ireland, visited DIAS on Friday 20th July and met with Dr Eucharia Meehan (Registrar and CEO of DIAS) and Professor Denjoe O'Connor (Senior Professor in the School of Theoretical Physics). He also met Professor Jemal Guven (National University of Mexico) who is visiting the School at the moment.

Thug A Shoilse, an tUasal Miguel Malfavón, Ambasadóir na hÉireann i Meicsiceo, cuairt ar DIAS ar an Aoine, an 20ú Iúil áit ár bhuail sé leis an Dr Eucharia Meehan (Cláraitheoir agus POF DIAS) agus leis an Ollamh Denjoe O'Connor (Ollamh Sinsearach i Scoil na Fisice Teoiriciúla). Chomh maith leis sin, bhuail sé leis an Ollamh Jemal Guven (Ollscoil Náisiúnta Mheicsiceo) atá ar cuairt ar an Scoil i láthair na huaire.

2018 Publications The 3 books and 1 journal published by the School of Celtic Studies in 2018.

Foilseacháin 2018 Na 3 leabhar agus an t-aon iris amháin a d'fhoilsigh Scoil an Léinn Cheiltigh in 2018.

19 November 2018 DIAS Senior management at the DIAS 2018-2022 Strategy launch in *Cliff Townhouse*.

19 Samhain 2018 Foireann shinsearach DIAS ag seoladh Straitéis DIAS 2018-2022 sa *Cliff Townhouse*.

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+43.3%
Impressions
56,087

Followers: 01 January 2018
0
Followers: 31 December 2018
36 (est)
Follower Growth %
N/A
Impressions
N/A

Followers: 01 January 2018
Unknown
Followers: 31 December 2018
1,136
Follower Growth %
N/A
Impressions
937*

**
Followers: 01 January 2018
702 (est)
Followers: 31 December 2018
1,206 (est)
Follower Growth %
+72%
Impressions
547,962

**(Jan-Sept numbers estimated based on median of views Oct, Nov, Dec)*
***(The Internet Archive used to gauge followers in Nov 2017. An average per month increase was calculated and added to this figure)*

School of Celtic Studies
Scoil an Léinn Cheiltigh

Scoil an Léinn Cheiltigh

Cailleadh an tOllamh Anders Ahlqvist, Cathaoirleach Bhord Stiúrtha Scoil an Léinn Cheiltigh i mí Lúnasa. Chaith a bhás tobann scáil mhór ar imeachtaí na Scoile. Ceapadh an tOllamh Ahlqvist ina Chathaoirleach den chéad uair sa bhliain 2005 agus athcheapadh é in 2010 agus arís in 2015. Fear de bhunadh na Fionlainne ab ea é agus bhí meas air mar scoláire i gcéin agus i gcóngar. Is mór a chuir sé leis an Léann Ceilteach agus is sár-Chathaoirleach ar Bhord Stiúrtha na Scoile a bhí ann. Cronófar go mór é.

Anders Ahlqvist

TAIGHDE

Lean Liam Breatnach de bheith ag obair ar Ghraiméar Meán-Ghaeilge agus réitigh sé roinnt páipéar le haghaidh a bhfoilsithe.

Bhí Ruairí Ó hUiginn ag obair ar eagrán den téacs *Oileamhain Chon Culainn agus Oidheadh Chonnlaoich mheic Con Culainn*, chríochnaigh sé alt ar chomhréir na Gaeilge agus réitigh roinnt léachtaí comhdhála le haghaidh a bhfoilsithe.

Chríochnaigh Barry Lewis dréacht dá eagrán de *Bonedd y Saint*, ginealaigh na naomh Breatnach.

Lean Aoibheann Nic Dhonnchadha dá taighde ar théacsanna leighis de chuid na Nua-Ghaeilge Moiche.

Lean Michelle O Riordan léi ag obair ar leabhar ar fhilíocht pholaitiúil lár na seachtú haoise déag.

Lean Brian Ó Curnáin lena chuid oibre ar ghnéithe éagsúla de shochtheangeolaíocht agus de chanúineolaíocht na Nua-Ghaeilge, monagraf ar Ghaeilge Oirthear na Gaillimhe, agus tras-scríobh agus eagrú ábhair thaifeadta le haghaidh thionscadal GLÓR.

Chuir Mícheál Hoyne bailchríoch ar eagrán de dhánta Sheifín Mhóir, file de chuid na cúigiú haoise déag maille le staidéar ar an aiste filíochta *brúilingeacht*. Tá sé i gceist an saothar seo a chur faoi bhráid Choiste na bhFoilseachán le haghaidh Shraith na Nua-Ghaeilge Moiche in 2019. Choinnigh sé air ag obair ar a eagrán den tráchtas gramadaí IGT III–IV agus chuir sé le Bunachar Fhilíocht na Scol leis an Dr Katharine Simms. Tá dréacht de *Clóliosta: printing in the Irish language 1571–1871, an attempt at narrative bibliography* réitithe aige in éineacht leis an Ollamh Richard Sharpe ó Ollscoil Oxford. Catalóg mhionsonraithe dhioscúrsach de gach foilseachán a cuireadh i gcló sa Ghaeilge in imeacht trí chéad bliain atá sa saothar seo.

Bronnadh Scoláireacht Uí Dhonnabháin ar Nike Stam agus tháinig sí chun na Scoile i Meán Fómhair 2018. Tá sí ag réiteach ailt ar an dátheangachas sa Luath-Ghaeilge agus ar an gcódmheascadh i dtráchtaireacht Mheán-Ghaeilge. Ina cheann sin, tá an tráchtaireacht ar Félire Óengusso atá sa lámhscríbhinn UCD A7 á cur in eagar aici.

Bronnadh Scoláireacht freisin ar Andrea Palandri a tháinig chun na Scoile i Meán Fómhair 2018. Tá sé ag réiteach eagráin agus aistriúcháin de scéal Marco Polo a scríobhadh i dtréimhse na Nua-Ghaeilge Moiche. Tá aiste ar an ábhar seo curtha faoi bhráid *Celtica* aige. Tá tras-scríobh déanta aige de chúig cinn de leaganacha lámhscríbhinne an dáin *Ris féin is measta Mac Cárthaigh* leis an Giolla Dubh mac Conchubhair Í Dhuinnín, dán nár cuireadh in eagar go dtí seo.

Roimh imeacht di i Mí an Mheithimh le dul i mbun poist iardhochtúireachta in Ollscoil Cambridge, lean Marie-Luise Theurkauf de bheith ag obair ar eagrán de dhinnsheanchas Temair agus ar an dinnsheanchas atá i Leabhar Buí Leacáin.

Bhí Sara Waidler ar déanamh taighde ar 'Stories of Saints: Medieval Irish Hagiographical Anecdota', an príomhthionscadal taighde a bhí idir lámha aici sa Scoil sular imigh sí ag deireadh Mhí Mheán Fómhair le tosú ar phost in Ollscoil Nua-Eabhrac. Tá súil aici an saothar seo a fhoilsiú mar leabhar. Bhí sí ag obair freisin ar alt 'The Medieval Cult of Relics in Wales and the Welsh Perceptions of Relics' agus ar eagrán, tras-scríobh agus aistriúchán de bheathaí Laidine Naomh Dáibhí na Breataine Bige, atá ar fáil i lámhscríbhinní Éireannacha, le haghaidh an tionscadail *Vitae Sanctorum Cambriae: The Latin Lives of the Welsh Saints* atá faoi stiúir Ollscoil Cambridge agus Canolfan Aberystwyth agus atá maoinithe ag AHRC na Breataine.

School of Celtic Studies

Activities in the School of Celtic Studies were overshadowed by the sudden and untimely death in August of the Chairman of its Governing Board, Professor Anders Ahlqvist. Professor Ahlqvist was first appointed Chair in 2005, being subsequently re-appointed in 2010 and 2015. A native of Finland, he was an internationally respected scholar and teacher who made a significant contribution to Celtic Studies and excelled in his role as Chair of the Governing Board. His loss is keenly felt.

RESEARCH

Liam Breatnach continued his work on a Grammar of Middle Irish, and on preparing a number of papers for publication.

Ruairí Ó hUiginn worked on preparing an edition of the text *Oileamhain Chon Culainn agus Oidheadh Chonnlaoich mheic Con Culainn*, completed an article on Irish syntax and prepared a number of conference presentations for publication.

Barry Lewis completed a draft of his edition of *Bonedd y Saint*, the Welsh saints' genealogies.

Aoibheann Nic Dhonnchadha continued research on Early Modern Irish medical texts.

Michelle O Riordan continued work on a book on Irish political poetry in the mid-seventeenth century.

Brian Ó Curnáin continued work on various aspects of Modern Irish sociolinguistics and dialect studies, including the preparation of a monograph on East Galway Irish, and the transcription and editing of recorded materials for the GLÓR project.

Mícheál Hoyne continued finalising an edition of the poems of the fifteenth-century poet Seifín Mór together with a study of the verse-form known as *brúilingeacht*, to be submitted to the Early Modern Irish Texts Series in 2019. He also continued work on his edition of the Classical Modern Irish grammatical tract IGT III-IV and further updated and expanded Dr Katharine Simms' Bardic Poetry Database (bardic.celt.dias.ie). Together with Professor Richard Sharpe of Oxford University, he has prepared a draft of *Clóliosta: printing in the Irish language 1571–1871, an attempt at narrative bibliography*, a detailed, discursive catalogue of all printed matter in Irish over three centuries.

Nike Stam joined the School as an O'Donovan Scholar in September 2018 and has been preparing an article that contains a case-study of her project on medieval Irish bilingualism and code-switching in a Middle Irish commentary text, and is editing the Commentary to the *Félire Óengusso* (Saints' Calendar of Óengus) from manuscript Dublin, UCD A 7.

Andrea Palandri likewise joined the School as O'Donovan Scholar in September 2018 and has been engaged in editing and translating the Early Modern Irish Travels of Marco Polo. A paper on this topic has been submitted for publication in *Celtica*. He also transcribed five manuscript sources of the fifteenth-century poem *Ris féin is measta Mac Cárthaigh* by An Giolla Dubh mac Conchubhair Í Dhuinnín, which has yet to be edited.

Marie-Luise Theuerkauf continued work on editing the *dindshenchas* of Temair (Tara), and her research on the *Dindshenchas* in the Yellow Book of Lecan prior to her leaving the Institute in May to take up a post-doctoral position at Cambridge University.

Ruairí Ó hUiginn, Chantal Kobel and Barry Lewis at the launch of Celtica 30.

Ruairí Ó hUiginn, Chantal Kobel agus Barry Lewis ag seoladh Celtica 30.

Scoil an Léinn Cheiltigh (ar lean)

Choinnigh Silva Nurmio uirthi ag obair ar theangeolaíocht na Breatnaise sular fhág sí an Scoil ag deireadh Mhí Lúnasa le glacadh le comhaltacht taighde sa bhFionlainn.

Lean Chantal Kobel dá cuid taighde ar an lámhscríbhinn TCD H 3.18 (1337). Cuimseoidh an staidéar seo eagráin de roinnt téacsanna maille le suirbhé cóidéacseolaíochta agus catalóg nua. Ina cheann sin, bhí sí ag réiteach roinnt aistí lena gcur i gcló.

MEAMRAM PÁIPÉAR RÍOMHAIRE (MPR/ISOS)

Lean an obair ar thionscadal Meamram Páipéar Ríomhaire faoi stiúir Anne Marie O'Brien. Cuireadh an 400ú lámhscríbhinn ar an suíomh i gcaitheamh na bliana, cloch mhór mhíle i scéal an tionscadail. Léiriú ar ardiomrá MPR is ea gur tugadh cuairt ar an suíomh 5,349,381 uair i gcaitheamh 2018.

Cuireadh 12 lámhscríbhinn eile de chuid Acadamh Ríoga na hÉireann ar an suíomh i gcaitheamh na bliana, (MS 23 D 2, MS 23 M 25, MS 23 M 26, MS 23 M 27, MS 23 M 28, MS 23 M 29, MS 23 M 30, MS 23 M 31, MS 23 M 32, MS 23 M 33, MS 23 M 34, MS 24 L 6.) rud a fhágann go bhfuil 97 lámhscríbhinn de chuid ARÉ ar shuíomh ISOS anois.

Chuaigh an Scoil i mbun pairtnéireachta nua le Cartlann na nÍosánach, agus tá an chéad lámhscríbhinn de na naoi gcinn ansin, IL 1, ar shuíomh MPR anois. Lámhscríbhinn í seo a bhfuil ceangal leathair uirthi agus armas easpagóideach Sheáin Uí Bhriain, Easpag Chluana agus Rois (1748–67) ar an gclúdach. Cóip de Foras Feasa ar Éirinn le Séathrún Céitinn, maille le dánta agus ginealaigh a bhaineann le Muintir Bhriain atá sa lámhscríbhinn seo a bhreac Mícheál Ó Longáin.

Blogh de lámhscríbhinn fhíorspéisiúil ar thángthas uirthi le deireanas 'Blogh Avicenna'. Rinneadh digitiú uirthi i gcaitheamh na bliana. Anuas go dtí Lúnasa 2018 is mar chlúdach ar leabhar clóbhuailte ón séú haois déag a baineadh leas as an mbifolium seo. Is éard atá ann, blogh de thráchtas leighis Avicenna (c.980–1037) a aistríodh ó leagan Laidine Gerard Cromona (†1187) go Gaeilge tar éis a ghiorraithe, méid áirithe. Chomh fada agus is eol dúinn, níl teacht ar leagan eile Gaeilge de thráchtas Avicenna. Tá cur síos ar an mblogh seo a réitigh an tOllamh Aoibheann Nic Dhonnchadha, Scoil an Léinn Cheiltigh, agus an tOllamh Pádraig Ó Macháin, Coláiste na hOllscoile Corcaigh ar an suíomh leis an íomhá. Tarraingíodh aird an phobail air seo i roinnt tuairiscí nuachtáin in Éirinn agus sa Bhreatain.

Rud mór eile a chuir ISOS i gcrích i gcaitheamh na bliana gur digitíodh dhá lámhscríbhinn dlí atá i gColáiste na Tríonóide, Baile Átha Cliath. Imleabhar ina bhfuil tráchtais éagsúla dlí a bhaineann leis an gcnuasach cáiliúil an Senchas Már atá i TCD 1336 (H 3.17). Is léiriú ar a thábhachtaí is atá an lámhscríbhinn mar fhoinse do na seandlithe go bhfuil lán 481 leathanach – an cúigiú cuid den saothar iomlán – gafa leis an eagrán dioplómaitiúil de H 3.17 a d'fhoilsigh D. A. Binchy ina *Corpus Iuris Hibernici*. Lámhscríbhinn mhór í TCD MS 1337 (H 3.18) atá ceangailte in 25 imleabhar. Tiomsúcháin agus bloghanna éagsúla, blúirí meamraim agus páipéir a scríobhadh sa chúigiú agus sa séú haois déag atá sa lámhscríbhinn seo. Tá cáil ar 1337 (H 3.18) i ngeall ar a liacht tráchtas dlí a scríobhadh den chéad uair i dtréimhse na Sean-Ghaeilge atá inti, leithéidí *Uraicecht Becc* and *Críth Gablach*. Níl againn de chuid de na téacsanna seo ach a bhfuil in 1337 (H 3.18).

Avicenna fragment. Blogh Avicenna.

De bhrí gur tosaíodh ar na lámhscríbhinní tábhachtacha seo Choláiste na Tríonóide, Baile Átha Cliath, a dhigitiú, thug Anne Marie O'Brien agus Caoimhe Ní Ghormáin (Leabharlannaí Cúnta i Leabharlann na Lámhscríbhinní agus na gCartlann i gColáiste na Tríonóide) caint ag comhdháil dhá lá a d'eagraigh Roinn na Gaeilge agus na dTeangacha Ceilteacha sa choláiste seo i Mí na Bealtaine 2018. 'The Library of Trinity College Dublin and the ISOS Project' ba theideal don chaint acu.

BIBLEAGRAFAÍOCHT

Le linn na bliana 2018 choinnigh Alexander Guilarte air ag obair ar thiomsú an *Bibliography of Irish Linguistics and Literature (/BILL/),* trí iontrálacha nua a chur isteach ann chomh maith le léirmheasanna breise a chur leis, a chinntiú gur tagairtí reatha a bhí sna tagairtí d'irisí, agus bearnaí sa leabharliosta a aimsiú agus a líonadh. Baineadh leas as acmhainní ar nós *BRILL Linguistic Bibliography* agus an MLA International Bibliography WFT, ar tugadh cead rochtana do Leabharlann na Scoile orthu ar feadh tréimhse le linn 2018.

School of Celtic Studies (continued)

Sarah Waidler, who departed at the end of September to take up a position in New York University, conducted research for 'Stories of Saints: Medieval Irish Hagiographical Anecdota', her main project at DIAS, which she hopes to publish as a monograph. She also worked on an article 'The Medieval Cult of Relics in Wales and the Welsh Perceptions of Relics', and on an edition, transcription and translation of the Latin Lives of St David of Wales in Irish manuscripts for the AHRC-funded project *Vitae Sanctorum Cambriae: The Latin Lives of the Welsh Saints* (University of Cambridge and Centre for Advanced Welsh and Celtic Studies, Aberystwyth).

Silva Nurmio, who left the School at the end of August to take up a research fellowship in Finland continued her work on Welsh linguistics.

Chantal Kobel Continued research on TCD MS H 3.18 (1337), which includes preparing new editions of a number of texts, a codicological survey and production of a new catalogue, and continued preparing a number of papers for publication.

IRISH SCRIPT ON SCREEN (ISOS)

The development of the School's Irish Script On Screen project continued under the direction of Anne Marie O'Brien. A major milestone was reached during the year with the digitisation of its 400th manuscript to go live on the website. The high profile of ISOS is reflected in the fact that the total number of hits to the website during 2018 amounted to 5,349,381.

In the annual digitisation at the Royal Irish Academy a further 12 manuscripts (MS 23 D 2, MS 23 M 25, MS 23 M 26, MS 23 M 27, MS 23 M 28, MS 23 M 29, MS 23 M 30, MS 23 M 31, MS 23 M 32, MS 23 M 33, MS 23 M 34, MS 24 L 6.) went live, thus bringing the total manuscripts held on ISOS from the Royal Irish Academy to 97.

The School initiated a new partnership with the Irish Jesuit Archives. The first manuscript of nine to be digitised, IL 1, can now be viewed on ISOS. Bound in leather, with the episcopal arms of John O'Brien, bishop of Cloyne and Ross (1748–67), this eighteenth-century manuscript written by Mícheál Ó Longáin, consists of a copy of Geoffrey Keating's Foras *Feasa ar Éirinn*, and poems, annals and genealogies related to the Uí Bhriain family.

An interesting recent find 'The Avicenna Fragment' was digitised during the year. Until August 2018 this bifolium was used as a cover for a sixteenth-century printed book. A Medical fragment of the book 1 of the Avicenna canon (v. 980–1037), translated into Irish, from the Latin of Gerard of Cremona (d. 1187). As far as is currently known, this copy of the translation of Avicenna's Canon is unique. The ISOS image is accompanied by a description of the fragment prepared by Professor Aoibheann Nic Dhonnchadha of the School of Celtic Studies and Professor Pádraig Ó Macháin of UCC. This important discovery was the subject of a number of newspaper articles in Ireland and in Britain.

Another major achievement of the Irish Script On Screen project came with the digitisation of two primary legal manuscripts from Trinity College. TCD MS 1336 (H 3.17), is a volume made up of several distinct books or tracts of different sizes associated with the famous compilation known as the Senchas Már. Its importance as a source for mediaeval Irish law can be gauged from the fact that the diplomatic edition of the legal texts in it takes up 481 pages in D. A. Binchy's *Corpus Iuris Hibernici* (pp. 1650–2130), just over a fifth of the total.

TCD MS 1337 (H 3.18) a large manuscript now bound in 25 volumes, consisting of discrete gatherings, fragments and slips of vellum and paper, written variously in the fifteenth and sixteenth centuries. TCD MS 1337 is renowned for its abundance of legal tracts originally written in the Old Irish period, such as *Uraicecht Becc* and *Críth Gablach*, many of which are now the only extant copies.

In light of these prominent TCD manuscripts being digitised, Anne Marie O'Brien together with Caoimhe Ní Ghormáin (Assistant Librarian, Manuscripts & Archives Research Library, TCD) presented a paper at the two-day conference organised by the Department of Irish and Celtic languages in May 2018, 'The Irish manuscripts in the library of Trinity College Dublin'. The paper was entitled 'The Library of Trinity College Dublin and the ISOS Project'.

Scoil an Léinn Cheiltigh (ar lean)

I gcomhar le Andrew McCarthy lean sé de bheith ag cur feabhais ar chóras an bhunachair a mbaineann comhéadan an riarthóra agus comhéadan poiblí BILL leas as. Tá iontrálacha ar fhoilseacháin i ngort an Léinn Cheiltigh scríofa aige agus cuirfear i gcló iad in imleabhar 50 (le haghaidh 2016; le foilsiú 2019) den International Medieval Bibliography a chuireann an Institute for Medieval Studies, Ollscoil Leeds, in eagar agus a fhoilsíonn muintir Brepols.

LÉANN NA LÁMHSCRÍBHINNÍ

Stiúraigh an tOllamh Liam Breatnach an obair ar eagrán dioplómaitiúil den Leabhar Breac, lámhscríbhinn de chuid na cúigiú haoise déag, agus rinne stiúrú freisin ar thionscadal eile a bhfuil idir bhaill den fhoireann agus scoláirí páirteach ann a bhfuil d'aidhm leis clár nua do Leabhar Buí Leacáin a réiteach.

AN LEABHARLANN

Bíonn an Leabharlann i gcónaí ag iarraidh feabhas a chur ar an rochtain atá ag daoine ar fhoinsí atá i gcló nó atá ar líne. Cuireadh leis an stoc sna réimsí ábhartha taighde atá ag an Scoil de réir an pholasaí sealbhaithe atá ag an Leabharlann.

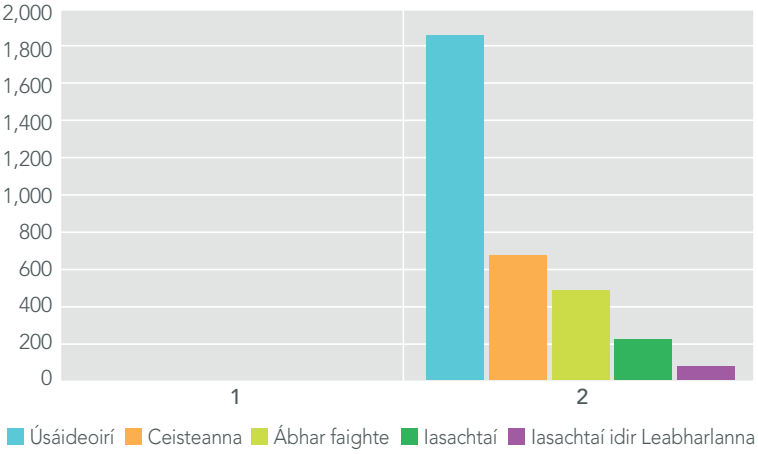
Scaipeadh an t-eolas is deireanaí maidir le foilseacháin nua atá faighte ag an Leabharlann agus le hirisí reatha.

Tugadh thart ar 2,000 cuairt ar an Leabharlann i gcaitheamh na bliana 2018.

Coiste na Leabharlainne

Tugann Coiste na Leabharlainne comhairle faoi pholasaithe leabharlainne, cur chun cinn na leabharlainne, agus forbairt na leabharlainne maille le cur i gcrích athruaithe straitéiseacha.

STAITISTICÍ NA LEABHARLAINNE 2018



Is iad Ruairí Ó hUiginn, Aoibheann Nic Dhonnchadha, Alexander Guilarte agus Margaret Irons baill an Choiste.

Bhí cruinnithe ag an gCoiste i Mí Aibreáin agus Mí Dheireadh Fómhair 2018.

Comhdálacha Seachtracha

Bhí Margaret Irons i láthair ag Seimineár LIR: 'Deciphering Data: Informing Decision-making, Transforming User Experience' ar an 5 Nollaig.

Dair

dair.dias.ie

Tionscadal de chuid Leabharlann Scoil an Léinn Cheiltigh atá in DAIR, (DIAS Access to Institutional Repository), taisclann institiúide d'fhoilseacháin a chuireann saothar taighde fhoireann na hInstitiúide ar fáil. Is is bhfoirm leictreonach atá na hailt acadúla, cóipeanna réamhchló (leagan reatha den alt nó leagan a cuireadh faoi bhráid piarmheastóirí) nó cóipeanna ar glacadh leo le haghaidh a bhfoilsithe, nó ábhar gaolmhar ar nós caibidlí i leabhair, léachtanna comhdhála, páipéir oibre, tuairiscí teicniúla agus a leithéidí.

Is é an tOllamh Ruairí Ó hUiginn, Stiúrthóir Scoil an Léinn Cheiltigh, a sheol DAIR le linn Fhóram Taighde na hInstitiúide ar an 11 Bealtaine 2018. Is í an Leabharlannaí atá i mbun a bhainistithe.

Tionscadail Chatalógaithe

Tháinig roinnt mac léinn cartlannaíochta chun na Leabharlainne in 2018.

Chríochnaigh Geraldine McNamara an Catalógú Siarghabhálach.

Chláraigh Clíona Ní Liatháin agus Leonora Balfour bailiúcháin éagsúla a bronnadh orainn.

Chuir Chiara Monteleone Cartlann Mhic Cana in eagar. Tugann na páipéir atá inti léargas ar obair an Ollaimh Mac Cana san Institiúid agus ar a shaol mar scoláire.

Ní mór dóibh siúd ar mhian leo ábhar na Cartlainne a cheadú cead i scríbhinn a fháil ón Stiúrthóir nó ón Leabharlannaí.

School of Celtic Studies (continued)

BIBLIOGRAPHY

During 2018 Alexander Guilarte has continued to work on the compilation of the *Bibliography of Irish Linguistics and Literature (/BILL/)*, entering new material but also focusing on the addition of more reviews, bringing existing periodicals and series up to date, and detecting and eliminating any gaps in the bibliography. To locate this material extensive use has been made of resources such as *BRILL Linguistic Bibliography* and MLA International Bibliography WFT, access to which has been granted by the SCS Library on a temporary basis during 2018.

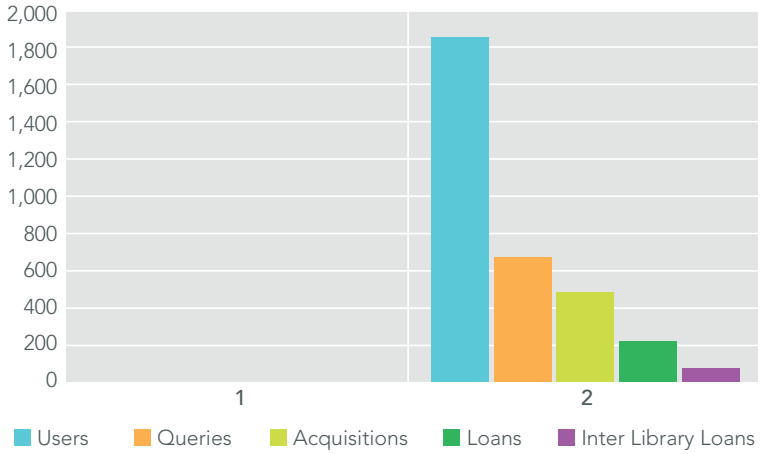
Working in conjunction with Andrew McCarthy he has continued to improve the database system used for *BILL* both on the public and the administrator's interface.

He also has contributed entries on Celtic studies publications to appear in vol. 50 for 2016 (forthcoming in 2019) of the International Medieval Bibliography edited by the Institute for Medieval Studies, University of Leeds, and published by Brepols.

MANUSCRIPT STUDIES

Professor Liam Breatnach continued direction of a diplomatic edition of the early fifteenth-century manuscript *Leabhar Breac*, and a project involving staff and scholars of the School to produce a new catalogue on the contents of the Yellow Book of Lecan.

LIBRARY STATISTICS 2018



LIBRARY

The library continues to maintain and improve access to relevant research resources both in print and online. Acquisitions continued in subject areas relevant to the research needs of the School and in keeping with the acquisitions policy of the library.

Regular updates on recent accessions and current periodicals were issued.

During 2018 approximately 2,000 visits were made to the library.

Library Committee

The Library Committee advises on library policies, promotion of the library and on development and implementation of strategic changes.

Committee members are Ruairí Ó hUiginn, Aoibheann Nic Dhonnchadha, Alexandre Guilarte and Margaret Irons.

The Committee met in April and October 2018.

External Conferences

Margaret Irons attended the LIR Seminar: 'Deciphering Data: Informing Decision-making, Transforming User Experience' on 5 December.

DAIR - Institutional Repository

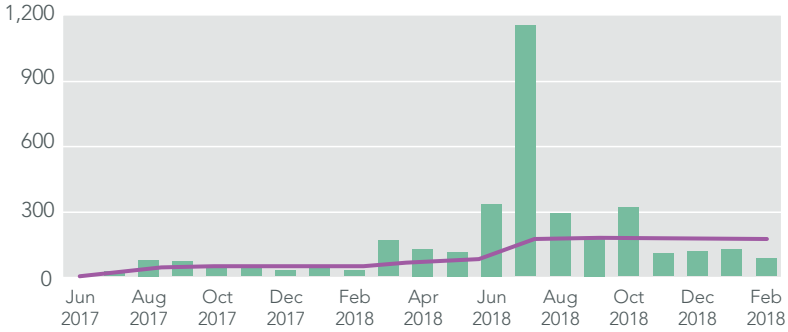
dair.dias.ie

DAIR, (DIAS Access to Institutional Repository), an initiative of the School of Celtic Studies Library, is an institutional repository of research publications which showcases the research output of professors, staff and scholars of the Institute. The repository holds electronic copies of academic papers, which can be either preprints (a working paper or the version of a paper submitted for peer review) or postprints (the final peer reviewed version, which has been accepted for publishing) or similar material such as book chapters, conference papers, working papers, technical reports and so on.

DAIR was officially launched at the DIAS Research Forum on 11th May 2018 by the Director of the School of Celtic Studies, Prof. Ruairí Ó hUiginn and is managed by the Librarian.

Scoil an Léinn Cheiltigh (ar lean)

STAITISTICÍ NA TAISCLAINNE



Forbhreathnú ar an obair

841 mír

3,535 íoslódáil

99% téacs iomlán

99% rochtain oscailte

Bhronn na daoine seo a leanas leabhair ar an Leabharlann:

- **Gerard Beggan**
  Taighdeoir neamhspleách
- **Matthew James Driscoll**
  Ollscoil Chóbanhávan
- **Maxim Fomin**
  Ollscoil Uladh
- **Anthony Harvey**
  Acadamh Ríoga na hÉireann
- **Ruairí Ó hUiginn**
  Institiúid Ard-Léinn Bhaile Átha Cliath
- **Liam Mac Peaircín**
  Coláiste Mhuire gan Smál, Luimneach
- **Tatiana Mikhailova**
  Ollscoil Mhoscó
- **Nike Stam**
  Institiúid Ard-Léinn Bhaile Átha Cliath
- **Anders Ahlqvist**†
  Ollscoil Sydney
  Irisí éagsúla

Rinneadh athchóiriú ar pholasaí na Leabharlainne maidir le hábhair a bhronntar uirthi ag teacht le pleananna straitéiseacha forbartha na Leabharlainne. Is féidir an polasaí a léamh ach é a iarraidh.

Cuairteoirí idirnáisiúnta ar an leabharlann

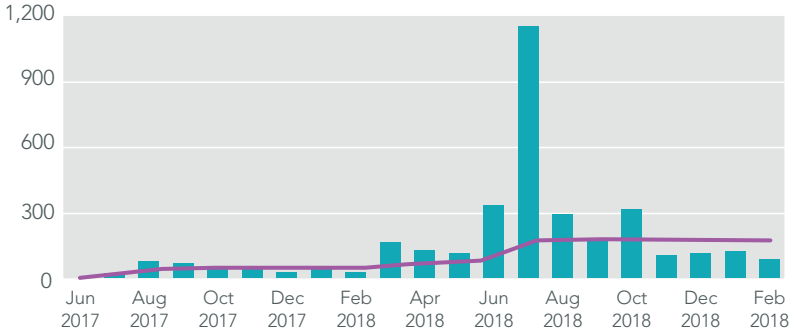
1. **Mícheál Briody**, Ollscoil Helsinki, An Fhionlainn
2. **Melita Cataldi**, Ollscoil Turin, An Iodáil
3. **Piero de Gennaro**, Ollscoil Turin, An Iodáil
4. **Margo Griffin-Wilson**, Ollscoil Cambridge, Sasana
5. **David McCay**, Ollscoil Cambridge, Sasana
6. **Helen Imhoff**, Munich, An Ghearmáin
7. **Tatyana Mikhailova**, Ollscoil Mhoscó, Aontas na Rúise
8. **James McCloskey**, Ollscoil California Santa Cruz, SAM
9. **Tomás Ó Cathasaigh**, Ollscoil Harvard, Massachusetts, SAM
10. **Pádraig Ó Néill**, Ollscoil North Carolina, SAM
11. **Jan Erik Rekdal**, Ollscoil Oslo, An Iorua
12. **Guto Rhys**, Flondrás, An Bheilg
13. **Richard Sharpe**, Ollscoil Oxford, Sasana
14. **Jonathan Wooding**, Ollscoil Sydney, An Astráil
15. **Marged Haycock**, Ollscoil Aberystwyth, An Bhreatain Bheag
16. **Malachy McKenna**, An tSualainn

TIONÓL 2018

Bhí Tionól na bliana 2018 ar bun 2–3 Samhain agus d'fhreastail slua mór daoine air. In imeacht an dá lá tugadh 20 caint chomh maith leis an Léacht Reachtúil. Is iad seo na cainteanna a tugadh ar an Aoine 2 Samhain: Deborah Hayden '*Auraicept na nÉces* and the *Ars Medicine*'; Beatrix Färber 'An Irish Materia Medica: Tadhg Ó Cuinn's Irish Herbal (1415)'; Guto Rhys 'Welsh grave elegies, 1570-2018'; Anthony Harvey 'Haunting vocabulary: towards a taxonomy of ghost words in Celtic lexicography'; Marged Haycock '75 years ago: Ifor Williams's DIAS lectures on Early Welsh poetry'; David Stifter agus Angelina Lavelle 'Alliterate by number'; Elliott Lash 'The etymology of the Old Irish interrogative particle *in* and some notes on syntactic change in Old Irish'; Patrick Sims-Williams '"Just saying": Old Irish *ol* & *olsé*, Middle Welsh *heb* & *hebyr*'; Richard Sharpe 'Clóliosta: printing in the Irish language 1571–1871'; Mícheál Hoyne 'Guides to reading Irish in printed books 1571–1871'. Is iad seo a leanas na cainteanna a tugadh ar an Satharn 3 Samhain: Gregory Toner agus Xiwu Han 'Machine-learning methods for dating Irish narrative'; Marie-Luise Theuerkauf agus Máire Ní Mhaonaigh 'Electronic Dictionary of the Irish Language: ceardlann'; Pamela O'Neill 'Statistical analysis of lexicon and the composition of *Críth Gablach*'; Peter McQuillan 'Early modern civility in Gaelic Ireland and conceptual history'; Merryn

School of Celtic Studies (continued)

REPOSITORY STATISTICS



Activity Overview

841 items

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Cataloguing Projects

In 2018 the library gained a number of cataloguing and archiving students.

The Retrospective Cataloguing project was completed by Geraldine McNamara.

Clíona Ni Liatháin together with Leonora Balfour continued cataloguing various donated collections.

Chiara Monteleone worked on arranging and compiling the Mac Cana Archive. The papers document Professor Mac Cana's academic activity at the Institute, and his academic career as a whole.

Researchers wishing to inspect archive material must seek written permission from the Director or the Librarian.

Donations

Individual book donations were gratefully received from the following:

- **Gerard Beggan**
  Independent researcher
- **Matthew James Driscoll**
  University of Copenhagen
- **Maxim Fomin**
  Ulster University
- **Anthony Harvey**
  Royal Irish Academy
- **Ruairí Ó hUiginn**
  DIAS
- **Liam Mac Peaircín**
  Mary Immaculate College, Limerick
- **Tatiana Mikhailova**
  Moscow University
- **Nike Stam**
  DIAS
- **Anders Ahlqvist**†
  University of Sydney
  Various journal titles

The library donations policy has been revised in keeping with strategic growth plans for the library. The policy can be consulted upon request.

International visitors to the library

1. **Mícheál Briody**, University of Helsinki, Finland
2. **Melita Cataldi**, Turin University, Italy
3. **Piero de Gennaro**, Turin, Italy
4. **Margo Griffin-Wilson**, Cambridge University, England
5. **David McCay**, University of Cambridge, England
6. **Helen Imhoff**, Munich, Germany
7. **Tatyana Mikhailova**, Moscow State University, Russia
8. **James McCloskey**, University of California Santa Cruz, USA
9. **Tomás Ó Cathasaigh**, Harvard University, Massachusetts, USA
10. **Pádraig Ó Néill**, University of North Carolina, USA
11. **Jan Erik Rekdal**, University of Oslo, Norway
12. **Guto Rhys**, Flanders, Belgium
13. **Richard Sharpe**, University of Oxford, England
14. **Jonathan Wooding**, University of Sydney, Australia
15. **Marged Haycock**, University of Aberystwyth, Wales
16. **Malachy McKenna**, Sweden

Scoil an Léinn Cheiltigh (ar lean)

Davies-Deacon '"Official" Cornish orthography in the post-SWF era'; Caoimhín Breatnach 'Editions of *Tóruigheacht Dhiarmada agus Ghráinne* and of the tale referred to as *Úath Beinne Étair*'; Wolfgang Meid '*Táin Bó Cúailnge*: The final verbal exchange between Medb and Fergus'; Maria Del Henar Velasco Lopez 'Courting water: Greek and Irish heroines'; Roisin McLaughlin 'Marginal entries in TCD MS H 2.15b'; Séamas De Barra 'Rian na scríobhaithe agus na n-údar Gaeilge ar an gCatechismus/Teagasc Criostuí ag an Ath. Teaboid Gállduf'.

An tOllamh Liam Breatnach a thug an Léacht Reachtúil sa Choláiste Ollscoile ar an Aoine, 2 Samhain. 'Poetry on the edge: marginal verses in mediaeval Irish manuscripts', an teideal a bhí ar an léacht agus tháinig slua mór daoine i láthair. Tá taifead anois ar fáil ar shuíomh gréasáin na Scoile. Sular tugadh an léacht, thug an tOllamh Tomás Ó Cathasaigh ó Ollscoil Harvard caint ghairid in ómós don Ollamh Anders Ahlqvist a bhí ina Chathaoirleach ar Bhord Stiúrtha na Scoile go dtí gur cailleadh é i Mí Lúnasa.

SIOMPÓISIAM DHÁ LÁ AR NAOMHSHEANCHAS NA hÉIREANN AGUS NA BREATAINE BIGE

D'eagraigh Barry Lewis agus Sarah Waidler an siompóisiam seo ar an 25–6 Bealtaine. Bhí 15 cainteoir páirteach ann agus bhí 60 duine i láthair. Tugadh na cainteanna seo a leanas ar an Aoine 25 Bealtaine: Alan Macquarrie (Glaschú): 'Creating a National Hagiography for Scotland: the Aberdeen Breviary (1510)'; Caroline Brett (Cambridge): 'Hagiography as Charter: the Example of the Cartulary of Landévennec'; Elizabeth Boyle (Maigh Nuad): ' "*More than Honey to My Mouth*": Saints and the Psalms in Early Medieval Ireland'; Sarah Waidler (IABÁC): 'Demons, Ghosts and Angels: Independent Anecdotes of Irish Saints'; John Carey (Coláiste na hOllscoile Corcaigh): 'Beyond Angels and Ancients: Saints and Their Uncanny Interlocutors'; Diarmuid Ó Riain (Vienna): 'Pushing the Boundaries of Cult: a Twelfth-Century Account of St Martin's Translation to Salzburg (BHL 5659)'; Barry Lewis (IABÁC): 'Some Vernacular Expressions of the Cult of Saints in Wales'.

Is iad seo a leanas na cainteanna a tugadh ar an Satharn 26 Bealtaine: David Callander (Cambridge): 'The Late Medieval Welsh Poetry to Gwenfrewy'; Raymond Gillespie (Maigh Nuad): 'Inventing Saints: the Construction of the Sixteenth-Century North-West Ulster Saints Lives'; Marie-Luise Theuerkauf (IABÁC): '*Baile Moling*: Generic and Contextual Considerations'; Patrick Sims-Williams (Aberystwyth): 'Saints and Early Welsh Charters'; Pádraig Ó Riain (Coláiste na hOllscoile Corcaigh): 'Irish Saints' Genealogies: Hagiographical Coordinates or Title Deeds?'; Jesse Harrington (Cambridge): 'Figuring the Saint's Curse Outside of the Lives: Hagiographical Discourse and Narrative Exegesis in *Aided Diarmata meic Cerbaill*'; Anders Ahlqvist (Sydney): 'Forgotten Religious Poetry'; Thomas Owen Clancy (Glaschú): 'Hebridean Saints in and on the Margins: Approaching Saints Donnan and Cainnech through Peripheral Texts'.

SEIMINEÁIR

Thug Liam Breatnach seimineár seachtainiúil ar feadh na bliana ar théacsanna filíochta de chuid na Luath-Ghaeilge, an dán dar tús *A Choimmdiu nél* ina measc. Thug Ruairí Ó hUiginn seimineár ar an téacs *Oileamhan Chon Culainn* ó Eanáir go Bealtaine. 'Texts on the poet in late-medieval Wales' ba theideal do sheimineár Barry Lewis a tugadh ó Mhí Dheireadh Fómhair go Mí na Nollag.

Thug Peadar Ó Muircheartaigh, scoláire iardhochtúireachta de chuid Chomhairle Taighde na hÉireann a bhí ar cuairt sa Scoil trí chaint ar shainréimeanna teanga agus ar chanúintí sa tSean-Ghaeilge, agus thug an Dr Elaine Uí Dhonnchadha, scoláire ar cuairt ó Choláiste na Tríonóide, Baile Átha Cliath, trí chaint ar ghnéithe de chomhréir na Gaeilge.

LÉACHTAÍ

Chuir baill foirne léachtaí agus páipéir i láthair ag comhdhálacha agus in ionaid éagsúla abhus in Éirinn agus ar an gcoigríoch.

Liam Breatnach:

sraith léachtaí ar théacsanna dlí agus filíochta Sean-Ghaeilge mar aon le léacht phoiblí dar teideal 'Marriage in early medieval Ireland: Sources and interpretations' i Roinn na Ceiltise, Ollscoil Harvard, Aibreán 21–6,

'Manuscript H 3. 17 (1336)', caint a tugadh ag an gComhdháil faoi Lámhscríbhinní Gaeilge Choláiste na Tríonóide, Baile Átha Cliath ar 18 Bealtaine.

Ruairí Ó hUiginn:

'In song and in story: aspects of the performance of medieval Irish saga literature', caint a tugadh ag an Cambridge Colloquium, Ollscoil Cambridge University, 10 Feabhra.

'The Fifth Province', Léacht Chuimhneacháin Uí Chorráin Scoil Dlí na Boirne, Baile Uí Bheacháin, 5 Bealtaine.

'Ancestors, gods and genealogies', caint a tugadh ag an Séú Colóiciam Bliantúil 'Thinking about Mythology in the 21st Century', Ollscoil Dhún Éideann, 10 Samhain.

'Logainmneacha na hÉireann: roinnt gnéithe', caint a tugadh ag Tionól Gaeilge an 23ú Australasian Conference of Irish Studies, Ollscoil Sydney, An Astráil, 27 Samhain.

School of Celtic Studies (continued)

TIONÓL 2018

This year's Tionól was held Friday 2 and Saturday 3 November and attracted a very large audience. Over the two days a total of 20 papers were read in addition to the annual Statutory Public Lecture. The following papers were presented 2 November: Deborah Hayden '*Auraicept na nÉces* and the *Ars Medicine*'; Beatrix Färber 'An Irish Materia Medica: Tadhg Ó Cuinn's Irish Herbal (1415)'; Guto Rhys 'Welsh grave elegies, 1570-2018'; Anthony Harvey 'Haunting vocabulary: towards a taxonomy of ghost words in Celtic lexicography'; Marged Haycock '75 years ago: Ifor Williams's DIAS lectures on Early Welsh poetry'; David Stifter and Angelina Lavelle 'Alliterate by number'; Elliott Lash 'The etymology of the Old Irish interrogative particle *in* and some notes on syntactic change in Old Irish'; Patrick Sims-Williams '"Just saying": Old Irish *ol* & *olsé*, Middle Welsh *heb* & *hebyr*'; Richard Sharpe 'Clóliosta: printing in the Irish language 1571–1871'; Mícheál Hoyne 'Guides to reading Irish in printed books 1571–1871'. The following were given on Saturday 3 November: Gregory Toner and Xiwu Han 'Machine-learning methods for dating Irish narrative'; Marie-Luise Theuerkauf and Máire Ní Mhaonaigh 'Electronic Dictionary of the Irish Language: workshop'; Pamela O'Neill 'Statistical analysis of lexicon and the composition of *Críth Gablach*'; Peter McQuillan 'Early modern civility in Gaelic Ireland and conceptual history'; Merryn Davies-Deacon '"Official" Cornish orthography in the post-SWF era'; Caoimhín Breatnach 'Editions of *Tóruigheacht Dhiarmada agus Ghráinne* and of the tale referred to as *Úath Beinne Étair*'; Wolfgang Meid '*Táin Bó Cúailnge*: The final verbal exchange between Medb and Fergus'; Maria Del Henar Velasco Lopez 'Courting water: Greek and Irish heroines'; Roisin McLaughlin 'Marginal entries in TCD MS H 2.15b'; Séamas De Barra 'Rian na scríobhaithe agus na n-údar Gaeilge ar an gCatechismus/ Teagasc Criostuí ag an Ath. Teaboid Gállduf'.

The Statutory Public Lecture held in conjunction with the Tionól was delivered in UCD by Professor Liam Breatnach on Friday 2 November. Titled 'Poetry on the edge: marginal verses in mediaeval Irish manuscripts', it attracted a large audience. A recording is now available on the School's website. The lecture was preceded by a brief and warmly received appreciation of the late Chairman of the Governing Board, Professor Anders Ahlqvist, delivered by Professor Tomás Ó Cathasaigh of Harvard University.

Professor Damian McManus, Dr Katharine Simms and Dr Mícheál Hoyne at the launch of Fuidheall Áir: Bardic poems on the Meic Dhiarmada of Magh Luirg c. 1377 - c. 1637.

An tOllamh Damian McManus, Dr Katharine Simms agus Dr Mícheál Hoyne ag seoladh Fuidheall Áir: Bardic poems on the Meic Dhiarmada of Magh Luirg c. 1377 - c. 1637.

TWO-DAY SYMPOSIUM ON IRISH AND WELSH HAGIOGRAPHY

Barry Lewis and Sarah Waidler organised this two-day seminar on May 25–6. It featured 15 speakers and had an audience in excess of 60 people. The following papers were presented on Friday 25 May: Alan Macquarrie (Glasgow): 'Creating a National Hagiography for Scotland: the Aberdeen Breviary (1510)', Caroline Brett (Cambridge): 'Hagiography as Charter: the Example of the Cartulary of Landévennec', Elizabeth Boyle (MU): '"*More than Honey to My Mouth*": Saints and the Psalms in Early Medieval Ireland', Sarah Waidler (DIAS): 'Demons, Ghosts and Angels: Independent Anecdotes of Irish Saints', John Carey (UCC): 'Beyond Angels and Ancients: Saints and Their Uncanny Interlocutors', Diarmuid Ó Riain (Vienna): 'Pushing the Boundaries of Cult: a Twelfth-Century Account of St Martin's Translation to Salzburg (BHL 5659)', Barry Lewis (DIAS): 'Some Vernacular Expressions of the Cult of Saints in Wales'.

Scoil an Léinn Cheiltigh (ar lean)

'Reading *Tóruigheacht Dhiarmada agus Ghráinne*', Príomhléacht: 23ú Australasian Conference of Irish Studies, Ollscoil Sydney, An Astráil, 30 Samhain.

Barry Lewis:

'The dating of medieval Welsh literary texts': caint a tugadh ag an gceardlann 'The dating of Old Norse and Celtic texts', Ollscoil Oslo, 22 Márta 2018.

'Some vernacular expressions of the cult of saints in Wales': caint a tugadh ag an gcomhdháil 'Defining the boundaries of Celtic hagiography: textual sources outside Lives and martyrologies', IABÁC, 25 Bealtaine 2018.

'Byd Arthur fel delfryd yng ngwaith y beirdd canoloesol': caint a tugadh ar an siompóisiam lae Arthurian legends in Wales and beyond, Ollscoil Bangor, An Bhreatain Bheag, 28 Meitheamh 2018.

'The interface between hagiography and history in medieval Wales': caint a tugadh ag an 25ú International Medieval Congress (IMC), Leeds, 3 Iúil 2018.

Aoibheann Nic Dhonnchadha:

'Tráchtas leighis ón 14ú haois: lámhscríbhinn, téacs agus foinsí' caint a tugadh ag an gcomhdháil, *Léann na Sionainne*, Ollscoil Luimnigh on 25–26 Bealtaine 2018.

'Na téacsanna leighis i LS Ó Lochlainn 3: ábhar agus cúlra', caint a tugadh ag *Seoda Scripte: Seimineár Leathlae ar Roinnt Lámhscríbhinní Gaeilge sna Bailiúcháin Speisialta* sa Choláiste Ollscoile, Baile Átha Cliath 30 Samhain.

'An Irish medical commentary of the 15th century', caint a tugadh ag comhdháil *Science and Medicine in the Insular Middle Ages* Ollscoil na Banríona, Béal Feirste 7 Nollaig.

Michelle O Riordan:

'"Beannacht ar anmain Éireann": bás agus síor-aiséirí na hÉireann i bhfriotal na bhfilí', caint a tugadh ag Éigse Cholm Cille, Ollscoil Uladh, Doire, 9–10 Márta 2018.

'Fill Arís', caint a tugadh ag an seimineár lae in ómós don Msg. An tOllamh Breándán Ó Doibhlin, Ollscoil Mhá Nuad, 30 Meitheamh 2018.

'The Poems of Giolla Brighde Mac Con Midhe–the Apologues', caint a tugadh ag seimineár bliantúil Chumann na Sgríbheann nGaedhilge, Coláiste na hOllscoile Corcaigh, 17 Samhain.

Brian Ó Curnáin:

'Fuaim an Phinn a Canth linny ón 19 céad; *Mack Dea, Muirye waher, Coo Collen, Fun, Esheen, an Packaugh* agus *an Baus* ó láimh na gConnachtach', Seimineár Taighde, Roinn na Nua-Ghaeilge, Ollscoil Mhá Nuad, 15 Samhain.

Cainteoir ag seimineár 'Miliwn o siaradwyr Cymraeg erbyn 2050?' in Ollscoil Bangor, an Bhreatain Bheag, 21 Samhain.

Mícheál Hoyne:

'Editing Classical Modern Irish poetry (in éineacht leis an Dr Eoin Mac Cárthaigh, Coláiste na Tríonóide Baile Átha Cliath agus an Dr Eoghan Ó Raghallaigh, Ollscoil Mhá Nuad), ag ceardlann a reáchtáladh le linn an Conference of the Celtic Studies Association of North America, Ollscoil California, Los Angeles, SAM, 10 Márta.

'The Seifín Duanaire (H 4.22, XII)': caint a tugadh ag an gComhdháil faoi Lámhscríbhinní Gaeilge Choláiste na Tríonóide, Baile Átha Cliath, 17 Bealtaine.

'Guides to reading Irish in printed books, 1571–1871', caint a tugadh ag an Tionól, 3 Samhain.

M. Hoyne agus R. Ó hUiginn at the launch of Fuidheall Áir.

M. Hoyne agus R. Ó hUiginn ag seoladh *Fuidheall Áir*.

School of Celtic Studies (continued)

The following were given on Saturday, 26 May: David Callander (Cambridge): 'The Late Medieval Welsh Poetry to Gwenfrewy', Raymond Gillespie (MU): 'Inventing Saints: the Construction of the Sixteenth-Century North-West Ulster Saints Lives', Marie-Luise Theuerkauf (DIAS): '*Baile Moling*: Generic and Contextual Considerations', Patrick Sims-Williams (Aberystwyth): 'Saints and Early Welsh Charters', Pádraig Ó Riain (UCC): 'Irish Saints' Genealogies: Hagiographical Coordinates or Title Deeds?', Jesse Harrington (Cambridge): 'Figuring the Saint's Curse Outside of the Lives: Hagiographical Discourse and Narrative Exegesis in *Aided Diarmata meic Cerbaill*', Anders Ahlqvist (Sydney): 'Forgotten Religious Poetry', Thomas Owen Clancy (Glasgow): 'Hebridean Saints in and on the Margins: Approaching Saints Donnan and Cainnech through Peripheral Texts'.

SEMINARS

Liam Breatnach gave a seminar on early Irish verse texts, including the ninth-century poem beginning *A Choimmdiu* nél.

Ruairí Ó hUiginn held a weekly seminar on the text *Oileamhan Chon Culainn* from January to May.

Barry Lewis gave a seminar on 'Texts on the poet in late-medieval Wales' from October to December.

Peadar Ó Muircheartaigh, visiting IRC postdoctoral scholar, gave three seminars on aspects of register and dialect in Old Irish while Elaine Uí Dhonnchadha, a visiting scholar from TCD, gave three seminars on issues in Irish syntax.

LECTURES

Liam Breatnach

gave a series of post-graduate seminars on early Irish law and verse texts, as well as a public lecture entitled 'Marriage in early medieval Ireland: Sources and interpretations', at the Department of Celtic Languages and Literatures, Harvard University, April 21-6.

'Manuscript H 3. 17 (1336)', paper given at the Conference on the Irish Manuscripts of Trinity College Dublin, 18 May.

Ruairí Ó hUiginn:

'In song and in story: aspects of the performance of medieval Irish saga literature', paper given at the Cambridge Colloquium, Cambridge University, 10 February.

'The Fifth Province', Ó Corráin Memorial Lecture, Burren Law School, Ballyvaughan, 5 May.

'Ancestors, gods and genealogies', paper given at the Sixth Annual Colloquium on Thinking about Mythology in the 21st Century, Edinburgh University, 10 November.

'Logainmneacha na hÉireann: roinnt gnéithe', paper given at the Tionól Gaeilge of the 23rd Australasian Conference of Irish Studies, University of Sydney, 27 November.

'Reading *Tóruigheacht Dhiarmada agus Ghráinne*', Keynote lecture: 23rd Australasian Conference of Irish Studies, University of Sydney, 30 November.

Barry Lewis:

'The dating of medieval Welsh literary texts': paper given at the workshop 'The dating of Old Norse and Celtic texts', University of Oslo, 22 March 2018.

'Some vernacular expressions of the cult of saints in Wales': paper given at the conference 3. 'Defining the boundaries of Celtic hagiography: textual sources outside Lives and martyrologies', DIAS, Dublin, 25 May 2018.

'Byd Arthur fel delfryd yng ngwaith y beirdd canoloesol': paper given at the day symposium 'Arthurian legends in Wales and beyond', Bangor University, 28 June 2018.

'The interface between hagiography and history in medieval Wales': paper given at the 25th International Medieval Congress (IMC), Leeds, 3 July 2018.

Aoibheann Nic Dhonnchadha:

'Tráchtas leighis ón 14ú haois: lámhscríbhinn, téacs agus foinsí' paper given at the conference, *Léann na Sionainne*, University of Limerick on 25-26 May 2018.

'Na téacsanna leighis i LS Ó Lochlainn 3: ábhar agus cúlra', paper read at *Seoda Scripte: Seimineár Leathlae ar Roinnt Lámhscríbhinní Gaeilge sna Bailiúcháin Speisialta* held at University College Dublin, 30 November.

'An Irish medical commentary of the 15th century', paper read at conference *Science and Medicine in the Insular Middle Ages* held at Queen's University Belfast on 7 December.

Michelle O Riordan:

'"Beannacht ar anmain Éireann": bás agus síor-aiséirí na hÉireann i bhfriotal na bhfilí', paper given at Éigse Cholm Cille, Ulster University, Derry, 9–10 March 2018.

'Fill Arís', paper given at the day seminar in honour of Msg. Prof. Breándán Ó Doibhlin, Maynooth University, 30 June 2018.

Scoil an Léinn Cheiltigh (ar lean)

'Giolla Brighde Mac Con Midhe: Language and Metre', caint a tugadh ag seimineár bliantúil Chumann na Sgríbheann nGaedhilge, Coláiste na hOllscoile Corcaigh, 17 Samhain.

Chantal Kobel:

'The "then" and the "now": glimpses into a later medieval Irish legal composite manuscript', caint a tugadh ag an 17ú Seminar on the Care and Conservation of Manuscripts, Ollscoil Chóbanhávan,11 Aibreán 2018.

'Manuscript H 3.18 (1337): Glimpses into the composite manuscript', caint a tugadh ag an gComhdháil faoi Lámhscríbhinní Gaeilge Choláiste na Tríonóide, Baile Átha Cliath 17–18 Bealtaine

Pádraig A. Breatnach:

'I láimh an údair: Duanaire Eoghain Ruaidh Mhic an Bhaird i Leabhar Inghine Í Dhomhnaill (An Bhruiséil, BR 6131-33)', caint a tugadh ag Éigse Cholm Cille 2018, Ollscoil Uladh, Doire, 10 Márta.

'*Mo ghearán féin féachaidh gur doilbh an duain* (Liam Rua Mac Coitir cct) agus roinnt marbhnaí comhghaolmhara', caint a tugadh ag an gcomhdháil Léann na Sionainne 2018, Ollscoil Luimnigh, 25 Bealtaine.

EAGARTHÓIREACHT

Bhí Liam Breatnach ina chomheagarthóir le Damian Mc Manus ar *Ériu, imleabhar* 67.

Bhí Ruairí Ó hUiginn ina eagarthóir ar *Book of Ballymote. Codices Hiberni Eximinii 2* (Baile Átha Cliath, Acadamh Ríoga na hÉireann, 2018, xv + 384) agus ina chomheagarthóir (le Barry Lewis) ar Celtica 30 (2018).

Bhí Barry Lewis ina chomheagarthóir (le Ruairí Ó hUiginn) ar *Celtica* 30 (2018).

Bhí Aoibheann Nic Dhonnchadha ina comheagarthóir (le Pádraig Ó Macháin) ar *An Linn Bhuí: Iris Ghaeltacht na nDéise*, ar foilsíodh imleabhar 22 de in 2018.

Bhí Marie Luise Theurkauf, Chantal Kobel agus Sarah Waidler ina n-eagarthóirí cúnta ar *Celtica* 30.

SCRÚDAITHEOIREACHT SHEACHTRACH AGUS BALLRAÍOCHT AR CHOISTÍ

Ba bhall é Liam Breatnach de Choiste Comhairleach eDIL (Ollscoil na Banríona, Béal Feirste agus Ollscoil Cambridge).

Bhí Ruairí Ó hUiginn ina Scrúdaitheoir Seachtrach sa Ghaeilge in Ollscoil Uladh agus ina Scrúdaitheoir Seachtrach sa Cheiltis in Ollscoil Obar Dheathain. Ba bhall é de Choiste Comhairleach eDIL (Ollscoil na Banríona, Béal Feirste agus Ollscoil Cambridge) agus den Choiste na Leabharlainne, Acadamh Ríoga na hÉireann. Tá sé ina Chathaoirleach ar Choistí Bainistíochta agus Eagarthóireachta Fhoclóir Stairiúil na Nua-Ghaeilge (Acadamh Ríoga na hÉireann) agus ina Chathaoirleach ar Iontaobhas Uí Chadhain.

Ba bhall é Barry Lewis de Bhord Eagarthóireachta, *Proceedings of the Harvard Celtic*, de Bhord Comhairlitheach an tionscadail Cult of saints in Wales project, CAWCS, bhí sé ina phiarmeastóir d'Ériu agus don University of Wales Press. Bhí sé ina scrúdaitheoir seachtrach ar thráchtas PhD i Scoil na nDaonnachtaí agus na nEolaíochtaí Sóisialta, Ollscoil South Wales (viva 24 Samhain 2017).

Ba bhall í Aoibheann Nic Dhonnchadha de Bhord Eagarthóireachta CELT, agus den Fhochoiste Leabharlainne, Leabharlann de Hindeberg, Coláiste na Rinne.

Chuir Michelle O Riordan ábhar ar fáil do LÉAMH.ORG agus bhí sí ina léitheoir ag an tionscadal freisin. Ba bhall í den chomhchoiste idir Foilseachán Ábhar Spioradálta agus *An Timire*.

CÚRSAÍ SEACHTRACHA A MÚINEADH

Barry Lewis:

An Mheán-Bhreatnais do thosaitheoirí, Ollscoil Mhá Nuad.

Mícheál Hoyne:

'Ceart agus Labhairt na Teanga' Roinn na Gaeilge agus na dTeangacha Ceilteacha, Coláiste na Tríonóide, Baile Átha Cliath.

Chantal Kobel:

An Introduction to Palaeography (SG618), Roinn na Luath-Ghaeilge, Ollscoil Mhá Nuad.

Gluaiseanna na Sean-Ghaeilge (IR2003), Roinn na Gaeilge agus na dTeangacha Ceilteacha, Coláiste na Tríonóide, Baile Átha Cliath.

Secular Narrative Texts (IR4306 & IR7005), Roinn na Gaeilge agus na dTeangacha Ceilteacha, Coláiste na Tríonóide, Baile Átha Cliath.

FOILSEACHÁIN NA SCOILE

Foilsíodh trí leabhar agus iris faoi inphrionta Scoil an Léinn Cheiltigh in 2018. Seoladh *Buchedd Beuno: The Middle Welsh Life of St Beuno*, a chuir Patrick Sims-Williams as Ollscoil Aberystwyth in eagar, le linn chomhdháil na Scoile ar an naomhsheanchas i Mí na Bealtaine. Seo an leabhar is deireanaí sa tsraith Medieval and Modern Welsh. I Mí Mheán Fómhair seoladh *Filíocht Ghaeilge an Athar Maonas Ó Ruairc* (c.1658–1750), a chuir Pádraig de Brún in eagar, i ndiaidh na ceardlainne ar an gcóidéacseolaíocht a thug an Dr John Gillis. Seoladh *Celtica* 30 a chuir Barry Lewis agus Ruairí Ó hUiginn in eagar le cúnamh ó Chantal Kobel, Marie-Luise Theuerkauf agus Sarah Waidler le linn Thionól na Scoile. Is ag an ócáid sin freisin a seoladh

School of Celtic Studies (continued)

'The Poems of Giolla Brighde Mac Con Midhe–the Apologues', paper given at the annual seminar of the Irish Texts Society, University College, Cork, 17 November.

Brian Ó Curnáin:

'Fuaim an Phinn a Canth linny ón 19 céad; *Mack Dea, Muirye waher, Coo Collen, Fun, Esheen, an Packaugh agus an Baus* ó láimh na gConnachtach', Seimineár Taighde, Roinn na Nua-Ghaeilge, Ollscoil Mhá Nuad, 15 November.

Speaker at a seminar 'Miliwn o siaradwyr Cymraeg erbyn 2050?' at Bangor University, Wales, 21 November.

Mícheál Hoyne:

'Editing Classical Modern Irish poetry (with Dr Eoin Mac Cárthaigh,TCD and Dr Eoghan Ó Raghallaigh, MU), workshop held at the Conference of the Celtic Studies Association of North America, University of California, Los Angeles, 10 March.

'The Seifín Duanaire (H 4.22, XII)': paper given at the conference on the Irish Manuscripts of Trinity College Dublin, 17 May.

'Guides to reading Irish in printed books, 1571–1871', paper given at the Tionól, 3 November.

'Giolla Brighde Mac Con Midhe: Language and Metre', paper given at the annual seminar of the Irish Texts Society, UCC, 17 November.

Chantal Kobel: 'The "then" and the "now": glimpses into a later medieval Irish legal composite manuscript', paper given at the 17th Seminar on the Care and Conservation of Manuscripts, University of Copenhagen,11 April 2018.

'Manuscript H 3.18 (1337): Glimpses into the composite manuscript', paper given at the conference. The Irish Manuscripts in the Library of Trinity College Dublin, May 17th–18th, 2018, Trinity College Dublin.

Pádraig A. Breatnach:

'I láimh an údair: Duanaire Eoghain Ruaidh Mhic an Bhaird i Leabhar Inghine Í Dhomhnaill (An Bhruiséil, BR 6131-33)', lecture given at Éigse Cholm Cille 2018, University of Ulster, Derry, 10 March.

'Mo ghearán féin féachaidh gur doilbh an duain (Liam Rua Mac Coitir cct) agus roinnt marbhnaí comhghaolmhara', lecture given at Léann na Sionainne 2018, University of Limerick, 25 May.

COURSES TAUGHT

Barry Lewis: Middle Welsh for beginners, Maynooth University.

Mícheál Hoyne: 'Ceart agus Labhairt na Teanga' First Year students of Modern Irish in the Department of Irish and Celtic Languages (TCD).

Chantal Kobel: An Introduction to Palaeography (SG618), Department of Early Irish, Maynooth University; Old Irish Glosses (IR2003), Department of Irish and Celtic Languages, Trinity College Dublin; Secular Narrative Texts (IR4306 & IR7005), Department of Irish and Celtic Languages, Trinity College Dublin.

EDITING

Liam Breatnach was co-editor with Damian Mc Manus of *Ériu* volume 67.

Ruairí Ó hUiginn was editor of *Book of Ballymote. Codices Hiberni Eximinii 2* (Dublin, Royal Irish Academy, 2018, xv + 384) and was co-editor (with Barry Lewis) of *Celtica* 30 (2018).

Barry Lewis was co-editor (with Ruairí Ó hUiginn) of *Celtica* 30 (2018).

Aoibheann Nic Dhonnchadha was joint editor (with Pádraig Ó Macháin) of *An Linn Bhuí: Iris Ghaeltacht na nDéise*, volume 22 of which was published in 2018.

Marie Luise Theurkauf, Chantal Kobel and Sarah Waidler were assistant editors of *Celtica* 30.

EXTERNAL EXAMINING AND MEMBERSHIP OF COMMITTEES

Liam Breatnach was a member of the Advisory Committee eDIL (QUB and Cambridge University)

Ruairí Ó hUiginn was External Examiner in Irish at Ulster University and External Examiner in Celtic at the University of Aberdeen. He was a member of the Advisory Committee eDIL (QUB and Cambridge University), and was a member of the Royal Irish Academy's Library Committee. He was Chair of Coiste na Logainmneacha/Place-names Committee (Government Appointment), and Chair of the Management and Editorial Committees of Foclóir Stairiúil na Nua-Ghaeilge/Historical Dictionary of Modern Irish (Royal Irish Academy) and Cathaoirleach of Iontaobhas Uí Chadhain.

Barry Lewis was a member of the editorial board, *Proceedings of the Harvard Celtic Colloquium*, of the Advisory Board, Cult of saints in Wales project, CAWCS, and an ad hoc peer-reviewer for *Ériu* and the University of Wales Press. He was also external examiner for a PhD thesis in the School of Humanities and Social Sciences, University of South Wales (viva 24 November 2017).

Aoibheann Nic Dhonnchadha was a members of the Editorial Board of CELT, and of An Fochoiste Leabharlainne, Leabharlann de Hindeberg, Coláiste na Rinne.

Scoil an Léinn Cheiltigh (ar lean)

Fuidheall Áir: Bardic poems on the Meic Dhiarmada of Magh Luirg c.1377–c.1637, an chéad imleabhar i sraith nua téacsanna: Sraith na Nua-Ghaeilge Moiche/Early Modern Irish Texts.

FOILSEACHÁIN NA FOIRNE

Liam Breatnach:

'Varia III. 1. On the preposition *for* with the negative particle in Old Irish. 2. The River Níth', Ériu 67 (2017) 227–37.

'An Old Irish Story of a Woman Poet in Donegal', in Jason Merchant, Line Mikkelsen, Deniz Rudin & Kelsey Sasaki (eagí), *A Reasonable Way to Proceed: Essays in Honor of Jim McCloskey*. (Linguistics Research Center, Santa Cruz, CA 2018) 51–7.

'A Fragmentary Old Irish Text on Oaths', in Anders Ahlqvist and Pamela O'Neill (eagí), *Fír Fesso. A Festschrift for Neil McLeod*, Sydney Series in Celtic Studies 17 (Sydney 2018) 53–64.

Ruairí Ó hUiginn:

'The Book of Ballymote: scholars, sources and patrons', in R. Ó hUiginn (eag.) *Book of Ballymote. Codices Hibernenses Eximii 2.* (Baile Átha Cliath, 2018) 191–220.

'Pádraig Ó Fiannachta: foilsitheoir' in *Léachtaí Cholm Chille* 48 (2018), 145–60.

'*Tóruigheacht Dhiarmada agus Ghráinne* characters, themes and history', in K. Murray (ed.) *Tóruigheacht Dhiarmada agus Ghráinne: Reassessments* Irish Texts Society Subsidiary Series 30 (Londain, 2018), 43–71.

Barry Lewis:

Léirmheas: Deborah Hayden and Paul Russell (eds), *Grammatica, Gramadach and Gramadeg: Grammar and Grammarians in Medieval Ireland and Wales* (Amsterdam/Philadelphia, 2916), in Celtica, 30 (2018), 223–9.

'Ar drywydd Magna, "chwaer Dewi Sant", ac eglwys ddiflanedig yn Nyffryn Teifi', *Studia Celtica*, 52 (2018), 33–52.

Léirmheas: Lynette Olson (ed.), *St Samson of Dol and the Earliest History of Brittany, Cornwall and Wales* (Woodbridge, 2017), in Studia Celtica, 52 (2018), 188–92.

Aoibheann Nic Dhonnchadha:

(le Pádraig Ó Macháin, Coláiste na hOllscoil Corcaigh) 'Nessa Ní Shéaghdha: palaeographer and textual historian', in Kevin Murray (ed.), *Tóruigheacht Dhiarmada agus Ghráinne: Reassessments* Irish Texts Society Subsidiary Series 30 (London 2018), 1-16.

'Cnuasach litreacha', *An Linn Bhuí: iris Ghaeltacht na nDéise* 22 (2018), 217–227.

'Nótaí Fáin' [míreanna 2, 3 agus 4] *An Linn Bhuí: iris Ghaeltacht na nDéise* 22 (2018) 228-242.

Mícheál Hoyne:

Fuidheall Áir: Bardic Poems on the Meic Dhiarmada of Magh Luirg c. 1377 – c. 1637. Sraith na Nua-Ghaeilge Moiche 1. DIAS (xvi + 489pp.).

'Early Modern Irish miscellanea: 1. corrigendum (ad Ériu lxvi 72–3) and a note on *comparatio compendiaria*; 2. a detail of vowel shortening in hiatus in Classical Modern Irish; 3. áoi trasgartha; 4. a rhyming example of nom. pl. *dee* "gods" in Classical Modern Irish', Ériu 67 (2017 [2018]), 169–86.

Nike Stam: 'Strategy or Accident: Code-Switching in the Commentary to the Félire Óengusso', in M. Ó Flaithearta (eag.) *Code-Switching in Medieval Ireland and England* (Bremen, 2018), 71–95.

Chantal Kobel:

'A note on the use of a feminine adjective following accusative and dative singular talmain', *Celtica* 30 (2018), 10–13.

Pádraig A. Breatnach:

'Kuno Meyer's boyhood diaries and the letters to family and friends' (Alt Léirmheasa), *Studia Hibernica* 44 (2018), 135-148.

"A true scholar and something more": Gearóid Ó Murchadha (1901–1959)', in Nioclás Mac Cathmhaoil et al. (eds) *Súgán an Dúchais*, Sraith Adhamhnáin Iml. 1, (Doire, 2018), 462–485.

'Togha na hÉigse 1700–1800, 7. *Tarla gné dhaoldatha d'fhoiligh gach rian* (Séamas Mac Coitir)', *Celtica* 30 (2018), 38–55.

GNÍOMHAÍOCHTAÍ EILE

Thug Brian Ó Curnáin roinnt agallamh ar an teilifís agus ar an raidió faoi chóip de *Cúirt an Mheán-Oíche* atá i lámhscríbhinn Gaeilge as Contae Ros Comáin.

Bhí tuairisc ar thionscadal an *Chlóliosta* atá idir lámha ag Mícheál Hoyne agus ag an Ollamh Richard Sharpe (Ollscoil Oxford) ar shuíomh gréasáin nuachta RTÉ (Eng: https://www.rte.ie/news/nuacht/2018/1031/1007852-new-catalogue-of-books-printed-in-irish-from-1571-to-1871/; Ir: https://www.rte.ie/news/nuacht/2018/1101/1008001-catalog-nua-de-leabhair-a-clobhuaileadh-i-ngaeilge-o-1571-go-1871/).

School of Celtic Studies (continued)

Michelle O Riordan was, a contributor and reader for LÉAMH. ORG, and a member of the joint committee of Foilseachán Ábhar Spioradálta and *An Timire*.

SCHOOL PUBLICATIONS

Three books and a journal appeared under the imprint of the School of Celtic Studies in 2018. *Buchedd Beuno: The Middle Welsh Life of St Beuno*, edited by Patrick Sims-Williams of Aberystwyth University, was launched in May during the School's Two-day symposium on hagiography. This is the latest volume in the Medieval and Modern Welsh series. *Filíocht Ghaeilge an Athar Maonas Ó Ruairc* (c.1658–1750) edited by Pádraig de Brún was launched in September following a workshop on codicology given by Dr John Gillis. *Celtica* 30, edited by Barry Lewis and Ruairí Ó hUiginn, with the assistance of Chantal Kobel, Marie-Luise Theuerkauf and Sarah Waidler, was launched during the annual Tionól in November as was *Fuidheall Áir: Bardic poems on the Meic Dhiarmada of Magh Luirg c.1377–c.1637*, edited by Mícheál Hoyne, Bergin Fellow at the School of Celtic Studies. This represents the first volume in a new book series: Early Modern Irish Texts/ *Sraith na Nua-Ghaeilge Moiche*.

PUBLICATIONS BY MEMBERS OF STAFF

Liam Breatnach:

'Varia III. 1. On the preposition for with the negative particle in Old Irish. 2. The River *Níth'*, *Ériu* 67 (2017) 227–37.

'An Old Irish Story of a Woman Poet in Donegal', in Jason Merchant, Line Mikkelsen, Deniz Rudin & Kelsey Sasaki (eds), *A Reasonable Way to Proceed: Essays in Honor of Jim McCloskey*. (Linguistics Research Center, Santa Cruz, CA 2018) 51–7.

'A Fragmentary Old Irish Text on Oaths', in Anders Ahlqvist and Pamela O'Neill (eds), *Fír Fesso. A Festschrift for Neil McLeod*, Sydney Series in Celtic Studies 17 (Sydney 2018) 53–64.

Ruairí Ó hUiginn:

'The Book of Ballymote: scholars, sources and patrons', in R. Ó hUiginn (ed.) *Book of Ballymote. Codices Hibernenses Eximii 2.* (Dublin, 2018) 191–220.

'Pádraig Ó Fiannachta: foilsitheoir' in *Léachtaí Cholm Chille* 48 (2018), 145–60.

'Tóruigheacht Dhiarmada agus Ghráinne characters, themes and history', in K. Murray (ed.) *Tóruigheacht Dhiarmada agus Ghráinne*: Reassessments Irish Texts Society Subsidiary Series 30 (London, 2018), 43–71.

Barry Lewis:

Review: Deborah Hayden and Paul Russell (eds), *Grammatica, Gramadach and Gramadeg: Grammar and Grammarians in Medieval Ireland and Wales* (Amsterdam/Philadelphia, 2916), in Celtica, 30 (2018), 223–9.

'Ar drywydd Magna, "chwaer Dewi Sant", ac eglwys ddiflanedig yn Nyffryn Teifi', *Studia Celtica*, 52 (2018), 33–52.

Review: Lynette Olson (ed.), *St Samson of Dol and the Earliest History of Brittany, Cornwall and Wales* (Woodbridge, 2017), in *Studia Celtica*, 52 (2018), 188–92.

Aoibheann Nic Dhonnchadha:

(with Pádraig Ó Macháin, UCC) 'Nessa Ní Shéaghdha: palaeographer and textual historian', in Kevin Murray (ed.), *Tóruigheacht Dhiarmada agus Ghráinne: Reassessments* Irish Texts Society Subsidiary Series 30 (London 2018), 1-16.

'Cnuasach litreacha', *An Linn Bhuí: iris Ghaeltacht na nDéise 22* (2018), 217–227.

'Nótaí Fáin' [items 2, 3 and 4] *An Linn Bhuí: iris Ghaeltacht na nDéise* 22 (2018) 228-242.

Mícheál Hoyne:

Fuidheall Áir: Bardic Poems on the Meic Dhiarmada of Magh Luirg c. 1377 – c. 1637 Early Modern Irish Texts Series 1. DIAS (xvi + 489pp.)

'Early Modern Irish miscellanea: 1. corrigendum (ad Ériu lxvi 72–3) and a note on *comparatio compendiaria*; 2. a detail of vowel shortening in hiatus in Classical Modern Irish; 3. *áoi trasgartha*; 4. a rhyming example of nom. pl. dee "gods" in Classical Modern Irish', Ériu 67 (2017 [2018]), 169–86.

Nike Stam:

'Strategy or Accident: Code-Switching in the Commentary to the *Félire Óengusso*', in M. Ó Flaithearta (ed.) *Code-Switching in Medieval Ireland and England* (Bremen, 2018), 71–95.

Chantal Kobel:

'A note on the use of a feminine adjective following accusative and dative singular *talmain'*, *Celtica* 30 (2018), 10–13.

Pádraig A. Breatnach: 'Kuno Meyer's boyhood diaries and the letters to family and friends' (Review Article), *Studia Hibernica* 44 (2018), 135-148.

"A true scholar and something more": Gearóid Ó Murchadha (1901–1959)', in Nioclás Mac Cathmhaoil et al. (eds) *Súgán an Dúchais*, Sraith Adhamhnáin Iml. 1, (Doire, 2018), 462–485.

'Togha na hÉigse 1700–1800, 7. *Tarla gné dhaoldatha d'fhoiligh gach rian* (Séamas Mac Coitir)', *Celtica* 30 (2018), 38–55.

Scoil an Léinn Cheiltigh (ar lean)

Bhí mír ar Nuacht TG4 chomh maith le tuairisc san *Irish Times* faoin gComhdháil ar Lámhscríbhinní Gaeilge i gColáiste na Tríonóide, Baile Átha Cliath ag ar labhair roinnt scoláirí as IALBÁC

IMEACHTAÍ EILE SA SCOIL

Thug an tOllamh Jørn Øyrehagen Sunde, saineolaí ar dhlithe na Sean-Ioruaise, cuairt ar an 26 Aibreán ar IABAC mar ar bhuail sé le baill Scoile agus roinnt scoláirí eile le plé a dhéanamh ar chomhoibriú a d'fhéadfaí a dhéanamh amach anseo ar sheantéacsanna dlí sa dá thír. Bhí lón neamhfhoirmiúil i ndiaidh an chruinnithe i Seomra na Comhairle. I láthair ag an lón bhí a Soilse, Else Berit Eikeland, Ambasadóir na hIorua chun na tire seo a d'eagraigh cuairt an Ollaimh Sunde. Bronnadh portráid den scoláire cáiliúil Ioruach Carl Marstrander ar an Ambasadóir agus ghlac an tOllamh Sunde leis na seacht n-imleabhar atá i sraith an Early Irish Law le haghaidh na leabharlainne in Ollscoil Bergen.

Thug an Dr John Gillis as Rannóg an Chaomhnaithe i Leabharlann Choláiste na Tríonóide, Baile Átha Cliath, ceardlann ar chóidéacseolaíocht ar an 28 Meán Fómhair. An Dr Chantal Kobel a d'eagraigh an cheardlann.

Ar an 18 Deireadh Fómhair thug an tOllamh M. J. Driscoll ó Ollscoil Chóbanhávan caint dar teideal 'The Icelandic Rímur', an triú léacht de shraith léachtaí atá tugtha aige sa Scoil in 2017–18.

School of Celtic Studies (continued)

OTHER ACTIVITIES AND ACHIEVEMENTS

Brian Ó Curnáin gave a number of television and radio interviews on a copy of *Cúirt an Mheán-Oíche* found in a nineteenth-century Irish manuscript from Co. Roscommon.

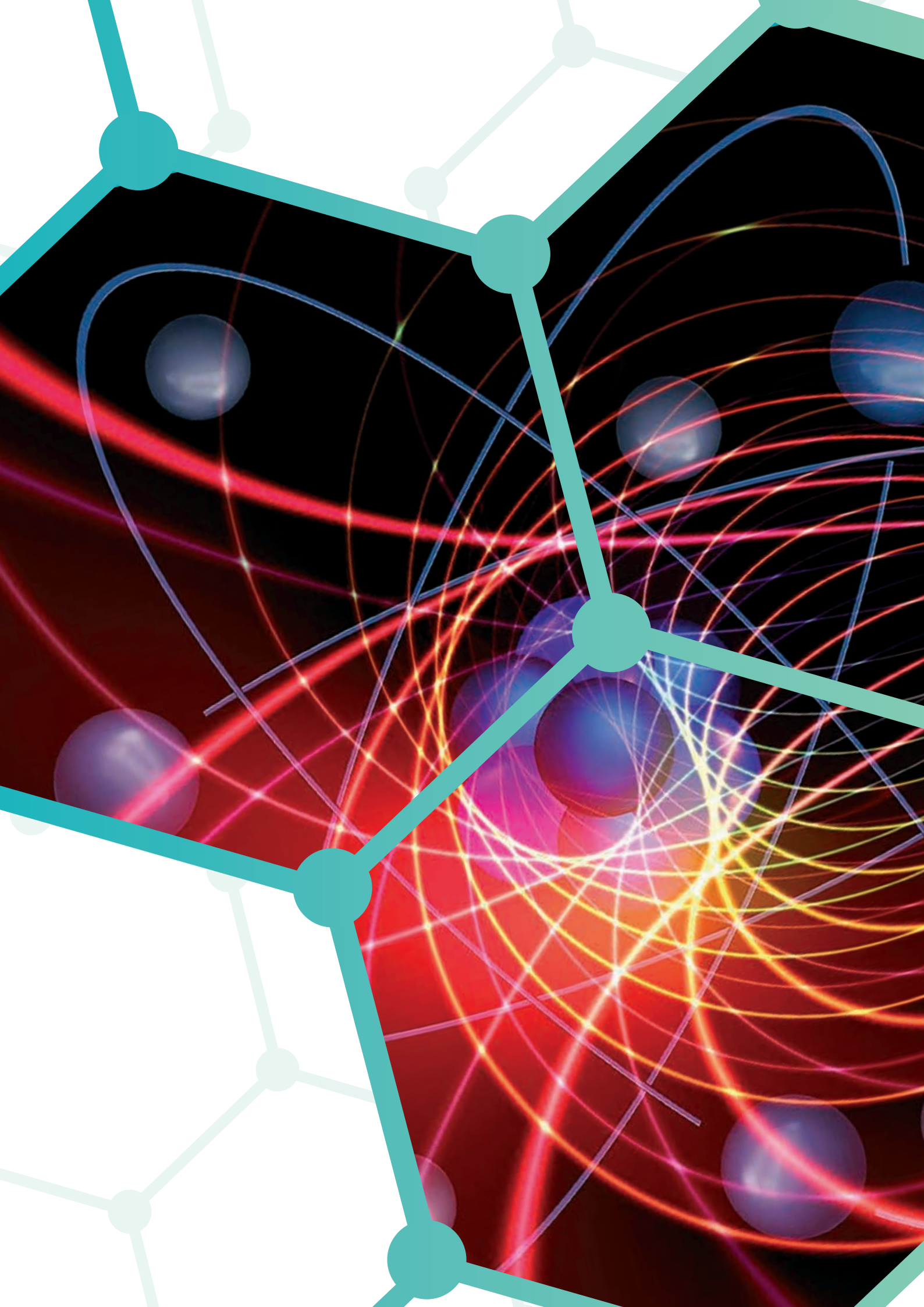
The *Clóliosta* project undertaken by Mícheál Hoyne and Professor Richard Sharpe (Oxford University) was the subject of a piece on RTÉ News website (Eng: https://www.rte.ie/news/nuacht/2018/1031/1007852-new-catalogue-of-books-printed-in-irish-from-1571-to-1871/; Ir: https://www.rte.ie/news/nuacht/2018/1101/1008001-catalog-nua-de-leabhair-a-clobhuaileadh-i-ngaeilge-o-1571-go-1871/).

The Trinity Irish Manuscripts conference at which a number of DIAS scholars spoke was the subject of a piece on TG4's Nuacht programme and a report in the *Irish Times*.

OTHER EVENTS

Professor Jørn Øyrehagen Sunde of Bergen University who is a specialist in Old Norse Law visited DIAS on 26 April where he had a meeting with members of the School and some other academics to discuss possible collaboration in the future in the area of early legal studies. This was followed by an informal lunch in the Council Room attended by H. E. Else Berit Eikeland, Norwegian Ambassador, through whose good offices the visit had been arranged. The Ambassador was afterwards presented with a framed portrait of Carl Marstrander, the renowned Norwegian Celticist, while Professor Sunde accepted a boxed set of the 8 volumes of the SCS Early Irish Law series for the library at Bergen University.

Dr John Gillis, of the Conservation Department of the Trinity College Dublin Library held a workshop on the codicology of Irish manuscripts 28 September which was arranged by Chantal Kobel. Professor M.J. Driscoll of Copenhagen University gave a lecture on 'The Icelandic Rímur' on 18 October, this being the third in a series of lectures he has given at the School in 2017–18.



School of Cosmic Physics
Scoil na Fisice Cosmaí

Scoil na Fisice Cosmaí

Réaltfhisice

Príomhfhorbairtí 2018: Le tuairisciú de réir na gceithre Sprioc Straitéiseacha uileghabhálacha sa Straitéis nua.

Sprioc 1: Eolas agus léargais nua a fhionnadh trí ardtaighde agus scoláireacht bhunúsach, ag cur ar chumas DIAS leanúint lena oidhreacht agus cáil na hÉireann a bhreisiú mar oileán de chaipitil intleachtach.

Le dhá bhliain anuas, tá dul chun cinn mór á dhéanamh i dtaobh rannpháirtíocht na hÉireann i dtionscadail réalteolaíochta idirnáisiúnta. In 2018, chuaigh Éire isteach Réadlann Eorpach sa Leathsféar (ESO) mar shéú Bhallstát déag na heagraíochta, tar éis d'Éirinn páirt a ghlacadh sa Low Frequency Array (LOFAR) in 2017. Shínigh John Halligan TD, an tAire Stáit freagrach as Oiliúint, Scileanna, Nuálaíocht, Taighde agus Forbairt, agus Xavier Barcons, Stiúrthóir Ginearálta ESO conradh aontachais a ESO ar an 26 Meán Fómhair 2018. Bhí ról ceannasach ag DIAS chun cás a dhéanamh do bhallraíocht ESO, agus mar thoradh, ceapadh an tOllamh Tom Ray ar Chomhairle an ESO chun ionadaíocht a dhéanamh thar ceann leasanna réalteolaíocha na hÉireann san ESO.

Tá radhairc nua ar an ngrian, réaltaí agus réaltraí i bhfad uainn á bhfáil ag réalteolaithe ó LOFAR ag minicíochtaí raidió ísle (10-240 MHz). Ag DIAS, tá ár dtaighdeoirí ag tabhairt faoi staidéar bunúsach ar ghrianbhladhmanna le sonraí LOFAR i gcomhar le breithniúcháin ó mhisin NASA agus ESA, cosúil le Solar Dynamics Observatory. Tá an Dr Oisín Creaner, Comhalta Taighde, ag obair mar chuid d'Ardphobal Eorpach mór, Radionet, ar bhogearraí chun feidhmíocht LOFAR a fheabhsú, agus tá an Dr Simon Purser dírithe ar na próisis atá freagrach as réalta a fhoirmiú a bhfuil mais acu atá cosúil leis an mais inár nGrian. Níos sonraíche ná sin, tá leas á bhaint aige as breithniúcháin raidió chun an fhisic atá taobh thiar de scairdeanna ardluais, ianaithe a sheoltar mar fhotháirgí den phróiseas seo a shoiléiriú. Tá leas á bhaint ag an Dr Eoin Curley agus mic léinn PhD, Aoife Ryan, Ciara Maguire agus Pearse Murphy ag úsáid LOFAR chun staidéar a dhéanamh ar struchtúr agus ar éabhlóid atmaisféar na gréine.

Tá foireann LOFAR fairsingithe go suntasach ó tháinig an tOllamh Peter Gallagher ar bord ag deireadh 2018. Tá an líon is mó taighdeoirí LOFAR anois ag DIAS, lena n-áirítear beirt Príomhiniúchóirí, triúr Comhaltaí Taighde agus ceathrar Scoláire Taighde. Tá an tOllamh Gallagher ina Cheannaire ar Chuibhreannas LOFAR na hÉireann freisin.

Faigheann LOFAR tacaíocht ó Fhondúireacht Eolaíochta Éireann, ón Roinn Gnó, Fiontar agus Nuálaíochta agus ó Chomhairle Taighde na hÉireann.

The ESO Very Large Telescope (VLT) during observations.
Teileascóp Mór (VLT) ESO i mbun breathnóireachta.

An Réadlann Eorpach sa Leathsféar

Le ballraíocht san ESO, fuair réalteolaithe DIAS rochtain ar sraith teileascóip agus ionstraimí den chéad scoth an ESO, lena n-áirítear an Teileascóip An-Mhór (VLT) ar Paranal agus an tEagar Mór Miliméadair/fomhiliméadair ar Atacama (ALMA) ag Chajnantor sa tSile. Féadfaidh réalteolaithe agus tionscal na hÉireann anois aghaidh a thabhairt ar chur le tógáil Teileascóip An-Mhór (ELT) den chéad scoth. Tá réaltfhisiceoirí DIAS ag úsáid na n-áiseanna seo cheana féin agus leanfaidh siad ag cur lena bhforbairt sna blianta romhainn.

School Of Cosmic Physics

Astrophysics

Key Developments 2018: To be reported in line with the four overarching Strategic Goals in the new Strategy.

Goal 1: Discovery of new knowledge and insights through advanced fundamental research and scholarship, enabling DIAS continue it's legacy and enhance Ireland's reputation as an island of intellectual capital.

Image of I-LOFAR from a balloon.
Iomhá de I-LOFAR ó bhalún.

The last two years have seen major progress being made in Irish participation in international astronomy projects. In 2018, Ireland joined the European Southern Observatory (ESO) as the organisation's sixteenth Member State, which followed on from Ireland joining the Low Frequency Array (LOFAR) in 2017. The ESO accession agreement was signed on 26 September 2018 by John Halligan T.D., Irish Minister of State for Training, Skills, Innovation, Research and Development, and Xavier Barcons, Director General of ESO. DIAS has played a leading role in making the case for ESO membership, and as a result, Professor Tom Ray was appointed to the ESO Council to represent Irish astronomical interests within ESO.

LOFAR is giving astronomers new views of the sun, stars and distant galaxies at low radio frequencies (10-240 MHz). At DIAS, our researchers are undertaking fundamental studies of solar flares using LOFAR data in combinations with observations from NASA and ESA missions, such as Solar Dynamics Observatory. Dr Oisín Creaner, a Research Fellows, is working as part of a major European Advanced Community, Radionet, on software to improve the performance of LOFAR, while Dr Simon Purser is focused on examining the processes responsible for the formation of stars similar in mass to our Sun. More specifically he is using radio observations to elucidate the physics behind the high-velocity, ionised jets which are launched as by-products of this process. Dr Eoin Carley and PhD students, Ms Aoife Ryan, Ms Ciara Maguire and Mr Pearse Murphy are using LOFAR to study the structure and evolution of the solar atmosphere.

The LOFAR team has expanded significantly since the arrival of Professor Peter Gallahger in late 2018. DIAS now has the largest concentration of LOFAR researchers, including two Principal Investigators, three Research Fellows and four Research Students. Professor Gallagher is also Head of the Irish LOFAR Consortium.

LOFAR is supported by Science Foundation Ireland, the Department of Business, Enterprise and Innovation and the Irish Research Council.

Scoil na Fisice Cosmaí (ar lean)

HESS Telescope.
Teileascóp HESS.

Roghnaíodh an tOllamh Ray mar ionadaí thar ceann Rialtas na hÉireann ar Chomhairle ESO agus ceapadh Comhalta Taighde DIAS, an Dr Rebeca Garcia Lopez, mar ionadaí na hÉireann ar Choiste Úsáideoirí ESO. Tá an tOllamh Ray ina chomhchathaoirleach freisin ar Phainéal Straitéise ESO a bunaíodh faoi choimirce na Roinne Gnó, Fiontair agus Nuálaíochta agus tá an Dr Garcia Lopez ina ball de freisin.

Réaltfhisic Ardfhuinnimh

D'fhoilsigh comhoibriú H.E.S.S. suirbhé suntasach ar an bplána Réaltrach in eagrán speisialta de Astronomy and Astrophysics tiomanta do thorthaí ó H.E.S.S. (A&A, Aibreán 2018). Áiríodh san eagrán sraith páipéar a chlúdaigh raon leathan ábhar, ó réaltnéalta gaoithe pulsár go córais dhénártha gáma-gha trí iarsmaí ollnóva. Léiríodh sna páipéir seo cumas iontach na dteileascóp gáma-gha chun staidéar a dhéanamh ar na feiniméin is fuinniúla sa Réaltra agus na nithe is féidir a bheith ag súil leo ón Teileascóip Eagair Cherenkov (CTA). Is fiú a thabhairt faoi deara gur dóchúil go mbeidh CTA an Deiscirt suite in aice le suíomh Paranal ESO. Mar thoradh, beidh rochtain ag réalteolaithe na hÉireann ar an áis seo láithreach. I measc na dtaighdeoirí DIAS atá páirteach in H.E.S.S. tá an tOllamh Felix Aharonian agus an Dr Jonathan Mackey.

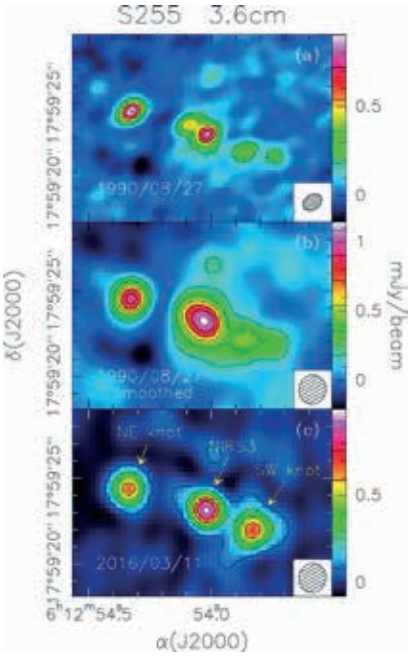
Bladhmanna Raidió ó Réad Réaltach Óg Ollmhór

Cuireann taighdeoirí DIAS an chéad fhianaise i láthair de bhladhm raidió a bhaineann le bladhm fuillimh infridhearg i réad réaltach ollmhór óg (Cesaroni et al., A&A, 2018). Léirmhíníonn na húdair (lena n-áirítear ó DIAS, Alessio Caratti o Garatti, Tom Ray, agus Malcolm Walmsley nach maireann) na breithnithe seo i dtéarmaí samhail scairde ag leathnú a thugann le fios go bhfuil an scaird bhunúsach agus feiniméin diosca fuillimh mar a chéile is atá in ábhair le mais níos ísle.

Braiteoirí den Chéad Ghlúin Eile

Tá cineál nua braiteora á fhorbairt ag Réaltfhisic DIAS a bhreiseoidh go mór ár gcumas le staidéar a dhéanamh ar na réaltraí is faide uainn sa Chruinne mar aon le foirmiú réalta agus pláinéid i mBealach na Bó Finne. Tugtar Braiteoirí Ionduchtas Cinéiteach Micreathoinne, MKID orthu, fuaraítear picteilíní chuig codán de chéim os cionn dearbhnialas agus is féidir leo a bhrath ní hamháin déine na bhfótón a thagann ó ábhair i bhfad ó bhaile ach freisin a ndath agus an t-am a dtagann siad chuig codán de mhilleasoicind. Tá rátaí sonraí ó na braiteoirí seo chomh hard go n-úsáidfidh an tionscadal leictreonaic asléimh, a forbraíodh don teileascóip raidió ollmhór ar a dtugtar an tEagar Cearnógach Ciliméadair, chun torthaí a bhailiú. Tá an tionscadal seo ar siúl i gcomhar le hOllscoil Oxford, an Netherlands Institute for Space Research (SRON), Coláiste na Tríonóide, Baile Átha Cliath agus Ollscoil Mhá Nuad. Tacaíonn Fondúireacht Eolaíochta Éireann leis an taighde seo.

VLA archival image obtained on August 27, 1990, at 3.6cm with the C-array configuration.
Íomhá chartlainne VLA a fuarthas ar an 27 Lúnasa, 1990, ag 3.6cm leis an gcumraíocht C-eagair.



School Of Cosmic Physics (continued)

European Southern Observatory

With ESO membership, DIAS astronomers gained access to ESO's suite of world-class telescopes and instruments, including the Very Large Telescope (VLT) on Paranal and the Atacama Large Millimeter/submillimeter Array (ALMA) at Chajnantor in Chile. Irish astronomers and industry can now also look forward to contributing to the construction of the cutting-edge Extremely Large Telescope (ELT). DIAS astrophysicists are already users of these facilities and will continue to their development in the coming years.

Professor Ray has been chosen as the Irish Government representative on the ESO Council while DIAS Research Fellow, Dr Rebeca Garcia Lopez, has been appointed Irish representative on the ESO Users' Committee. Professor Ray also co-chairs the ESO Strategy Panel set up under the auspices of the Department of Business, Enterprise and Innovation of which Dr Garcia Lopez is also a member.

High Energy Astrophysics

The H.E.S.S. collaboration published a significant survey of the Galactic plane in a special issue of Astronomy and Astrophysics devoted to results from H.E.S.S (A&A, April 2018). The issue included a series of papers covering a wide range of objects, from pulsar wind nebulae to gamma-ray binaries through supernova remnants. These papers illustrated the great potential of gamma ray telescopes to study the most energetic phenomena in the Galaxy and what can be expected from the Cherenkov Telescope Array (CTA). It is worth noting that CTA South is likely to be located near ESO's Paranal site. As a result, Irish astronomers will have access to this facility as of right. DIAS researchers involved in H.E.S.S include Professor Felix Aharonian and Dr Jonathan Mackey.

Radio Bursts from a Massive Young Stellar Object

DIAS researchers present the first evidence of a radio burst associated with accretion massive young stellar object (Cesaroni et al., A&A, 2018). The authors (from DIAS, Alessio Caratti o Garatti, Tom Ray, and the late Malcolm Walmsley) interpret these observations in terms of an expanding jet indicating that the basic jet and accretion disc phenomena are the same as in lower mass objects.

Next Generation Detectors

DIAS Astrophysics are developing a new type of detector that will enormously enhance our ability to study the most distant galaxies in the Universe as well as star and planet formation in the Milky Way. Known as Microwave Kinetic Inductance Detectors, MKIDs, pixels are super-cooled to a fraction of a degree above absolute zero and can detect not only the intensity of photons arriving from distant objects but also their colour and time of arrival to within a fraction of a millisecond. Data rates from these detectors are so high that the project will use read-out electronics, developed for the giant radio telescope known as the Square Kilometre Array, to collect results. This project is in collaboration with the University of Oxford, the Netherlands Institute for Space Research (SRON), Trinity College Dublin and Maynooth University. This research is supported by Science Foundation Ireland.

An experimental laboratory has been established at 31 Fitzwilliam Place, which now includes a vector network analyser, high frequency (4-8 GHz) readout electronics and an adiabatic demagnetisation refrigerator cryostat capable of cooling samples down to 30 mK, just 0.03 degrees above absolute zero. This not only makes DIAS the currently coldest place in Ireland but also enables both further local detector fabrication, evaluation and optimisation.

Summary of any key decisions taken on direction of research/ new areas

Changing Leadership

2018 was a year of change for DIAS Astrophysics as the Section welcomed the appointment of Peter Gallagher as a Senior

Experimental Laboratory.
Saotharlann Thurgnamhach.

Scoil na Fisice Cosmaí (ar lean)

Bunaíodh saotharlann thurgnamhach ag 31 Plás Mhic Liam, ina bhfuil anailíseoir líonra veicteora, leictreonaic asléimh ardmhinicíochta (4-8 GHz) agus crióstat cuisneora dímhaighnéadaithe aidiabatach atá in ann samplaí a fhuarú chuig 30 mK, díreach 0.03 céim os cionn dearbhnialas anois. Ní hamháin anois go bhfuil DIAS ar an áit is fuaire in Éirinn ach cuireann sé ar chumas déanamh, measúnú agus optamú braiteoirí áitiúla a bhreisiú.

Achoimre ar aon phríomhchinntí a glacadh maidir le treoir taighde/ réimsí nua

Ceannaireacht ag Athrú

Bhí go leor athruithe in 2018 i Réaltfhisic DIAS nuair a chuir an Rannóg fáilte roimh cheapachán Peter Gallagher mar Ollamh Sinsearach agus Ceann na Realteolaíochta agus na Réaltfhisice nuair a d'éirigh an tOllamh Luke Drury as.

Bhí an tOllamh Drury ina Ollamh Sinsearach sa Réaltfhisic ar feadh 32 bliain agus tá go leor curtha aige le fisic phlasma theoiriciúil, go háirithe maidir le turraing agus scairdeanna i bplasmaí réaltfhisice. D'fhoilsigh sé os cionn 220 páipéar molta agus tá an-mheas ar a chuid oibre, le níos mó ná 15,000 sliocht athfhriotail faighte aige. Tá an t-alt athbhreithnithe a scríobh sé ar theoiric luasghéarú turrainge idirleata de cháithníní fuinniúla i bplasmaí tanaí (Drury, 1983) ina pháipéar tábhachtach do thaighdeoirí tosaigh go háirithe, agus luadh os cionn 1,200 uair é ó foilsíodh é. Tá an páipéar a scríobh sé in 2001 le M.A. Malkov ina pháipéar ceannródaíoch i réimse na réaltfhisice plasma teoiriciúil (Malkov & Drury, 2001). Threoraigh an tOllamh Drury Réaltfhisic DIAS trí am dúshlánach agus chinntigh sé gur cothaíodh agus gur cosnaíodh Réadlann Dunsink do na glúnta le teacht. Le blianta beaga anuas, leathnaíodh an Rannóg mar thoradh ar an gcáil láidir idirnáisiúnta agus an timpeallacht intleachtúil a chothaigh an tOllamh Drury thar na blianta. Buaicphointe dá ghairm bheatha ba ea a Uachtaránacht ar Acadamh Ríoga na hÉireann idir 2011-2014. Guímid gach rath air ina scor agus tá áthas orainn go leanfaidh sé ar aghaidh mar Ollamh Emeritus ag DIAS.

In 2018, ceapadh an tOllamh Peter Gallagher mar Ollamh Sinsearach agus Ceann na Realteolaíochta agus na Réaltfhisice ag DIAS. Roimh ghlacadh leis an ról, bhí an tOllamh Gallagher ina Ollamh le Réaltfhisic ag Coláiste na Tríonóide, Baile Átha Cliath, áit a raibh sé ina cheannaire ar an bhfisic ghréine agus taighde aimsire spáis – agus áit ar threoraigh sé forbairt an chéad áis mhór réalteolaíochta in Éirinn – Low Frequency Array na hÉireann (I-LOFAR) ag Caisleán Bhiorra i gCo. Uíbh Fhailí. Thug an tOllamh Gallagher grúpa taighde gníomhach agus a bhfuil cáil orthu ar fud an domhan chuig DIAS, ag díriú ar réimsí na fisice gréine agus na haimsire spáis. Oibríonn a fhoireann de dheichniúr taighdeoirí ar éabhlóidiú grianspota, tuar bladhma, poill chorónacha agus ruaigeadh maise corónacha, agus an tionchar a imríonn na feiniméin seo ar an Domhan. Tá an tOllamh Gallagher fós ag treorú Cuibhreannas Low Frequency Array na hÉireann (I-LOFAR) agus is Ollamh Taca é ag Coláiste na Tríonóide, Baile Átha Cliath. Tá naisc ghairide ag a fhoireann le Gníomhaireacht Spáis na hEorpa (ESA) agus leis an NASA Goddard Space Flight Centre go háirithe. I dtéarmaí an ESA, tá an tOllamh Gallagher ina Chomh-Thaighdeoir don ionstraim X-ghathanna Íomháithe Teileascóip Ghréine (STIX) a sheolfar ar an spásárthach Solar Orbiter in 2018 agus tá sé ina Bhall freisin de Choiste Comhairleach Eolaíochta Spáis ESA. Is í an uaillmhian atá aige fás suntasach a thiomáint i Réaltfhisic DIAS i dtéarmaí an líon taighdeoirí agus i gcáilíocht agus i méid na bhfoilseachán a thairgeann an Rannóg. Tá sé mar aidhm aige freisin Réadlann Dunsink a athrú sna blianta romhainn, le go mbeidh sé ina cheann scríbe mór do mhic léinn agus do bhaill an phobail a bhfuil suim acu foghlaim faoi cheannaireacht na hÉireann roimhe seo agus i láthair na huaire i dtaighde réaltfhisiceach.

Minister John Halligan and Professor Peter Gallagher at the Leviathan Telescope in Birr, Co. Offaly.

An tAire John Halligan agus an tOllamh Peter Gallagher ag Teileascóip Leiviatan i mBiorra, Co. Uíbh Fhailí.

School Of Cosmic Physics (continued)

Professor and Head of Astronomy and Astrophysics upon the retirement of Professor Luke Drury.

Professor Drury was a Senior Professor in Astrophysics for 32 years and has made major contributions to theoretical plasma physics, particularly relating to shock and jets in astrophysical plasmas. He has published over 220 refereed papers and his work is highly regarded, receiving over 15,000 citations. His review article on the theory of diffusive shock acceleration of energetic particles in tenuous plasmas (Drury, 1983) has become an important paper for starting researchers in particular, received over 1,200 citations since it's publication. His 2001 paper, co-authored with M. A. Malkov, has become a seminal paper in the field of theoretical plasma astrophysics (Malkov & Drury, 2001). Professor Drury led DIAS Astrophysics through challenging times and has ensured that Dunsink Observatory has been maintained and protected for future generations. In recent years, the Section has experienced some expansion as a result of the strong international reputation and intellectual environment that Professor Drury has nurtured over the years. A highlight of his career must have been his Presidency of the Royal Irish Academy in 2011-2014. We wish him well in his retirement and are delighted that he will continue on as an Emeritus Professor at DIAS.

2018 saw the appointment of Professor Peter Gallagher as a Senior Professor and Head of Astronomy and Astrophysics at DIAS. Prior to taking up the role, Professor Gallagher was Professor in Astrophysics at Trinity College Dublin, where he was head of solar physics and space weather research – and where he led the development of Ireland's first major astronomy facility, the Irish Low Frequency Array (I-LOFAR) at Birr Castle in Co. Offaly. Professor Gallagher has brought an active and world-renowned research group to DIAS, focusing on the areas of solar physics and space weather. His team of ten researchers work on sunspot evolution, flare forecasting, coronal holes and coronal mass ejections, and the impact that these phenomena have on the Earth. Professor Gallagher continues to lead the Irish Low Frequency Array (I-LOFAR) Consortium and is an Adjunct Professor at Trinity College Dublin. His team have close links with the European Space Agency (ESA) and with NASA Goddard Space Flight Centre in particular. In terms of ESA, Professor Gallagher is a Co-Investigator for the Solar Telescope Imaging X-rays (STIX) instrument that will be launched on the Solar Orbiter spacecraft in 2018 and he is also a Member of ESA's Space Science Advisory Committee. His ambition is to drive substantial growth in DIAS Astrophysics in terms of the number of researchers and also in the quality and quantity of publications that the Section produces. He also aims to transform Dunsink Observatory over the coming years, making it a major destination for students and members of the public interested in learning about Ireland past and present leadership in astrophysical research.

Future plans – summary of any funding awards and a few lines on new projects

Dr Rebeca Garcia Lopez was awarded a Science Foundation Ireland Starting Investigator Research Grant. The project will involve the use of IR interferometric data from VLTI-GRAVITY and -MATISSE, on the ESO Very Large Telescope (VLT). The data pool obtained will also serve to develop a statistical imaging reconstruction method for geo-stationary satellite imaging.

Dr Jonathan Mackey, an SFI-Royal Society University Research Fellow, was awarded an Irish Research Council Laureate Award. The project, "High-Energy Radiation from Interaction Supernovae", will investigate particle acceleration and high-energy radiation processes in stellar-wind bubbles, in supernovae interacting with dense stellar winds, and in young supernova remnants.

Any other awards/honours (national or international) received acknowledging excellence of research and/or individuals

DIAS Research Fellow, Dr Alessio Caratti o Garatti was appointed as a Research Associate at Istituto Nazionale di Astrofisica (INAF, Italian National Institute for Astrophysics).

List of key publications

(NOTE: full list of publications in an Appendix)

Research output, measured by the number of publications, continues to be strong as shown in the attached bibliography for publications in 2018. Publication and citation rates have remained relatively stable over the past decade.

Scoil na Fisice Cosmaí (ar lean)

Pleananna don todhchaí – achoimre ar aon dámhachtainí maoinithe agus cúpla líne ar thionscadail nua

Bronnadh Deontas Taighde Iniúchóra ó Fhondúireacht Eolaíochta Éireann ar an Dr Rebeca Garcia Lopez. Úsáidfear sonraí trasnamhéadrachta IR ó VLTI-GRAVITY agus -MATISSE, ar an Teileascóip An-Mhór ESO (VLT) sa tionscadal seo. Úsáidfear an méid sonraí a bhailítear chun modh atógála íomháithe staitistiúil a fhorbairt i gcomhair íomháithe satailíte geochobhsaí.

Bronnadh Gradam Laureate Chomhairle Taighde na hÉireann ar an Dr Jonathan Mackey, ar Comhalta Taighde de chuid SFI-Royal Society University é. Déanfar iniúchadh sa tionscadal "High-Energy Radiation from Interaction Supernovae" ar luasghéarú cáithníní agus ar phróisis radaíochta ardfhuinnimh i mbolgáin gaoth réaltach, in ollnóva ag idirghníomhú le gaotha dlútha réaltacha, agus i bhfuílligh ollnóva óga.

Aon dámhachtainí/ onóracha eile (náisiúnta nó idirnáisiúnta) a fuarthas ag aithint sármhaitheas na taighde agus/nó daoine aonair

Ceapadh Comhalta Taighde DIAS, an Dr Alessio Caratti o Garatti mar Chomhalta Taighde ag Istituto Nazionale di Astrofisica (INAF, Institiúid Náisiúnta na hIodáile son Réaltfhisic).

Liosta príomhfhoilseachán

(NÓTA: tá liosta iomlán foilseachán san Aguisín)

Tá aschur taighde, arna thomhas de réir an líon foilseachán, fós láidir mar a léirítear sa leabharliosta faoi iamh maidir le foilseacháin in 2018. Tá rátaí foilseacháin agus lua fanta réasúnta cobhsaí le deich mbliana anuas.

Foilsíodh formhór ár dtorthaí sna hirisí réalteolaíocha ceannródaíocha, Astronomy and Astrophysics, The Astrophysical Journal agus Monthly Notices of the Royal Astronomical Society. Anuas air sin, leanaimid ag foilsiú irisí a bhfuil an-tionchar acu cosúil le Nature and Science.

Tá mórán gach páipéar linn ar fáil mar athphriontáil ar an arXiv agus dá bhrí sin tá ár dtiomantas rochtana oscailte á shásamh againn. Tá go leor de na páipéir seo anois curtha i gcartlann institiúideach DIAS. Beidh rochtain oscailte a thabhairt ar fhoilseacháin ag éirí níos tábhachtaí, go háirithe i bhfianaise "Plean S", tionscnamh d'fhoilsiú eolaíochta rochtain oscailte a sheol Science Europe i Meán Fómhair 2018. Éilíonn an plean ar eolaithe agus ar thaighdeoirí a bhaineann tairbhe as eagraíochtaí agus institiúidí atá maoinithe ag an stát a gcuid oibre a fhoilsiú i dtaisclanna oscailte nó in irisí atá ar fáil faoi 2020. D'eisigh ALLEA, (All European Academies - the European Federation of Academies of Sciences and Humanities), ráiteas maidir le Plean S, na tionchair ar dóchúil a bheidh aige agus a riachtanais fhorfheidhmithe. Bhí Luke Drury ina chomhalta ar Bhord ALLEA agus bhí sé ina ambasadóir agus ionadaí iontach don DIAS sna gníomhaíochtaí seo.

Seo thíos tá roinnt foilseachán tábhachtacha ó 2018.

"Multimessenger observations of a flaring blazar coincident with high-energy neutrino IceCube-170922A", IceCube Collaboration, Aartsen, et al., Science, 361, (2018).

"The H.E.S.S. Galactic plane survey, H.E.S.S. Collaboration", Abdalla, et al., Astronomy and Astrophysics, 612, A1, (2018).

"Radio outburst from a massive (proto)star. When accretion turns into ejection", Cesaroni, R., et al., Astronomy and Astrophysics, 612, A103, (2018).

"A chemical survey of exoplanets with ARIEL", Tinetti, Giovanna, et al., Experimental Astronomy, 46, 135, (2018).

"Connection between jets, winds and accretion in T Tauri stars. The X-shooter view", Nisini, B., et al., Astronomy and Astrophysics, 609, A87, (2018).

"Mapping the core of the Tarantula Nebula with VLT-MUSE. I. Spectral and nebular content around R136", Castro, N., et al., Astronomy and Astrophysics, 614, A147, (2018).

"Constraining the nature of DG Tau A's thermal and non-thermal radio emission", Purser, S. J. D., et al., Monthly Notices of the Royal Astronomical Society, 481, 5532, (2018).

"Expansion of High-speed Solar Wind Streams from Coronal Holes through the Inner Heliosphere", Garton, T. M., Murray, S. A., Gallagher, P. T., Astrophysical Journal Letters, 869, L12, (2018).

"A Detailed Model of the Irish High Voltage Power Network for Simulating GICs", Blake, S. P., Space Weather, 16, 1770, (2018).

Liosta d'aon chuir i láthair mór ag comhdhálacha idirnáisiúnta

(NÓTA: tá liosta iomlán san Aguisín)

- Thug Felix Aharonian caint ar chuireadh "Hillas Plot: trivial and non-trivial implications" ag an Hillas Symposium, Heidelberg, An Ghearmáin, Noll. 10-12, 2018.
- Thug Jonathan Mackey caint ag Potsdam, sa Ghearmáin ag cruinniú maidir le Turraingí Réaltfhisiceacha (5-7 Márta).
- Labhair Felix Aharonian agus Luke Drury ag cruinniú CRATER in GSSI L'Aquila, san Iodáil ón 28 Bealtaine, 2018 go dtí an 1 Meitheamh. D'oscail agus dhún cainteoirí DIAS an cruinniú.

School Of Cosmic Physics (continued)

Most of our findings have been published in the leading astronomical journals, Astronomy and Astrophysics, The Astrophysical Journal and Monthly Notices of the Royal Astronomical Society. In addition, we continue to publish in high-impact journals such as Nature and Science.

Virtually all our papers are available as preprints on the arXiv and we are thus meeting our open access commitment. Many of these papers have now been deposited in the DIAS institutional repository. Providing open access to publications will become increasingly important, particularly in light of "Plan S", an initiative for open-access science publishing that was launched by Science Europe in September 2018. The plan requires scientists and researchers who benefit from state-funded research organisations and institutions to publish their work in open repositories or in journals that are available to all by 2020. ALLEA, (All European Academies - the European Federation of Academies of Sciences and Humanities), released a statement relating to Plan S, its likely impacts and implementation requirements. Luke Drury has served as a member of the ALLEA Board and has been an excellent ambassador and representative for the DIAS in these activities.

Below are detailed a number of key publications from 2018.

"Multimessenger observations of a flaring blazar coincident with high-energy neutrino IceCube-170922A", IceCube Collaboration, Aartsen, et al., Science, 361, (2018).

"The H.E.S.S. Galactic plane survey, H.E.S.S. Collaboration", Abdalla, et al., Astronomy and Astrophysics, 612, A1, (2018).

"Radio outburst from a massive (proto)star. When accretion turns into ejection", Cesaroni, R., et al., Astronomy and Astrophysics, 612, A103, (2018).

"A chemical survey of exoplanets with ARIEL", Tinetti, Giovanna, et al., Experimental Astronomy, 46, 135, (2018).

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"Mapping the core of the Tarantula Nebula with VLT-MUSE. I. Spectral and nebular content around R136", Castro, N., et al., Astronomy and Astrophysics, 614, A147, (2018).

"Constraining the nature of DG Tau A's thermal and non-thermal radio emission", Purser, S. J. D., et al., Monthly Notices of the Royal Astronomical Society, 481, 5532, (2018).

"Expansion of High-speed Solar Wind Streams from Coronal Holes through the Inner Heliosphere", Garton, T. M., Murray, S. A., Gallagher, P. T., Astrophysical Journal Letters, 869, L12, (2018).

"A Detailed Model of the Irish High Voltage Power Network for Simulating GICs", Blake, S. P., Space Weather, 16, 1770, (2018).

List of any major international conference presentations

(NOTE: full list of publications in an Appendix)

- Felix Aharonian gave an invited talk "Hillas Plot: trivial and non-trivial implications" at the Hillas Symposium, Heidelberg, Germany, Dec 10-12, 2018.
- Jonathan Mackey gave a talk at Potsdam, Germany at a meeting on Astrophysical Shocks (5-7 March).
- Felix Aharonian and Luke Drury both spoke at the CRATER meeting in GSSI L'Aquila, Italy from 28th May, 2018 to 1 June. DIAS speakers opened and closed the meeting.
- Tom Ray spoke on 9th March at the "The JWST Protostars Core Program" meeting at the Observatoire de Paris.
- Gerhard Ulbricht gave a talk at the 67th Annual Denver X-Ray Conference, Denver, USA (6 - 10 August) and a presentation for the Quantum Sensors Group of the National Institute for Standards and Technologies (NIST) in Boulder, USA.
- Alessio Caratti o Garatti gave an invited talk "Overview of JWST and its GTO programs on star and planet formation" at "Protoplanetary disks seen through the eyes of new-generation high-resolution instruments", 25-28 June, Rome, Italy.
- Dr Simon Purser gave two talks discussing his work on a galactic survey of ionised jets towards sites of massive star formation, and the subsequent similarities to the low-mass case. These were given at the `Tracing the flow' conference in the UK (6th May 2018) and `The Olympian Symposium 2018' conference in Greece (28th May 2018).
- Dr Rebeca Garcia Lopez gave an invited review talk "Observations of outflows and angular momentum transport from the inner to the outer disk" at "Take a closer look" conference at ESO Head Quarters in Garching (Germany).

Scoil na Fisice Cosmaí (ar lean)

- Labhair Tom Ray ar an 9 Márta ag cruinniú "The JWST Protostars Core Program" ag an Observatoire de Paris.
- Thug Gerhard Ulbricht caint ag an 67ú Annual Denver X-Ray Conference, Denver, SAM (6 - 10 Lúnasa) agus cur i láthair don Quantum Sensors Group of the National Institute for Standards and Technologies (NIST) in Boulder, SAM.
- Thug Alessio Caratti o Garatti cuairt ar chuireadh "Overview of JWST and its GTO programs on star and planet formation" ag "Protoplanetary disks seen through the eyes of new-generation high-resolution instruments", 25-28 Meitheamh, sa Róimh, an Iodáil.
- Thug an Dr Simon Purser dhá chaint inar phléigh sé a chuid oibre féin ar shuirbhé réaltrach ar scairdeanna ianaithe i dtreo suíomhanna foirmiú réalta ollmhóra, agus na cosúlachtaí ina dhiaidh sin le cás na maise ísle. Tugadh iad seo ag an gcomhdháil `Tracing the flow' sa RA (6 Bealtaine 2018) agus comhdháil `The Olympian Symposium 2018' sa Ghréig (28 Bealtaine 2018).
- Thug an Dr Rebeca Garcia Lopez caint athbhreithnithe ar chuireadh "Observations of outflows and angular momentum transport from the inner to the outer disk" ag comhdháil "Take a closer look" ag Ceanncheathrú ESO in Garching (An Ghearmáin).

Sprioc 2: Idirnáisiúnú ar ár dtaighde agus comhoibrithe a bhreisíonn taighde domhanda agus a chuireann taighde agus scoláireacht na hÉireann chun cinn ag an am céanna

Más cuí – Fáiltiú roimh rannpháirtíocht na hÉireann le bonneagair taighde idirnáisiúnta in 2018 – léirigh ról, ranníocaíocht DIAS

Achoimre ar aon chuibhreannais nó bonneagair idirnáisiúnta nua a ndeachamar leo in 2018

Solar Orbiter Seolfar spásárthach ESA Solar Orbiter i mí Feabhra 2020 agus eitleoidh sé taobh istigh d'fhithis Mhearcair chun breithnithe cianbhraiteachta agus in situ a dhéanamh ar an nGrian agus ar fheiniméin neamhbhuana gréine. Tá taighdeoirí DIAS ag cur le forbairt na mbogearraí i gcomhair X-ghathanna Íomháithe Teileascóip Ghréine (STIX) ar Solar Orbiter. Úsáidfear an ionstraim seo chun speictreascópacht íomháithe a dhéanamh ar ghrianbhladhmanna go háirithe. Tá taighdeoirí DIAS ina bpríomhbhaill de na foirne um forbairt bogearraí agus eolaíochta.

Achoimre ar aon fhorbairtí laistigh de chuibhreannais agus bonneagair idirnáisiúnta a rabhaimid ina mball díobh in 2018 (i gcáil feidhmíocht taighde nó comhairleach)...

ARIEL Roghnaigh ESA an spásárthach Atmospheric Remote-sensing Infrared Exoplanet Large-survey (ARIEL) i Márta 2018 mar a chéad mhisean eolaíochta meánaicmeach eile. Tá sé le seoladh in 2026. Beidh Réaltfhisic DIAS freagrach as gach scoilteoir agus scagaire léis. D'fhorbair cuibhreannas institiúidí Eorpacha lonnaithe sa RA, sa Fhrainc, san Iodáil, san Ísiltír, i bPoblacht na Seice, sa Pholainn, sa Bheilg, san Ostair, sa Danmhairg, sa Phortaingéil agus in Éirinn ARIEL. Cinnte, láidreoidh sé seo ár naisc idirnáisiúnta ach, go háirithe, beimid ag obair go dlúth le hOllscoil Phrág agus Saotharlanna Rutherford Appleton in Oxford, mar go bhfuilimid freagrach go cnuasaitheach as na hoptaic coitianta, mar a thugtar orthu.

GRAVITY Lean DIAS ina chomhoibriú le Max Planck Institute of Astronomy (MPIA) in Heidelberg agus an Institut de Planétologie et d'Astrophysique (IPAG) in Grenoble ar an gcéad ghlúin eile de thrasnamhéadar gar-infridhearg GRAVITY atá lonnaithe ag suíomh ESO Paranal. Áiríodh anseo cúnamh ó phearsanra DIAS chun réaltaí óga a choimisiúnú agus a bhreithniú go luath chun cumais na n-ionstraimí a dhéanamh amach.

RadioNet Leanann DIAS de bheith ina ball gníomhach d'Ardphobal Eorpach mór, Radionet, mar aitheantas ar a rannpháirtíocht i dtionscadal LOFAR na hÉireann. Cuireann RadioNet chun cinn beartas spéire oscailte Eorpach do réalteolaíocht raidió agus tacaítear leis trí mhaoiniú Horizon 2020. I gcomhoibriú le taighdeoirí ag Ollscoil Chalmers sa tSualainn, tá bogearraí forbartha ag DIAS chun saintréithe léas teileascópach a mhúnlú. Cuirfidh bogearraí DIAS-Chalmers ar chumas réalteolaithe éagsúlacht in íogaireacht an léis a thabhairt san áireamh.

H.E.S.S. Leanann DIAS le comhoibriú H.E.S.S., ar cuireadh borradh faoi le déanaí trí nuashonruithe ceamara a mhéadaíonn go mór a íogaireacht agus a fhreagairt le himeachtaí neamhbhuana cosúil le Bladhmanna Gáma-Gha. Chinn an coiste stiúrtha do H.E.S.S. síneadh a chur leis an tionscadal go dtí deireadh 2022 ar a laghad mar gheall ar a chumas méadaithe agus mar gheall ar mhoill le háiseanna den chéad ghlúin eile. Trí Ghradam Laureate Tosaigh IRC Jonathan Mackey, beidh taighdeoir iardhochtúireachta ag DIAS ag cur go suntasach le gníomhaíochtaí a bhaineann le H.E.S.S. do 2019-2021.

School Of Cosmic Physics (continued)

Goal 2: Internationalisation of our research and collaborations thus in simultaneously enhancing global research and promoting Irish research and scholarship

If relevant - Welcoming Ireland's engagement with international research infrastructures in 2018– highlight DIAS role, contribution.

A summary of any new international consortia or infrastructures we joined in 2018

Solar Orbiter ESA's Solar Orbiter spacecraft will be launched in February 2020 and will fly inside the orbit of Mercury to make remote-sensing and in-situ observations of the Sun and solar transient phenomena. DIAS researchers have been making contributions to the development of software for the Solar Telescope Imaging X-rays (STIX) on Solar Orbiter. This instrument will be used to do imaging-spectroscopy of solar flares in particular. DIAS researchers are key members of the software development and science teams.

A summary of any developments within international consortia and infrastructures of which we were a member in 2018 (whether in a research performance or advisory capacity)…

ARIEL The Atmospheric Remote-sensing Infrared Exoplanet Large-survey (ARIEL) spacecraft was selected by ESA in March 2018 as it's next medium-class science mission. It is due for launch in 2026. DIAS Astrophysics will be responsible for all beam splitters and filters. ARIEL has been developed by a consortium of European institutes based in the UK, France, Italy, the Netherlands, the Czech Republic, Poland, Belgium, Austria, Denmark, Portugal as well as Ireland. This, of course, will strengthen our international links but in particular we will be working particularly closely with the University of Prague and the Rutherford Appleton Laboratories in Oxford, as collectively we are responsible for the so-called common optics.

GRAVITY DIAS continued its collaboration with the Max Planck Institute of Astronomy (MPIA) in Heidelberg and the Institut de Planétologie et d'Astrophysique (IPAG) in Grenoble on the next generation near-infrared interferometer GRAVITY based at the ESO Paranal site. This included assistance by DIAS personnel in the commissioning and early observations of young stars to determine the instruments capabilities.

RadioNet DIAS continues to be an active member of the EU Advanced Community RadioNet, in recognition of its involvement in the Irish LOFAR project. RadioNet promotes an European open sky policy for radio astronomy and is supported through Horizon 2020 funding. In collaboration with researchers at Chalmers University in Sweden, DIAS have developed software to model the characteristics of the telescope beam. The DIAS-Chalmers software will enable astronomers to take into account the variation in sensitivity of the beam.

H.E.S.S. DIAS continues to participate in the H.E.S.S. collaboration, which has received a boost recently through camera upgrades that dramatically increase its sensitivity and response to transient events such as Gamma Ray Bursts. The steering committee for H.E.S.S. has decided to extend the project until at least 2022 on account of its increased capability and because of delays to next generation facilities. Through Jonathan Mackey's IRC Starting Laureate Award, DIAS will have a postdoctoral researcher contributing significantly to H.E.S.S. related activities for 2019-2021.

International Summer Schools held in 2018

DIAS Summer School on High-Energy Astrophysics 2018

The "DIAS Summer School on High-Energy Astrophysics 2018" was the second summer school organised by Felix Aharonian, Jonathan Mackey, Andrew Taylor and Masha Chernyakova and hosted by Dublin City University (DCU). The school was aimed at motivated young researchers beginning their careers (in particular PhD students and young postdocs), with a focus on "filling in the gap" between University education and University-level research. Among the speakers were X Barcons, J Silk, T Piran and A Watson. The school was held at DCU and included a social event in Dunsink on Sat 23rd June which will be combined with the unveiling of the EPS plaque. It was a very popular school with 57 students registered for the School and 28 speakers over the 10 days.

Contribution to international evaluation panels, reviews etc.

Professor Peter Gallagher continued to serve on the board of the International LOFAR Telescope and to lead the Irish LOFAR Consortium. He also continues to be a member of ESA's Space Science Advisory Committee and has been a review panel member for two rounds of ESA medium-class mission evaluation panels and the recent "Fast" or "Flexible" mission evaluation round.

Scoil na Fisice Cosmaí (ar lean)

Scoileanna Samhraidh Idirnáisiúnta a reáchtáladh in 2018

Scoil Samhraidh DIAS ar Réaltfhisic Ardfhuinnimh 2018

Ba é "Scoil Samhraidh DIAS ar Réaltfhisic Ardfhuinnimh 2018" an dara scoil samhraidh arna eagrú ag Felix Aharonian, Jonathan Mackey, Andrew Taylor agus Masha Chernyakova arna óstáil ag Ollscoil Chathair Bhaile Átha Cliath (DCU). Bhí an scoil dírithe air thaighdeoirí óga spreagtha ag tús a ngairmeacha (daltaí PhD agus mic léinn iardhochtúireachta óga), ag díriú ar "an bhearna a laghdú" idir oideachas Ollscoile agus taighde ag leibhéal Ollscoile. I measc na gcainteoirí bhí X Barcons, J Silk, T Piran agus A Watson. Reáchtáladh an scoil ag DCU agus áiríodh ann imeacht shóisialta in Dunsink ar Dé Sathairn an 23 Meitheamh a nascadh le nochta plaic EPS. Bhí an-tóir ar an scoil le níos mó ná 57 scoláire cláraithe don Scoil agus 28 cainteoir thar an deich lá.

Rannóocaíocht le painéil mheasúnaithe, athbhreithnithe idirnáisiúnta etc.

Lean an tOllamh Peter Gallagher ar bhord Teileascóip Idirnáisiúnta LOFAR agus ag treorú Cuibhreannas LOFAR na hÉireann. Tá sé fós ina bhall freisin de Choiste Comhairleach Eolaíocht Spáis ESA agus tá sé ina chomhalta den phainéal athbhreithnithe do dhá bhabhta de phainéil measúnaithe misin meánaicme ESA agus an babhta measúnaithe misin "Tapa" nó "Solúbtha" le déanaí.

Lean an tOllamh Felix Aharonian ar aghaidh mar chomhalta den Choiste Comhairleach Eolaíochta sa APPEC Astroparticle Physics European Consortium; mar chathaoirleach ar an gComhairle Comhairleach Idirnáisiúnta den UCCUB Institute of Sciences of the Cosmos, University of Barcelona; agus ina chomhalta den Choiste Comhairleach Eolaíochta de AHEAD, Integrated Activities for the High-Energy Astrophysics Domain of Horizon 2020.

Lean an tOllamh Luke Drury ar aghaidh mar chomhalta de Choiste Stiúrtha Eolaíochta PRACE, an Chomhpháirtíocht Eorpach don Ard-Ríomhaireachta; mar chomhalta de ghrúpa bainistíochta Euro-ICSU d'Acadaimh Eorpacha; agus mar Chathaoirleach den Horizon 2020 Centre of Excellence E-CAM.

Lean an tOllamh Tom Ray mar Chathaoirleach ar Choiste Eolaíochtaí Fisiciúla Ceimiceacha agus Matamaiticiúla Acadamh Ríoga na hÉireann; ina chomhalta de Bhord Réadlann agus Pláinéadlann Ard Mhacha agus ina chomhalta de Choiste Stiúrtha e-MERLIN sa RA. Bhí sé freisin mar ionadaí Rialtas na hÉireann ar Chomhairle ESO, tá sé ina chomhalta de Phainéal Fisice Marie Skdowska Curie.

Bhí an Dr Patrick Kavanagh ar Phainéal um Bhreithniú Leithdháileadh Ama XMM-Newton d'Ollnóva, Bladhmanna Gáma-Gha, Imeachtaí Toinn Domhantarraingte, Fuílligh Ollnóva, Diffuse (Galactic) Emission and Isolated Neutron Stars, ar Choiste Eagraithe Eolaíochta don Cheardlann 'Meán Idir-réaltach sa Chruinne in Aice Láimhe' in Bamberg, an Ghearmáin, agus tá sé fós ina chomhalta don SWG Fuílligh Ollnóva agus Meán Idir-réaltach do réadlann X-gha Athena.

Bhí an Dr Alessio Caratti o Garatti mar mholtóir ar Choiste Clár Breithnithe ESO (OPC) i mBealtaine agus i Samhain 2018.

Sprioc 3: Ceannairí taighde a mhealladh, a choinneáil agus a shaothrú don lá inniu agus don todhchaí

Fáilte romhaibh siúd a tháinig linn mar fhoireann/scoláirí nó mic léinn in 2018

Bhí áthas ar an Rannóg fáilte a chur roimh an oiread Comhaltaí Taighde agus Mic Léinn Taighde chuig DIAS in 2018. Tháinig Eoin Carley, Sophie Murray, Shane Maloney agus Laura Hayes ar bord mar Chomhaltaí Taighde san fhisic ghréine agus tháinig Tadhg Garton, Aoife Ryan, Brendan Clark, Ciara Maguire, Pearse Murphy agus Marie Nelissen ar bord mar Mhic Léinn Taighde.

Fás na foirne idir 2017 agus 2018

Tá an Rannóg fós ag fás in uimhreacha tar éis do Tom Ray deontais shuntasacha a fháil ó Fhondúireacht Eolaíochta Éireann agus ó Chomhairle Taighde na hEorpa in 2017. In 2018 féin, d'earcaigh sé beirt mac léinn PhD agus beirt Comhaltaí Taighde.

Chuir bunú an Ghrúpa Taighde Fisice Gréine agus Aimsire Spáis faoi cheannaireacht Peter Gallagher go mór le fás in uimhreacha sa Rannóg in 2018. Tá deichniúr taighdeoirí anois sa Ghrúpa Fisice Gréine, lena n-áirítear ceathrar Comhaltaí Taighde, cúigear mac léinn PhD agus an ceannaire grúpa, Peter Gallagher. Ó tháinig sé, tá roinnt tograí curtha isteach ag an ngrúpa chuig Horizon 2020, Comhairle Taighde na hÉireann agus Fondúireacht Eolaíochta Éireann, a d'fhéadfadh cur le fás na Rannóige.

Chuir an Dr Rebeca Garcia Lopez, Comhalta Marie Sklodowska-Curie, togra isteach in 2018 chuig clár Deontais d'Iniúchóir Óg Tosaithe de chuid Fondúireacht Eolaíochta Éireann, a chuirfidh ar a cumas beirt comhaltaí grúpa breise a earcú. Chuir taighdeoir a bhfuil gealladh faoi, Jonathan Mackey, a bhfuil Comhaltacht Taighde Fondúireacht Eolaíochta Éireann-Royal Society University aige, togra isteach chuig clár Laureate Comhairle Taighde na hÉireann in 2018. D'éirigh leis seo, ag cur ar a chumas beirt taighdeoirí breise a earcú dá ghrúpa.

School Of Cosmic Physics (continued)

Professor Felix Aharonian continued as a member of the Scientific Advisory Committee of the APPEC Astroparticle Physics European Consortium; as chair of the International Advisory Council of the the UCCUB Institute of Sciences of the Cosmos, University of Barcelona; and as a member of the Science Advisory Committee of AHEAD, Integrated Activities for the High-Energy Astrophysics Domain of Horizon 2020.

Professor Luke Drury continued as a member of the Science Steering Committee of PRACE, the European Partnership for Advanced Computing; as a member of the Euro-ICSU management group of European Academies; and as Chair of the Horizon 2020 Centre of Excellence E-CAM.

Professor Tom Ray continued as Chair of the Royal Irish Academy's Physical Chemical and Mathematical Sciences Committee; a member of the Armagh Observatory and Planetarium Board and as a member of the e-MERLIN Steering Committee in the UK. He also served as the Government of Ireland representative on the ESO Council, is a member of the Marie Skdowska Curie.

Dr Patrick Kavanagh served on the XMM-Newton Observation Time Allocation Panel for Supernovae, Gamma-Ray-Bursts, Gravitational Wave Events, Supernova Remnants, Diffuse (Galactic) Emission and Isolated Neutron Stars, on the Scientific Organising Committee for the 'Interstellar Medium in the Nearby Universe' Workshop in Bamberg, Germany, and is a continuing member of the Supernova Remnants and Interstellar Medium SWG for the Athena X-ray observatory.

Dr Alessio Caratti o Garatti served as a referee on the ESO Observing Programmes Committee (OPC) in May and November 2018.

Goal 3: Attracting, retaining and cultivating research leaders for today and the future

Welcome to those who joined us as staff/scholars or students in 2018

The Section were delighted to welcome many new Research Fellows and Research Students to DIAS in 2018. Eoin Carley, Sophie Murray, Shane Maloney and Laura Hayes joined as Research Fellows in solar physics while Tadhg Garton, Aoife Ryan, Brendan Clark, Ciara Maguire, Pearse Murphy and Marie Nelissen who joined as Research Students.

Growth of team between 2017 and 2018

The Section has continued to experience growth in numbers following the receipt of significant grants by Tom Ray from Science Foundation Ireland and the European Research Council in 2017. In 2018 alone, he has recruited two PhD students and two Research Fellows.

The establishment of the Solar Physics and Space Weather Research Group under the leadership of Peter Gallagher has contributed to significant growth in numbers in the Section in 2018. The Solar Physics Group now includes ten researchers, including four Research Fellows, five PhD students and the group leader, Peter Gallagher.

Since arriving, the group has submitted a number of proposals to Horizon 2020, the Irish Research Council and Science Foundation Ireland, which may result in further growth of the Section.

Dr Rebeca Garcia Lopez, a Marie Sklodowska-Curie Fellow, submitted a proposal in 2018 to the Science Foundation Ireland Starting Young Investigator Grant programme, which will enable her to hire two additional group members. Another up-and-coming researcher, Jonathan Mackey, who holds a Science Foundation Ireland-Royal Society University Research Fellowship, submitted a proposal to the Irish Research Council's Laureate programme in 2018.

High-energy Astrophysics Summer School 2018.
Réaltfhisic Ardfhuinnimh Scoil.

Scoil na Fisice Cosmaí (ar lean)

Tá fáilte le cur roimh an rath seo i maoiniú agus fás uimhreacha, ach chuir siad brú breise ar spás oifige ag 31 Plás Mhic Liam, atá lán anois. Fócas mór do 2019 agus níos faide anonn is ea baile níos mó a fháil do Réaltfhisic DIAS ionas gur féidir leis fás agus taighdeoirí breise a mhealladh chuig an Rannóg.

Tionscnaimh chun DIAS a bhreisiú mar cheann scríbe – e.g. obair trí chuibhreannas GENERA

Tá DIAS ina chomhpháirtí comhlach sa tionscadal Genera Horizon 2020 atá maoinithe ag AE atá dírithe ag Pleananna um Chomhionannas Inscne de chuid Institiúidí agus Eagraíochtaí Taighde a leanúint, a mhonatóiriú agus a fheabhsú, go háirithe i réimse na taighde fisice. Tá na trí ghníomh seo á ndéanamh ag Cuibhreannas 13 Eagraíocht Déanta agus Maoinithe Taighde comhpháirtí tairbhí agus roinnt comhpháirtithe agus breathnóirí comhlacha. Áirítear i gCuibhreannas GENERA ionadaíocht mhór fisiceoirí ban gníomhacha ina ngairmeacha beatha ag leibhéil éagsúla agus rachaidh siad i ngleic a thuilleadh le fisiceoirí ban atá gníomhach in Institiúidí éagsúla chun tagarmharcáil agus monatóireacht a dhéanamh ar éifeachtúlacht ba mbeart gníomhach agus a moladh roimhe seo cheana agus na cinn a mholfaidh an Cuibhreannas.

Reáchtáil tionscadal GENERA cruinniú dá gComh-Rúnaíocht in DIAS ar Aibreán 18-19, agus ina dhiaidh bhí cruinniú oscailte le daoine aonair agus eagraíochtaí Éireannacha a bhfuil suim acu i saincheisteanna inscne áit ar cuireadh i láthair agus ar pléadh na ceachtanna a foghlaimíodh i dtionscadal GENERA.

Sprioc 4: Na disciplíní a láidriú go náisiúnta, ionas go gcumasófaí for-rochtain phobail a chumas iomlán agus chun inbhuanaitheacht amach anseo a chinntiú

Cúrsaí a cuireadh ar fáil in 2018

Léachtóireacht Leanann Peter Gallagher ag tabhairt léachtaí ar ardmhodúil ag Coláiste na Tríonóide, Baile Átha Cliath, lena n-áirítear 12 léacht ar Eolaíocht Spáis agus Pláinéadach d'fhochéimithe sa bhliain dheiridh agus 20 léacht ar an bhFisic Phlasma d'iarchéimithe. Tá an-tóir fós ar an Modúl Eolaíochta Spáis agus Pláinéadach i measc fochéimithe ag Coláiste na Tríonóide, agus 24 ar an gcúrsa in 2018. Clúdaíonn an cúrsa topaicí atá ábhartha go díreach do thaighdeoirí ag DIAS, lena n-áirítear fisic ghréine, maighnéadaisféir phláinéadacha, eiseapláinéid agus gaotha gréine agus réalta. Tugann an Modúl Iarchéime san Fhisic Phlasma réamhrá mionsonraithe le Fisic Phlasma d'iarchéimithe atá ag tosú san Fhisic agus sa Réaltfhisic. Bíonn freastal maith air i gcónaí ó mhic léinn as Coláiste na Tríonóide, Coláiste na hOllscoile, Baile Átha Cliath agus Ollscoil Chathair Bhaile Átha Cliath.

Thug Patrick Kavanagh léachtaí i modúl Réaltfhisic Ardfhuinnimh do mhic léinn na bliana deiridh agus léacht réamhrá ar ollnóva, fuílligh ollnóva, réaltaí neodróin agus dúphoill do mhic léinn chéad bhliana in Ollscoil Mhá Nuad.

Tionscadail na Bliana Deiridh Lean Réaltfhisic DIAS ag tabhairt deis do mhic léinn fochéime sa bhliain deiridh tabhairt faoi thionscadal na bliana deiridh sa Rannóg. In 2018, d'óstáil Comhaltaí agus Ollamh Taighde ceathrar mac léinn ar feadh 3 mhí ar ábhair ó fhisic ghréine, go stoirmeacha geomaighnéadacha do réaltfhisic ardfhuinnimh.

Tionscadail MSc D'óstáil Réaltfhisic DIAS mic léinn ó chúrsa MSc san Eolaíocht Spáis ag Coláiste na hOllscoile Baile Átha Cliath dá n-intéirneachtaí.

Léachtaí, Seimineáir, Ceardlanna nó eile a eagraíodh in 2018

Cruinniú GRAVITY D'eagraigh Rebeca Garcia Lopez cruinniú do chuibhreannas Gravity ag 31 Plás Mhic Liam ar an 30 agus 31 Ean. D'fhreastail taighdeoirí as gach cearn den Eoraip ar an gcruinniú.

Ceardlann oiliúna Sense about Science De réir an chomhaontaithe óstáil, chuir Sense about Science seisiún oiliúna tiomanta ar fáil maidir le cumarsáidí eolaíochta arna éascú ag a Stiúrthóir, Tracey Brown, ar fhreastail gach Scoil in DIAS air agus ar éirigh go hiontach leis.

D'eagraigh Alessio Caratti o Garatti agus Tom Ray an **Cheardlann Trasnamhéadrach um Próiseáil Sonraí do eMerlin agus ALMA**, ag Bóthar Burlington, MF 10 go 12.

Léacht reachtúil in 2018

Arna Eagrú ag Geoifisic in 2018.

Gníomhaíochtaí for-rochtana

Plaic in onóir Thomas Grubb

Nochtaigh an tAire Stáit le freagracht as Oiliúint, Scileanna, Nuálaíocht agus Taighde agus Forbairt, John Halligan TD plaic, a d'urraigh DIAS, in aice le ceanncheathrú an Chónaidhm Náisiúnta Foirgníochta in aice le Droichead Charlemont i mBaile Átha Cliath.

Réadlann Dunsink

Tá an úsáid a bhaintear as Dunsink ar mhaithe le for-rochtain phoiblí fós ag fás. Is féidir blaiseadh de na himeachtaí seo a fheiceáil ag www.dunsink.dias.ie/category/talks/.

School Of Cosmic Physics (continued)

This has since been successful, enabling him to begin recruiting two additional researchers for his group.

These successes in funding and growth in numbers are to be welcomed, but have put additional pressure on office space at 31 Fitzwillam Place, which is now at capacity. A major focus for 2019 and beyond will be to secure a larger home for DIAS Astrophysics so that it can continue to grow and attract additional researchers to the Section.

Initiatives to enhance DIAS as a destination – e.g. work through GENERA consortium

DIAS is an associate partner in the EU funded Horizon 2020 Genera project aiming at continuing, monitoring and improving the Gender Equality Plans of Research Institutions and Organisations specifically in the physics research field. These three actions are being performed by a Consortium of 13 beneficiary partner Research Performing and Research Funding Organisations and a number of associate partners and observers. The GENERA Consortium includes a considerable representation of women physicists active in their careers at different levels and will engage with further women physicists active in various Institutions to benchmark and monitor the effectiveness of already active and previously proposed measures and the ones which will be proposed by the Consortium.

The GENERA project held a meeting of their Joint Secretariat in DIAS on April 18-19, which was followed by an open meeting with Irish individuals and organisations interested in gender issues where the lessons learnt by the GENERA project will be presented and discussed.

Goal 4: Strengthening the disciplines nationally, so as to enable the community reach its full potential and ensure future sustainability… (1 – 3 A4 pages of text)

Courses provided in 2018

Lecturing Peter Gallagher continues to lecture advanced modules at Trinity College Dublin, including 12 lectures on Space and Planetary Science for final year undergraduates and 20 lectures on Plasma Physics for postgraduates. The Space and Planetary Science Module continues to be very popular with undergraduates at Trinity, with 24 taking the course in 2018. The course covers topics of direct relevance to researchers at DIAS, including solar physics, planetary magnetospheres, exoplanets and solar and stellar winds. The Postgraduate Module in Plasma Physics provides a detailed introduction to Plasma Physics for starting postgraduates in Physics and Astrophysics. It is always well attended by students from Trinity, University College Dublin and Dublin City University.

Patrick Kavanagh lectured a High Energy Astrophysics module to final year students and an introductory lecture on supernovae, supernova remnants, neutron stars and black holes to first year students in Maynooth University.

Final Year Projects DIAS Astrophysics continued to offer final year undergraduate students the opportunity to undertake final year project at in the Section. In 2018, Research Fellows and Professor hosted four students for 3 months on topics ranging from solar physics, to geomagnetic storms to high energy astrophysics.

MSc Projects DIAS Astrophysics hosted students from the MSc Space Science course at University College Dublin for their internships.

Lectures, Seminars, Workshops or other such organised in 2018

GRAVITY meeting Rebeca Garcia Lopez organised a meeting for the Gravity consortium in 31 Fitzwilliam Place on Jan 30 and 31. The meeting was attended by researchers from across Europe.

Sense about Science training workshop In accordance with the hosting agreement Sense about Science provided a dedicated training session on science communications facilitated by their Director, Tracey Brown, which was attended by all Schools of DIAS and very well received.

Alessio Caratti o Garatti and Tom ray organised the **Interferometric Data Processing Workshop for eMerlin & ALMA**, in Burlington Road, Sept. 10 to 12.

Statutory lecture in 2018

Organised by Geophysics in 2018.

Outreach activities

Plaque to Honour Thomas Grubb

A plaque, sponsored by DIAS, was unveiled near the Construction Industry Federation headquarters near Charlemont Bridge in Dublin, by the Minister of State for Training, Skills, Innovation, Research and Development, John Halligan, TD.

Dunsink Observatory

The use of Dunsink for public outreach continues to grow. A flavour of some of these events can be viewed at www.dunsink.dias.ie/category/talks/.

Scoil na Fisice Cosmaí (ar lean)

Ar an 9 Meitheamh, labhair Luke Drury le grúpa eolaithe ar cuairt as Meiriceá faoi shaol agus shaothar William Rowan Hamilton, agus ar an 11 Meitheamh ghlac sé páirt i dtráthnóna le téama Joyce faoi na tagairtí go léir don réalteolaíocht in Ulysses. Ar an 13 Meitheamh, rinneadh ceiliúradh ar 150 bliain ón gcéad solas le hathraonadóir James South, agus d'óstálamar dinnéar do bhrainse na hÉireann d'fhóram idirnáisiúnta na mban ar an 20 Meitheamh. Tharla sé seo ar fad roimh nochtadh plaic EPS ar an 23 Meitheamh.

Suíomh Stairiúil European Physical Society: Réadlann Dunsink

Nochtaigh an European Physical Society (EPS) go foirmiúil comhartha ag sainaithint Réadlann Dunsink ag Suíomh Stairiúil Uimhir 54 ar an 23 Meitheamh. Nochtaigh an tAire Stáit um Ardoideachas, Mary Mitchell O'Connor TD agus an tOllamh Rüdiger Voss, Uachtarán an European Physical Society plaic chun an t-ainmniúchán a chomóradh.

Oíche Chultúir 2018

Reáchtáladh Oíche Chultúir 2018 ar an 21 Meán Fómhair ag Réadlann Dunsink DIAS mar aon le go leor imeachtaí eile a tharla ar fud na hÉireann. Thug an tOllamh Tom Ray agus an Dr Robert Izzard cainteanna as Ollscoil Surrey sa RA cainteanna an tráthnóna sin. Bhí cead ag cuairteoirí féachaint timpeall ar an Réadlann agus cuairt a thabhairt ar an gCruinneachán Theas. Bhí oibrithe deonacha ó DIAS, ón Irish Astronomical Society (IAS), ón Irish Centre for High-End Computing (ICHEC) agus ó Ollscoil Chathair Bhaile Átha Cliath (DCU) suite ar fud na réadlainne ar an tráthnóna ag labhairt leis na cuairteoirí ar fad.

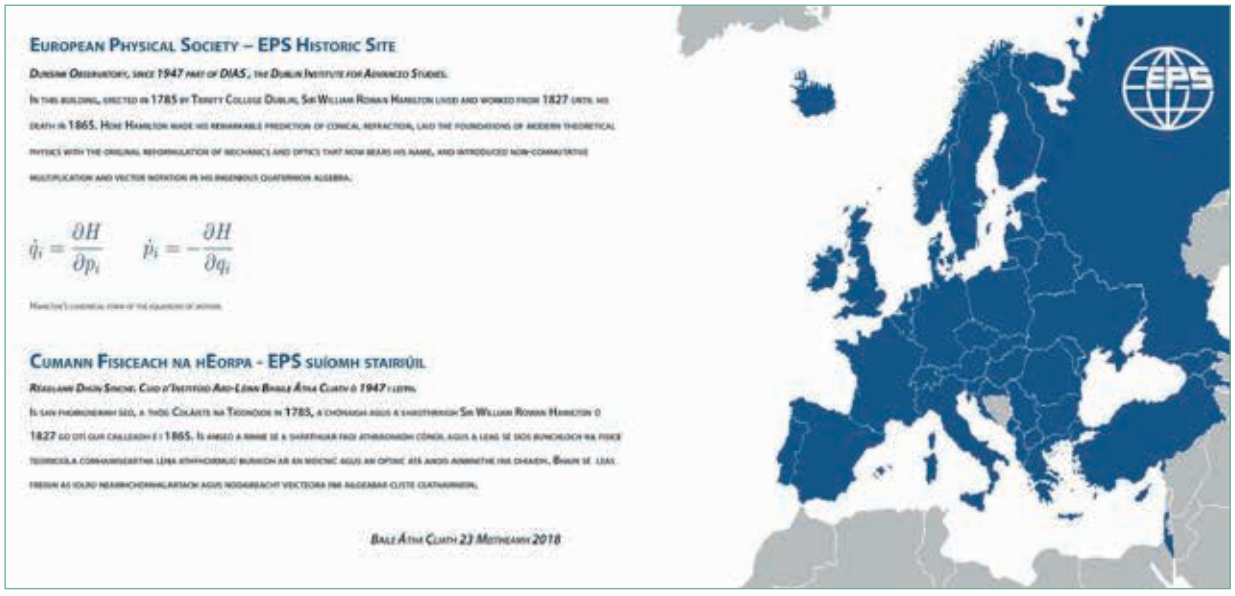
Reáchtáladh dhá chaint i Seomra na Fadlíne, agus slua mór i láthair. Chuir Jonathan Mackey an dá chaint i láthair agus labhairt sé leis na cuairteoirí faoi stair Réadlann Dunsink. Labhair sé freisin faoi thaighde a ghrúpa atá á déanamh i gcomhar le go leor taighdeoirí idirnáisiúnta atá ar cuairt i Rannóg Réalteolaíochta agus Réaltfhisice DIAS Ionnaithe i Réadlann Dunsink agus ag Plás Mhic Liam. Labhair Tom Ray faoi shaolta Thomas agus Howard Grubb agus luaigh sé go raibh beagnach 100 bliain ann ó cruthaíodh Teoiric Coibhneasachta Einstein le Céileastat Grubb a dearadh agus a rinneadh ag Portobello Grubb Engineering Works.

Seachtain an Spáis 2018

Reáchtáladh Seachtain an Spáis 2018 ón 4 go 10 Deireadh Fómhair. I rith na seachtaine seo, d'óstáil Réadlann Dunsink DIAS cuairt ghrúpa agus Oíche Oscailte Phoiblí. Tháinig Brendan Jordan, a d'oibrigh ag an Réadlann, ar chuairt ghrúpa chuig Réadlann Dunsink. I rith na cuairte seo, thug Sam Green, Mac Léinn PhD, caint maidir le dreigí agus thug John Flannery (IAS) caint maidir le stair Réadlann Dunsink.

Seachtain na Matamaitice 2018

Reáchtáladh Seachtain na Matamaitice 2018 ón 13 go 21 Deireadh Fómhair agus i rith na seachtaine seo, d'óstáil Réadlann Dunsink DIAS Siúlóid Hamilton agus Oíche Oscailte Phoiblí. Reáchtáladh siúlóid bhliantúil Hamilton ar an 16 Deireadh Fómhair. Shiúil cuairteoirí ó Réadlann Dunsink DIAS trí pháirc agus síos Lána Bhaile Scriobail, chuig Baile an Ásaigh agus Droichead Broome. Labhair Fiacre Ó Cairbre (OÉ Mhá Nuad) daoi shaol William Rowan Hamilton agus na ceathairnín a chruthaigh sé a luaitear in Finnegans Wake. Bhí slua mór daoine ann de gach aois a bhain taitneamh as dathanna an fhómhair.



School Of Cosmic Physics (continued)

On June 9 Luke Drury spoke to a visiting party of US scientists about the life and work of William Rowan Hamilton, and on June 11 he took part in a Joycean-themed evening discussion of the many astronomical references in Ulysses. June 13th marked the 150th anniversary of first light with the James South refractor, and we hosted a dinner for the Irish branch of the international women's forum on 20th June. This all lead up to the unveiling of the EPS plaque on the 23rd June.

European Physical Society Historic Site: Dunsink Observatory

The European Physical Society (EPS) formally unveiled a sign identifying Dunsink Observatory as EPS Historical Site Number 54 on June 23. A plaque to commemorate the designation was unveiled by Mary Mitchell O'Connor TD, Minister of State for Higher Education, and Professor Rüdiger Voss, President of the European Physical Society.

Culture Night 2018

Culture Night 2018 was held on September 21 at DIAS Dunsink Observatory along with many other events happening across Ireland. Giving the evening talks were Professor Tom Ray and Dr. Robert Izzard from the University of Surrey, UK. Visitors were free to explore the Observatory and visit the South Dome. Volunteers from DIAS, the Irish Astronomical Society (IAS), the Irish Centre for High-End Computing (ICHEC) and Dublin City University (DCU) were located throughout the observatory on the evening liaising with our many visitors.

Two talks were held in the Meridian Room, both to a full house. Jonathan Mackey introduced both of these talks and spoke to our visitors about the history of Dunsink Observatory. He also spoke about his group's research being done in collaboration with many visiting international researchers within the Astronomy and Astrophysics Section of DIAS located both in Dunsink Observatory and at Fitzwilliam Place. Tom Ray spoke about the lives of Thomas and Howard Grubb and mentioned that it has nearly been 100 years since Einstein's Theory of Relativity was proven using a Grubb Coelostat designed and manufactured at the Portobello Grubb Engineering Works.

Space Week 2018

Space Week 2018 was held during the week of October 4th to 10th. During this week DIAS Dunsink Observatory hosted a group visit and a Public Open Night. Brendan Jordan, who worked at the Observatory, came on a group visit to Dunsink Observatory. During this visit Sam Green, PhD Student, gave a talk about meteors and John Flannery (IAS) gave a talk about the history of Dunsink Observatory.

Maths Week 2018

Maths Week 2018 was held from October 13th to 21st and during this week DIAS Dunsink Observatory held the Hamilton Walk and a Public Open Night. The annual Hamilton walk was held on 16th October. Visitors walked from DIAS Dunsink Observatory through a field and down Scribblestown Lane, leading to Ashtown Village and Broombridge. Fiacre Ó Cairbre (NUI Maynooth) spoke about William Rowan Hamilton's life and the quaternions he invented that are mentioned in Finnegans Wake. There was a great array of people of many different ages who enjoyed the autumn colours.

Transition Year week in Dunsink

Transition Year Science Week at Dunsink Observatory started in February 2017, based around the SFI-funded meteor cameras and radio antenna installed on the Observatory grounds. These detectors automatically scan the sky and record shooting stars, or meteors, when they come into the field of view. We had a group of 5 students the first year from Castleknock and wider Dublin and Kildare, and increased this to 16 students in 2018. A very positive development is that some of the DIAS PhD students are beginning to take on leadership roles in developing the teaching and learning materials for the week.

The Transition Year students learn how day-to-day scientific research is done by finding out about meteors and looking at what is recorded by the detectors. Analysing these data, the students use the maths and physics they have learned in school to determine where meteors entered Earth's atmosphere, how fast they were travelling, and where they came from in the Solar System. At the end of the week they present a poster with their findings to the staff of the DIAS Astrophysics Section. There is a strong citizen science emphasis through the NEMETODE network and contributions from members of our partner amateur astronomy societies. The 2018 TY Week was cut short by Storm Emma which closed all Higher-Education institutions, but the students had a very good experience anyway and packed a lot into the days that they were with us.

Scoil na Fisice Cosmaí (ar lean)

Seachtain na hIdirbhliana in Dunsink

Thosaigh Seachtain Eolaíochta na hIdirbhliana ag Réadlann Dunsink i mí Feabhra 2017, bunaithe ar cheamaraí dreige agus aeróga raidió le maoiniú SFI a suiteáladh ar thailte na Réadlainne. Déanann na braiteoirí seo scanadh uathoibríoch ar an spéir agus taifeadann siad réaltaí reatha, nó dreigí, nuair a thagann siad isteach sa réimse radhairc. Bhí grúpa de 5 dalta againn an chéad bhliain as Caisleán Cnucha agus Baile Átha Cliath agus Cill Dara, agus mhéadaigh sé seo go dtí 16 dalta in 2018. Forbairt an-dearfach is ea go bhfuil roinnt de mhic léinn PhD DIAS ag tosú ag glacadh le róil cheannaireachta chun ábhair theagaisc agus fhoghlama a fhorbairt don tseachtain.

Foghlaimíonn na daltaí Idirbhliana faoin gcaoi a ndéantar taighde eolaíochta laethúil trí fhoghlaim faoi dhreigí agus féachaint ar na rudaí a thaifeadann na braiteoirí. Chun anailís a dhéanamh ar na sonraí seo, úsáideann na daltaí matamaitic agus fisic atá foghlamtha ar scoil acu lena fháil amach cá háit ar tháinig na dreigí isteach in atmaisféar an domhain, chomh tapa is a bhí siad ag taisteal, agus cá háit ar tháinig siad isteach sa Ghrianchóras. Ag deireadh na seachtaine, cuireann siad póstaer lena dtorthaí i láthair foireann as Rannóg Réaltfhisice DIAS. Tá béim láidir ar eolaíocht saoránach trí líonra NEMETODE agus ábhar ó bhaill dár gcumainn réalteolaíochta amatéaracha comhpháirtí. Chuir Stoirm Emma deireadh luath le Seachtain na hIdirbhliana 2018 mar gheall gur dhún gach Institiúid Ard-Oideachais, ach bhí taithí an-mhaith ag na daltaí ar aon nós agus d'éirigh leo go leor a dhéanamh sna laethanta a raibh siad linn.

Eolaíocht Saoránach

D'óstáil Réadlann Dunsink cruinniú de líonra pro-am um breathnú dreigí NEMETODE ar an 15 Meán Fómhair 2018. Thaisteal roinnt ball de líonra NEMETODE chuig an gceardlann dreige seo, lena n-áirítear na baill bhunaithe William Stewart agus Alex Pratt, agus cuiditheoirí gníomhacha eile cosúil le Jim Rowe agus Bill Ward. Bhí sé iontach an oiread sin réalteolaithe amatéaracha ardleibhéil páirteach, a bhí ag iarraidh bealaí nua le foghlaim faoi dhreigí a fhiosrú. Bhí sé iontach freisin cainteanna a bheith ann ó réalteolaithe gairmiúla ag oibriú ar dhreigí: Apostolos Christou as AOP agus Cis Verbeeck as tionscadal dreige BRAMS sa Bheilg.

Tar éis an chruinnithe seo, tháinig mac léinn fochéime in IT Shligigh chugainn a bhfuil tionscadal á dhéanamh aige ar Fhoghlaim Mheaisín, ag fiosrú conas is féidir le halgartaim ríomhaire íomhánna ceamara a rangú mar bhraitĺ dreige nó dearfach bréige (éin, eitleáin, scamaill, satailítí). Tá Sam Green ag comhfhreagairt leis ar an tionscadal agus ag tabhairt sonraí dó ó cheamaraí Dunsink.

Fáiltiú don Irish Astronomical Society

Mar chomhartha buíochais leis an Irish Astronomical Society, nach mbeimis in ann na hoícheanta oscailte agus imeachtaí eile ag Dunsink a reáchtáil, mhol an Cláraitheoir gur smaoineamh maith a bheadh ann buíochas a ghlacadh leo le fáiltiú beag agus caint ag Bóthar Burlington. Ina dhiaidh sin, fuair mé an chumarsáid sin ó Uachtarán IAS.

Líon freastail (cuairteanna) ag suíomhanna for-rochtana/oícheanta poiblí lena n-áirítear Dunsink, léachtaí Stat, amais ISOS, etc.

Meastar go raibh beagnach 5,000 cuairteoir ag Dunsink in 2018.

School Of Cosmic Physics (continued)

Citizen Science

Dunsink Observatory hosted a meeting of the pro-am NEMETODE meteor observing network on the 15th of September 2018. A number of NEMETODE network members travelled to this meteor workshop, including the founding members William Stewart and Alex Pratt, and other active contributors suchas Jim Rowe and Bill Ward. It was great to see so many high-level amateur astronomers participating, all eager to explore new ways of learning about meteors. It was also very gratifying to have talks from professional astronomers working on meteors: Apostolos Christou of AOP and Cis Verbeeck of the Belgian BRAMS meteor project.

Following this meeting we were approached by an undergraduate student in Sligo IT who is now doing a project on Machine Learning, investigating how computer algorithms can classify camera images as meteor detections or false positives (birds, planes, clouds, satellites). Sam Green is corresponding with him on the project and giving him data from the Dunsink cameras.

Reception for the Irish Astronomical Society

As a gesture of thanks to the Irish Astronomical Society without whom we would be unable to run the open nights and other events in Dunsink, the Registrar gave a small reception and talk in Burlington Road.

Attendance numbers (visits) at sites for outreach/public nights, including Dunsink, Stat lectures, ISOS hits, etc.

Estimated that we had neary 5,000 visitors to Dunsink in 2018.

Appendix 1: Publications

1. Acciari, V. A., et al., "Constraining dark matter lifetime with a deep gamma-ray survey of the Perseus galaxy cluster with MAGIC", Physics of the Dark Universe, 22, 38, (2018).
2. Hitomi Collaboration, Aharonian, et al., "Detection of polarized gamma-ray emission from the Crab nebula with the Hitomi Soft Gamma-ray Detector", Publications of the Astronomical Society of Japan, 70, 113, (2018).
3. Purser, S. J. D., et al., "Constraining the nature of DG Tau A's thermal and non-thermal radio emission", Monthly Notices of the Royal Astronomical Society, 481, 5532, (2018).
4. MAGIC Collaboration, Acciari, et al., "Constraining very-high-energy and optical emission from FRB 121102 with the MAGIC telescopes", Monthly Notices of the Royal Astronomical Society, 481, 2479, (2018).
5. Colantoni, I., et al., "Design and Fabrication of the Second-Generation KID-Based Light Detectors of CALDER", Journal of Low Temperature Physics, 193, 726, (2018).
6. Colantoni, Ivan, et al., "CALDER: The Second-Generation Light Detectors", IEEE Transactions on Applied Superconductivity, 28, 2841925, (2018).
7. Ahnen, M. L., et al., "Extreme HBL behavior of Markarian 501 during 2012", Astronomy and Astrophysics, 620, A181, (2018).
8. Gravity Collaboration, Karl, et al., "Multiple star systems in the Orion nebula", Astronomy and Astrophysics, 620, A116, (2018).
9. H.E.S.S. Collaboration, Abdalla, et al., "First ground-based measurement of sub-20 GeV to 100 GeV γ-Rays from the Vela pulsar with H.E.S.S. II", Astronomy and Astrophysics, 620, A66, (2018).
10. Aguilar-Jiménez, J. A., et al., "Techno-economic analysis of a hybrid PV-CSP system with thermal energy storage applied to isolated microgrids", Solar Energy, 174, 55, (2018).
11. Kholupenko, E. E., et al., "Detection of UV Radiation from Extensive Air Showers: Prospects for Cherenkov Gamma-Ray Astronomy", Journal of Technical Physics, 63, 1603, (2018).
12. Abdalla, H., et al., "Searches for gamma-ray lines and 'pure WIMP' spectra from Dark Matter annihilations in dwarf galaxies with H.E.S.S.", Journal of Cosmology and Astro-Particle Physics, 2018, 037, (2018).
13. Tinetti, Giovanna, et al., "A chemical survey of exoplanets with ARIEL", Experimental Astronomy, 46, 135, (2018).
14. Aab, A., et al., "Large-scale Cosmic-Ray Anisotropies above 4 EeV Measured by the Pierre Auger Observatory", The Astrophysical Journal, 868, 4, (2018).
15. Abeysekara, A. U., et al., "Periastron Observations of TeV Gamma-Ray Emission from a Binary System with a 50-year Period", The Astrophysical Journal, 867, L19, (2018).
16. Ahnen, M. L., et al., "Limits on the flux of tau neutrinos from 1 PeV to 3 EeV with the MAGIC telescopes", Astroparticle Physics, 102, 77, (2018).
17. MAGIC Collaboration, Acciari, et al., "Detection of persistent VHE gamma-ray emission from PKS 1510-089 by the MAGIC telescopes during low states between 2012 and 2017", Astronomy and Astrophysics, 619, A159, (2018).
18. H.E.S.S. Collaboration, Abdalla, et al., "The γ-ray spectrum of the core of Centaurus A as observed with H.E.S.S. and Fermi-LAT", Astronomy and Astrophysics, 619, A71, (2018).
19. MAGIC Collaboration, Ahnen, et al., "Multi-wavelength characterization of the blazar S5 0716+714 during an unprecedented outburst phase", Astronomy and Astrophysics, 619, A45, (2018).
20. Teixeira, G. D. C., et al., "Photometric variability of massive young stellar objects", Astronomy and Astrophysics, 619, A41, (2018).
21. van der Velde, M., et al., "In-season performance of European Union wheat forecasts during extreme impacts", Scientific Reports, 8, 15420, (2018).
22. MAGIC Collaboration, Ansoldi, et al., "The broad-band properties of the intermediate synchrotron peaked BL Lac S2 0109+22 from radio to VHE gamma-rays", Monthly Notices of the Royal Astronomical Society, 480, 879, (2018).
23. Aab, A., et al., "Observation of inclined EeV air showers with the radio detector of the Pierre Auger Observatory", Journal of Cosmology and Astro-Particle Physics, 2018, 026, (2018).

School Of Cosmic Physics (continued)

24. Tanaka, Takaaki, et al., "NuSTAR Detection of Nonthermal Bremsstrahlung from the Supernova Remnant W49B", The Astrophysical Journal, 866, L26, (2018).

25. Gravity Collaboration, Sanchez-Bermudez, et al., "GRAVITY chromatic imaging of η Car's core. Milliarcsecond resolution imaging of the wind-wind collision zone (Brγ, He I)", Astronomy and Astrophysics, 618, A125, (2018).

26. Williams, Robin J. R., et al., "The classical D-type expansion of spherical H II regions", Monthly Notices of the Royal Astronomical Society, 479, 2016, (2018).

27. Kafexhiu, Ervin, et al., "Energetic Gamma-Ray Emission from Solar Flares", The Astrophysical Journal, 864, 148, (2018).

28. MAGIC Collaboration, Ansoldi, et al., "Gamma-ray flaring activity of NGC1275 in 2016-2017 measured by MAGIC", Astronomy and Astrophysics, 617, A91, (2018).

29. H.E.S.S. Collaboration, Abdalla, et al., "The starburst galaxy NGC 253 revisited by H.E.S.S. and Fermi-LAT", Astronomy and Astrophysics, 617, A73, (2018).

30. MAGIC Collaboration, Ahnen, et al., "Detection of the blazar S4 0954+65 at very-high-energy with the MAGIC telescopes during an exceptionally high optical state", Astronomy and Astrophysics, 617, A30, (2018).

31. Aguilar, M., et al., "Precision Measurement of Cosmic-Ray Nitrogen and its Primary and Secondary Components with the Alpha Magnetic Spectrometer on the International Space Station", Physical Review Letters, 121, 051103, (2018).

32. Aguilar, M., et al., "Observation of Complex Time Structures in the Cosmic-Ray Electron and Positron Fluxes with the Alpha Magnetic Spectrometer on the International Space Station", Physical Review Letters, 121, 051102, (2018).

33. Aguilar, M., et al., "Observation of Fine Time Structures in the Cosmic Proton and Helium Fluxes with the Alpha Magnetic Spectrometer on the International Space Station", Physical Review Letters, 121, 051101, (2018).

34. Ansoldi, S., et al., "The Blazar TXS 0506+056 Associated with a High-energy Neutrino: Insights into Extragalactic Jets and Cosmic-Ray Acceleration", The Astrophysical Journal, 863, L10, (2018).

35. Fedriani, R., et al., "Parsec-scale jets driven by high-mass young stellar objects. Connecting the au- and the parsec-scale jet in IRAS 13481-6124", Astronomy and Astrophysics, 616, A126, (2018).

36. Dionatos, Odysseas, et al., "Herschel spectral-line mapping of the HH211 protostellar system", Astronomy and Astrophysics, 616, A84, (2018).

37. Cardani, L., et al., "Al/Ti/Al phonon-mediated KIDs for UV–vis light detection over large areas", Superconductor Science Technology, 31, 075002, (2018).

38. IceCube Collaboration, Aartsen, et al., "Multimessenger observations of a flaring blazar coincident with high-energy neutrino IceCube-170922A", Science, 361, eaat1378, (2018).

39. Ambrogi, L., et al., "On the potential of Cherenkov Telescope Arrays and KM3 Neutrino Telescopes for the detection of extended sources", Astroparticle Physics, 100, 69, (2018).

40. Amati, L., et al., "The THESEUS space mission concept: science case, design and expected performances", Advances in Space Research, 62, 191, (2018).

41. Gravity Collaboration, Abuter, et al., "Detection of the gravitational redshift in the orbit of the star S2 near the Galactic centre massive black hole", Astronomy and Astrophysics, 615, L15, (2018).

42. Yang, Rui-zhi, et al., "Exploring the shape of the γ-ray spectrum around the "π0-bump"", Astronomy and Astrophysics, 615, A108, (2018).

43. Pinilla, Paola, et al., "Resolved millimeter-dust continuum cavity around the very low mass young star CIDA 1", Astronomy and Astrophysics, 615, A95, (2018).

44. Hitomi Collaboration, Aharonian, et al., "Hitomi X-ray observation of the pulsar wind nebula G21.5-0.9", Publications of the Astronomical Society of Japan, 70, 38, (2018).

45. Khangulyan, Dmitry, et al., "On the Anomalously Large Extension of the Pulsar Wind Nebula HESS J1825-137", The Astrophysical Journal, 860, 59, (2018).

Scoil na Fisice Cosmaí (ar lean)

46. Castro, N., et al., "Mapping the core of the Tarantula Nebula with VLT-MUSE. I. Spectral and nebular content around R136", Astronomy and Astrophysics, 614, A147, (2018).

47. Koutoulaki, M., et al., "The circumstellar environment of HD 50138 revealed by VLTI/AMBER at high angular resolution", Astronomy and Astrophysics, 614, A90, (2018).

48. Grassitelli, L., et al., "Subsonic structure and optically thick winds from Wolf-Rayet stars", Astronomy and Astrophysics, 614, A86, (2018).

49. Abdallah, H., et al., "Search for γ -Ray Line Signals from Dark Matter Annihilations in the Inner Galactic Halo from 10 Years of Observations with H.E.S.S.", Physical Review Letters, 120, 201101, (2018).

50. Wang, Jie-Shuang, et al., "Analytical treatment for the development of electromagnetic cascades in intense magnetic fields", Physical Review D, 97, 103016, (2018).

51. Bogovalov, S. V., et al., "Magnetic absorption of VHE photons in the magnetosphere of the Crab pulsar", Monthly Notices of the Royal Astronomical Society, 476, 4213, (2018).

52. H.E.S.S. Collaboration, Abdalla, et al., "H.E.S.S. discovery of very high energy γ-ray emission from PKS 0625-354", Monthly Notices of the Royal Astronomical Society, 476, 4187, (2018).

53. MAGIC Collaboration, Ahnen, et al., "Erratum: A cut-off in the TeV gamma-ray spectrum of the SNR Cassiopeia A", Monthly Notices of the Royal Astronomical Society, 476, 2874, (2018).

54. Sun, Xiao-Na, et al., "Energy distribution of relativistic electrons in the kiloparsec scale jet of M 87 with Chandra", Astronomy and Astrophysics, 612, A106, (2018).

55. Cesaroni, R., et al., "Radio outburst from a massive (proto) star. When accretion turns into ejection", Astronomy and Astrophysics, 612, A103, (2018).

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Appendix 2: Conference talks

1. Purser, S. J. D., *"A Galactic radio survey of jets from MYSOs: An unobscured insight into massive star formation"*, Tracing the Flow: Galactic Environments and the Formation of Massive Stars, UK, 6th May 2018.

2. Purser, S. J. D., *"Radio jets as a bridge between low and high-mass star formation"*, The Olympian Symposium 2018: Gas and stars from milli- to mega-parsecs, Greece, 28th May 2018.

3. Caratti o Garatti A., "Overview of JWST and its GTO programs on star and planet formation" at "Protoplanetary disks seen through the eyes of new-generation high-resolution instruments", 27th June, Rome, Italy.

4. Caratti o Garatti A., "First disk-mediated accretion burst from a massive protostar: how accretion turns into ejection", at "Protoplanetary disks seen through the eyes of new-generation high-resolution instruments", 25th June, Rome, Italy.

5. Garcia Lopez, R., "Observations of outflows and angular momentum transport from the inner to the outer disk" at "Take a closer look", 15-19 Oct 2018, ESO HQ, Garching (Germany).

6. Garcia Lopez, R., "The inner astronomical units of protoplanetary disks: an interferometric view" at "Protoplanetary disks seen through the eyes of new-generation high-resolution instruments", 25-28 June, Rome, Italy.

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7. Ulbricht, G., "Thermal Kinetic Inductance Detectors: Highly Multiplexible Micro - Calorimetric Detectors Not Only for X-ray Imaging Spectroscopy", 67th Annual Denver X-Ray Conference, 8th August, Denver Co., USA.

8. Ulbricht, G., "MKIDs and TKIDs: Kinetic Inductance Detectors for anything between X-rays and mid-IR", Quantum Sensors Group seminar, National Institute for Standards and Technologies (NIST), 7th August, Boulder Co., USA.

9. Kavanagh, P. J., "Magnetic field estimates in the 30 Dor C superbubble with Chandra", The Interstellar Medium in the Nearby Universe, 28th March, Bamberg, Germany.

10. Kavanagh, P. J., "Commissioning analysis support tools", JWST MIRI Team Meeting, 7th November, Edinburgh, Scotland.

11. Kavanagh, P. J., "MIRISim: The MIRI Simulator", JWST Astrometry Collaboration Meeting, 16th May, STScI, Baltimore, USA (remote).

Scoil na Fisice Cosmaí (ar lean)

Geoifisice

Sprioc 1: Eolas agus léargais nua a fhionnadh trí ardtaighde agus scoláireacht bhunúsach

Le bliain anuas, leathnaíodh gníomhaíochtaí agus comhoibrithe sa rannóg mar aon leis an obair agus comhoibrithe reatha a dhoimhniú agus a láidriú. Tá tacair sonraí iontacha d'fhionnachtana leanúnacha agus sa todhchaí á gcur ar fáil ag feachtais allamuigh nua náisiúnta agus idirnáisiúnta, lena n-áirítear an t-imlonnú Ocean Bottom Seismometer (OBS) is mó a rinneadh riamh san Atlantach Oirthuaisceart.

Breithniú Seismeach Nua

Cuireadh ceithre ghréasáin seismeach nua amach in 2018. Bhí an chéad cheann ar bholcáin Sierra Negra ar Isla Isabela, Galapagos san Eacuadór i gcomhar leis an Institiúid Geoifisice ag EPN in Quito agus Ollscoil Dhún Éideann idir an 17 Aibreán 2018 agus an 4 Bealtaine 2018. Chómhaoinigh NERC, RA agus DIAS an t-imlonnú faoi thionscadal IGUANA (https://www.geos.ed.ac.uk/homes/abell5/IGUANA.html) - féach an grianghraf thíos). Bhrúcht an bolcán i Meitheamh 2018 agus thug sé tacar sonraí seismeacht réamhbhrúchtach iontach atá á anailísiú faoi láthair ag ár gcuibhreannas idirnáisiúnta. Is é an aidhm go dtuigfimid na rialuithe ar agus na sínithe seismeacha a bhaineann le gluaiseacht mhagma ar an bhfodhromchla, sna huaireanta díreach roimh bhrúchtadh. Is iad Chris Bean/Martin Möllhoff comhcheannairí DIAS.

Líonra seismeach mullaigh ardtaifeach, nuálaíoch agus 'an chéad cheann dá chineál' a bhí sa dara ceann ar ar tugadh HERSK, ar bholcán Hekla san Íoslainn. Timpeallacht gharbh nach bhfuil mórán cumhachta ann sa gheimhreadh is ea Hekla. Imlonnú turgnamhach de chuid DIAS é seo, i gcomhar leis an Icelandic Meteorological Office (IMO), agus léiríonn sé an chéad iarracht chun sonraí fíor-ama a shruthú ón mullach. Is é an aidhm ná réamhtheachtaithe doshéanta le brúchtaí 'tapa' a shainaithint, mar a chonacthas cheana ag Hekla (go hiondúil níos lú ná 50 nóiméad de rabhadh ón gcéad bhrath go dtí brúchtadh iomlán – a chiallaíonn go bhfuil sé an-chontúirteach). Is iad Martin Möllhoff/Chris Bean ceannairí an tionscadail. Tá obair Hekla cómhaoinithe ag GSI/DIAS/An Coimisiún Eorpach/Iceland Met Office.

Is é an tríú ceann imlonnú SEA-SEIS Ocean Bottom Seismometer in Oirthuaisceart an Atlantaigh (https://sea-seis.ie/). Airítear leis an imlonnú iontach seo de chuid pearsanra DIAS de threalamh iMARL (https://imarl.ie/) ón RV Celtic Explorer, seismiméadair agus hidreafóin in uiscí na hÉireann, na Breataine agus na hÍoslainne. Táthar ag súil go dtreoróidh sé tuiscint nua teicteonach ar éabhlóidiú Oirthuaisceart an Atlantaigh agus is é an chéad taifeadadh minicíocht íseal ar fhuaimdhreach an aigéin fadtéarma sa réigiún é. Gheofar na hionstraimí ar ais i lár 2020. Roimh imlonnú SEA-SEIS, athchumraíodh stáisiúin Ireland Array le go gcuirfidís ar an mbealach is fearr leis an gclúdach sonraí atá ag teacht chun cinn ón líonra OBS nua. Is é Chris Bean an PI iMARL le comhordú ó Louise Collins agus ceannaire teicniúil ó Mick Smyth. Is é Sergei Lebedev PI SEA-SEIS. Tá an obair á cómhaoiniú ag SFI/GSI/Foras na Mara.

Is féidir teacht ar íomhánna SEA-SEIS anseo: https://sea-seis.ie/photos/

Tá an ceathrú imlonnú mar chuid de thionscadal PACIFIC, atá á threorú ag Université Grenoble Alpes (UGA) agus DIAS mar chomhpháirtí mór. Is é aidhm an tionscadail modhanna nua a fhorbairt d'íomhánna screimhe éadoimhne trí thonnta coirp seismeacha a bhaint ó na sonraí torainn timpeallacha (ní chaitear aon bhuillí gníomhacha) arna dtaifeadadh ar eagair sheismeacha tiubha. Dúshlán suntasach is ea tonn choirp a bhaint i réimse nua na seismice fulangaí. Imlonnaíodh os cionn 1,000 braiteoir seismeach gearrthréimhse i gCeanada láir ar feadh mí amháin mar chuid den turgnamh agus bhí na torthaí luatha i mbaint toinne coirp an-mhaith. Tá PACIFIC á mhaoiniú ag clár H2020 an Choimisiúin Eorpaigh. Is é Chris Bean ceannaire DIAS agus maoinítear Sergei Lebedev freisin tríd an tionscadal.

Cás-staidéar le dul chun cinn ar leith

Mar gheall ar anailís ar na sonraí ó Ocean Bottom Seismograph (OBS) píolótach DIAS in 2015

Geophysics

Goal 1: Discovery of new knowledge and insights through advanced fundamental research and scholarship

The past year has seen an ongoing expansion of activities and collaborations in the section as well as a deepening and strengthening of existing work and collaborations. New national & international field campaigns, including the largest Ocean Bottom Seismometer (OBS) deployment ever undertaken in the N.E. Atlantic are providing exceptional datasets for ongoing and future discoveries.

New Seismic Observation

Four new seismic networks were deployed in 2018. The first was on Sierra Negra volcano on Isla Isabela, Galapagos in Ecuador in collaboration with the Institute of Geophysics at EPN in Quito and the University of Edinburgh between 17th April 2018 - 4th May 2018. The deployment was jointly funded by NERC, UK and DIAS under the IGUANA project (https://www.geos.ed.ac.uk/homes/abell5/IGUANA.html) - see photo below). The volcano erupted in June 2018 yielding an exceptional pre-eruptive seismicity dataset that is currently being analysed by our international consortium. The aim is to understand the controls on and seismic signatures associated with magma movement in the subsurface, in the hours just leading up to an eruption. Chris Bean/ Martin Möllhoff are the DIAS co-leads.

The second was an innovative 'first of its kind' high resolution summit seismic network called HERSK, on Hekla volcano, Iceland. Hekla is a very harsh power-starved environment in winter months. This is an experimental deployment by DIAS, in collaboration with the Icelandic Meteorological Office (IMO), and represents the first attempt to stream real time seismic data from the summit (see photo below). The aim is to identify unequivocal precursors to 'fast' eruptions, as previously seen at Hekla (typically less than 50 minutes warning from first detection to full blown eruption – making it extremely dangerous). Martin Möllhoff/Chris Bean are project leads. The Hekla work is co-funded by GSI/DIAS/European Commission/Iceland Met Office.

The third is the SEA-SEIS Ocean Bottom Seismometer (OBS) deployment in the N.E. Atlantic (https://sea-seis.ie/). This exceptional deployment by DIAS personnel of iMARL equipment (https://imarl.ie/) from the RV Celtic Explorer, includes seismometers and hydrophones in Irish, British and Icelandic waters. It is expected to lead to a new tectonic understanding of the evolution of the North Eastern Atlantic and is the first long term low frequency ocean soundscape recordings in the region. The instruments will be retrieved in mid-2020. Prior to the SEA-SEIS deployment, the terrestrial Ireland Array stations were reconfigured so as to best complement the forthcoming data coverage from the new OBS network. Chis Bean is the iMARL PI with coordination by Louise Collins and technical lead by Mick Smyth. Sergei Lebedev the SEA-SEIS PI. The work is co-funded by SFI/GSI/ Marine Institute.

The fourth deployment is part of PACIFIC project, which is led by Université Grenoble Alpes (UGA) with DIAS as a major partner. The aim of the project is to develop new methods for shallow crustal imagery by extracting seismic body waves from ambient noise data (no active shots fired) recorded on dense seismic arrays. Body wave extraction is a significant challenge in the novel area of passive seismics. Over 1,000 short period seismic sensors were deployed in central Canada for one month as part of the experiment with impressive early results in body wave extraction. PACIFIC is funded by the European Commission H2020 programme. Chris Bean is the DIAS lead with Sergei Lebedev also funded through the project.

Case study with a particular advance

Analysis of data from the 2015 DIAS pilot Ocean Bottom Seismograph (OBS) deployment led by Dr Florian

arna threorú ag an Dr Florian Le Pape as DIAS ar fud imeall na scairbhe, siar ó Éirinn, tá tuiscint nua faighte ar bhunús féideartha na dtonnta Love i micriseisme aigéin dhomhanda. Ceist oscailte is ea a mbunús fód ar fud an domhain mar nach léir an chaoi a bhféadfaí iad a ghiniúint trí idirghníomhaíochtaí toinn aigéin le grinneall na farraige. Fuaireamar amach gur féidir le tonnta Love teacht as tiontuithe toinn seismeacha, ó chineálacha toinn seismeacha eile, ag imeall na scairbhe. Rialaítear na tiontuithe seo le deilbheolaíocht na scairbhe agus tiús an dríodair áitiúil [maoinitheoir/comhoibreoir]: SFI, GFZ Potsdam, Foras na Mara.

Bhí seismeolaithe DIAS mar chuid de staidéar inar thángthas ar chonair faoin nGraonlainn áit a bhfuil an pláta teicteonach tanaí de ghnáth (Steinberger, B., Bredow, E., Lebedev, S., Schaeffer, A. agus Torsvik, T.H., Nature Geoscience, 2019). Is dócha gur chruthaigh Cleitín Bolcáin te na hÍoslainne é agus an Ghraonlainn ag imeacht le sruth os a chionn, ansin threoraigh sé sreabhadh domhain ábhar maintlín, a réitíonn an mhistéir fadmharthanach faoin gcaoi go bhféadfadh foinse amháin de charraig the (Cleitín Bolcáin na hÍoslainne) bheith ina chúis le brúchtaí ag an am céanna ar chóstaí thoir agus thiar na Graonlainne. Trí thátal, tá bunús Chlochán an Aifir agus bolcánachas Pailéigéineach eile i dtír agus amach ó chósta na hÉireann cosúil – sreabhadh na carraige te ón Íoslainn faoi threoir topagrafaíocht ag íochtar an phláta teicteonaigh.

Cruthaíodh físeán lucht féachana a bhfuil tóir air mar thionlacan leis an bpáipéar: https://www.youtube.com/watch?v=hLGp6lRaSs0

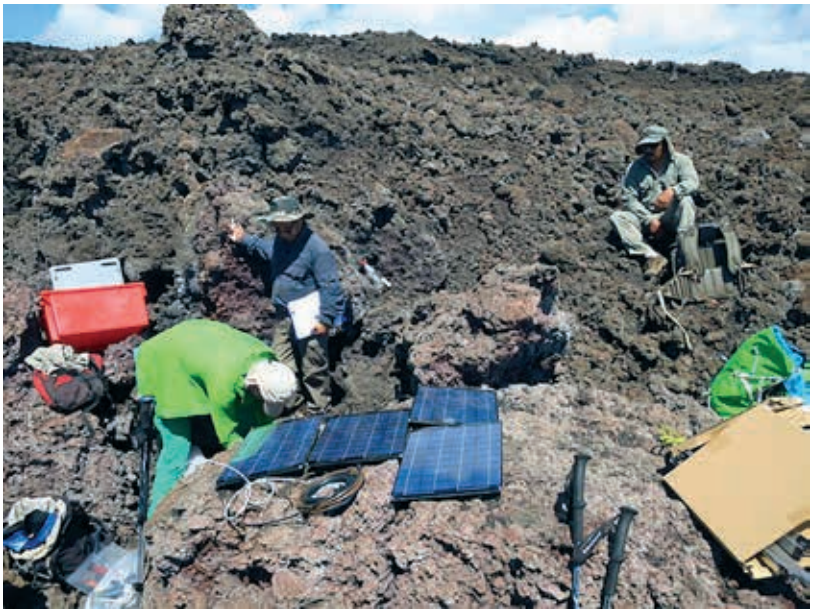
Obair Leictreamaighnéadach (EM)

Bhí bliain an-ghníomhach ag an ngrúpa EM. Chomhordaigh an Dr Duygu gníomhaíochtaí foriomlána na foirne. Tá an grúpa ag oibriú i dtrí réimse (i) modhanna cónasctha íomháithe nua a fhorbairt chun tuiscint níos fearr a fháil ar struchtúir gheolaíocha faoi Éirinn – i gcomhair múnlú teicteonach agus saintréithriú acmhainne (ii) feidhmiú na modhanna MagnetoTellutic d'íomháú bolcáin a thiomáint agus (iii) comhoibriú ar obair aimsire Spáis, le rannóg Réalteolaíochta agus Réaltfhisice TCD/DIAS. Fuarthas sonraí MT nua ar fud na hÉireann (Gaillimh, Maigh Eo, Sligeach, An Mhí, Cill Mhantáin, Lú agus Loch Garman), go príomha ba é Colin Hogg a fuair iad fad is a fuair an Dr Kiyan obair dhírithe ar eolas struchtúrach éadomhain i gceantar na Mí, timpeall ar mhianach Boliden-na Teamhrach. Anuas air sin, cuireadh dhá chéim de bhailiú sonraí maignéatóteallúrach fadtréimhse i dTuaisceart Éireann mar chuid de thionscadal taighde maoinithe gearrghairme GSI ar an Space Weather Electromagnetic Database for Ireland (SWEMDI), i gcomhar le rannóg Réalteolaíochta agus Réaltfhisice TCD/DIAS. Fuarthas tacar sonraí MT fadtréimhse breise in Iardheisceart Éireann is féidir a úsáid do chomhoibriú Aimsir Spáis agus d'íomháú domhain. Chuir an Dr Kiyan torthaí íomháithe ó gceann deiridh i láthair ag Cruinniú Fómhair AGU 2018, ar an 12 Nollaig, Washington, USA.

Ar leithligh, rinneadh suirbhé píolótach Maignéatóteallúrach freisin i gcomhar le ISTerre, an Fhrainc, ag díriú ar shaintréithriú geoifisiceach de chrios fabhtaí gníomhach seismeach (Vuache) in Annect, an Fhrainc le díriú ar ainiseatrópacht leictreach a bhaineann le saithí seismeacha. Rinneadh suirbhé MT eile ar scála mór ag leanúint le taighde seanbhunaithe i saintréithriú geoleictreach ar Furnas agus Bolcán Fogo, São Miguel, Azores. Tugadh faoi athphróiseáil nua sonraí tar éis cóid phróiseála á roinnt ag an Ollamh Martyn Unsworth (Ollscoil Alberta, Ceanada), a thug cuairt ar ghrúpa DIAS EM in 2018. Tá an obair seo ag tabhairt léiriú ar éifeachtúlacht na modheolaíochta seo ag mapáil

Installing DIAS equipment at Sierra Negra Volcano, Isabella Island, Galapagos (Martin Möllhoff and David Craig (in Green above), led the DIAS field work.

Trealamh DIAS á shuiteáil ag Bolcán Sierra Begra, Oileán Isabella, Galápagos (Martin Möllhoff agus David Craig (i nGlas thuas), a threoraigh obair allamuigh DIAS.



School Of Cosmic Physics (continued)

Le Pape of DIAS across the shelf edge, west of Ireland, has led to a new understanding of the possible origins of Love waves in global ocean microseisms. Their origin worldwide is still an open question as it is unclear how they might be generated through ocean wave interactions with sea floor. We have discovered that Love waves can emanate from seismic wave conversions, from other seismic wave types, at the shelf edge. These conversions are controlled by the morphology of the shelf and the local sediment thickness [funder/collaborator]: SFI, GFZ Potsdam, Marine Institute.

DIAS seismologists were part of a study that discovered a corridor beneath Greenland where the tectonic plate is unusually thin (Steinberger, B., Bredow, E., Lebedev, S., Schaeffer, A. and Torsvik, T.H., Nature Geoscience, 2019). Probably created by the hot Iceland Plume as Greenland drifted across it, it then guided the deep flow of hot mantle material through it, which solves a long-standing mystery of how a single source of hot rock (the Iceland Plume) could cause simultaneous eruptions on Greenland's eastern and western coasts. By inference, the origin of the Giant's Causeway and other Paleogene volcanism on- and off-shore Ireland are likely similar – the flow of hot rock from Iceland guided by topography at the bottom of the tectonic plate.

A popular-audience video has been created to accompany the paper: https://www.youtube.com/watch?v=hLGp6lRaSs0

Electro-Magnetic (EM) work

The EM group had a very active year. Dr Duygu Kiyan coordinated the team's overall activities. The group is working in three areas (i) developing new combined imaging methods for a better understanding of deep geological structures beneath Ireland – for tectonic modelling and resource characterisation (ii) driving the application of MagnetoTellutic methods for volcano imagery and (iii) collaborating on Space weather work, with TCD/DIAS Astronomy & Astrophysics section. New MT data were acquired throughout Ireland (Galway, Mayo, Sligo, Meath, Wicklow, Louth, and Wexford), primarily by Colin Hogg whilst targeted work for shallow structural information was acquired by Dr Kiyan in the Meath area, around Boliden-Tara mine. In addition two phases of long-period magnetotelluric data collection were completed in Northern Ireland as part of the GSI short-call funded research project on Space Weather Electromagnetic Database for Ireland (SWEMDI), in collaboration with TCD/DIAS Astronomy & Astrophysics section. An additional long period MT dataset was acquired in SW Ireland which can be used for both the Space Weather collaboration and for deep imaging. New imaging results from the latter were presented at the AGU 2018 Fall Meeting, December 12th, Washington DC, USA by Dr Kiyan.

DIAS installation at Galapagos. Picture shows power sources for ground tilt meter and seismometer (buried beneath the disturbed ground to the right). Batteries and data logger are protected from wild boar beneath the solar panels (panel tilt angles clearly show that we are on the equator).

Suiteáil DIAS ag Galápagos. Taispeántar sa phictiúr foinsí cumhachta do mhéadar claonta agus seismiméadar talún (curtha faoin talamh suaite ar dheis). Cosnaítear cadhnraí agus logálaí sonraí ó thorc fiáin faoi na painéil ghréine (taispeánann uilleannacha claonta na bpainéal go soiléir go bhfuilimid ar an meánchiorcal).

Separately, a pilot Magnetotelluric survey was also carried out in collaboration with ISTerre, France, targeting geophysical characterisation of a seismically active fault zone (Vuache) in Annecy, France with a focus on electric anisotropy related to seismic swarms. A further large scale MT survey was carried out continuing long-standing research into the geoelectrical characterisation of Furnas and Fogo Volcano, São Miguel, Azores. New re-processing of data were undertaken following the sharing of processing codes from Prof. Martyn Unsworth (University of Alberta, Canada), who visited the DIAS EM group in 2018. This work is demonstrating the efficacy of this methodology at

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an chórais hidriteirmigh i réigiúin bholcánacha. Tá ríthábhacht le córais hidriteirmeacha sa timthriall bhrúchtach agus le haghaidh acmhainní fuinnimh in-athnuaite.

Leanadh le taighde i modheolaíocht íomháithe geoifisiceach le maignéatóteallúrach ag díriú ar maignéatóteallúrach (MT) 'foinse-rialaithe' agus forbairt uirlisí chun sonraí torannacha a anailísiú agus a phróiseáil. Tá an obair seo ar siúl i gcomhar le hOllscoil Strasbourg.

Leanadh le léirmhíniú agus próiseáil sonraí maighnéadach satailíte Saithe, faoin tionscadal arna mhaoiniú ag ESA '3D Earth - A Dynamic Living Planet'. Tá bogearraí á bhforbairt ag an Ollamh Zdenek Martinec chun réadlanna fíorúla (VOnna) a ríomh agus anailís Slepian mar chéim réitithe don iarratas ar thairiscint ESA chun VOnna a tháirgeadh di gach sonraí Saithe Satailíte agus CHAMP.

Deontais/Dámhachtainí

- **Ship Time Award** ó Fhoras na Mara: PI; *S. Lebedev*, the Celtic Explorer, 16 MF – 6 DF 2019.
- **Suirbhéireacht Gheolaíochta na hÉireann** (deontas ghairm ghearr): Co-PIs; *P. Arroucau, S. Lebedev, C. Bean*, Determining a new earthquake local magnitude scale for Ireland. (Uimhir thag. 2017-SC-046.). Samhain 2017 – Deireadh Fómhair 2018. €24,970.
- **Glencore Zinc Ireland/BRG**: Co-PIs, *C.Hogg D. Kiyan, V. Rath*. €147,600
- **An Coimisiún Eorpach H2020** - Gníomh Taighde agus Nuálaíochta Ainm an tionscadail: PACIFIC; treoir DIAS, Bean. (€871,636)
- **Cómhaoiniú ón gCoimisiún Eorpach** – geothermica: Ainm an tionscadail: GeoUrban; ceannaire DIAS, Bean. (€63,250)

DIAS cables and other infrastructure on their way to the top on Hekla Volcano, Iceland (on May 15th 2018). The work is led by DIAS and part-funded through a GSI short call on volcano Hazard. Local Collaborator, Iceland Met Office.

Cáblaí DIAS agus bonneagar eile ar a mbealach chuig barr Bholcán Hekla, An Íoslainn (an 15 Bealtaine 2018). Tá an obair seo á threorú ag DIAS agus á maoiniú i bpáirt trí ghairm ghairid GSI ar Ghuais bholcáin. Comhoibrí Áitiúil, Iceland Met Office.

- **Cómhaoiniú ón gCoimisiún Eorpach** – geothermica: Ainm an tionscadail: COSEISMIQ; ceannaire DIAS, Bean. (€224,958)

Sprioc 2: Idirnáisiúnú ár dtaighde agus comhoibrithe

Bunaíodh roinnt comhoibrithe nua le bliain anuas.

3D EARTH

Lean DIAS ag cuidiú le cuibhreannas "3D Earth" ESA. Tá comhpháirtithe DIAS anois ag eagrú Cruinniú Eolaíocht Domhan 3T, an phríomh-chomhdháil den mhórthionscadal seo, ag DIAS, le reáchtáil idir 12-14 Márta, 2019. [Maoinitheoir: ESA].

INSN

Trí obair forbartha ag an INSN, chuaigh DIAS ar ais san International Seismological Centre (ISC). Le 9 mbliana anuas, ba í Éire an t-aon tír in Iarthar na hEorpa nach raibh ballraíocht ISC aici.

ÍOMHÁÚ FO-BHASALT

Foirmíodh comhoibriú nua idir an tOllamh Satish Singh ag an Global Physics Institute i bPáras (IPG Paris). Dírítear ar íomháú seismeach faoi charraigeacha ilchineálacha basailt le hInbhéartú Tonnchrutha Iomlán (FWI). Cuirfidh an Dr Gaurav Tomar as DIAS na torthaí tosaigh i láthair i mí Feabhra 2018 ag an IISER Pune, an India.

H2020 - AN tAIGÉAN CHIÚIN

Comhoibriú mór nua idirnáisiúnta is ea tionscadal EU H2020 PACIFIC ar Íomháú Seismeach Fulangach ina bhfuil Geoifisic DIAS ina chomhpháirtí mór. Reáchtálfar seisiún Cruinniú Bliantúil agus Teicniúil an tionscadail in DIAS ón 14-16 Bealtaine 2018.

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mapping the hydro-thermal system in volcanic regions. Hydrothermal systems are of key importance in the eruptive cycle and also for renewable energy resources.

Research into geophysical imaging methodology using magnetotellurics continued with a focus on 'controlled-source' magnetotellurics (MT) and the development of tools for analysis and processing of noisy data. This work is in collaboration with the University of Strasbourg.

Interpretation and processing of the Swarm satellite magnetic data has continued, under the ESA funded project `3D Earth - A Dynamic Living Planet'. Prof. Zdenek Martinec is developing new software for calculating virtual observatories (VOs) and Slepian analysis as a preparation step for the application for an ESA tender to produce VOs for all Satellite Swam and CHAMP data.

Grants/Awards

- **Ship Time Award** from the Marine Institute: PI; *S. Lebedev*, the Celtic Explorer, 16 Sept – 6 October 2019.
- **Geological Survey of Ireland** (Short call grant): Co-PIs; *P. Arroucau, S. Lebedev, C. Bean*, Determining a new earthquake local magnitude scale for Ireland. (Ref number 2017-SC-046.). November 2017 – October 2018. €24,970.
- **Glencore Zinc Ireland/BRG**: Co-PIs, *C.Hogg D. Kiyan, V. Rath*, €147,600
- **European Commission H2020** - Research & Innovation Action. Project name: PACIFIC; DIAS lead, Bean (€871,636)
- **European Commission Cofund** - geothermica: Project name: GeoUrban; DIAS lead, Bean (€63,250)
- **European Commission Cofund** - geothermica: Project name: COSEISMIQ; DIAS lead, Bean (€224,958)

Goal 2: Internationalisation of our research and collaborations

A number of new external collaborations have been established in the last year.

3D EARTH

DIAS continued making key contributions to the ESA "3D Earth" consortium. The DIAS partners are now organising the 3D Earth Science Meeting, the main conference of this major project, at DIAS, to take place 12th-14th March, 2019. [Funder: ESA].

INSN

Through the development work at the INSN, DIAS rejoined the International Seismological Centre (ISC). Over the past 9 years Ireland was the only country in Western Europe not to hold ISC membership.

SUB-BASALT IMAGING

A new collaboration has been formed with Professor Satish Singh at the Global Physics Institute in Paris (IPG Paris). The focus is on seismic imaging below heterogeneous basalt rocks using Full Waveform Inversion (FWI). Initial results will be presented in February 2018 at the IISER Pune, India, by Dr Gaurav Tomar of DIAS.

H2020 - PACIFIC

A major new international collaboration is the EU H2020 PACIFIC project on Passive Seismic Imaging in which DIAS Geophysics is a major partner. The project Annual Meeting & Technical session will take place at DIAS on May 14th-16th 2018.

H2020 - EUROVOLC

Eurovolc is currently the largest European Volcano consortium, funded through EU H2020. DIAS is a founding partner and is responsible for the cross cutting theme 'Sub-Surface processes'. DIAS researchers will attend the Eurovolc Annual Project Meeting in the Azores from the 18th – 21st February 2019.

EM VOLCANO IMAGING

The ongoing, fundamental research into the geoelectrical characterisation of Furnas volcano (Azores, Portugal) has led to the development of a new project for the adjacent volcano, Fogo. The DIAS EM Group-led project has a strong international collaboration with the University of Azores, ISTERRE (France) and the University of Cologne (Germany). [Funder: DIAS EM group]

IGUANA

IGUANA is a new joint University of Edinburgh, Instituto Geofisico at the Escuela Politecnica Nacional (IGEPN) and DIAS project, on Sierra Negra volcano in the Galapagos, Ecuador. DIAS seismic, accelerometer and tilt stations were installed in Spring 2018, but the first service run was urgently brought forward after the volcano erupted on June 26th. Recent additional collaborators include Penn State, in the US. This project is attracting significant international interest in terms of collaboration requests. [Funder NERC/DIAS/IGEPN/PENN STATE]

EU GEO-URBAN

The EU GEO-URBAN has two sister sites, one in Ireland and one in Spain. This has led to new research collaborations within an international consortium that includes DIAS Universitat

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H2020 - EUROVOLC

Is é Eurovolc an cuibhreannas Bolcáin Eorpaigh is mó faoi láthair, arna mhaoiniú trí EU H2020. Comhpháirtí bunaidh is ea DIAS agus tá siad freagrach as an téama leathan 'Próisis Fo-dhromchla'. Freastalóidh taighdeoirí DIAS ar Chruinniú Bliantúil Tionscadail Eurovolc sna hAsóir ón 18-21 Feabhra 2019.

ÍOMHÁÚ BOLCÁIN EM

Mar gheall ar an taighde leanúnach, bhunúsach ar shaintréithriú bholcáin Furnas (sna hAsóirm an Phortaingéil) tá tionscadal nua forbartha don bholcán in aice láimhe, Fogo. Tá comhoibriú idirnáisiúnta láidir ag an tionscadal faoi threoir Ghrúpa EM DIAS le University of Azores, ISTERRE (An Fhrainc) agus University of Cologne (An Ghearmáin). [Maoinitheoir: Grúpa EM DIAS]

IGUANA

Tionscadal nua idir University of Edinburgh, Instituto Geofisico agus Escuela Politecnica Nacional (IGEPN) agus DIAS is ea IGUANA, ar bholcán Sierra Negra sna Galapagos, Eacuadór. Suiteáladh stáisiúin sheismeacha, luasaire agus chlaonta DIAS in Earrach 2018, ach tugadh chun cinn an chéad rith seirbhíse go práinneach tar éis don bholcáin pléascadh ar an 26 Meitheamh. Áirítear i measc comhoibritheoirí breise le déanaí Penn State, i SAM. Tá suim shuntasach idirnáisiúnta á tarraingt ag an tionscadal seo i dtéarmaí iarratais chomhoibrithe. [maoinitheoir NERC/DIAS/IGEPN/ PENN STATE]

EU GEO-URBAN

Tá dhá chomhshuíomh ag EU GEO-URBAN, ceann in Éirinn agus ceann sa Spáinn. Dá bharr seo, tá comhoibrithe nua taighde tarlaithe le cuibhreannas idirnáisiúnta ina n-áirítear DIAS Universitat de Barcelona agus an Istituto Cartografico de Catalunya [Maoinitheoir: Comhchiste EU/ Geothermica]

HERSK

Rinneadh obair allamuigh do thionscadal HERSK i Meitheamh agus Meán Fómhair i gcomhar le hoifig Met na hÍoslainne (IMO) agus le British Geological Survey (BGS). Suiteáladh líonra de shé sheismiméadar leathanbhanda i gcoinníollacha uafásacha. Sruthaíonn na sonraí ón líonra i mbeagnach fíor-am chuig IMO agus DIAS [Maoinitheoir: GSI Short call/DIAS/ Icelandic Met Office]

HYDROSLIDE

Chuir grúpa Taighde EM tús le comhoibriú nua leis an University of Strasbourg i dtionscadal taighde mar chuid de HYDROSLIDE, arna mhaoiniú ag an French Research Agency (ANR), ar shaintréithriú agus monatóireacht ar thaiscumair uisce agus sciorradh talún. Tá Scoláire Iardhochtúireachta DIAS an Dr Robert Delhaye ag glacadh páirte faoi láthair i suirbhé monatóireachta geoifisiceach in Pégairolles-de-l'Escalette, i ndeisceart na Fraince. Breiseoidh an comhoibriú nua seo ár gcuid eolais ar an dearadh suirbhé don geoifisic EM aga-dheighilte. Tá sé mar aidhm ag an ngrúpa EM an t-eolas seo a chur i bhfeidhm ar thaighde lonnaithe in Éirinn ar screamhuisce agus staidéar geoghuaise.

Príomhionad Tristan da Cunha

Tá DIAS mar chuid de chomhoibriú nua le staidéar a dhéanamh ar Phríomhionad Tristan de Cunha san Atlantach Theas le seismiméadair ar ghrinneall na farraige: Áirítear i measc na gcomhpháirtithe an Alfred Wegener Institute (AWI); Helmholtz Centre for Polar Research, Bremerhaven, An Ghearmáin; University of Bremen, An Ghearmáin; GEOMAR, An Ghearmáin; GFZ Postdam; Earthquake Research Institute, University of Tokyo, An tSeapáin

Ócáidí idirnáisiúnta ilchineálacha EILE; baill de phainéil etc...

Eagraíochtaí cruinnithe:

- Bhí Sergei Lebedev ina chomh-thionólaí ar an seisiún "What lies beneath? Seismic tomography from crust to core" ag Comhthionól Ginearálta an European Geosciences Union (EGU) i Vín, an Ostair, 9-13 Aibreán 2018.
- Bhí Chris Bean ina chomh-thionólaí ar an seisiún "Ambient seismic noise techniques: sources, monitoring, and imaging" ag Comhthionól Ginearálta an European Geosciences Union (EGU) i Vín, an Ostair, 9-13 Aibreán 2018.
- Bhí V. Rath ina chomh-thionólaí ar an seisiún "Geophysical Imaging of Volcanoes" agus bhí sé ina chathaoirleach ar an seisiún ó bhéal de Íomháú EM.Muon ag Comhthionól Ginearálta an European Geosciences Union (EGU) i Vín, an Ostair, 9-13 Aibreán 2018.
- Bhí Sergei Lebedev ina chomh-thionólaí de thrí sheisiún ag an European Seismological Commission i Málta, Meán Fómhair 2018.
- Bhí Chris Bean ina chomh-thionólaí de sheisiún ag an European Seismological Commission i Málta, Meán Fómhair 2018.
- Bhí Chris Bean ina chomh-thionólaí de sheisiún ag an gcruinniú Cities on Volcanoes i Napoli, Meán Fómhair 2018.
- Fóram taighde DIAS arna reáchtáil ar (Clare Horan), 11 Bealtaine 2018.

Ballraíocht ar phainéil, láithreoireachtaí nach ag comhdhálacha iad agus cainteanna nua idirnáisiúnta

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de Barcelona and the Istituto Cartografico de Catalunya [Funder: EU/Geothermica cofund]

HERSK

Fieldwork for the HERSK project was carried out in June and September in collaboration with the Icelandic Met office (IMO) and the British Geological Survey (BGS). A network of six broadband seismometers was successfully installed in extreme conditions. The data from the network stream in quasi real-time to IMO and DIAS [Funder: GSI Short call/DIAS/ Icelandic Met Office]

HYDROSLIDE

The EM Research group started a new collaboration with University of Strasbourg in a research project as part of HYDROSLIDE, funded by the French Research Agency (ANR), on the characterisation and monitoring of water reservoirs and landslides. DIAS Post-doctoral Scholar Dr Robert Delhaye is currently taking part in the geophysical monitoring survey in Pégairolles-de-l'Escalette, South France. This new collaboration will enhance our knowledge on the survey design for time-lapse EM geophysics. The EM group aims to apply this knowledge to Ireland-based research on groundwater and geohazard studies.

Tristan da Cunha Hotspot

DIAS is part of the new collaboration to study of the Tristan da Cunha Hotspot in the South Atlantic using ocean-bottom seismometers: Partners include the Alfred Wegener Institute (AWI); Helmholtz Centre for Polar Research, Bremerhaven, Germany; University of Bremen, Germany; GEOMAR, Germany; GFZ Postdam; Earthquake Research Institute, University of Tokyo, Japan

Tough field conditions during DIAS field work on Hekla volcano, Iceland (Spet2018). The HERSK project is primarily funded by a GSI short call (PI, M Möllhoff). The company supplying the cables wrote a feature on the experiment.

Íomhá thuas: Coinníollacha diana allamuigh i rith obair allamuigh DIAS ar bholcán Hekla, An Íoslainn (MF 2018). Tá tionscadal HERSK maoinithe go príomha ag GSI short call (PI, M Möllhoff). Scríobh an chuideachta a sholáthraíonn na cáblaí alt ar an turgnamh.

OTHER Miscellaneous international engagements; panel members etc …

Meeting organisations:

- Sergei Lebedev was a co-convenor of the session "What lies beneath? Seismic tomography from crust to core" at the European Geosciences Union (EGU) General Assembly in Vienna, Austria, 9th-13th April 2018.
- Chris Bean was a co-convener of the session "Ambient seismic noise techniques: sources, monitoring, and imaging "at the European Geosciences Union (EGU) General Assembly in Vienna, Austria, 9th-13th April 2018.
- V. Rath was a co-convener of the session "Geophysical Imaging of Volcanoes" and was the chair of the oral session of EM/ Muon Imaging at the European Geosciences Union (EGU) General Assembly in Vienna, Austria, 9th-13th April 2018.
- Sergei Lebedev was a co-convenor of 3 sessions at the European Seismological Commission in Malta, September 2018.
- Chris Bean was a co-convenor of a session at the European Seismological Commission in Malta, September 2018.
- Chris Bean was a co-convenor of a session at the Cities on Volcanoes meeting in Naples, September 2018.
- DIAS research Forum held on (Clare Horan), May 11th 2018.

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- Tá comhoibriú nua idirnáisiúnta ag Sergei Lebedev idir MIT (SAM), China University of Technology (Hefei) agus DIAS: Tomagrafaíocht seismeach réigiúnach agus dhomhanda ag baint úsáid as comh-inbheartú d'amanna taistil tonnchoirp agus treoluasanna céime tonn-dromchla.
- Taighde comhoibritheach nua idir Technical University of Freiberg (TBUF), DIAS agus GSI arna thosú ag Duygu Kiyan. Cinnfear airíonna leictreacha carraigeacha ó chroí-stór GSI lena gcur i gcomparáid le breithnithe allamuigh DIAS.
- D'fheidhmigh Sergei Lebedev mar Scrúdaitheoir Seachtrach ar thráchtas PhD Islam Fadel, University of Twente, an Ísiltír.
- Sergei Lebedev: Deimhníodh é i gcomhair téarma nua trí bliana mar Eagarthóir Comhlach na Geoicheimice, Geoifisice, Geochóras (G-ciúbaithe).
- Óstálann DIAS an tIonad Sonraí Náisiúnta CTBTO, le Tom Blake mar ionadaí DIAS.
- D'fhreastail Tom Blake ar an Citizen Science Meeting i Londain chun plé a dhéanamh ar bhrathadóirí nua do scoileanna agus ar bhogearraí nua.
- Javier Fullea: Obair mar mheasúnóir do thionscadail arna sheoladh isteach chuig an líonra náisiúnta sár-ríomhaireachta Spáinneach.
- Ceapadh Chris Bean ar phainéal comhairleach an "Multi-hazard Urban Disaster Risk Transitions Hub" de chuid UK NERC (Global Challenge Research Fund). Oibríonn an Mol ar laghdú riosca ag ceithre phríomhionad: Katmandu, Nairobi, Quito agus Iostanbúl.
- Tugadh cuireadh don Dr Martin Möllhoff mar ionadaí náisiúnta ar Ghrúpa Oibre 2 – Tomhais Seismeacha agus Geoifisiciúla ar Chóras Rabhaidh Súnámaí na hEorpa. (NEAMTWS/IOC/UNESCO)

Cainteoirí agus Cuairteoirí chuig an Rannóg:

- *An tOllamh Martyn Unsworth* (University of Alberta, Ceanada): "Magnetotelluric studies of magmatism in the Central and Southern Andes." (Seimineár GEO), 16 Aibreán 2018.
- *Dr Andrew Schaeffer* (University of Ottawa, Canada): "Imaging the locked to slow slip zone in Cascadia: combining on-shore seismic data with OBS infrastructure to illuminate the seismic-aseismic transition." (GEO Seminar), 19 Aibreán 2018.
- *Dr Jana H. Börner* (Technical University of Freiberg, Germany): "Complex electrical conductivity of reactive systems." (GEO Seminar), 25 Aibreán 2018.
- *Mr. Amano*, DG International Atomic Energy Agency, Vienna in DIAS, 1 Bealtaine 2018.
- *Irene Merino* (Institute of Marine Sciences, Barcelona): "Stratigraphic evolution of a segmented hyper-extended rifted margin: The example of the Western Iberia Margin." (Seimineár GEO). *Irene Merino* became a long term visitor in Brian O'Reilly's group, 3 Bealtaine 2018.
- *An tOllamh Javier Almendros* (University of Granada) – cuairteoir i ngrúpa Chris Bean, arna mhaoiniú ag rialtas na Spáinne go dtí deireadh mhí an Mheithimh 2018.
- *An tOll. Hans Peter Bunge agus an Dr Sara Carena* (Ollscoil Munich): cuairt 2 lá agus caint ag seimineár. Pléití ar chomhoibriú, 29-30 Bealtaine 2018.
- *Eoghan Totten* (Ollscoil Oxford) – cuairt chomhoibritheach. Baineann an comhoibriú níos mó idir grúpaí seismeolaíochta DIAS agus Oxford le modhanna nua d'íomháú tonnchrutha seismeach, 15-19 Deireadh Fómhair 2018.
- *Andrew Schaeffer*, PhD Geoifisice DIAS (2014) agus iardhochtúireacht (2015). Shlánaigh Andrew post buan ag Geological Survey of Canada/Natural Resources Canada in Vancouver.

Láithreoireachtaí a thug foireann DIAS agus comhdhálacha/cruinnithe teicniúla éagsúla

Buaicphointe: Chuir taighdeoirí sa Rannóg Geoifisice 34 póstaer/caint i láthair ag Comhthionól Ginearálta an European Geosciences Union (EGU) i Vín, an Ostair, Aibreán 2018.

Láithreoireachtaí roghnaithe eile (seachas EGU)

- Sergei Lebedev: tugadh cuireadh dó chuig University of Munich (LMU), 30 Eanáir 2018.
- Rinne Chris Bean láithreoireacht ag cruinniú tosaigh an tionscadail Eorpaigh EUROVOLC, in Keflavik, An Íoslainn, 5-9 Feabhra 2018.
- Sergei Lebedev: tugadh cuireadh dó chuig University of Cambridge, 14 Feabhra 2018.
- Reáchtáladh cruinniú tionscadail ar IS13/13 agus tionscadail leanúnacha iCRAG le Brian O'Reilly, Manel Prada, Laura Berdi (DIAS) agus Tim Minshull (Southampton) ar an 20 Feabhra 2018.

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Panel memberships, non-conference presentation & new international engagements

- Sergei Lebedev has a new collaboration between MIT (US), China University of Technology (Hefei) and DIAS: Regional and global seismic tomography using the joint inversion of body-wave travel times and surface-wave phase velocities.
- New collaborative research between Technical University of Freiberg (TBUF), DIAS and GSI has been initiated by Duygu Kiyan. Electrical properties of rocks from the GSI core store will be determined for comparison with DIAS field observations.
- Sergei Lebedev acted as External Examiner of the PhD thesis of Islam Fadel, University of Twente, the Netherlands.
- Sergei Lebedev: Confirmed for a new 3-year term as Associate Editor of Geochemistry, Geophysics, Geosystems (G-cubed).
- DIAS hosts the CTBTO National Data Centre, with Tom Blake as the DIAS representative.
- Tom Blake attended Citizen Science Meeting London to discuss new sensors for schools and new software.
- Javier Fullea: Work as reviewer for projects submitted to the Spanish supercomputing national network.
- Chris Bean has been appointed to the advisory panel of the UK NERC (Global Challenge Research Fund) "Multi-hazard Urban Disaster Risk Transitions Hub". The Hub works on Risk reduction in four hotpots: Kathmandu, Nairobi, Quito and Istanbul.
- Dr Martin Möllhoff has been invited as a national representative in the Working Group 2 - Seismic & Geophysical Measurements of the European Tsunami Warning System (NEAMTWS/IOC/UNESCO)

Speakers & Visitors to Section:

- *Prof. Martyn Unsworth* (University of Alberta, Canada): "Magnetotelluric studies of magmatism in the Central and Southern Andes." (GEO Seminar), April 16th 2018.
- *Dr Andrew Schaeffer* (University of Ottawa, Canada): "Imaging the locked to slow slip zone in Cascadia: combining on-shore seismic data with OBS infrastructure to illuminate the seismic-aseismic transition." (GEO Seminar), April 19th 2018.
- *Dr Jana H. Börner* (Technical University of Freiberg, Germany): "Complex electrical conductivity of reactive systems." (GEO Seminar), April 25th 2018.
- *Mr. Amano*, DG International Atomic Energy Agency, Vienna in DIAS, May 1st 2018.
- *Irene Merino* (Institute of Marine Sciences, Barcelona): "Stratigraphic evolution of a segmented hyper-extended rifted margin: The example of the Western Iberia Margin." (GEO Seminar). *Irene Merino* became a long term visitor in Brian O'Reilly's group, May 3rd 2018.
- *Prof Javier Almendros* (University of Granada) – visitor in Chris Bean's group, funded by Spanish government until end-June 2018.
- *Prof Hans Peter Bunge and Dr Sara Carena* (University of Munich): 2-day visit and seminar talk. Discussions on collaboration, 29th-30th May 2018.
- *Eoghan Totten* (Oxford University) – collaborative visit. The growing collaboration between the DIAS and Oxford seismology groups is on new methods of seismic waveform imaging, 15th-19th October 2018.
- *Andrew Schaeffer*, DIAS Geophysics PhD (2014) and postdoc (2015). Andrew has also secured a permanent position at the Geological Survey of Canada/Natural Resources Canada in Vancouver.

Presentations given by DIAS staff and various conferences/technical meetings

Highlight: Geophysics Section researchers presented 34 posters/talks at the European Geosciences Union (EGU) General Assembly, Vienna Austria, April 2018.

Selected other presentations (excluding EGU)

- Sergei Lebedev: invited seminar at the University of Munich (LMU), January 30th 2018.
- Chris Bean presented at the kick-off meeting of the European project EUROVOLC, in Keflavik, Iceland, 5th–9th February 2018.
- Sergei Lebedev: invited seminar at the University of Cambridge, February 14th 2018.

Scoil na Fisice Cosmaí (ar lean)

- Tugadh cuireadh do Manel Prada chuig an Marine Science Institute (Barcelona) áit ar thug sé láithreoireacht agus ar reáchtáil sé pléití le comhoibrithe i rith na dara seachtaine i mí Feabhra 2018.
- Rinne Laura Berdi láithreoireacht ag seimineár am lóin ag UCD maidir lena cuid oibre PhD. Teideal: "The sedimentary architecture of the Hatton Basin from new 2D seismic reflection and gravity data", Feabhra 2018.
- Javier Fullea: Cruinniú 3D Earth, An Ísiltír. 12-16 Feabhra 2018 – D'fhreastail Mattia Guerri ar an 14ú Advanced School on Parallel computing School ag CINECA (Ionad náisiúnta sár-ríomhaireachta na hIodáile, Bologna).
- Cur i láthair Chris Bean le foireann Met Éireann. Teideal: "Ocean wave-state information and Atlantic storm tracking, using seismic ground vibrations", 22 Feabhra 2018.
- D'fhreastail Manel Prada ar an gcomhdháil dhá lá AAPG (American Association of Petroleum Geologists) ag ar thug sé láithreoireacht agus ar reáchtáil sé pléití le comhoibrithe. Granada, An Spáinn, Márta 2018.
- Tom Blake Vienna. Grúpa Oibre Teicniúil B CTBTO, Vín, An Ostair, Márta 2018.
- Rinne Mather, B; Fullea, J. láithreoireacht ag ceardlann TACtical, Hobart, An Tasmáin. Teideal: "Uncertainty reduction of geothermal heat flux from assimilating seismic tomography and depth to Curie temperature", 21-23 Márta 2018.
- Tom Blake. "Seismology in Schools presentation to Directors of Teacher Training Education centres at their annual conference, Aibreán 2018.
- Tectonics, Exhumation and Landscape Evolution of the North Atlantic Margins: what are we missing? Ceardlann: Coláiste na Tríonóide, Baile Átha Cliath, 26-27 Aibreán 2018.

  Thug Raffaele Bonadio, Nicolas Celli, Sergei Lebedev agus Francois Lavoue ceithre chur i láthair (trí chaint agus póstaer amháin); thug Manel Prada, Brian O'Reilly agus Laura Berdi láithreoireacht amháin.
- Thug Chris Bean láithreoireacht "An overview of geophysics academic research in Ireland" ag an gcéad chruinniú den Chraobh Éireannach de EAGE (European Association of Geoscientists and Engineers), Baile Átha Cliath, 2 Bealtaine 2018.
- Munich, An Ghearmáin. Láithreoireacht ag seimineár am lóin in Ludwig Maximilian University of Munich. "Large-scale magnetic modelling in spherical coordinates" (Eldar Baykiev), Bealtaine 2018.
- Bhuail Manel Prada, Brian O'Reilly agus Laura Berdi le comhoibrithe Cheanada agus comhthaighdeoirí iCRAG i rith na ceardlainne dhá lá a reáchtáladh in UCD. Tugadh láithreoireachtaí ó bhéal agus póstaeir ar théamaí taighde forluiteacha, Bealtaine 2018.
- Campanyà, J., Gallagher P., Kiyan, D., Blake, S., Hogg, C., Scanlon, R., Jackson, D., Gibbs, M., Reay, D., Fullea, J. and Rath, V. SWEMDI Space Weather Electromagnetic Database for Ireland. Cur i láthair póstaeir ag Cruinniú Geo-eolaíochta Bhaile Átha Cliath, Éire, 6 Samhain 2018.
- Colin H., Kiyan, D., Rath, V., Junge, A., Carmo, R., Vivieros, F., Marques, R. agus foireann Fogo. *Three-dimensional electrical conductivity characterisation of Furnas and Fogo Volcanoes, São Miguel Island (Azores archipelago, Portugal), by magnetotelluric data.* Cur i láthair póstaeir ag 62ú IGRM, UCD, Baile Átha Cliath, Éire, Márta 1–3 2019.
- Grannell, J., Möllhoff, M., Craig, D., Bean, C.J. (2019), *Enhancing the Operational Capacity of the Irish National Seismic Network.* Cur i láthair póstaeir ag 62ú IGRM, UCD, Baile Átha Cliath, Éire, Márta 1–3 2019.
- Möllhoff, M., C.J. Bean, K.S. Vogfjörd, B.H. Bergsson, H. Buxel, V. Kjartansson, B. Bergsson (2018), HERSK, the first real-time seismic network on Hekla volcano in Iceland, Geoscience 2018 - Meeting the Challenges, 6th. Cur i láthair póstaeir.
- Kiyan, D., Campanyà, J., Fullea, J., Hogg, C., Blake, S.P., Rath, V., Gallagher, P., and Scanlon, R. Electrical conductivity distribution of the lithosphere in Ireland revealed by magnetotelluric imaging. Glacadh le cur i láthair póstaeir ag AGU, Washington DC, SAM, 12 Nollaig 2018.
- Le Pape, F., Craig, D. and Bean, C. *The role of the continental shelf on ocean induced seismic surface waves generated offshore Ireland.* Cur i láthair póstaeir ag 62ú IGRM, UCD, Baile Átha Cliath, Éire, Márta 1–3 2019.
- Le Pape, F., Craig, D. agus Bean, C. *Differentiating ocean induced seismic surface waves generated offshore Ireland.* Cur i láthair póstaeir ag comhdháil Atlantic Ireland, Baile Átha Cliath 30-31 Deireadh Fómhair 2018.

School Of Cosmic Physics (continued)

- A project meeting on IS13/13 and ongoing iCRAG projects was held with Brian O'Reilly, Manel Prada, Laura Berdi (all DIAS) and Tim Minshull (Southampton) in attendance, February 20th 2018.
- Manel Prada was invited to Marine Science Institute (Barcelona) where he gave a presentation and held discussions with collaborators during the second week in February 2018.
- Laura Berdi presented a lunchtime seminar at UCD on her PhD work. Title: "The sedimentary architecture of the Hatton Basin from new 2D seismic reflection and gravity data", February 2018.
- Javier Fullea: 3D Earth meeting, ESA, Netherlands. 12th–16th February 2018 – Mattia Guerri attended the 14th Advanced School on Parallel computing School at CINECA (Italian national super-computing centre, Bologna).
- Chris Bean presentation to staff at Met Eireann. Title: "Ocean wave-state information and Atlantic storm tracking, using seismic ground vibrations", February 22nd 2018.
- Manel Prada attended a two day AAPG (American Association of Petroleum Geologists) conference where he gave a presentation and held discussions with collaborators. Granada, Spain, March 2018.
- Tom Blake Vienna. CTBTO Technical Working Group B. Vienna, Austria, March 2018.
- Mather, B; Fullea, J. presented at the TACtical workshop, Hobart, Tasmania. Title: "Uncertainty reduction of geothermal heat flux from assimilating seismic tomography and depth to Curie temperature", March 21st-23rd 2018.
- Tom Blake. "Seismology in Schools presentation to Directors of Teacher Training Education centres at their annual conference", April 2018.
- Tectonics, Exhumation and Landscape Evolution of the North Atlantic Margins: what are we missing? Workshop: Trinity College, Dublin, April 26th – 27th 2018.

  Raffaele Bonadio, Nicolas Celli, Sergei Lebedev and Francois Lavoue delivered 4 presentations (3 talks and one poster); Manel Prada, Brian O'Reilly and Laura Berdi gave one presentation.
- Chris Bean presented "An overview of geophysics academic research in Ireland" at the inaugural Irish Chapter meeting of the EAGE (European Association of Geoscientists and Engineers), Dublin, May 2nd 2018.
- Munich, Germany. Lunch time seminar presentation in Ludwig Maximilian University of Munich. "Large-scale magnetic modelling in spherical coordinates" (Eldar Baykiev), May 2018.
- Manel Prada, Brian O,'Reilly and Laura Berdi met with Canadian collaborators and iCRAG co-researchers during a two day workshop held in UCD. Oral and poster presentations were given on overlapping research themes, May 2018.
- Campanyà, J., Gallagher P., Kiyan, D., Blake, S., Hogg, C., Scanlon, R., Jackson, D., Gibbs, M., Reay, D., Fullea, J. and Rath, V. SWEMDI Space Weather Electromagnetic Database for Ireland. Poster presentation at the Geoscience Meeting Dublin, Ireland, November 6th 2018.
- Colin H., Kiyan, D., Rath, V., Junge, A., Carmo, R., Vivieros, F., Marques, R. and the Fogo team. *Three-dimensional electrical conductivity characterisation of Furnas and Fogo Volcanoes, São Miguel Island (Azores archipelago, Portugal), by magnetotelluric data*. Poster presentation at 62nd IGRM, UCD, Dublin, Ireland, March 1st–3rd 2019.
- Grannell, J., Möllhoff, M., Craig, D., Bean, C.J. (2019), *Enhancing the Operational Capacity of the Irish National Seismic Network*. Poster presentation at 62nd IGRM, UCD, Dublin, Ireland, March 1st–3rd 2019.
- Möllhoff, M., C.J. Bean, K.S. Vogfjörd, B.H. Bergsson, H. Buxel, V. Kjartansson, B. Bergsson (2018), HERSK, the first real-time seismic network on Hekla volcano in Iceland, Geoscience 2018 - Meeting the Challenges, 6th. Poster presentation.
- Kiyan, D., Campanyà, J., Fullea, J., Hogg, C., Blake, S.P., Rath, V., Gallagher, P., and Scanlon, R. Electrical conductivity distribution of the lithosphere in Ireland revealed by magnetotelluric imaging. Accepted poster presentation at AGU, Washington DC, USA, December 12th 2018.

Scoil na Fisice Cosmaí (ar lean)

- Li, K. L., Bean, C. J., Bell, A., Hernandez, S., Möllhoff, M., Ruiz, M., Oliva, S. J. C. agus Ebinger, C. *The 26th June 2018 eruption at Sierra Negra volcano, Galapagos archipelago: early results on seismic tremor from a temporary network*. Cur i láthair póstaeir ag Cruinniú Fómhair AGU, 10th-14th Nollaig 2018.
- Maggio, G., Kiyan, D., Queralt, P., Blake, S. and Bean, C. GEO-URBAN: Exploring the Geothermal Potential of Dublin City using Electromagnetic and Passive Seismic Methods. Cur i láthair póstaeir ag Cruinniú Geo-eolaíochta, Baile Átha Cliath, Éire, 6 Samhain 2018.
- Möllhoff, M., Bergsson B.H., Buxel H., Kjartansson V., Bergsson B., Bean C.J., Vogfjörd K.S. (2018). The logistical challenge of establishing a real-time seismic network on Hekla volcano, Iceland, 36th General Assembly of the European Seismological Commission, Malta, ESC-S11-402. Cur i láthair ó bhéal.
- Römhild, L., Sonntag, M., Kiyan, D., Rath, V. agus J. Börner, 2019. *Petrophysical Characterisation of Highly Polarizable Rocks From the Moffat Shale Group (Ireland).* Cur i láthair póstaeir ag 62ú IGRM, UCD, Baile Átha Cliath, Éire, Márta 1st-3rd 2019.
- Tomar, G. Cur i láthair ó bhéal maidir le íomháú fo-bhasailt in abhantrach Rockall le tomagrafaíocht amthaistil agus inbhéartú iomlán tonnchrutha sna ceardlanna ar "Íomháú Fo-Bhasailt" ag Dehradun, An India, 22nd-23rd Feabhra 2019.
- Fuair Chris Bean cuireadh chun láithreoireacht a thabhairt ar 'Ground vibrations, beyond traditional seismology' ag an mbraisle Scottish Geoscience (SAGES), i nDún Éideann, Samhain 2018.
- Rinne Chris Bean Láithreoireacht ag an gCoimisiún Eorpach maidir leis an Ionad iCRAG.
- Fuair an Dr Duygu Kiyan cuireadh chun caint a thabhairt ag Technical University Bergakademie Freiberg, Institute of Geophysics and Geoinformatics, Freiberg, An Ghearmáin i mí Feabhra 2018.

Sprioc 3: Ceannairí taighde a mhealladh, a choinneáil agus a shaothrú

Tháinig méadú suntasach ar thaighdeoirí sa rannóg in 2018. Tháinig Janneke de Laat agus Bruna Chagas de Melo isteach mar mhic léinn PhD ag obair ar struchtúr seismeach domhain. Tá áthas orainn freisin fáilte a chur roimh cohórt nua comhaltaí iardhochtúireachta atá ag obair ar ábhair ón seismeolaíocht, bolcáin, breithnithe spás-bhunaithe ar réimse maighnéadach na Cruinne chuig obair ag an gcomhéadan idir an fhisic mhianraí agus nithe infheicthe geoifisiceacha, áirítear orthu sin: An Dr Grace Cox, an Dr Dmitry Molodtsov, an Dr Ka Lok Li, an Dr Meysam Razaeifar, an Dr Diako Hariri, an Dr Chiara Civiero. Nuair a cuireadh síneadh le gníomhaíochtaí an Irish National Seismic Network (INSN), ceapadh an Dr Martin Möllhoff mar Stiúrthóir ar Líonraí Seismeacha, an Dr David Craig mar Oifigeach Teicniúil Líonraí Seismeacha agus James Grannell mar Anailísí Líonra. I mbliana freisin, chuaigh Tom Blake ar scor tar éis blianta fada de sheirbhís thiomanta ag INSN. Ach in 2018, leanfaidh Tom ag déanamh ionadaíochta thar ceann DIAS ag CTBTO.

D'óstáil geoifisic DIAS roinnt mac léinn samhraidh agus ócáideacha freisin i rith na bliana.

Sprioc 4: Na disciplíní a láidriú go náisiúnta

Irish National Seismic Network (INSN): Feidhmíonn na Rannóg Geoifisice an Irish National Seismic Network (www.insn.ie). In 2017, chuamar isteach i gcomhaontú cómhaoinithe le Suirbhéireacht Gheolaíochta Éireann (GSI) chun an tseirbhís náisiúnta seo a reáchtáil. In 2018, tharla athrú mór i mbonneagar fisiciúil agus oibríochtaí INSN.

Foilsítear sonraí seismeacha fíor-ama ar líne mar acmhainní phoiblí náisiúnta. Cabhraíodh go mór leis seo trí aistriú ó scanadh sonraí de láimh go dtí uathoibríoch trí algartam nua intí (arna fhorbairt ag James Grannell) chun difreáil a dhéanamh idir pléascanna cairéil agus creathanna talún áitiúla. Roghnaímid céimeanna teiliseisme anois go huathoibríoch ar stáisiún sonraí INSN. Athbhunaíodh teagmháil leis an ISC (International Seismological Centre) chun na roghanna céime seo ó stáisiúin INSN a atosú go rialta. Forbraíodh algartaim nua-fhorbartha chun an córas braite imeachta a athstruchtúrú d'fhonn rabhadh bréige a laghdú. Faigheann na hoibreoirí INSN anois fógraí SMS uathoibríocha maidir le himeacht seismeach réigiúnach ar bith a bhraitheann an INSN.

Forbraíodh an chéad scála Méide do chrith talún áitiúil d'Éirinn i mbliana (ag James Grannell) arna mhaoiniú ag GSI Short Call. Roimhe seo, bhíodh scála na Breataine i bhfeidhm in Éirinn. Comhtháthaíodh an scála nua Éireannach seo in obair oibríochtúil ag INSN.

iMARL: Seoladh iMARL *(Insitu MArine Laboratory for geosystems Research)* ar an 18 Aibreán i bhfoirgneamh Choimisinéirí Soilse na hÉireann i nDún Laoghaire. Sheol Seán Kyne, an tAire Stáit le freagracht as Gnóthaí Tuaithe agus Acmhainní Nádúrtha, an Bonneagar náisiúnta seo. Labhair Stiúrthóir Ginearálta SFI an tOllamh Mark Ferguson agus Stiúrthóir GSI, Koen Verbruggen ag an seoladh freisin. Soláthróidh iMARL breithnithe díreacha fadtéarma ar an idirghníomhaíocht idir an t-aigéan agus an dlúthdhomhan. Éascóidh

School Of Cosmic Physics (continued)

- Le Pape, F., Craig, D. and Bean, C. *The role of the continental shelf on ocean induced seismic surface waves generated offshore Ireland.* Poster presentation at 62nd IGRM, UCD, Dublin, Ireland, March 1st–3rd 2019.
- Le Pape, F., Craig, D. and Bean, C. *Differentiating ocean induced seismic surface waves generated offshore Ireland.* Poster presentation at Atlantic Ireland conference, Dublin, 30th-31st October 2018.
- Li, K. L., Bean, C. J., Bell, A., Hernandez, S., Möllhoff, M., Ruiz, M., Oliva, S. J. C. and Ebinger, C. *The 26th June 2018 eruption at Sierra Negra volcano, Galapagos archipelago: early results on seismic tremor from a temporary network.* Poster presentation at the AGU Fall Meeting, Dec 10th–14th 2018.
- Maggio, G., Kiyan, D., Queralt, P., Blake, S. and Bean, C. GEO-URBAN: Exploring the Geothermal Potential of Dublin City using Electromagnetic and Passive Seismic Methods. Poster presentation at Geoscience Meeting, Dublin, Ireland, November 6th 2018.
- Möllhoff, M., Bergsson B.H., Buxel H., Kjartansson V., Bergsson B., Bean C.J., Vogfjörd K.S. (2018). The logistical challenge of establishing a real-time seismic network on Hekla volcano, Iceland, 36th General Assembly of the European Seismological Commission, Malta, ESC-S11-402. Oral presentation.
- Römhild, L., Sonntag, M., Kiyan, D., Rath, V. and J. Börner, 2019. *Petrophysical Characterisation of Highly Polarizable Rocks From the Moffat Shale Group (Ireland).* Poster presentation at 62nd IGRM, UCD, Dublin, Ireland, March 1st–3rd 2019.
- Tomar, G. Oral presentation on sub-basalt imaging in Rockall basin using travel time tomography and full waveform inversion in the workshop on "Sub-basalt Imaging" at Dehradun India, February 22nd-23rd 2019.
- Chris Bean gave an invited presentation on 'Ground vibrations, beyond traditional seismology' at the Scottish Geoscience cluster (SAGES), in Edinburgh, November 2018.
- Chris Bean gave a presentation at the European Commission on the iCRAG Centre.
- Dr. Duygu Kiyan gave an invited talk at the Technical University Bergakademie Freiberg, Institute of Geophysics and Geoinformatics, Freiberg, Germany in February 2018.

Goal 3: Attracting, retaining and cultivating research leaders

The section saw a significant flux of researchers in 2018. Janneke de Laat & Bruna Chagas de Melo joined as PhD students working on deep seismic structure. We are also delight to welcome a large new cohort of postdoctoral fellows working on topics ranging from seismology, volcanoes, the space based observations of the Earth's magnetic field through to work at the interface between mineral physics and geophysical observables, they include: Dr Grace Cox, Dr Dmitry Molodtsov, Dr Ka Lok Li, Dr Meysam Razaeifar, Dr Diako Hariri, Dr Chiara Civiero. The expansion of Irish National Seismic Network (INSN) activities saw the appointment of Dr Martin Möllhoff as Director of Seismic Networks, Dr David Craig as Seismic Networks Technical Officer and James Grannell a Network Analyst. This year also saw the retirement of Tom Blake after many years of dedicated service at INSN. However in 2018 Tom will continue to represent DIAS at CTBTO.

DIAS geophysics also hosted several summer and occasional students throughout the year.

Goal 4: Strengthening the disciplines nationally

Irish National Seismic Network (INSN): The Geophysics Section operates the Irish National Seismic Network (www.insn.ie). In 2017 we entered a co-funding agreement with the Geological Survey, Ireland (GSI) to run this national service. 2018 saw a transformation in the physical infrastructure and operations of the INSN.

Real time seismic data is published online as a national public resource. This has been greatly aided by a transition from manual to automatic data scanning through a new in-house algorithm (developed by James Grannell) for distinguishing between quarry blasts and local earthquakes. We also now automatically pick teleseism phases on INSN station data. Contact was re-established with the ISC (International Seismological Centre) to restart the regular submission of these phase picks from INSN stations. Newly developed algorithms were developed to completely restructure the event detection system in order to reduce false alarms. INSN operators also now receive automatic SMS alerts of any regional seismic event detected by the INSN.

Scoil na Fisice Cosmaí (ar lean)

an trealamh tógáil íomhánna fo-dhromchla 3T réigiúnacha, brath feabhsaithe ar chreathanna talún amach ón gcósta, an cumas chun súnámaithe a bhrath agus an dlúthdhomhan agus geo-eolaíocht mhuirí a chomhtháthú. Dá bharr seo, gheofar tuiscint níos fearr ar an gcaoi a dhéanann an talamh agus an t-aigéan domhain idirghníomhaíocht lena chéile, i bhfad amach ón gcósta. Tá an áis á óstáil ag DIAS agus á mhaoiniú ag SFI le tacaíocht ó Shuirbhéireacht Gheolaíochta na hÉireann (www.imarl.ie).

Teagasc: Reáchtáil Geoifisic DIAS a chúrsa Fochéime bliantúil seachtaine 'Modhanna Geoifisice' do mhic léinn Domhaneolaíochta UCD agus TCD, i mí Aibreáin. Úsáideadh Dunsink agus Páirc an Fhionnuisce mar ionaid. Tá taighdeoirí PhD agus Iardhochtúireachta ó Geoifisic fós ag cur leis an gcúrsa. Tá sé á chomhordú ag Colin Hogg.

Thug Tom Blake léacht do mhic léinn Innealtóireachta ag DIT Sráid Bolton maidir le 'Seismeolaíocht agus innealtóireacht struchtúrach – céard is féidir linn a fhoghlaim óna chéile', i mí Feabhra 2018.

Rinne an Dr Duygu Kiyan maoirsiú ar an mac léinn fisice sa bhliain dheiridh in TCD, Meabh Ní Mhuilleoir. "Airborne Electromagnetic Datasets from the Tellus Programme: Quantitative analysis of the role of the flight altitude parameter on the resulting subsurface inversion models." a bhí mar theideal ar an tionscadal. D'fhorbair Meabh póstaer ón saothar a bhuaigh an gradam don phóstaer fo-chéime is fearr ag an 62ú Cruinniú Taighde Geolaíochta Éireann, in UCD, Márta 2018.

Reáchtáil an tOllamh Zdenek Martinec cúrsa dhá lá ar Airde Geodasach ag DIAS ar an 15-16 Eanáir. Áiríodh i measc na ndaoine a d'fhreastail ar an imeacht, cúigear ó OSi, triúr ó OSNi, beirt ó DIAS agus beirt ó TU Baile Átha Cliath/DIT.

Thug Chris Bean cúrsa ag scoil iarchéime iGEO, OÉ Gaillimh, an 16 Eanáir 2018.

Suirbhéireacht Ordanáis Éireann (OSi) D'fhorbair Geoifisic DIAS comhoibriú nua le OSi. Tá tionscadal á rith ag OSi faoi láthair chun Líonra Náisiúnta Domhantarraingthe Iomlán a fhorbairt d'Éirinn. Tar éis conradh chun líonraí de stáisiúin domhantarraingthe iomlán a bhunú in Éirinn a bhronnadh ar an Institute of Geodesy agus Cartography Warsaw, Poland (IGiK), thug foireann ó OSi agus IGiK cuairt ar Dunsink i Meitheamh 2018 chun iniúchadh a dhéanamh ar shuíomh an stáisiúin bhunáite Domhantarraingt Dunsink. Cuireadh tús leis an suirbhé ar an 3 Meán Fómhair 2018 agus toisí á ndéanamh ag Dunsink ar an 4 Meán Fómhair. Chomhordaigh Clare Horan as DIAS an t-idirghníomhú seo.

For-rochtain:

INSN: Mar gheall ar an athfhorbairt ar an Irish National Seismic Network (INSN), tháinig ardú an-suntasach ar an méid idirghníomhaíochta poiblí le suíomh gréasáin INSN, i dtéarmaí tuairiscí braite agus fiosrúcháin eile.

Eolaithe Óga – BTYSE: Rinne taighdeoirí DIAS teagmháil, go príomha le daoine óga, ag Taispeántas na nEolaithe Óga BT, RDS (féach na híomhánna thíos) ag taispeáint braith creathanna talún réigiúnacha agus domhanda in Éirinn mar chuid den seastán GSI san Éicea-chrios. Chuir bunú beo de sheismiméadar leathanbhanda ar chumas cuairteoirí chun 'a gcrith talún féin a chruthú', rud a thaitin go mór le leanaí óga.

Chuir INSN le hiontráil BTYSE 2019 scoil Naomh Killian. Buaigh Roan Batard, Ethan McQuaid agus Marilou Gerbelot-Barillon an dara háit sa chatagóir Sóisearach d'Eolaíochtaí Fisiciúla, Ceimiceacha agus Matamaiticiúla lena dtionscadal "What makes Dublin Shake?"

Seismeolaíocht i Scoileanna: Rinneadh breisfhorbairt ar an idirghníomhaíocht le daoine óga a raibh suim acu i réimse na geoifisice tríd an gclár Seismeolaíocht i Scoileanna (SIS). Shuiteáil Tom Blake (DIAS) seismiméadar ag Lycée Français d'Irlande, Eurocampus, Cluain Sceach, Baile Átha Cliath, agus Celine Tirel (Múinteoir eolaíochta LFI1) mar chuid den chlár SIS. Tá an stáisiún nua (LFI1) cheana féin i líonra domhanda na scoile seismiméadair agus sruthanna sonraí seismeacha i bhfíor-am trí shuíomh gréasáin na Incorporated Research Institutions for Seismology (IRIS). Suiteáladh seismiméadar breise freisin i gCionn tSáile.

Trí chlár Seismeolaíocht i Scoileanna, tháinig Bunscoil Naomh Seosamh Fionnradharc ar cuairt chuig DIAS ar an 22 Bealtaine 2018 chun an rannóg geoifisice a fheiceáil i mbun oibre.

Teilifís: Chuir Javier Fullea ábhar/íomhánna ar fáil do chlár teilifíse Gearmánach dar teideal "A Day in the Life of Earth"

Chuir Chris Bean agus Sergei Lebedev ábhar ar fáil do chlár teilifíse dar teideal "10 things to know about".

BTYSE RDS, January 2018.
BTYSE RDS, Eanáir 2018.

School Of Cosmic Physics (continued)

The first ever local earthquake Magnitude scale for Ireland was developed this year (by James Grannell) funded by a GSI Short Call. Prior to now, the British scale had been applied Ireland. This new Irish scale has since been integrated into operational work at INSN.

iMARL: iMARL *(Insitu Marine Laboratory for geosystems Research)* was launched on the 18th April in the Commissioners of Irish Lights building in Dun Laoghaire. Seán Kyne, Minister for State of Rural Affairs and Natural Resources, launched this national Infrastructure. SFI Director General Prof Mark Ferguson and GSI Director, Koen Verbruggen also spoke at the launch. iMARL will provide direct long term observations of the interaction between the ocean and solid Earth. The equipment will facilitate the constructing of regional 3D sub-surface images, much improved detection of off-shore earthquakes, the ability to detect tsunamis and the integration of solid earth and marine geoscience. This will lead to a better understanding of how the land and the deep ocean interact with one another, far offshore. The facility hosted by DIAS and funded by SFI with support from the Geological Survey, Ireland (www.imarl.ie)

Teaching: DIAS Geophysics ran its annual week-long 'Geophysics Methods' Undergraduate course for UCD and TCD Earth Sciences students, in April. Dunsink and the Phoenix park were both used as the venue. PhD and Postdoctoral researchers from Geophysics contribute to the course. It is coordinated by Colin Hogg.

Tom Blake gave a DIT Bolton Steet Lecture to Engineering students on 'Seismology and structural engineering – what we can learn from each other', in Feb 2018.

Dr. Duygu Kiyan supervised Final year TCD physics student, Meabh Ni Mhuilleoir. The project was entitled "Airborne Electromagnetic Datasets from the Tellus Programme: Quantitative analysis of the role of the flight altitude parameter on the resulting subsurface inversion models." Meabh developed a poster from the work that won the undergraduate poster award at the 62nd Irish Geological Research Meeting, in UCD, March 2018.

Prof Zdenek Martinec ran a 2 day Geodetic Heights course at DIAS in January 15-16th. Attendees included 5 from OSi, 3 from OSNi, 2 DIAS and 2 TU Dublin/DIT.

Chris Bean gave a course at the iGEO post graduate school, NUI Galway, Jan 16th 2018.

Ordnance Survey Ireland (OSi). DIAS Geophysics developed a new collaboration with OSi. The OSi are currently running a project to develop a National Absolute Gravity Network for Ireland. Following the awarding of the tender for the establishment of a network of absolute gravity stations in Ireland to the Institute of Geodesy and Cartography Warsaw, Poland (IGiK), staff from OSi and IGiK visited Dunsink in June 2018 to inspect the site of the original Dunsink Gravity base station. The survey commenced on 3rd September 2018 with measurements being made at Dunsink on 4th September. This interaction was coordinated by Clare Horan from DIAS.

Outreach:

INSN: The redevelopment of the Irish National Seismic Network (INSN) has led to very significant increase in the amount of public interaction with the INSN web site, in terms of felt reports and other enquiries.

Young Scientists- BTYSE: DIAS researchers engaged, primarily with young people, at the BT Young Scientists Exhibition, RDS (see images below) showcasing the detection of regional and global earthquakes in Ireland as part of GSI stand in Eco Zone. A live set-up of a broadband seismometer enabled visitors to 'create their own earthquake' which was very popular with young kids.

The INSN contributed to a BTYSE 2019 entry of St. Killian's school. Roan Batard, Ethan McQuaid & Marilou Gerbelot-Barillon won 2nd place in the Junior Physical, Chemical & Mathematical Sciences category with their project "What makes Dublin Shake?"

Seismology in Schools: The interaction with young people interested in the field of geophysics was further developed through the Seismology in Schools (SIS) programme. A seismometer was installed in Lycée Français d'Irlande, Eurocampus, Clonskeagh, Dublin, by Tom Blake (DIAS) and Celine Tirel (LFI1 science teacher) as part of the SIS programme. The new station (LFI1) has already joined the global network of school seismometers and streams seismic data in real time through the Incorporated Research Institutions for Seismology (IRIS) website. A further seismometer was also installed in Kinsale.

Through Seismology in Schools, St. Josephs Primary School Fairview came on a visit to DIAS on 22nd May 2018 to see the geophysics section at work.

TV: Javier Fullea provided material/ images for German TV programme called "A Day in the Life of Earth".

Scoil na Fisice Cosmaí (ar lean)

Seachtain na Matamaitice: Fuair an suíomh gréasáin an d'fhorbair Colin Hogg www.weusemaths.ie aird na meán náisiúnta i rith Seachtain na Matamaitice. Nascann an suíomh gréasáin for-rochtana seo Curaclam na Scoile le Cúrsaí Tríú Leibhéal le Gairmeacha a 'úsáideann matamaitic'.

Tá clár Oideachais agus Rannpháirtíocht leis an bPobal suntasach nua forbartha mar chuid de thionscadal **SEA-SEIS**. Roimh an turas, reáchtálamar comórtas do scoileanna náisiúnta chun ainmneacha a fháil do na seismiméadair. Shocraíomar freisin do cheangal satailíte cáilíochta ón long agus bhí 18 nasc físeáin beo againn le seomraí ranga. Tá clár EPE úsáidte cheana féin ag na céadta mac léinn. Tá sé ag leanúint ar aghaidh faoi láthair, agus tá dhá chomórtas nua á reáchtáil anois (https://sea-seis.ie/competitions). Tá an clár seo á threorú ag Sergei Lebedev.

Mark Ferguson, Director General of SFI; Sean Kyne, Minister for State of Rural Affairs and Natural Resources; Chris Bean, Senior Prof of Geophysics DIAS and Koen Verbruggen, Director of GSI.

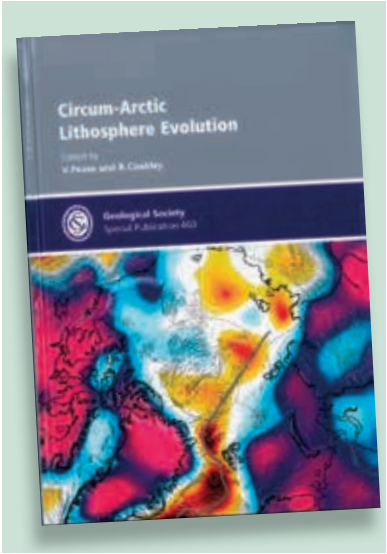
Mark Ferguson, Stiúrthóir Ginearálta SFI; Sean Kyne, An tAire Stáit um Ghnóthaí Tuaithe agus Acmhainní Nádúrtha; Chris Bean, Ollamh Sinsearach le Geoifisic DIAS agus Koen Verbruggen, Stiúrthóir GSI.

Ceapadh Chris Bean mar leas-stiúrthóir ar **iCRAG**, an Irish Centre for Research in Applied Geosciences (www.icrag-centre.org). Arna bhunú in 2015, is é iCRAG ionad náisiúnta um thaighde geo-eolaíochtaí na hÉireann ina bhfuil 150 taighdeoir thar 6 institiúid acadúla.

Thug Chris Bean caint ag Acadamh Ríoga na hÉireann (RIA) dar teideal: Recent Insights into how the Earth Works: Embracing Uncertainly, 25 MF 2018.

(https://www.youtube.com/watch?v=gK-Zz63w4Tw)

Oíche chultúir @ #5 Merrion, 21 MF 2018. "Earthquakes and Volcanoes" Full House.



DIAS mantle tomography on the cover of the Geol. Soc. Volume (2018).

Tomagrafaíocht maintlín DIAS mar chlúdach an Geol. Soc. Imleabhar (2018).

School Of Cosmic Physics (continued)

Chis Bean & Sergei Lebedev made contribution to the TV programme, "10 things to know about".

Maths Week: The website www.weusemaths.ie developed by Colin Hogg gained national attention in the media during Mathsweek. This outreach website links the School Curriculum to Third level Courses to Careers that 'use maths'.

A significant new Education and Public Engagement programme has been developed as part of the project **SEA-SEIS**. Before the expedition, we ran a national school competition to name our seismometers. We also arranged for quality satellite connection from the ship and had 18 live video links to classrooms. This EPE programme has already engaged many hundreds of students. It now continues, and two new competitions are now running (https://sea-seis.ie/competitions). This programme is led by Sergei Lebedev.

Seán Kyne, Minister for State of Rural Affairs and Natural Resources, speaking at iMARL launch.

Seán Kyne, an tAire Stáit le freagracht as Gnóthaí Tuaithe agus Acmhainní Nádúrtha, ag labhairt ag seoladh iMARL.

Chris Bean was appointed deputy director of **iCRAG**, the Irish Centre for Research in Applied Geosciences (www.icrag-centre.org). Established in 2015, iCRAG is Ireland's national geosciences research centre comprising 150 researchers across 6 academic institutions.

Chris Bean presented a discourse at the Royal Irish Academy (RIA) entitled: Recent Insights into how the Earth Works: Embracing Uncertainly, Sept 25th 2018.

(https://www.youtube.com/watch?v=gK-Zz63w4Tw)

Culture night @ #5 Merrion, Sept 21st 2018. "Earthquakes and Volcanoes" Full House.

Container with OBS being delivered to DIAS (back yard, 5 Merrion Square) (on Saturday morning at 7.00am.

Coimeádán ina bhfuil OBS arna sheachadadh chuig DIAS (an clós cúil, 5 Cearnóg Mhuirfean) (maidin Dé Sathairn ag 7.00am).

Scoil na Fisice Cosmaí (ar lean)

Publications in 2018

Bonadio, R., Geissler, W., Lebedev, S., Fullea, J., Ravenna, M., Celli, N., Jokat, W., Jegen, M., Sens-Schonfelder, C., Baba, K., 2018. Hot upper mantle beneath the Tristan da Cunha Hotspot, from probabilistic Rayleigh-wave inversion and petrological modeling. Geochem. Geophys. Geosyst., doi:10.1002/2017GC007347.

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Blake, S.P., Gallagher P.T., Campanyà J., Hogg, C., Beggan C, Thomson A.W.P., Richardson, G.S., Bell, D, 2018, A Detailed Model of the Irish High Voltage Power Network for Simulating GICs, Spaceweather, https://doi.org/10.1029/2018SW001926.

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Hogg, C., D. Kiyan, V. Rath, S. Byrdina, J. Vandemeulebrouck, A. Revil, F. Viveiros, R. Carmo, R. Silva, and T. Ferreira (2018), 3-D interpretation of short-period magnetotelluric data at Furnas Volcano, Azores Islands, Geophysical Journal International, 213, 371-386, doi:10.1093/gji/ggx512.

Kiyan, D., Campanyà, J., Fullea, J., Hogg, C., Blake, S.P., Rath, V., Gallagher, P., and Scanlon, R. Electrical conductivity distribution of the lithosphere in Ireland revealed by magnetotelluric imaging. Accepted poster presentation at AGU 2018 Fall Meeting, December 12th, Washington DC, USA.

Lebedev, S., A.J. Schaeffer, J. Fullea, and V. Pease (2018), Seismic tomography of the Arctic region: Inferences for the thermal structure and evolution of the lithosphere, In Pease, V. & Coakley, B. (eds.) Circum-Arctic Lithosphere Evolution. Geological Society, London, Special Publications, 460, 419-440.

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School Of Cosmic Physics (continued)

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Martinec, Z., Klemann, V., van der Wal, W., Riva, R.E.M., Spada, G., Sun, Y, Melini, D., Kachuck, S.B., Barletta, V., Simon, K., A, G, James, T.S., 2018. A benchmark study of numerical implementations of the sea level equation in GIAmodelling. Geophys. J., Int., 215, 389-414.

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School of Theoretical Physics
Scoil na Fisice Teoiriciúla

Scoil na Fisice Teoiriciúla

Fuair DIAS agus go háirithe ár Scoil go leor aird phoiblí le dhá mhí dhéag anuas. Go suntasach, roghnaíodh DIAS mar cheann de thrí eagraíocht 'ancaire' do ranníocaíocht na hÉireann leis an World Expo 2020 in Dubai (mar aon leis an SFI agus Leabharlann Chester Beatty). Níor chabhraigh an aird bhreise seo lenár mbuiséad a fheabhsú, ach cabhróidh sé leis amach anseo.

Tá Leron Borsten, duine den bheirt Chomhalta Schroedinger atá againn ag cur críoch lena cheapachán cúig bliana ag DIAS agus bogfaidh sé chuig Ollscoil Heriot-Watt, Dún Éideann ag deireadh na bliana. Óstálfar Graham Kells go dtí 2021, mar go gcaithfidh sé aire a thabhairt dá ghrúpa le maoiniú SFI, lena n-áirítear beirt scoláirí PhD.

Roimhe seo, bhí trí phost againn agus teastaíonn uainn iad a fháil ar ais. Soláthróidh an Cláraitheoir an maoiniú riachtanach don tríú Comhalta Schroedinger, mar sin tá dhá phost á thairiscint againn. Tá caoga iarratas dáiríre faighte againn. Fuair Marianne Leitner Comhaltacht Iardhochtúireachta IRC don tionscadal Foirmeacha Uathmhorfacha Géineas níos airde i dTeoiric na Réimse Comhfhoirmiúil, i ngrúpa Jan Manschot ag TCD, ach tá sí fós ag obair ar an ábhar seo le Werner Nahm.

D'oibrigh Tony Dorlas ar fhadhb bhunúsach san fhisic staitistiúil chlasaiceach, eadhon feidhmeanna comhchoibhnis de bhraislí cáithníní le hidirghníomhaíocht dhá ábhar. Mar aon le A.L. Rebenko as Kiev agus Comhalta Taighde DIAS agus a mhac léinn iardhochtúireachta roimhe seo B. Saviole dhíorthaigh agus réitigh sé cothromóidí i gcomhair feidhmeanna comhchoibhnis teasctha go páirteach agus fuair sé airíonna láidre lofa, nach mbíodh amhlaidh ach nuair a bhí na cáithníní srianta do shuíomhanna laitíse. Úsáideadh aitheantais theaglamacha sa chruthúnas a bhí nua agus scríobh triúr údar ar leithligh iad.

Mar aon lena chomhalta IRC Samuel Kovacik, lean Denjoe O'Connor leis an iniúchadh ar theoiric réimse scálach le féin-idirghníomhú cuartach ar an sféar doiléir. Rinne siad comparáid idir cuir chuige uimhriúla agus anailíseacha le suíomh an phointe i spás paraiméadair áit a dtagann na trí chéim seo le chéile. D'aimsigh siad roinnt diallta ó mheastacháin roimhe sin ach comhsheasmhacht leathan idir na cuir chuige. Mar aon lenár n-iarbhaill foirne Yuhma Asano agus Veselin Filev, déanann Denjoe agus Samuel staidéar ar mhúnla BMN (múnla maitrís toinn ar phlána ollsiméadrach uasta), arís le haird ar leith ar theorainneacha céime. Tá an múnla ríthábhachtach do bharúlacha dúbailteachta a bhaineann le domhantarraingt candamach agus teoiric tomhsaire le meicníochtaí agus scannáin maitríse. Áirítear Taighdeoir Iardhochtúireachta IRC Ian Jubb agus an Scoláire Mahul Pandey i ngrúpa Denjoe anois.

Mar aon le Mike Duff agus comhoibrithe eile, d'fhoilsigh Leron ceithre pháipéar ar tomhsaire+domhantarraingt ollsiméadrach. Baineann dhá pháipéar le siméadrachtaí réitigh dúphoill foircinniúla, maidir le déacht Freudenthal agus E7. Fuair siad fianaise mhaith freisin gur ann do theoiricí cúpla neamh-dhomhantarraingte, arna sainmhíniú mar theoiricí leis an mbósón céanna ach réimsí fermióin éagsúla. I bpáipéar a foilsíodh i mí na Samhna seo caite, léirigh siad go n-éascaítear an cur síos ar oll-dhomhantarraingt mar tháirge dhá theoiric tomhsaire go mór le réimsí taibhse a áireamh.

2018 was the inaugural year of the DIAS Samhain agus Science mini-festival. On Dark Matter Day, 31 October staff got into the spirit of the evening.

Rinne Institiúid Ard-Léinn Bhaile Átha Cliath an chéad mhionfhéile 'Samhain agus Science' a reáchtáil in 2018. Chuir an fhoireann a gcroí isteach i Lá an Damhna Dorcha ar an 31 Deireadh Fómhair.

School of Theoretical Physics

DIAS and in particular our School received much public attention in the past twelve months. Most remarkably, DIAS was selected as one of three 'anchor' organisations for the Irish contribution to World Expo 2020 in Dubai (together with SFI and the Chester Beatty Library). The increased attention has not yet led to any recovery of our budget, but it certainly will help in the future.

Leron Borsten, one of our two Schroedinger Fellows is finishing his five-year appointment at DIAS and will move to Heriot-Watt University, Edinburgh at the end of this year. Graham Kells will be hosted until 2021, since has to care for his SFI financed group, including two PhD students.

In former times we had three positions and we need to recover them. The Registrar will indeed provide the necessary funds for a third Schroedinger Fellow, so we are offering two positions. We have received fifty serious applications. Marianne Leitner obtained an IRC Postdoctoral Fellowship for the project Higher Genus Automorphic Forms in Conformal Field Theory, in the group of Jan Manschot at TCD, but she continues to work on this topic with Werner Nahm.

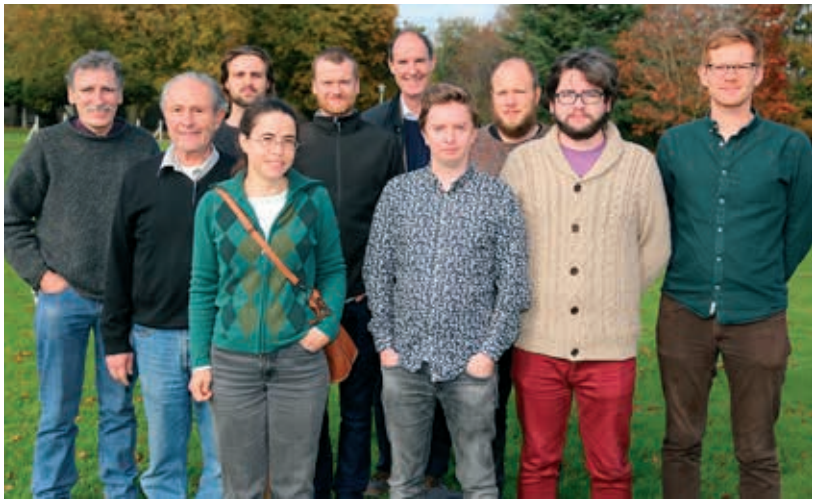
Tony Dorlas worked on a fundamental problem in classical statistical physics, namely the correlation functions of clusters of particles with two-body interaction. Together with A. L. Rebenko from Kiev and DIAS Research Associate and his former postdoc B. Savoie he derived and solved equations for partially truncated correlation functions and obtained strong decay properties, which so far were only known when the particles are constrained to lattice positions. The proof used combinatorial identities that seem to be new and were written up separately by the three authors.

Together with his IRC fellow Samuel Kovacik Denjoe O'Connor continued the investigation of the scalar field theory with quartic self-interaction on the fuzzy sphere. They compared numerical and analytical approaches to the location of the point in parameter space where the three known phases meet. They found some deviations from previous estimates but broad consistency between the approaches. Together with our former staff members Yuhma Asano and Veselin Filev, Denjoe and Samuel study the BMN model (a maximally supersymmetric plane wave matrix model), again with particular attention to phase boundaries. The model is crucial for duality conjectures that relate quantum gravity and gauge theory with matrix mechanics and membranes. Denjoe's group now also includes IRC Postdoctoral Researcher Ian Jubb and Scholar Mahul Pandey.

Together with Mike Duff and other collaborators, Leron published four papers on supersymmetric gauge+gravity. Two papers concern symmetries of extremal black hole solutions, related to Freudenthal duality and E7. They also found good evidence for the existence of non-gravitational twin theories, defined as theories with the same bosonic but different fermionic fields. In a paper published last November they showed that the description of supergravity as the product of two gauge theories is considerably facilitated by the inclusion of ghost fields.

School staff pictured at the DIAS Staff day in Dunsink Observatory in September 2018.

Foireann na scoile ag Lá Foirne Institiúid Ard-Léinn Bhaile Átha Cliath i Réadlann Dhún Since i mí Mheán Fómhair 2018.



Scoil na Fisice Teoiriciúla (ar lean)

Go háirithe, bíonn sé níos éasca domhantarraingt agus an leathadh a scaradh.

Mar aon leis scoláire iardhochtúireachta Shane Dooley agus comhoibrithe eile, d'fhiosraigh Graham Kells qubit toipeolaíoch bunaithe ar Majorana, an t-iarrthóir fabhraithe faoi láthair do ríomh candaim. Ríomh siad rátaí earráide, go háirithe caillteanas qubit de bharr corraíolacha seachtracha neamhaidiabatacha agus an próiseas tointeála atá riachtanach do ríomhanna le Majorons. Ar an drochuair, bhrúigh siad an dóchas go laghdaíonn an ghluaiseacht chomhordaithe de theorainneacha imill caillteanas qubit.

Le Fatima Laytimi, d'fhoilsigh Werner Nahm páipéar a léirigh comhionannas leordhóthanacht na mbeart veicteoirí a fuarthas ag feidhmeoir Schur agus leordhóthanacha an bhirt líne canónta ar an iolrachán brait comhfhreagrach, a dhéanann toradh clasaiceach de chuid Hartshorne ginearálta.

DIAS "What is Life" Brochure for the lunchtime lecture series marking the 75th anniversary of the publication of the "What is Life book".

An bróisiúr "What is Life" de chuid Institiúid Ard-Léinn Bhaile Átha Cliath a bhaineann leis an tsraith de léachtaí am lóin atá á reáchtáil chun comóradh 75 bliain a dhéanamh ar fhoilsiú an leabhair "What is Life".

Prof Terence Rudolph who provided the 2018 Statutory Public Lecture in the Royal Irish Academy, pictured with Dr Eucharia Meehan and Professor Werner Nahm.

An tOllamh Terence Rudolph a thug Léacht Phoiblí Reachtúil 2018 in Acadamh Ríoga na hÉireann, in éineacht leis an Dr Eucharia Meehan agus leis an Ollamh Werner Nahm.

I gcomhthéacs an ghrúpa oibre ar an seandálaíocht, teangeolaíocht agus pailéigéiniteach scríobh sé páipéar '*Indo-Iranians at the tin roads*'. Tugann an páipéar seo buntaca teangeolaíoch don teoiric seandálaíochta go ndearna na hlaránaigh luatha san Afganastáin mianadóireacht ar an stán a úsáideadh i lár an chré-umha aois sa Mheaspatáim agus san Anatóil. Baineann torthaí tánaisteacha den pháipéar leis an teicneolaíocht sádrála de na Hitigh agus an chúis leis an meascán coitianta idir na focail do stán agus luaidhe. I gcomhoibriú leis an bpríomhúdar Cormac O'Raifeartaigh scríobhadh páipéar stairiúil eile '*One Hundred Years of the Cosmological Constant: from 'Superfluous Stunt' to Dark Energy*'.

Is é tuiscint ar an damhna dorcha an dúshláin is práinní chun tuiscint a fháil ar an gcruinne fhisiciúil agus réimse ina bhfuil tacaíocht an phobail don eolaíocht ríthábhachtach. Go hidirnáisiúnta, tá "Lá an Damhnra Dorcha" ina ionad d'iarrachtaí chuige seo. Anuraidh, reáchtáil DIAS imeacht Samhna a raibh freastal maith air – *Samhain Agus Science: Don't be afraid of the Dark*, arna thaibhiú ag Luke Drury ó Cosmic Physics agus ár gComhalta Taighde Brian Dolan. Is cinnte go mbeidh an méid ollmhór sonraí toinn domhantarraingte nua ó LIGO/VIRGO mar thopaic lárnach an fómhar seo.

I gcomhthéacs an 75ú bliain ó léachtaí Schroedinger *What is Life?*' chuir gach Scoil in DIAS le sraith rathúil léachtaí poiblí. Thug Terry Rudolph Léacht Poiblí Reachtúil 2018 ag Acadamh Ríoga na hÉireann. Ghlac sé páirt freisin ag imeacht sa Little Museum, nuair a thugamar ar iasacht an litir le Crick chuig a sheanathair lena thaispeáint go poiblí.

Tá forbairt mhaith á déanamh ag gníomhaíochtaí foirmiúla agus neamhfhoirmiúla leis na hollscoileanna, mar a fheictear leis an gcruinniú bliantúil de chuid Irish Quantum Foundations a reáchtáiltear anois ag TCD, ach cuid níos lú freisin cosúil le sraith Comh-Sheimineáir DIAS-UCD san fhisic damhna comhdhlúite. Pléifear Clár Máistreachta Cheantar Bhaile Átha Cliath ar leithligh.

Werner Nahm

School of Theoretical Physics (continued)

In particular it becomes easier to separate gravity and the dilaton.

Together with his postdoc Shane Dooley and other collaborators, Graham Kells investigated Majorana-based topological qubits, the currently favoured candidate for quantum computation. They calculated error rates, in particular qubit-loss due to both external non-adiabatic perturbations and to the shuttling process necessary for computations with Majorons. Unfortunately they squashed the hope that the coordinated movement of edge boundaries reduces qubit-loss.

With Fatima Laytimi, Werner Nahm published a paper that showed the equivalence of the ampleness of vector bundles obtained by a Schur functor and ampleness of the canonical line bundle on the corresponding flag manifold, generalizing a classical result by Hartshorne.

In the context of the working group on archaeology, linguistics and palaeogenetics he wrote a paper '*Indo-Iranians at the tin roads*'. The paper provides linguistic underpinning for the archaeological theory that in the middle bronze age the tin used in Mesopotamia and Anatolia was mined by early Iranians in Afghanistan. Side results of the paper concern the soldering technology of the Hittites and the reason for the common mix-up between words for tin and lead. Collaboration with lead author Cormac O'Raifeartaigh led to a further historical paper '*One Hundred Years of the Cosmological Constant: from 'Superfluous Stunt' to Dark Energy'*.

The understanding of dark matter is the most urgent challenge in understanding the physical universe and an area were public support for science is crucial. Internationally, "Dark Matter Day" has become a venue for efforts in this direction. Last year DIAS held a well-attended Halloween event - *Samhain Agus Science: Don't be afraid of the Dark*, performed by Luke Drury from Cosmic Physics and our Research Associate Brian Dolan. The tremendous amount of new gravitational wave date from LIGO/VIRGO will certainly be the central topic this fall.

2018 Statutory Public Lecture in the Royal Irish Academy.
Léacht Phoiblí Reachtúil 2018 in Acadamh Ríoga na hÉireann.

Professor Werner Nahm closing day 2 of the "Schrödinger at 75: The Future of Biology" conference in the National Concert Hall.
An tOllamh Werner Nahm ag cur clabhsúir leis an dara lá den chomhdháil "Schrödinger at 75: The Future of Biology" sa Cheoláras Náisiúnta.

In the context of the 75th anniversary of Schroedinger's '*What is Life?*' lectures all Schools of DIAS contributed to a successful series of public lectures. The 2018 Statutory Public Lecture was given by Terry Rudolph at the Royal Irish Academy. He also participated at an event in the Little Museum, when we loaned the letter by Crick to his grandfather for public display.

Common formal and informal activities with the universities are developing well, as exemplified with the annual Irish Quantum Foundations meeting which just now takes place at TCD, but also smaller ones like the Joint DIAS-UCD Seminar series in condensed matter physics. The Dublin Area Masters Programme will be discussed separately.

Werner Nahm

Scoil na Fisice Teoiriciúla (ar lean)

PUBLICATIONS 2018

Papers published in refereed journals

1. Mitton, S., O'Keeffe, M., O'Raifeartaigh, C. and **Nahm, W.** (2018) "One Hundred Years of the Cosmological Constant: From 'Superfluous Stunt' to Dark Energy", *European Physical Journal* H 43 1.
2. **Nahm, W.** (2018) "Eshnunna rulers Ipiqadad I-III and a resurrected Awilsin", N.A.B.U Sepoa Notes (63), *NABU* 2018 3.
3. **Nahm, W.** (2018) "Testing the MEC: the end of the Lower Diyala State", N.A.B.U Sepoa Notes (64), *NABU* 2018 3.
4. **Nahm, W.** (2018) "Nuršamašdata: files and dates in his archive", N.A.B.U Sepoa Notes (65), *NABU* 2018 3.
5. **Kováčik, S.** and Presnajder, P. (2018) "Magnetic monopoles in noncommutative quantum mechanics 2", *J. Math. Phys.* 59 8 082107.
6. **Kováčik**, S. and Presnajder, P. (2018) "Alternative Description of Magnetic Monopoles in Quantum Mechanics ", *Eur. Phys. J.* C78 9745.
7. **Asano, Y.**, Filev, V., **Kováčik, S.** and **O'Connor, D.** (2018) "The non-perturbative phase diagram of the BMN matrix model", *JHEP* 18 07 152.
8. **Kováčik, S.** and **O'Connor, D.** (2018) "Triple Point of a Scalar Field Theory on a Fuzzy Sphere", *JHEP* 18 10 010.
9. **Kováčik, S.** and Presnajder, P. (2018) "Magnetic monopoles in (noncommutative) quantum mechanics", *PoS* CORFU2017 139.
10. Anastasiou, A., **Borsten, L.**, Duff, M. J., Marrani, A., Nagy, S. and Zoccali, M. (2018) "Gravity as Gauge Theory Squared: A Ghost Story", *Phys. Rev. Lett.* 121 21 211601.
11. **Borsten, L.** (2018) "On D=6, >=(2,0) and >=(4,0) Theories", Phys. Rev. D 97 066014.
12. Anastasiou, A., **Borsten, L.**, Duff, M. J., Marrani, A., Nagy, S. and Zoccali, M. (2018) "Are All Supergravity Theories Yang-Mills Squared?", *Nucl. Phys B* 934.
13. **Dooley, S.**, Dunningham, J., Hayes, A. J. and Munro, W. J. (2018) "Making the most of time in quantum metrology: concurrent state preparation and sensing", *Quantum Science and Technology* Vol. 3 No. 3.
14. **Dooley, S.**, Hanks, M., Nakayama, S., Munro, W. J. and Nemoto, K. (2018) "Robust quantum sensing with strongly interacting probe systems", *Quantum Information* Vol. 24 4.
15. **Kells, G.**, Meidan, D. and Moran, N. (2018) "Localization enhanced and degraded topological order in interacting p-wave wires", *Phys. Rev. B* 97 085425.
16. Bahari, I., **Dooley, S.**, Hayes, A., McCrossan, F. and Spiller, T. P. (2018) "Collapse and revival of entanglement between qubits coupled to a spin coherent state", *Int. J. Quantum Inf.* 16 02.
17. **Dolan, B. P.** (2018) "On the definition of mass in general relativity: Noether charges and conserved quantities in diffeomorphism invariant theories", *Phys Rev. D* 90 044010.
18. **Dolan, B. P.** (2018) "A tale of two derivatives: phase space symmetries and Noether charges in diffeomorphism invariant theories", *Phys Rev. D* 90 044009.
19. Radu, E. and **Tchrakin, D. H.** (2018) "A Higgs–Chern–Simons gravity model in 2 + 1 dimensions", *Class. Quant. Grav.* 35 17 175012.
20. **Tchrakian, D. H.** (2018) "Chern–Simons Gravities (CSG) and Gravitational Chern–Simons (GCS) Densities in All Dimensions", *Phys. Atom. Nucl.* 81 6.
21. Filev, V. G. and **O'Connor, D.** (2018) "Quantised relativistic membranes and non-perturbative checks of gauge/gravity duality", *J. Phys. Conf. Ser.* 965 012015.
22. Glaser, L., **O'Connor, D.** and Surya, S. (2018) "Finite Size Scaling in 2D Causal Set Quantum Gravity", *Class. Quant. Grav.* 35 4 045006.

Talks

1. **Leitner, M.** (2018) "The modular forms of the simplest quantum field theory": Given at Hausdorff Research Institute Bonn, Germany. 15 February 2018.
2. **Leitner, M.** (2018) "The modular forms of the simplest quantum field theory": Given at IQF Meeting 2018, Dublin City University. 28-29 May 2018.
3. **Kováčik, S**. (2018) "Magnetic monopoles in noncommutative quantum mechanics": Given at IQF Meeting 2018, Dublin City University. 28-29 May 2018.
4. **Borsten, L.** (2018) "On D=6, N=(2,0) and N=(4,0) theories": Given at Geometry, Duality and Strings, University of Murcia. 28 May 2018.
5. **Kells, G.** (2018) "Localisation protected and degraded topological-order": Given at Topological Matter, Beyond the 10-Fold Way; Nordita, Stockholm. July 2018.
6. **Kells, G.** (2018) "Localisation protected and degraded topological-order": Given at University College Dublin. November 2018.
7. **Asano, Y.** (2018) "Phase Transitions in the BMN Matrix Model": Given at Nonperturbative and Numerical Approaches to Quantum Gravity, String Theory and Holography; ICTS, Bangalore. 2 February 2018.
8. **Asano, Y.** (2018) "Phase Transitions in the BMN Matrix Model": Given at KEK Theory Workshop 2018, Tsukuba. 17-20 December 2018.

School of Theoretical Physics (continued)

9. **Asano, Y.** (2018) "Phase Transitions in the BMN Matrix Model": Given at Focus Week on Quantum Gravity and Holography; IPMU, Kashiwa. 2-6 April 2018.
10. **Kováčik, S.** (2018) "Quantum nature of black holes": Given at Models of Modern Physics; Zuberec, Slovakia. 12 September 2018.
11. **Kováčik, S.** (2018) "The triple point of a field theory on the fuzzy sphere": Given at Comenius University, Bratislava. 19 March 2018.
12. **Kováčik, S.** (2018) "Magnetic monopoles": Given at Comenius University, Bratislava. 9 January 2018.
13. **Kováčik, S.** (2018) "How much energy is available to us?": Given at Given at Comenius University, Bratislava. 25 October 2018.
14. **Kováčik, S.** (2018) "Magical box (physics of resonance)": Given at Comenius University, Bratislava. 7 January 2018.
15. **Dolan, B.** (2018) "Noether's theorem and the definition of mass in general relativity": Given at IQF Meeting 2018, Dublin City University. 28-29 May 2018.
16. **Dolan, B.** (2018) "Weighing a black hole: the definition of mass in general relativity": Given at MacQuarie University, Sydney. 16 August 2018.
17. **Tchrakin, D. H.** (2018) "Higgs-Chern-Simons Gravity": Given at Regional Meeting; Yerevan Physics Institute, Yerevan, Armenia. July 2018.
18. **O'Connor, D.** (2018) "Probing the BFSS dual geometry": Given at Tata Institute of Fundamental Research, Banglore. 27 January – 4 February 2018.
19. **O'Connor, D.** (2018) "The Non-perturbative Phase Diagram of the BMN Matrix Model": Given at University of Edinburgh. 20-23 May 2018.
20. **O'Connor, D.** (2018) "The Non-perturbative Phase Diagram of the BMN Matrix Model": Given at IQF Meeting 2018, Dublin City University. 28-29 May 2018.
21. **O'Connor, D.** (2018) "The non-perturbative physics of membrane matrix models - a phase diagram for the BMN model": Given at Symmetries, Geometry and Quantum Gravity; Primošten, Croatia. 18-22 June 2018.
22. **O'Connor, D.** (2018) "Phase Transitions in the BMN Matrix Model": Given at Matrix Models for Noncommutative Geometry and String Theory; Erwin Schrodinger Institute, Vienna. 9-13 July 2018.
23. **O'Connor, D.** (2018) "Matrix Membranes": Given at European Centre for Theoretical Studies in Nuclear Physics and Related Areas, Trento, Italy. 2-6 September 2018.

Preprints (unpublished articles)

1. **Kováčik, S.** and Presnajder, P. (2018) "Magnetic Monopoles in Noncommutative Quantum Mechanics 2".
2. **Kováčik, S.** and **O'Connor, D.** (2018) "Triple Point of a Scalar Field Theory on a Fuzzy Sphere".
3. Feehan, P. (2018) "On the Morse-Bott Property of Analytic Functions on Banach Spaces with Lojasiewicz Exponent One Half".
4. **Kováčik, S.** and Presnajder, P. (2018) "Alternative Description of Magnetic Monopoles in Quantum Mechanics".
5. **Dolan, B.** (2018) "A Tale of Two Derivatives: Phase Space Symmetries and Noether Charges in Diffeomorphism Invariant Theories".
6. **Dolan, B.** (2018) "On the definition of mass in general relativity: Noether charges and conserved quantities in diffeomorphism invariant theories".
7. **Tchrakian, D. H.** and Radu, E. (2018) "A Higgs-Chern-Simons gravitymodel in $2+1$ dimensions".
8. **Kováčik, S.** and Presnajder, P. (2018) "Magnetic Monopoles in (Noncommutative) Quantum Mechanics".
9. Kovacs, S., Sato, Y., Shimada, H. and Ananth, S. (2018) "Towards a tensionless string field theory for the N=(2,0) CFT in d=6".
10. **Dolan, B.** (2018) "The definition of mass in asymptotically de Sitter space-times".
11. Filev, V. G. and **O'Connor, D.** (2018) "Precision Test of Holographic Flavourdynamics".
12. **Tchrakian, D. H.**, Radu, E. and Navarro-Lerida, F. (2018) "On the topological charge of SO(2) gauged Skyrmions in 2+1 and 3+1 dimensions".
13. Herdeiro, C., Radu, E. and Uzawa, K. (2018) "Compact objects and the swampland".
14. Gimeno-Soler, S., Font, J. A., Herdeiro, C. and Radu, E. (2018) "Magnetized accretion disks around Kerr black holes with scalar hair - I. Constant angular momentum disks".
15. Herdeiro, C., Perapechka, I., Radu, E. and Shnir, Y. (2018) "Gravitating solitons and black holes with synchronised hair in the four dimensional O(3) sigma-model".
16. **Borsten, L.**, Duff, M. J. and Marrani, A. (2018) "Freudenthal duality and conformal isometries of extremal black holes".
17. **Borsten, L.**, Duff, M. J. and Marrani, A. (2018) "Twin conformal field theories".

Some of the International Visitors to Theoretical Physics in 2018

Albert Werner
University of Copenhagen

Alessio Marrani
Centro FERMI, Rome

Alexandros Anastasiou
Nordic Institute for Theoretical Physics

Aristomenis Donos
Durham University

Charles Strickland-Constable
University of Hertfordshire

Christiana Pantelidou
Durham University

Dragan Prekrat
Institute of Physics, Belgrade

Eugen Radu
Aveiro University

Juraj Tekel
Comenius University, Bratislava

Karl Landsteiner
Universidad
Autónoma de Madrid

Masanori Hanada
University of
Southampton

Morten Grud Rasmussen
Allborg University, Denmark

Ricardo Monteiro
Queen Mary University
of London

Ricardo Schiappa
Tecnico, University
of Lisbon

Sachin Vaidya
Indian Institute of Science,
Bangalore

Sanjaye Ramgoolam
Queen Mary University
of London

Silvia Nagy
University of Nottingham

Institute Staff

Council of the Institute

Chairman

V. Cunnane

Ex-Officio Members

A. Deeks, President, UCD

P. Prendergast, Provost, TCD

M. Kennedy, President, RIA

Members Appointed by the Governing Boards of Constituent Schools

G. Wrixon

A. Jaffe

A. Ahlqvist (RIP August)

W. Nahm

R. Ó hUiginn

C. Bean

Governing Board of the School of Celtic Studies

Chairman

A. Ahlqvist (RIP August)

Senior Professor

L. Breatnach

R. Ó hUiginn

Appointed Members

M. Ní Mhaonaigh

U. Mac Gearailt

R. Chapman Stacey

D. Stifter

M. Haycock

Governing Board of the School of Theoretical Physics

Chairman

A. Jaffe

Senior Professors

T. Dorlas

D. O'Connor

W. Nahm

Appointed Members

P. Knight

D. Zagier

A. Taormina

H. Braun

S. Ryan

Governing Board of the School of Cosmic Physics

Chairman

G. Wrixon

Senior Professors

L. Drury

C. Bean

Appointed Members

A. Watson

K. Verbruggen

L. Maraschi

Administrative Staff of the Institute 2018

Registrar

Eucharia Meehan

Finance Officer

Grace Forkin

Senior Administrative Officer

Mary Burke

Assistant Finance Officer

Ronan Byrne

Research & Systems Development Officer

Sadhbh McCarthy (to 31 December)

Clerks

Helena Moynihan

Mary Brennan

Zara McAdam

Orna O'Beirne (temporary) (to 13 July)

Head of IT

Dmitri Grigoriev

Senior Systems Administrator:

Jean-François Bucas

Systems Administrator
Philippe Grange

Support Staff
Colette Doyle
Karen Earley
Patrick Wynne
Stephen McCullagh (part-time)

Staff and Scholars of the School of Celtic Studies 2018

Senior Professor
R. Ó hUiginn (Director)

Professor
B. Lewis

Assistant Professors
A. Nic Dhonnchadha
M. O Riordan (Publications Officer)

Dialectologist
B. Ó Curnáin

Assistant Librarian
M. Irons

Library Assistant
Ó. Ní Chanainn

School Administrator
E. Nic Dhonncha

Technical Staff
ISOS
A.M. O'Brien

IT Support
A. McCarthy (part-time)

Bibliographer
A. Guilarte

Bergin Fellow
M. Hoyne (Ireland) (from 1 August)

Irish Research Council Government of Ireland Fellow
P. O Muircheartaigh (Ireland) (from 1 October)

Scholars
M. Hoyne (Ireland) (to 31 July)
S. Nurmio (Finland) (to 31 August)
M. Theuerkauf (Germany) (to 31 May)
S. Waidler (USA/UK) (to 30 September)
C. Kobel (Switzerland)
N. Stam (Netherlands) (from 1 September)
A. Palandri (Italy) (from 1 September)

Professor Emeritus
M. Ó Murchú
F. Kelly
P. Breatnach

Vacation Students
G. McNamara (Ireland) (from 19 June to 31 August)
C. Monteleone (Italy) (from 20 June to 31 December)
C. Ní Liatháin (Ireland) (from 20 October)
L. Balfour (Ireland) (from 22 October to 31 December)

Staff and Scholars of the School of Theoretical Physics 2018

Senior Professors
W. Nahm (Director)
T. Dorlas
D. O'Connor

Librarian/School Administrator
G. Rogers

Scholars
Y. Asano (Japan) (to 31 March)
M. Leitner (Germany) (to 31 December)
L. Coopmans (Holland) Externally funded
K. Kavanagh (Ireland) Externally funded
I. Jubb (UK) (17-30 September)

Schroedinger Fellows
G. Kells (Ireland)
L. Borsten (Holland)

Irish Research Council Government of Ireland Fellows
D. Benincasa (Italy) Irish Research Council (to 28 September)
S. Kováčik (Slovakia) Irish Research Council
I. Jubb (UK) (from 1 October)

Institute Staff (continued)

Project Staff

S. Dooley (Ireland) SFI Project

Summer Studentship

C. Doherty (Ireland) (5 June to 31 July)

Staff and Scholars of the School of Cosmic Physics 2018

Senior Professors

L. Drury (Director) (to 22 June)
P. Gallagher (Director) from 1 October)
C. Bean

Professors

T. Ray
F. Aharonian
Z. Martinec

Assistant Professors

S. Lebedev
B. O'Reilly

Schroedinger Fellows

V. Rath (Germany) (to 31 December)

Director of Observational Seismology

T. Blake (to 2 September)

Researcher

S. Donne (Ireland) (from 26 October) (part time)

Senior Technical Assistants

C. Horan
M. Smyth

Technical Assistants

E. Flood
A. Grace
L. Collins
C. Hogg

Clerical Staff

A. Sewielska (to 29 August)

Scholars

T. Farrell (Ireland) (to 31 July)
R. Delhaye (France/New Zealand)
M. Ravenna (Italy)
R. Bonadio (Italy)
N. Celli (Italy)
M. Koutoulaki (Greece)
R. Fedriani (Spain)
J. Grannell (Ireland) (to 31 October)
G. Maggio (Italy)
C. Gomez Garcia (Spain)
S. Subasic (Croatia)
L. Berdi (Hungary)
S. Green (U.K.)
S. Donne (Ireland) (to 31 August)
M. de Lucia (Italy)
E. Baldwin (Ireland)
A. Feeney-Johansson (Ireland)
M. Moutzouri (Greece)
C. Stock (U.S.A)
M. Nelissen (Belgium) (from 1 October)
R. Kennedy (Ireland) (to 1 May)
J. de Laat (Netherlands) (from 16 April)
G. Cox (U.K.)
K. Lok Li (Hong Kong) (to 30 September)
B. C. de Melo (Brazil) (from 22 August)
D. Kiyan (Turkey) (from 1-31 January)

Project Staff

F. le Pape (France) SFI project

M. Prada (Spain) SFI project

A. Caratti o Garatti (Italy) MIRI project (to 30 April) ERC project (from 2 October)

R. Garcia Lopez (Spain) EU Individual Marie Curie Fellowship

J. Fullea (Spain) ESA project

D. Craig (Ireland) SFI project (to 31 October) GSI (from 1 November)

J. Grannell (Ireland) GSI (from 1 November)

J. Mackey (Ireland) Royal Society/SFI

F. Lavoué (France) SFI project

M. Topinka (Czech Republic) MIRI project

P. Kavanagh (Ireland) MIRI project

G. Tomar (India) SFI project

M. Guerri (Italy) SFI Project (to 24 December)

D. Kiyan (Turkey) SFI Project (from 1 February to 31 December)

E. Baykiev (Russian Federation) SFI Project

B. Mather (Australia) Irish Research Council (To 26 October)

C. Bracken (Ireland) SFI Project

G. Ulbricht (Germany) SFI Project

I. Colantoni (Italy) SFI Project (to 26 December)

K. Jaxybulatov (Kazakhstan) (SFI Project) (To 30 April)

S. Purser (U.K.) (ERC Project)

O. Creaner (Ireland)(ERC Radionet) (from 1 January)

M. Rezaeifar (Iran) (EU Pacific Project) (from 1 October)

D. Molodtsov (Russia) (from 1 May) ((Itherc Project)

C. Civiero (Italy) (from 1 October) (SFI)

D. Naghadeh (Iran)(from 1 November) (EU Pacific Project)

Irish Research Council Government of Ireland Fellows

K. Lok Li (Hong Kong) (from 1 October)

Professor Emeritus

P. Readman

D. O'Sullivan

A. Thompson

A. Jones

Vacation Students

D. Sheridan (Ireland) (to 12 January)

Q. Kennedy (Ireland) (1 June to 31 August)

D. Breen (Ireland) (1 June to 31 August)

V. Beck (France) (1 July to 31 August)

P. Cannon (Ireland) (31 August to 2 October)

Dublin Institute for Advanced Studies

Financial Statements

for year ended 31 December 2018

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Governance Statement and Council Members' Report

The Dublin Institute for Advanced Studies (DIAS) is a statutory corporation and was established in 1940 under the Institute for Advanced Studies Act of that year.

The Council is accountable to the Minister for Education and Skills and is responsible for ensuring good governance and performs this task by setting strategic objectives and targets and taking strategic decisions on all key business issues. The regular day-to-day management, control and direction of the Institute are the responsibility of the Registrar/CEO and the senior management team. The Registrar/CEO and the senior management team must follow the broad strategic direction set by the Council, and must ensure that all Council Board members have a clear understanding of the key activities and decisions related to the entity, and of any significant risks likely to arise. The Registrar/CEO acts as a direct liaison between the Council and management of the Institute.

Council Responsibilities

The work and responsibilities of the Council are set out in the Institute for Advanced Studies Act 1940. Standing items considered by the members of Council include:

- reports from committees,
- financial reports/management accounts,
- performance reports, and
- reserved matters.

The Council is responsible for keeping adequate accounting records which disclose with reasonable accuracy at any time the financial position of the Institute and which enable to ensure that the financial statements comply with Section 28(2) of the Act.

In preparing those financial statements, the Council is required to:

- select suitable accounting policies and apply them consistently,
- make judgements and estimates that are reasonable and prudent,
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that it will continue in operation, and disclose and explain any material departures disclosed from applicable standards. The maintenance and integrity of the corporate and financial information on the Institutes website is the responsibility of the Registrar/CEO.

The Council is also responsible for safeguarding the assets of the Institute and for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The Council considers that the financial statements of the Institute give a true and fair view of the financial performance and the financial position of the Institute at 31 December 2018.

Council Structure

The Council consists of a Chairman appointed by the President, on the advice of the Government, three ex-officio members and six members appointed by the Governing Boards of the constituent schools. DIAS has a Registrar/CEO and a Central Administration. The members of Council were appointed for a period of five years and meet on a bi-annual basis the table below details the appointment period for current members:

Council Member	Role	Date Appointed
		1 July 2015 to 30 June 2020
Dr. Vincent Cunnane	Chairman	
Deeks, Presid., UCD	Ex-Officio Member	
P. Prendergast, Prov., TCD	Ex-Officio Member	
M. Kennedy, President, RIA	Ex-Officio Member	From March 2017
Prof. G. Wrixon	Appointed by Gov. Board	
Prof. A. Jaffee	Appointed by Gov. Board	
Prof. A. Ahlqvist	Appointed by Gov. Board	Deceased 23 August 2018
Prof. W. Nahm	Appointed by Gov. Board	
Prof. R. Ó hUiginn	Appointed by Gov. Board	From 21 November 2017
Prof. C. Bean	Appointed by Gov. Board	From 21 November 2017
Prof. M. Ní Mhaonaigh	Appointed by Gov. Board	From 1 November 2018

The Council has established an Audit and Risk Committee

The Audit and Risk Committee comprises four Board members. The role of the Audit and Risk Committee is to support the Council in relation to its responsibilities for issues of risk, control and governance and associated assurance. The Audit and Risk Committee is independent from the financial management of the organisation. In particular the Committee ensures that the internal control systems including audit activities are monitored actively and independently. The Audit and Risk Committee reports to the Council twice a year and formally in writing annually.

The members of the Audit and Risk Committee are: Mr. John Boland, Chairman, Prof. Dervilla Donnelly, Prof. Ann Breslin and Mr. Stewart Roche. In 2018 the Audit and Risk Committee met on four occasions.

Schedule of Attendance, Fees and Expenses

A schedule of attendance at the Council and Audit and Risk Committee meetings for 2018 is set out below including the fees and expenses received by each member.

	Council	Audit & Risk Committee	Fees 2018 €	Expenses 2018 €
No. of Meetings	2	4		
Dr. V. Cunnane (Ch)	1		-	995
Prof. G. Wrixon	2		-	228
Prof. A. Jaffee	2		-	1,872
Prof. A. Ahlqvist	1		-	2,625
Prof. W. Nahm	2		-	-
Prof. C. Bean	2		-	-
Prof. R. Ó hUiginn	2		-	-
Prof. M. Ní Mhaonaigh	1		-	-
Mr. J. Boland (Ch)		4	-	-
Prof. A. Breslin		3	-	-
Prof. D. Donnelly		4	-	-
Mr. S. Roche		3	-	-

Governance Statement and Council Members' Report (continued)

Key Personnel Changes

Prof. A. Ahlqvist (RIP) died 23 August 2018.

Prof. M. Ní Mhaonaigh was appointed as acting Chairman of the Board of Celtic Studies from 1 November 2018.

Mr. Stewart Roche was appointed as a member of the Audit and Risk Committee from 19 April 2018.

Disclosures Required by Code of Practice for the Governance of State Bodies (2016)

The Council is responsible for ensuring that the Institute has complied as appropriate with the requirements of the Code of Practice for the Governance of State Bodies ("the Code"), as published by the Department of Public Expenditure and Reform in August 2016. The following disclosures are required by the Code:

Employee Short-Term Benefits Breakdown

Employees' short-term benefits in excess of €60,000 are categorised into the following bands:

Range		Number of employees	
From	To	2018	2017
€60,000 -	€69,000	1	2
€70,000 -	€79,000	2	7
€80,000 -	€89,000	5	1
€90,000 -	€99,000	1	-
€100,000 -	€109,000	2	3
€110,000 -	€119,000	2	-
€120,000 -	€129,000	0	-
€130,000 -	€139,000	6	7

Note: for the purposes of this disclosure, short-term employee benefits in relation to services rendered during the reporting period include salary, but exclude employer's PRSI.

Consultancy Costs

Consultancy costs include the cost of external advice to management and exclude outsourced "business-as-usual" functions.

	2018 €	2017 €
Recruitment	-	38,576
Legal Fees	1,476	18,946
Financial/actuarial	36,975	36,519
Communication*	109,430	7,780
Other	70,836	24,325
Total Consultancy Costs charged to the Income and Expenditure	**218,717**	**126,146**

***Note** Included in communication is the cost of the design/publication and launch of the Strategy Statement.

Travel and Subsistence Expenditure

Travel and Subsistence Expenditure is categorised as follows:

	2018 €	2017 €
Domestic		
- Council	710	1,388
- Employees	18,885	17,206
- Academic Visitors	-	1,394
- Project*	378,882	69,449
- Field	20,000	-
International		
- Council	-	8,336
- Employees	37,239	58,900
- Academic Visitors	46,232	22,592
- Project	250,063	109,084
Total	**752,011**	**288,349**

***Note** Included in project domestic travel is ship-time costs of €277,857.

Hospitality Expenditure

The Income and Expenditure includes the following hospitality expenditure:

	2018 €	2017 €
Staff Hospitality	4,979	3,124
Client Hospitality	20,716	10,311
Total	**25,695**	**13,435**

Statement of Compliance

The Institute has complied with the requirements of the Code of Practice for the Governance of State Bodies (2016), as published by the Department of Expenditure and Reform in August 2016.

Vincent Cunnane
Chairman

28 June 2019

Eucharia Meehan
Registrar/CEO

28 June 2019

Statement of Responsibilities of the Council

The Council of the Dublin Institute for Advanced Studies is required under section 28(2) of the Institute for Advanced Studies Act 1940 to prepare financial statements in such form as shall be approved by the Minister for Education & Skills with the concurrence of the Minister for Finance.

In preparing those financial statements the Council is required to:

- select suitable accounting policies and apply them consistently;
- make judgements and estimates that are reasonable and prudent;
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the Institute will continue in operation; and
- disclose and explain any material departures from applicable accounting standards.

The Council is responsible for keeping adequate accounting records which disclose with reasonable accuracy at any time the financial position of the Institute and which enable it to ensure that the financial statements comply with Section 28(2) of the Act. The Council is responsible for safeguarding the assets of the Institute and for taking reasonable steps for the prevention and detection of fraud and other irregularities.

Ruairí Ó hUiginn
Council Member

Werner Nahm
Council Member

28 June 2019

Statement on Internal Control

Scope of Responsibility

On behalf of the Council of the Institute we acknowledge our responsibility for ensuring that an effective system of internal control is maintained and operated. This responsibility takes account of the requirements of the Code of Practice for the Governance of State Bodies (2016).

Purpose of the System of Internal Control

The system can only provide reasonable and not absolute assurance that assets are safeguarded, transactions authorised and properly recorded, and that material errors or irregularities are either prevented or would be detected in a timely period.

Capacity to Handle Risk

The Council has an Audit and Risk Committee comprising of four external members.

The Audit and Risk Committee continues to review internal control matters and issues raised by the Comptroller and Auditor General. In 2018, the Audit and Risk Committee met on four occasions.

In addition, the 2018 report on internal control systems as provided by the Internal Auditor has been made available to Members of Council.

Risk and Control Framework

The Council has taken steps to ensure an appropriate control environment by

- clearly defining management responsibilities;
- adopting the principles of corporate governance contained in the 2016 Code of Practice for Governance of State bodies
- establishing formal procedures for reporting significant control failures and ensuring appropriate corrective action; and
- establishing formal procedures to monitor the activities and safeguard the assets of the organisation.

The Council has established processes to identify and evaluate business risks by

- identifying the nature, extent and financial implication of risks facing the Institute including the extent and categories which it regards as acceptable;
- assessing the likelihood of identified risks occurring;
- assessing the Institute's ability to manage and mitigate the risks that do occur;
- assessing the costs of operating particular controls relative to the benefit obtained.

Ongoing Monitoring and Review

The system of internal control is based on a framework of regular management information, administrative procedures including segregation of duties, and a system of delegation and accountability.

In particular it includes:

- comprehensive budgeting system with an annual budget which is reviewed and agreed by the Council of the Institute;
- regular reviews by the Council of periodic and annual financial reports which indicate financial performance against forecasts;
- setting targets to measure financial and other performance;
- adherence to public procurement guidelines;
- regular reviews by the Council of external research projects.

Procurement

We confirm that the DIAS has procedures in place to ensure compliance with current procurement rules and guidelines. We confirm that in the year ended 31 December 2018, DIAS is in compliance with current procurement rules and guidelines.

Internal Control Issues

No weaknesses in internal control were identified in relation to 2018 that require disclosure in the financial statements.

Statement on Internal Control (continued)

Review of Effectiveness

We confirm that the DIAS has procedures to monitor the effectiveness of its risk management and control procedures.

The Council's monitoring and review of the effectiveness of the system of internal control is informed by the work of the internal auditor, the Registrar and other officers within the Institute who have responsibility for the development and maintenance of an appropriate internal control framework and comments made by the Audit and Risk Committee and the Comptroller and Auditor General in his management letter or other reports.

We confirm that in the year ended 31 December 2018, Council conducted a review of the effectiveness of the internal controls of the Institute. We confirm that the Institute has an appropriate system of internal and financial control in place.

Signed on behalf of the Council of the Institute

Dr. Vincent Cunnane
Chairman - Council of the Institute

Dr. Eucharia Meehan
Registrar

28 June 2019

Ard Reachtaire Cuntas agus Ciste
Comptroller and Auditor General
Report for presentation to the Houses of the Oireachtas

Opinion on financial statements

I have audited the financial statements of the Dublin Institute for Advanced Studies for the year ending 31 December 2018 as required under the provisions of the Institute for Advanced Studies Act 1940. The financial statements comprise

- the statement of income and expenditure and retained revenue reserves
- the statement of comprehensive income
- the statement of financial position
- the statement of cash flows, and
- the related notes, including a summary of significant accounting policies.

In my opinion, the financial statements give a true and fair view of the assets, liabilities and financial position of the Institute at 31 December 2018 and of its income and expenditure for 2018 in accordance with Financial Reporting Standard (FRS) 102- *The Financial Reporting Standard applicable in the UK and the Republic of Ireland.*

Basis of opinion

I conducted my audit of the financial statements in accordance with the International Standards on Auditing (ISAs) as promulgated by the International Organisation of Supreme Audit Institutions. My responsibilities under those standards are described in the appendix to this report. I am independent of the Institute and have fulfilled my other ethical responsibilities in accordance with the standards.

I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Report on information other than the financial statements, and on other matters

The Institute has presented certain other information together with the financial statements. This comprises the statement of responsibilities of the Council and the statement on internal control.

My responsibilities to report in relation to such information, and on certain other matters upon which I report by exception, are described in the appendix to this report.

I have nothing to report in regard to those matters.

Patricia Sheehan
For and on behalf of the
Comptroller and Auditor General

3 July 2019

Appendix to the report

Responsibilities of Council members

The members are responsible for

- the preparation of financial statements in the form prescribed under the Institute for Advanced Studies Act 1940
- ensuring that the financial statements give a true and fair view in accordance with FRS102
- ensuring the regularity of transactions
- assessing whether the use of the going concern basis of accounting is appropriate, and
- such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Responsibilities of the Comptroller and Auditor General

I am required under the Institute for Advanced Studies Act 1940 to audit the financial statements of the Institute and to report thereon to the Houses of the Oireachtas.

My objective in carrying out the audit is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement due to fraud or error. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with the ISAs, I exercise professional judgment and maintain professional scepticism throughout the audit. In doing so,

- I identify and assess the risks of material misstatement of the financial statements whether due to fraud or error; design and perform audit procedures responsive to those risks; and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- I obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal controls.
- I evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures.
- I conclude on the appropriateness of the use of the going concern basis of accounting and, based on the audit evidence obtained, on whether a material uncertainty exists related to events or conditions that may cast significant doubt on the ability of the Institute to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my report. However, future events or conditions may cause the Institute to cease to continue as a going concern.
- I evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

Information other than the financial statements

My opinion on the financial statements does not cover the other information presented with those statements, and I do not express any form of assurance conclusion thereon.

In connection with my audit of the financial statements, I am required under the ISAs to read the other information presented and, in doing so, consider whether the other information is materially inconsistent with the financial statements or with knowledge obtained during the audit, or if it otherwise appears to be materially misstated. If, based on the work I have performed, I conclude that there is a material misstatement of this other information, I am required to report that fact.

Reporting on other matters

My audit is conducted by reference to the special considerations which attach to State bodies in relation to their management and operation. I report if there are material matters relating to the manner in which public business has been conducted.

I seek to obtain evidence about the regularity of financial transactions in the course of audit. I report if there is any material instance where public money has not been applied for the purposes intended or where transactions did not conform to the authorities governing them.

I also report by exception if, in my opinion,

- I have not received all the information and explanations, I required for my audit, or
- the accounting records were not sufficient to permit the financial statements to be readily and properly audited, or
- the financial statements are not in agreement with the accounting records.

Statement of Income and Expenditure and Retained Revenue Reserves

	Notes	2018 €	2017 €
Income	2		
Oireachtas Grant		6,731,000	6,566,000
Net deferred funding for retirement benefits	9.d	1,230,721	811,160
Sales of Publications		34,123	42,095
Projects	3	5,355,640	2,238,227
Project Overhead Income		-	78,356
Other	4	17,845	10,702
		13,369,329	9,746,540
Transfer (to)/from Capital Reserve	14	(1,910,527)	11,654
		11,458,802	9,758,194
Expenditure	2		
School of Celtic Studies		1,875,337	1,675,927
School of Theoretical Physics		1,985,873	1,633,748
School of Cosmic Physics		5,090,140	4,046,186
Administration		2,418,614	2,342,113
		11,369,964	9,697,974
Surplus for the year		**88,838**	**60,220**
Balance at 1 January		973,057	912,837
Balance at 31 December		**1,061,895**	**973,057**

Statement of Comprehensive Income		2018 €	2017 €
Surplus/(Deficit) for the year		88,838	60,220
Experience gains/(losses) on retirement benefit obligations		241,000	(518,000)
Changes in assumptions underlying the present value of retirement benefit obligations		-	13,000
Actuarial Gain/(Loss) on Retirement Benefit Obligations	**9.c**	**241,000**	**(505,000)**
Adjustment to Deferred Retirement Benefit Funding		**(241,000)**	**505,000**
Total Recognised Gain/(Loss) for the Year		**88,838**	**60,220**

The Statement of Cash Flows and notes 1 to 17 form part of these financial statements.

Ruairí Ó hUiginn
Council Member

28 June 2019

Werner Nahm
Council Member

28 June 2019

Statement of Financial Position

	Notes	2018 €	2017 €
Assets			
Fixed Assets: Property, Plant and Equipment	13	2,726,180	815,653
Current Assets			
Cash on Hand and at Bank		3,560,455	6,185,822
Receivables	16	380,168	721,753
Project Receivables	3(a)	1,030,313	214,064
Total Assets		**7,697,116**	**7,937,292**
Less Liabilities			
Payables - Amounts falling due within one year			
Payables	15	1,455,828	928,077
Project Payables	3(a)	2,425,455	4,565,458
Payables - Amounts falling due after one year	15	27,758	655,047
		3,909,041	**6,148,582**
Assets Less Liabilities Before Retirement Benefits		**3,788,075**	**1,788,710**
Deferred Retirement Benefit funding	9.d	60,113,000	59,123,000
Retirement Benefit Obligations	9.c	(60,113,000)	(59,123,000)
		0	**0**
Net Assets		**3,788,075**	**1,788,710**
Financed by			
Income and Expenditure Account		1,061,895	973,057
Capital Reserve	14	2,726,180	815,653
		3,788,075	**1,788,710**

The Statement of Cash Flows and notes 1 to 17 form part of these financial statements.

Ruairí Ó hUiginn
Council Member

28 June 2019

Werner Nahm
Council Member

28 June 2019

Statement of Cash Flows

	Notes	2018 €	2017 €
Reconciliation of Operating Surplus to Net Cash (Outflow)/Inflow from Operating Activities			
Surplus/(Deficit) for the Year		**88,838**	**60,220**
Interest Received	4	-	(603)
(Decrease)/Increase in Payables		(99,538)	570,400
(Increase) in Receivables		341,585	(453,672)
Net Decrease in Research Programmes and Fees		(2,956,252)	(53,182)
Depreciation	13	431,973	284,451
Capital Reserve Transfer	14	1,910,527	(11,654)
Net Cash (Outflow)/Inflow from Operating Activities		(282,867)	395,960
Cash Flow Statement			
Net Cash (Outflow)/Inflow from Operating Activities		(282,867)	395,960
Cash Flow from Financing Activities			
Bank Interest Received	4	-	603
Cash Flow from Investing Activities			
Purchase of Tangible Assets	13	(2,342,500)	(272,797)
(Decrease)/Increase in Cash		**(2,625,367)**	**123,766**
Reconciliation of Net Cash Flow to Movement in Net Funds			
(Decrease)/Increase in Cash		(2,625,367)	123,766
Net Funds at 1 January		6,185,822	6,062,056
Net Funds at 31 December		**3,560,455**	**6,185,822**

Analysis of Change in Net Funds	Cash at bank and in hand €	Cash at bank and in hand €
At Beginning of Year	6,185,822	6,062,056
Cash Flows	(2,625,367)	123,766
At End of Year	**3,560,455**	**6,185,822**

The Statement of Cash Flows and notes 1 to 17 form part of these financial statements.

Ruairí Ó hUiginn
Council Member

28 June 2019

Werner Nahm
Council Member

28 June 2019

Notes to the Financial Statements

1. Accounting Policies

The Institute was established under the Institute for Advanced Studies Act, 1940.

Its functions include the provision of facilities for the furtherance of advanced studies and the conduct of research in specialised branches of knowledge. It comprises three Schools - Celtic Studies, Theoretical Physics and Cosmic Physics.

a) Basis of Accounting

This set of financial statements is prepared by the Dublin Institute for Advanced Studies in accordance with accounting standards issued by the Financial Reporting Council, including FRS 102 "The Financial Reporting Standard applicable in the UK and Republic of Ireland" ("FRS 102").

The preparation of financial statements in compliance with FRS 102 requires the use of certain critical accounting estimates. It also requires management to exercise judgement in applying the Institute's accounting policies. (See Note 17).

The financial statements have been prepared on an accruals basis under the historical cost convention and comply with the financial reporting standards of the Financial Reporting Council.

The following accounting policies have been applied:

b) Oireachtas Grants

Income from Oireachtas grants represents accrued income in the year.

c) Fixed Assets: Property, Plant and Equipment

Fixed Assets comprise the furniture, equipment, computers and motor vehicles of the Institute and are shown at cost less accumulated depreciation. The rates of depreciation, calculated on a straight line basis, are as follows:

Furniture and Equipment	10%
Computers	25%
Motor Vehicles	25%

Fixed assets below the capitalisation threshold are charged to the Statement of Income and Expenditure in the year of purchase.

The capitalisation threshold amount is €3,000 exclusive of VAT.

The Fixed Assets are made up of exchequer and project funded assets. The depreciation of project funded assets are calculated on a straight line basis as outlined above.

Premises occupied by the Institute are leased from the Office of Public Works.

At each reporting date the Institute assesses whether there is any indication of impairment. If such indication exists, the recoverable amount of the asset is determined which is the higher of its fair value less costs to sell and its value in use. An impairment loss is recognised where the carrying amount exceeds the recoverable amount.

Gains and losses on disposals are determined by comparing the proceeds with the carrying amount and are recognised within the Income and Expenditure Account.

Heritage Assets

The Institute holds and maintains certain heritage assets, such as libraries holding manuscripts, book and pamphlet collections, as well as antique scientific instruments. Included in the list of assets is a book collection and antique astronomical equipment and clocks which are itemised on the contents of insurance.

The Institute conserves these assets for research and for interaction between the Institute and the public.

1. Accounting Policies (continued)

In accordance with accounting standard FRS102, heritage assets acquired pre 1 January 2007 are not capitalised in the financial statements since reliable estimates of cost or value are not available at a reasonable cost.

There have been no heritage assets acquired subsequent to 1 January 2007, within the thresholds as specified in this policy. The Institute will capitalise any assets acquired after this date at either their cost (in the case of acquisitions made by the Institute) or their fair value (in the case of donations). Donated heritage assets will be capitalised with reference to recent sales of similar objects.

Heritage assets valued at less than €10,000 are not capitalised in the financial statements.

As funds permit and if judged necessary, conservation is carried out on heritage items and the expenditure incurred is recognised in the income and expenditure accounts.

The Institute does not dispose of heritage items, whether acquired, donated or bequeathed.

d) Capital Reserve

The capital reserve represents the unamortised value of income used for the purchase of Fixed Assets from state sources.

Capital income received from non state sources is recognised in full when the asset is purchased.

e) Library

Expenditure on library books and materials is written off in the year in which it is incurred.

f) Publications

Expenditure on publications is written off in the year in which it is incurred.

g) Superannuation

The Dublin Institute for Advanced Studies operates a defined benefit retirement benefit scheme which is funded annually on a pay as you go basis from monies available to it, including monies provided by the Department of Education and Skills and from contributions deducted from staff salaries. Staff appointed before 1 January 2013 have pension terms under the relevant DIAS Superannuation Scheme as set out in:

(a) Dublin Institute for Advanced Studies (Superannuation) Scheme 1947 as amended

(b) Dublin Institute for Advanced Studies Spouses and Children's Contributory Scheme 1991

(c) Dublin Institute for Advanced Studies Non-Established Employees (Superannuation) Scheme 1983

(d) Dublin Institute for Advanced Studies Staff Superannuation (Consolidation) Scheme, 2008 and Dublin Institute for Advanced Studies Staff Superannuation Spouses' and Children's Contributory Pension (Consolidation) Scheme, 2008.

The Dublin Institute for Advanced Studies also operates the Single Public Service Pension Scheme (Single Scheme) which is the defined benefit retirement benefit scheme for pensionable public servants appointed on or after 1 January 2013. Single Scheme member's contributions are paid over to the Department of Public Expenditure and Reform.

As required under circular 28/2016, the Dublin Institute for Advanced Studies also pays Single Scheme employer contributions, at the rate of three times the employee contribution, over to the Department of Public Expenditure and Reform.

Retirement benefit costs reflect retirement benefits earned by employees in the period and are shown net of staff retirement benefit contributions which are retained by the Dublin Institute for Advanced Studies. An amount corresponding to the retirement benefits charge is recognised as income to the extent that it is recoverable, and offset by grants received in the year to discharge retirement benefit payments.

1. Accounting Policies (continued)

Actuarial gains or losses arising on scheme liabilities are reflected in the Statement of Comprehensive Income and a corresponding adjustment is recognised in the amount recoverable from the Department of Education and Skills.

Retirement benefit liabilities represent the present value of future retirement benefit payments earned by staff to date. Deferred retirement benefits funding represents the corresponding asset to be recovered in future periods from the Department of Education and Skills.

h) Projects

The Dublin Institute for Advanced Studies receives external funding from industry, government bodies and the European Commission. A chart of accounts is maintained for each project.

Project receipts are applied as project income, at a level that equals the annual expenditure incurred on direct costs and overheads earned by the associated project. At the end of the life of the project any surplus or deficit balance left on the project is reflected in the financial statements.

The Dublin Institute for Advanced Studies receives overhead income on a number of externally funded projects. Overhead income from projects is credited to the income and expenditure account in the period in which it is earned. Depending on the level of overhead expenditure on the project within the period, this may result in a surplus or deficit on overhead income being reflected in the financial statements.

Overhead income is recognised in line with funding arrangements.

j) Payables

Short term payables are measured at the transaction price.

k) Cash and Cash Equivalents

Cash is represented by cash in hand and deposits with financial institutions repayable without penalty on notice of not more than 24 hours.

Cash equivalents are highly liquid investments that mature in no more than three months from the date of acquisition and that are readily convertible to known amounts of cash with insignificant risk of change in value.

l) Financial Instruments

The Institute only enters into basic financial instrument transactions that result in the recognition of financial assets and liabilities like trade and other accounts receivable and payable. Basic financial instruments are recorded at transaction price.

m) Holiday Pay

A liability is recognised to the extent of any unused holiday pay entitlement which is accrued at the balance sheet date and carried forward to future periods. This is measured at the undiscounted salary cost of the future holiday entitlement and accrued at the balance sheet date.

n) Operating leases

Rentals payable under operating leases are charged to the Income and Expenditure Account as incurred over the term of the lease.

o) Functional Currency

The Institute's functional and presentational currency is euro.

p) Non Project Grants.

Grants from third parties are recorded in the financial statements using the Accruals Method and are allocated to income so as to match with the related expenditure to which they relate.

1. Accounting Policies (continued)

q) Judgements in Applying Accounting Policies and Key Sources of Estimation

The preparation of these financial statements requires management to make judgements, estimates and assumptions that affect the application of policies and reported amounts of assets and liabilities, income and expenses. Judgements and estimates are continually evaluated and are based on historical experiences and other factors, including expectations of future events that are believed to be reasonable under the circumstances.

The Institute makes estimates and assumptions concerning the future. The resulting accounting estimates will, by definition, seldom equal the related actual results. The estimates and assumptions that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are discussed below.

Useful Lives of Tangible Fixed Assets

Long-lived assets comprising primarily of Furniture and Equipment, Computers and Motor Vehicles represent a significant portion of total assets.

The annual depreciation charge depends primarily on the estimated lives of each type of asset and, in certain circumstances, estimates of residual values. The Council regularly review these useful lives and change them if necessary to reflect current conditions. In determining these useful lives management consider technological change, patterns of consumption, physical condition and expected economic utilisation of the assets. Changes in the useful lives can have a significant impact on the depreciation charge for the financial year.

Actuarial Assumptions in Respect of Defined Benefit Retirement Benefit Schemes

The application of actuarial assumptions relating to defined benefit retirement benefit schemes is incorporated in the financial statements in accordance with FRS 102. In applying FRS 102, advice is taken from independent qualified actuaries. In this context, significant judgement is exercised in a number of areas, including future changes in salaries and inflation, mortality rates and the selection of appropriate discount rates. A defined benefit asset is recorded matching the liability on the basis that the liability is funded by the state.

Provisions

The Institute makes provisions for legal and constructive obligations, which it knows to be outstanding at the period end date. These provisions are generally made based on historical or other pertinent information, adjusted for recent trends where relevant. However, they are estimates of the financial costs of events that may not occur for some years. As a result of this and the level of uncertainty attaching to the final outcomes, the actual out-turn may differ significantly from that estimated.

2. Detailed Analysis of Income & Expenditure for the year ended 31/12/2018

	Notes	School of Celtic Studies €	School of Theoretical Physics €	School of Cosmic Physics €	Adminis-tration €	2018 Total €	2017 Total €
INCOME							
Dept. of Education and Skills Grant (Annual)		1,666,719	969,534	2,534,128	1,560,619	6,731,000	6,566,000
*Net Deferred Funding for Retirement Benefits	9.d	383,148	83,272	615,933	148,368	1,230,721	811,160
Sales of Publications		34,123	-	-	-	34,123	42,095
Project Income	3.a	47,069	207,167	4,949,496	151,908	5,355,640	2,238,227
Project Income Admin		-	-	-	-	-	78,356
Other	4	360	-	16,735	750	17,845	10,702
		2,131,419	1,259,973	8,116,292	1,861,645	13,369,329	9,746,540
Transfer (to)/from Capital Reserve	14	-	-	-	(1,910,527)	(1,910,527)	11,654
		2,131,419	1,259,973	8,116,292	(48,882)	11,458,802	9,758,194
EXPENDITURE							
Payroll Costs	5	1,139,776	761,691	1,446,819	521,226	3,869,512	4,129,355
*Retirement Benefit Costs	9.b	610,174	900,789	743,656	468,859	2,723,478	2,256,393
Project Costs	3.a	32,472	207,085	2,695,724	-	2,935,281	1,805,950
Library and Book Storage		34,833	66,760	28,377	-	129,970	134,556
Depreciation	13	-	-	-	431,973	431,973	284,451
Rent, Rates and Insurance		-	-	-	253,271	253,271	200,819
General Expenses	7	15,512	3,428	57,180	280,263	356,383	241,778
Travel and Seminar Expenses		12,064	42,605	61,622	6,774	123,065	123,992
Premises Maintenance and Security		-	-	-	202,441	202,441	169,895
Computer and Internet Expenses		2,003	974	33,592	68,345	104,914	128,414
Fuel Light and Power		-	-	-	141,197	141,197	121,752
Postage and Telephone		-	-	-	20,611	20,611	21,373
Stationery		11,863	2,384	9,548	11,716	35,511	19,285
Publications		16,267	-	4,170	-	20,437	46,627
Advertising		-	157	-	3,946	4,103	5,759
Minor Office Equipment		373	-	9,452	7,992	17,817	7,575
		1,875,337	1,985,873	5,090,140	2,418,614	11,369,964	9,697,974
SURPLUS/(DEFICIT) FOR YEAR		**256,082**	**(725,900)**	**3,026,152**	**(2,467,496)**	**88,838**	**60,220**
Balance at 1 January		541,828	(409,908)	2,702,694	(1,861,557)	973,057	912,837
Balance at 31 December		**797,910**	**(1,135,808)**	**5,728,846**	**(4,329,053)**	**1,061,895**	**973,057**

Note (a) * The Net Deferred Funding for Retirement Benefits are allocated on a pro rata basis to the amount paid to pensioners in the year.
* The Retirement Benefits Costs are allocated on a pro rata basis to the pension contributions from staff in the year.
Note (b) Costs directly related to research (e.g., pay, library, computer expenses, travel) have been apportioned to the schools.
Overhead costs such as rent, insurance, utilities and property maintenance have been charged to Administration.
Note (c) Grant An amount of 6,731,000, (2017 6,566,000) was received from the Department of Education and Skills. The grant is provided by the Department of Education and Skills towards liabilities under pay and general non-pay expenses and is drawn down by the Institute on an annual basis.

3. (a) Projects

	2018 €	2017 €
Opening Balances	4,351,396	4,404,578
Receipts	2,399,386	2,185,045
	6,750,782	6,589,623
Closing Balances (Project Receivables €1,030,313, Project Payables €2,425,455)	(1,395,142)	(4,351,396)
Applied as Income	5,355,640	2,238,227
Income Allocation		
Administration	151,908	-
School of Celtic Studies	47,069	53,127
School of Theoretical Physics	207,167	86,329
School of Cosmic Physics	4,949,496	2,098,771
	5,355,640	2,238,227
Total Project Income *	5,355,640	2,238,227

Note * This figure is made up of project Income to Central Admin €151,908, project income to Schools €2,927,354 and capital expenditure on projects of €2,276,378.

Project Costs

	Celtic Studies €	Theoretical Physics €	Cosmic Physics €	2018 Total €	2017 Total €
* Salaries/Scholarships	30,692	180,335	1,610,209	1,821,236	1,352,418
**Travel					
- Domestic	-	-	378,882	378,882	69,449
- International	1,681	14,149	234,233	250,063	109,084
Other	99	12,601	472,400	485,100	274,999
Total Project Cost	32,472	207,085	2,695,724	2,935,281	1,805,950

***Note (a)** Externally Funded Research Staff and Scholars Numbers (WTE) 45 (2017: 51).
****Note (b)** Included in domestic travel in the School of Cosmic Physics is shiptime costs of €277,857.

3. (b) Project Detail

	Funding Authority	Opening Balance €	Receipts €	Recurrent Expenditure €	Applied as Income Central Admin Charge €	Applied as Income Schools (including Capital) €	Closing Balance €	Capital €
School of Celtic Studies								
Irish Script on Screen		14,587	-	99	-	14,587	-	14,488
Peadar O Muircheartaigh IRC Fellowship	IRC	11,129	21,353	32,373	-	32,482	-	-
Total Celtic Studies		**25,716**	**21,353**	**32,472**	**-**	**47,069**	**-**	**14,488**
School of Theoretical Physics								
G Kells	SFI	77,117	144,158	117,739	25,882	118,452	76,941	-
S Kovacik IRC Fellowship	IRC	12,654	46,524	45,654	-	45,654	13,524	-
D Benincasa IRC Fellowship	IRC	12,095	19,292	32,018	-	31,387	-	-
I Jubb IRC Fellowship	IRC	-	22,962	11,674	-	11,674	11,288	-
Total Theoretical Physics		**101,866**	**232,936**	**207,085**	**25,882**	**207,167**	**101,753**	**-**
School of Cosmic Physics								
Nam Conference	A. Observ'tory	4,769	-	-	-	-	4,769	-
NGST Project	ESA	25,459	119,159	156,324	-	156,324	(11,706)	-
Horizon 2020 Catalyst MKID	SFI	(2,447)	1,723	(724)	-	(724)	-	-
J Mackey Royal Society Fellowship	Royal Society	20,335	73,875	88,629	5,515	88,530	165	-
IRC New Horizons DIAS/UCD	IRC	(21,037)	-	-	-	-	(21,037)	-
MKID Camera IP T Ray	SFI	27,170	393,211	272,523	19,684	451,741	(51,044)	179,436
R Garcia Lopez Dig Deep EC Fellowship	EC	61,617	-	80,360	19,728	64,532	(22,643)	-
Maria Koutoulaki IRC Scholarship	IRC	8,919	24,000	28,582	-	28,582	4,337	-
Radionet EC Project	EC	48,667	40,881	67,696	3,310	67,872	18,366	-
T Ray ERC Easy	EC	563,949	-	237,737	12,654	237,737	313,558	-
DIAS Summer School	Various	-	48,100	68,809	-	48,100	-	-
Royal Society Enhancement Award	Royal Society	-	36,425	26,224	1,605	26,224	8,596	-
HIRES IRC -Laureate Award	IRC	-	108,824	-	-	-	108,824	-
Total Astrophysics		**737,401**	**846,198**	**1,026,160**	**62,496**	**1,168,918**	**352,185**	**179,436**

3. (b) Project Detail (continued)

	Funding Authority	Opening Balance €	Receipts €	Recurrent Expenditure €	Applied as Income Central Admin Charge €	Applied as Income Schools (including Capital) €	Closing Balance €	Capital €
Geophysics Schools Seismology	Various	7,209	1,220	2,681	-	8,429	-	-
CTBTO	Dept.For. Affairs	2,865	-	6,401	-	2,865	-	-
ESA UWB Grant	ESA	8,968	-	5,352	-	8,968	-	3,616
Structure and Seismicity of Ireland's Crust	SFI	120,714	505	94,506	5,940	97,517	17,762	-
ICRAG	SFI	(140,948)	505	578,399	30,626	584,482	(755,551)	7,231
iMARL Infrastructure	SFI	2,951,071	-	258,766	-	2,192,502	758,569	1,933,736
Geo External Services	Various	28,749	123,058	104,183	-	151,807	-	46,512
ERC Development iTHERC	SFI	84,142	195,398	182,427	11,842	222,905	44,793	29,489
NIAP-PassVel	Marine Institute	9,976	-	-	-	-	9,976	-
Duygu Kiyan Fellowship	SFI	(6,452)	6,452	-	-	-	-	-
IRC Geotherm	IRC	32,471	19,999	44,966	2,860	51,325	(1,715)	-
ESA 3D Earth	ESA	(43,179)	40,000	73,554	-	73,554	(76,733)	-
GSI P Arroucau Fellowship	GSI	4,932	(4,932)	-	-	-	-	-
SEA-SEIS	SFI	154,218	-	174,996	9,763	234,339	(89,884)	55,241
GSI Shortcall HERSK M. Molhoff	GSI	12,400	12,400	24,800	-	24,800	-	-
GSI Shortcall C Bean 2017	GSI	9,277	12,252	20,601	487	21,042	-	-
GSI Seimic Network Support	GSI	250,000	125,000	47,403	-	47,403	327,597	-
Eurovolc-Research and Innovation	EC	-	150,000	3,033	190	3,601	146,209	-
Geothermica EC Call-URBAN	GSI	-	21,083	648	16	697	20,370	-
Geothermica EC Call-COSEISMIQ	GSI	-	66,653	8,040	201	8,643	57,809	-
EC-PACIFIC	EC	-	506,344	28,577	1,605	35,468	469,271	6,629
Ka Lok Li Fellowship	IRC	-	22,962	10,231	-	10,231	12,731	-
Total Geophysics		**3,486,413**	**1,298,899**	**1,669,564**	**63,530**	**3,780,578**	**941,204**	**2,082,454**
Total Cosmic Physics		**4,223,814**	**2,145,097**	**2,695,724**	**126,026**	**4,949,496**	**1,293,389**	**2,261,890**
Total Net Balances - DIAS		**4,351,396**	**2,399,386**	**2,935,281**	**151,908**	**5,203,732**	**1,395,142**	**2,276,378**

Note Project receipts are applied as project income, at a level that equals the annual expenditure (recurrent plus capital) and overheads earned by the associated project.

The closing balances above represent overhead earned and advance funding to meet financial commitments in 2019.

The capital column outlines the expenditure on fixed assets during 2018.

4. Other Income

	2018 €	2017 €
Bank Interest	-	603
Fees and Grants	750	7,040
Other	17,095	3,059
Total	**17,845**	**10,702**

5. Remuneration

	Celtic Studies €	Theoretical Physics €	Cosmic Physics €	Admin. €	2018 Total €	2017 Total €
Core Funded Posts						
* Salaries/Wages	1,041,980	727,415	1,290,194	521,226	3,580,815	3,695,784
Retirement Benefit Costs	-	-	-	-	-	117,417
** Scholarships	97,296	34,276	156,625	-	288,197	316,502
Honoraria	500	-	-	-	500	(348)
	1,139,776	761,691	1,446,819	521,226	3,869,512	4,129,355

Note on Core Funded Posts
* Core Staff Numbers (WTE) 51.1 (2017:51.5), ECF Numbers (WTE) 55 (2017: 55).
** Core Scholars (WTE) 12 (2017: 13).

Note on Externally Funded Posts
Externally Funded Research Staff and Scholars Numbers (WTE) 45 (2017: 51).
Pension levy deductions of €231,908 (2017: €214,857) were paid to the Department of Education and Skills during 2018.

Key Management Remuneration
Key management personnel include the Registrar and the senior management team for whom the total remuneration cost was €635,507 (2017 €621,910) in the year.

(a) Aggregate Employee Benefits

	Celtic Studies €	Theoretical Physics €	Cosmic Physics €	Admin. €	2018 Total €	2017 Total €
Salaries/Wages	984,185	674,233	1,227,628	468,453	3,354,499	3,457,053
Overtime	-	-	-	-	-	-
Allowances	-	-	-	-	-	-
Employer's PRSI	57,795	53,182	62,566	52,773	226,316	238,731
Retirement Benefit Costs	-	-	-	-	-	117,417
	1,041,980	727,415	1,290,194	521,226	3,580,815	3,813,201

6. Number of Employees with Benefits in 2018 that fall within bands of €10,000 from €60,000 onwards.

	2018	2017
€60,000 to €69,999	1	2
€70,000 to €79,999	2	7
€80,000 to €89,999	5	1
€90,000 to €99,999	1	-
€100,000 to €109,999	2	3
€110,000 to €119,999	2	-
€120,000 to €129,999	-	-
€130,000 to €139,999	6	7

7. General Expenses

	Celtic Studies €	Theoretical Physics €	Cosmic Physics €	Admin. €	2018 Total €	2017 Total €
Miscellaneous	5,765	1,989	43,823	19,969	71,546	42,868
* Catering/Lunches	5,697	1,339	9,480	20,454	36,970	24,130
Professional Fees/ Consultancy	3,850	-	1,382	104,055	109,287	126,146
Training	200	100	2,495	2,050	4,845	14,955
Bank Charges	-	-	-	1,750	1,750	1,636
* Board Meeting Expenses	-	-	-	16,587	16,587	23,510
Health & Safety	-	-	-	5,968	5,968	8,533
**Communications	-	-	-	109,430	109,430	-
	15,512	3,428	57,180	280,263	356,383	241,778

Note
* Hospitality Expenditure in 2018 totalled €25,695.
** Strategy design and publication costs have been charged to communications.

7 (a) Professional Fees/Consultancy Costs

	2018 Total €	2017 Total €
Recruitment Costs	-	38,576
Communication costs	109,430	-
Internal Audit Fee	16,975	14,230
External Audit Fee	20,000	17,000
Governance Review	-	5,289
Legal Fees	1,476	18,946
Other Reviews and General Consultancies	70,836	32,105
	218,717	126,146

8. Leasing

Operating Leases

The premises occupied by the Institute are leased from the Office of Public Works.

The premises include Observatory House Dunsink, 5 Merrion Square, 9-10 Burlington Road and 31 Fitzwilliam Place.

There is a term of 80 years left on the lease for Observatory House and the other leases are renewed on an annual basis.

The commitment on foot of such leases in respect of 2019 is €113,609.

Office of Public Works Leases	Annual Rent €
Observatory House Dunsink	330
5 Merrion Square	5,022
9-10 Burlington Road	50,167
31 Fitzwilliam Place	58,090
	113,609

At 31 December 2018 the Institute had the following future minimum lease payments under non-cancellable operating leases for each of the following periods:

	2018 €	2017 €
Payable within one year	113,609	113,609
Between two and five years	990	990
After five years	25,080	25,410

Note
The Institute has a licence agreement with the OPW for a stores area located in Fenian Street at a cost of €1,000 per annum.

9. Retirement Benefit Costs

a) General Description of the Schemes

Staff members appointed before 1 January 2013 have pension terms under the relevant DIAS Superannuation Scheme as set out in:

(a) Dublin Institute for Advanced Studies (Superannuation) Scheme 1947 as amended

(b) Dublin Institute for Advanced Studies Spouses and Children's Contributory Scheme 1991

(c) Dublin Institute for Advanced Studies Non-Established Employees (Superannuation) Scheme 1983

(d) Dublin Institute for Advanced Studies Staff Superannuation (Consolidation) Scheme, 2008 and Dublin Institute for Advanced Studies Staff Superannuation Spouses' and Children's Contributory Pension (Consolidation) Scheme, 2008

The retirement benefits scheme is a defined benefit final salary retirement benefit arrangement with benefits and contributions defined by reference to current "model" public sector scheme regulations. The scheme provides a retirement benefit (eightieths per year of service), a gratuity or lump sum (three eightieths per year of service) and spouse's and children's retirement benefits.

Normal Retirement Age is a member's 65th birthday, and pre 2004 members have an entitlement to retire without actuarial reduction from age 60. Retirement Benefits in payment (and deferment) normally increase in line with general public sector salary inflation.

9. Retirement Benefit Costs (continued)

a) General Description of the Schemes (continued)

The valuation used for FRS 102 disclosures has been based on a full actuarial valuation by a qualified independent actuary taking account of the requirements of the FRS in order to assess the scheme liabilities at 31 December 2018.

The Single Public Service Pension Scheme (Single Scheme) is the defined benefit retirement benefit scheme for pensionable public servants appointed on or after 1 January 2013 in accordance with the Public Service Pension Scheme (Single Scheme and Other Provisions) Act 2012. The scheme provides for a retirement benefit and retirement lump sum based on career-average pensionable remuneration and spouse's and children's pensions. The minimum pension age is 66 years (rising in line with State pension age changes). It includes an actuarially-reduced early retirement facility from age 55. Retirement Benefits in payment increase in line with the consumer price index. The principal actuarial assumptions were as follows:

	2018	2017	2016
Rate of Increase in Salaries	2.75%	2.75%	2.50%
Rate of Increase in Retirement Benefits in Payment	2.25%	2.25%	2.00%
Discount Rate	2.00%	2.00%	1.75%
Inflation Rate	1.75%	1.75%	1.50%

The mortality basis adopted allows for improvements in life expectancy over time, so that the life expectancy at retirement will depend on the year in which a member attains retirement age (age 65). The table below shows the life expectancy for members attaining age 65 in 2018 and 2038.

	31/12/2018		31/12/2017	
Year of Attaining Age 65	2018	2038	2017	2037
Life Expectancy - Male	87.3	89.9	87.3	89.9
Life Expectancy - Female	88.7	90.9	88.7	90.9

b) Analysis of total retirement benefit costs charged to Expenditure

	2018 (€'000)	2017 (€'000)
Current Service Cost	1,681	1,396
Interest on Retirement Benefit Obligations	1,168	999
Employee Contributions	(126)	(139)
	2,723	2,256

c) Movement in Net Retirement Benefit Obligations during the financial year

	2018 (€'000)	2017 (€'000)
Retirement Benefit Obligations at 1 January	(59,123)	(57,807)
Current Service Cost	(1,681)	(1,396)
Interest Costs	(1,168)	(999)
Actuarial Gain/(Loss)	241	(505)
Retirement Benefits Paid in the Year	1,618	1,584
*** Retirement Benefit Obligations at 31 December**	(60,113)	(59,123)

*Liabilities relating to the Single Scheme amount to €746,000 and for the DIAS Scheme amounts to €59,367,000.

9. Retirement Benefit Costs (continued)

d) Deferred Funding for Retirement Benefits

DIAS recognises these amounts as an asset corresponding to the unfunded retirement benefit obligations on the basis of the set of principal actuarial and mortality assumptions set out in a) General Description of the Schemes and a number of past events. These events include the statutory basis for the establishment of the retirement benefit scheme, and the policy and practice in relation to funding public service retirement benefits including contributions by employees and the annual estimates process. While there is no formal agreement regarding these specific amounts with the Department of Education and Skills, DIAS has no evidence that this funding policy will not continue to meet such sums in accordance with current practice.

The Net Deferred Funding for Retirement Benefit Obligations recognised in Income and Expenditure Account was as follows:

	2018 (€'000)	2017 (€'000)
Funding Recoverable in Respect of Current Year Retirement Benefit Costs	2,849	2,395
State Grant Applied to Pay Pensioners	(1,618)	(1,584)
	1,231	811

The deferred funding asset for retirement benefits as at 31 December 2018 amounted to €60.113 million (2017: €59.123 million).

e) History of defined benefit obligations

	2018 (€'000)	2017 (€'000)	2016 (€'000)
Defined Benefit Obligations	60,113	59,123	57,807
Experience (Gains)/Losses on Scheme Liabilities Amount	(241)	518	(765)
Percentage of Scheme Liabilities.	(.40%)	0.88%	(1.32%)

The cumulative actuarial gain recognised in the Statement of Comprehensive Income amounts to €7,402,000 (2017: €7,643,000).

10. Disclosure of Transactions

The Council of the Institute adopts procedures in accordance with guidelines issued by the Department of Finance in relation to the disclosure of interests by Council Members and these procedures have been adhered to by the Council Members during the year.

No Council Member has declared an interest.

Notes to the Financial Statements (continued)

11. Disclosure of Council Members/Registrar Salary, Fees and Expenses

		Total Remuneration 2018 €	Total Expenses 2018 €	Total Remuneration 2017 €	Total Expenses 2017 €
Council Member					
Dr Vincent Cunnane		-	995	-	928
Members Appointed by the Governing Boards of Constituent Schools					
Professor Gerry Wrixon		-	228	-	460
Professor Arthur Jaffe		-	1,872	-	1,228
Professor Anders Ahlqvist	RIP 23/8/18	-	2,625	-	7,108
Professor Werner Nahm		-	-	-	-
Professor Chris Bean		-	-	-	-
Professor Ruairi Ó hUiginn		-	-	-	-
Professor Máire Ní Mhaonaigh	From 1/11/18	-	195	-	-
Registrar					
Mr. Cecil Keaveney *	Retired 06/17	-	-	48,226	100
Dr. Eucharia Meehan *		104,768	525	62,566	-
		104,768	6,440	110,792	9,824

*** Note** The Registrar's are in receipt of a salary only. They are not paid any bonus. The Registrar's retirement benefit entitlements does not exceed the standard entitlements in the model public sector defined benefit superannuation scheme. The Registrar, Mr. Cecil Keaveney retired in June 2017. He received a gratuity of €117,417.

12. Employer Retirement Benefit Contributions

Employer contributions in 2018 totalled €208,491 (2017: €170,987).

13. Fixed Assets: Property, Plant and Equipment

Cost	Furniture & Equipment €	Motor Vehicles €	Computers €	2018 Total €	2017 Total €
Opening Balance 1/1/2018	3,955,104	15,131	2,431,847	6,402,082	6,132,741
Additions*	2,234,775	-	107,725	2,342,500	272,797
Disposals	(25,753)	-	(88,435)	(114,188)	(3,456)
	6,164,126	15,131	2,451,137	8,630,394	6,402,082
Depreciation					
Opening Balance 1/1/2018	3,363,240	9,197	2,213,992	5,586,429	5,305,434
Charge	334,846	3,780	93,347	431,973	284,451
Disposals	(25,753)	-	(88,435)	(114,188)	(3,456)
	3,672,333	12,977	2,218,904	5,904,214	5,586,429
Net book value 31/12/2018	2,491,793	2,154	232,233	2,726,180	815,653

Note * All fixed assets in excess of €3,000 are capitalised in the books of DIAS.

14. Capital Reserve

	2018 €	2017 €
Balance at 1 January	815,653	827,307
Transfer to Income and Expenditure Account		
Income allocated to acquire fixed assets (Project Funded)	2,276,378	207,525
Income allocated to acquire fixed assets (Exchequer Funded)	66,122	65,272
Amortisation in line with asset depreciation	(431,973)	(284,451)
	1,910,527	(11,654)
Balance at 31 December	2,726,180	815,653

15. Payables due within twelve months

	2018 €	2017 €
Trade Payables	163,603	229,360
Accruals	234,468	432,092
VAT	66,638	117,703
Revenue Payables	154,333	148,922
Retirement Benefit Control Account*	836,786	-
	1,455,828	928,077

*** Note**
This figure relates to employer contributions for externally funded Research staff. The DIAS is liaising with DES/DPER in relation to the payment of the contributions.

Payables due after twelve months		2018 €	2017 €
The following funds are held on deposit.			
These comprise:	Vernam Hull Bequest	25,297	25,272
	Carmody Fund	2,461	2,461
	Retirement Benefit Control Account	-	627,314
		27,758	655,047

16. Receivables

	2018 €	2017 €
Prepayments	332,527	703,160
Book Sales Receivables	2,370	3,292
Sundry	15,271	15,301
Accrued Income	30,000	-
	380,168	721,753

17. Approval of Accounts

The Financial Statements were approved by Council on the 24th May 2019.

Institiúid Ard-Léinn Bhaile Átha Cliath

Ráitis Airgeadais

don bhliain dár críoch 31 Nollaig 2018

132 Ráiteas Rialachais agus Tuairisc na gComhaltaí Comhairle

136 Ráiteas Freagrachtaí na Comhairle

137 An Ráiteas ar an Rialú Inmheánach

139 Tuairisc an Ard-Reachtaire Cuntas agus Ciste

142 Ráiteas Ioncaim agus Caiteachais agus Cúlchistí Ioncaim Coinnithe

142 Ráiteas ar Ioncam Cuimsitheach

143 Ráiteas faoi Staid Airgeadais

144 Ráiteas Sreabhadh Airgid

145 Nótaí do na Ráitis Airgeadais

Ráiteas Rialachais agus Tuairisc na gComhaltaí Comhairle

Corparáid reachtúil is ea Institiúid Ard-Léinn Bhaile Átha Cliath agus bunaíodh í sa bhliain 1940 faoi Acht um Institiúid Ard-Léinn na bliana sin.

Tá an Chomhairle cuntasach don Aire Oideachais agus Scileanna agus freagrach as rialachas maith a chinntiú agus cuireann an tasc seo i gcrích trí chuspóirí straitéiseacha agus spriocanna a leagan síos agus trí chinntí straitéiseacha a ghlacadh i dtaca le gach mórábhar ghnó. Tá freagracht ag an gCláraitheoir/Príomhfheidhmeannach agus an fhoireann ardbhainistíochta as an mbainistiú rialta ó lá go lá, rialú agus treoir na hInstitiúide. Ní mór don Chláraitheoir/Príomhfheidhmeannach agus an fhoireann ardbhainistíochta an treo straitéiseach leathan atá leagtha síos ag an gComhairle a leanúint, agus ní mór dóibh a chinntiú go mbíonn tuiscint shoiléir ag comhaltaí uile na Comhairle ar na príomhghníomhartha agus cinntí a bhaineann leis an aonán, agus maidir le haon rioscaí suntasacha is dócha a bheidh ann. Feidhmíonn an Cláraitheoir/Príomhfheidhmeannach mar chaidreamh díreach idir an Chomhairle agus bainistíocht na hInstitiúide.

Freagrachtaí na Comhairle

Leagtar amach obair agus freagrachtaí na Comhairle san Acht um Institiúid Ard-Léinn 1940. Áirítear i measc na mbuanmhíreanna a bhíonn idir lámha ag baill na Comhairle:

- tuairiscí ó choistí,
- tuairiscí airgeadais/cuntais bainistíochta,
- tuairiscí feidhmíochta, agus
- nithe forchoimeádta.

Tá an Chomhairle freagrach as taifid imleor cuntasaíochta a choimeád a nochtaíonn le cruinneas réasúnta ag am ar bith staid airgeadais na Institiúid agus a chuidíonn lena chinntiú go gcloíonn na ráitis airgeadais le hAlt 28(2) den Acht.

Agus an Chomhairle ag ullmhú na ráitis airgeadais sin éilítear uirthi:

- polasaithe chuntasaíochta oiriúnacha a roghnú agus iad a chur i bhfeidhm go comhleanúnach,
- breithiúnais agus meastacháin a dhéanamh atá réasúnach agus stuama,
- na ráitis airgeadais a ullmhú ar bhonn gnóthais leantach mura bhfuil sé míchuí glacadh leis go leanfaidh an Institiúid ag oibriú, agus aon imeacht ábhartha ó chaighdeáin chuntasaíochta infheidhme a nochtadh agus a mhíniú. Tá an Cláraitheoir/Príomhfheidhmeannach as cothabháil agus iontaofacht na faisnéise corporáidí agus airgeadais ar shuíomh gréasáin na hInstitiúide.

Tá an Chomhairle freagrach freisin as cosaint a dhéanamh ar shócmhainní na hInstitiúide agus as bearta réasúnta a dhéanamh chun calaois agus mírialtachtaí eile a chosc agus a bhrath.

Measann an Chomhairle go dtugann ráitis airgeadais na hInstitiúide léargas fíor agus cóir ar fheidhmíocht airgeadais agus ar staid airgeadais na hInstitiúide ag 31 Nollaig 2018.

Struchtúr na Comhairle

Is iad comhaltaí na Comhairle an Cathaoirleach a cheapann an tUachtarán, ar chomhairle an Uachtaráin, triúr comhaltaí ex-officio agus seisear comhaltaí ceaptha ag Boird Rialaithe na gcomhscoileanna. Tá Cláraitheoir/Príomhfheidhmeannach agus Riarachán Lárnach ag DIAS. Ceapadh comhaltaí na Comhairle do thréimhse cúig bliana agus tagann siad le chéile dhá uair sa bhliain. Sa tábla thíos taispeántar an tréimhse ceapacháin do na comhaltaí reatha:

Comhalta Comhairle Ról Dáta a Ceapadh		
		1 Iúil 2015 go 30 Meitheamh 2020
An Dr. Vincent Cunnane	Cathaoirleach	
A. Deeks, Uachtarán COBÁC	Ball Ex-Officio	
P. Prendergast, Prov., TCD	Ball Ex-Officio	
M. Kennedy, Uachtarán, ARÉ	Ball Ex-Officio	Ó Mhárta 2017
An tOll. G. Wrixon	Ceaptha ag an mBord Rialaithe	
An tOll. A. Jaffee	Ceaptha ag an mBord Rialaithe	
An tOll. A. Ahlqvist	Ceaptha ag an mBord Rialaithe	Éagtha 23 Lúnasa 2018
An tOll. W. Nahm	Ceaptha ag an mBord Rialaithe	
An tOll. R. Ó hUiginn	Ceaptha ag an mBord Rialaithe	Ón 21 Samhain 2017
An tOll. C. Bean	Ceaptha ag an mBord Rialaithe	Ón 21 Samhain 2017
An tOll. M. Ní Mhaonaigh	Ceaptha ag an mBord Rialaithe	Ón 1 Samhain 2018

Tá Coiste Iniúchta agus Riosca bunaithe ag an gComhairle.

Tá ceathrar comhaltaí Boird ar an gCoiste Iniúchta agus Riosca. Is é ról an Choiste Iniúchta agus Riosca tacú leis an gComhairle i dtaca lena bhfreagrachtaí maidir le riosca, rialú agus rialachas agus dearbhú gaolmhar. Tá an Coiste Iniúchta agus Riosca neamhspleách ó bhainistiú airgeadais na heagraíochta. Go háirithe, déanann an Coiste deimhin de go ndéantar monatóireacht ghníomhach agus neamhspleách ar na córais rialaithe inmheánaigh lena n-áirítear gníomhaíochtaí iniúchta. Tuairiscíonn an Coiste Iniúchta agus Riosca don Chomhairle cúpla uair sa bhliain agus go foirmiúil i scríbhinn uair sa bhliain.

Is iad comhaltaí an Choiste Iniúchta agus Riosca: An tUas. John Boland, Cathaoirleach, An tOll. Dervilla Donnelly, An tOll. Ann Breslin agus An tUas. Stewart Roche. Sa bhliain 2018 tháinig an Coiste Iniúchta agus Riosca le chéile ceithre huair.

Sceideal Tinrimh, Táillí agus Speansais

Leagtar amach anseo thíos sceideal tinrimh ar chruinnithe de chuid na Comhairle agus an Choiste Iniúchta agus Riosca do 2018, lena n-áirítear táillí agus speansais a fuair gach comhalta.

	Comhairle	Coiste Iniúchta & Riosca	Táillí 2018 €	Speansais 2018 €
Líon Cruinnithe	2	4		
An Dr. V. Cunnane (Ch)	1		-	995
An tOll. G. Wrixon	2		-	228
An tOll. A. Jaffee	2		-	1,872
An tOll. A. Ahlqvist	1		-	2,625
An tOll. W. Nahm	2		-	-
An tOll. C. Bean	2		-	-
An tOll. R. Ó hUiginn	2		-	-
An tOll. M. Ní Mhaonaigh	1		-	-
An tUas. J. Boland (Ch)		4	-	-
An tOll. A. Breslin		3	-	-
An tOll. D. Donnelly		4	-	-
An tUas. S.Roche		3	-	-

Ráiteas Rialachais agus Tuairisc na gComhaltaí Comhairle (ar lean)

Mórathruithe Pearsanra

An tOll. A. Ahlqvist éagtha 23 Lúnasa 2018.

Ceapadh an tOll. M. Ní Mhaonaigh mar Chathaoirleach gníomhach ar Bhord an Léinn Chiltigh ó 1 Samhain 2018.

Ceapadh an tUas. Stewart Roche ina chomhalta den Choiste Iniúchta agus Riosca ón 19 Aibreán 2018.

Nochtuithe a Éilíonn an Cód Cleachtais chun Comhlachtaí Stáit a Rialú (2016)

Tá an Chomhairle freagrach as a chinntiú gur chomhlíon an Institiúid riachtanais an Chóid Cleachtais chun Comhlachtaí Stáit a Rialú ("an Cód"), mar a d'fhoilsigh an Roinne Caiteachais Phoiblí agus Athchóirithe i mí Lúnasa 2016. Éilíonn an Cód na nochtuithe seo a leanas:

Briseadh Síos ar Shochair Ghearrthéarma na bhFostaithe

Déantar sochair ghearrthéarma na bhfostaithe de bhreis ar €60,000 a rangú sna bandaí seo a leanas:

Raon		Líon na bhfostaithe	
Ó	Go	2018	2017
€60,000 -	€69,000	1	2
€70,000 -	€79,000	2	7
€80,000 -	€89,000	5	1
€90,000 -	€99,000	1	-
€100,000 -	€109,000	2	3
€110,000 -	€119,000	2	-
€120,000 -	€129,000	0	-
€130,000 -	€139,000	6	7

Nóta: chun críocha an nochtaithe seo, áirítear le sochair ghearrthéarma na bhfostaithe i dtaca le seirbhísí a chuireadh ar fáil le linn na tréimhse tuairiscithe tuarastal, ach ní áirítear ÁSPC an fhostóra.

Costais Chomhairliúcháin

Airítear le costais chomhairliúcháin an costas ar chomhairliúchán seachtrach don bhainistíocht agus ní áirítear feidhmeanna seachfhoinsithe "gnó mar is gnách".

	2018 €	2017 €
Earcaíocht	-	38,576
Táillí Dlí	1,476	18,946
Airgeadais/achtúireach	36,975	36,519
Cumarsáid *	109,430	7,780
Eile	70,836	24,325
Iomlán na gCostas Comhairliúcháin a gearradh leis an gcuntas Ioncaim agus Caiteachais	**218,717**	**126,146**

Nóta * Tá costas dearadh/foilsiú agus Seoladh an Ráiteas Straitéise san áireamh i gcostaisí cumarsáide.

Caiteachas Taistil agus Cothabhála

Déantar Caiteachas Taistil agus Cothabhála a rangú mar seo a leanas:

	2018 €	2017 €
Náisiúnta		
- Comhairle	710	1,388
- Fostaithe	18,885	17,206
- Cuairteoirí Acadúla	-	1,394
- Tograí*	378,882	69,449
- Obair Allamuigh	20,000	-
Idirnáisiúnta		
- Comhairle	-	8,336
- Fostaithe	37,239	58,900
- Cuairteoirí Acadúla	46,232	22,592
- Tograí	250,063	109,084
Iomlán	**752,011**	**288,349**

Nóta * Tá costais am loinge €277,857 san áireamh i dTograí, faoi chaiteachas taistil náisiúnta.

Caiteachas Fáilteachais

Áirítear sa chuntas Ioncaim agus Caiteachais an caiteachas fáilteachais seo a leanas:

	2018 €	2017 €
Fáilteachas Foirne	4,979	3,124
Fáilteachas Cliaint	20,716	10,311
Iomlán	**25,695**	**13,435**

Ráiteas Comhlíonta

Chomhlíon an Institiúid riachtanais an Chóid Cleachtais chun Comhlachtaí Stáit a Rialú (2016), mar a d'fhoilsigh an Roinn Caiteachais Phoiblí agus Athchóirithe i mí Lúnasa 2016.

Vincent Cunnane
Cathaoirleach

Dáta 28 Meitheamh 2019

Eucharia Meehan
Cláraitheoir

Dáta 28 Meitheamh 2019

Ráiteas Freagrachtaí na Comhairle

Éilítear ar Chomhairle Institiúid Ard-Léinn Bhaile Átha Cliath faoi alt 28(2) den Acht um Institiúid Ard-Leighinn, 1940 ráitis airgeadais a ullmhú ar shlí a cheadóidh an tAire Oideachais & Eolaíochta le comhthoiliú an Aire Airgeadais agus an Chomhairle ag ullmhú na ráitis airgeadais sin éilítear uirthi:

- polasaithe chuntasaíochta oiriúnacha a roghnú agus iad a chur i bhfeidhm go comhleanúnach;
- breithiúnais agus meastacháin a dhéanamh atá réasúnach agus stuama;
- na ráitis airgeadais a ullmhú ar bhonn gnóthais leantach mura bhfuil sé míchuí glacadh leis go leanfaidh an Institiúid ag oibriú; agus
- aon imeacht ábhartha ó chaighdeáin chuntasaíochta infheidhme a nochtadh agus a mhíniú.

Tá freagracht ar an gComhairle taifid chearta iomchuí a choinneáil a nochtaíonn ag aon am le cruinneas réasúnach staid airgeadais na hInstitiúide agus a chuireann ar a cumas a chinntiú go gcloínn na ráitis airgeadais le hAlt 28(2) den Acht. Tá freagracht ar an gComhairle sócmhainní na hInstitiúide a shlánú agus as céimeanna réasúnacha a ghlacadh le cosc a chur ar chalaois agus ar neamhrialtachtaí eile agus iad a aimsiú.

Ruairí Ó hUiginn
Comhalta Den Chomhairle

Werner Nahm
Comhalta Den Chomhairle

Dáta 28 Meitheamh 2019

An Ráiteas ar an Rialú Inmheánach

Scóip na Freagrachta

Thar ceann na Comhairle na hInstitiúide, aithnímid an fhreagracht atá orainn a chinntiú go ndéantar córas éifeachtach rialaithe inmheánaigh a chothabháil agus a fheidhmiú. Cuirtear san áireamh leis an bhfreagracht seo na ceangaltais faoin gCód Cleachtais chun Comhlachtaí Stáit a Rialú (2016).

Cuspóir an Chórais Rialaithe Inmheánaigh

Ní féidir leis an gcóras ach a dhearbhú go réasúnta, seachas go hiomlán, go gcosnaítear sócmhainní, go n-údaraítear idirbhearta agus go gcuirtear i dtaifead iad, agus go gcoisctear earráidí nó neamhrialtachtaí ábhartha nó go mbraithfí iad ar bhealach tráthúil.

An Cumas chun an Riosca a Láimhseáil

Tá Coiste Iniúchta agus Riosca ag an gComhairle ar a bhfuil ceathrar ball seachtrach.

Leantar leis go bhfuil an Coiste Iniúchta agus Riosca ag déanamh athbhreithnithe ar chúrsaí rialaithe inmheánaigh agus ar shaincheisteanna a tharraingíonn anuas an tArd-Reachtaire Cuntas agus Ciste iad.

In 2018, tháinig an Coiste Iniúchta agus Riosca le chéile ceithre huaire.

Ina theannta sin, cuireadh tuarascáil 2018 ar na córais rialaithe inmheánaigh ar fáil do Chomhaltaí na Comhairle, de réir mar a bhí sé ullmhaithe ag an Iniúchóir Inmheánach.

Creat Riosca agus Rialaithe

Tá céimeanna glactha ag an gComhairle chun déanamh cinnte de go mbeidh timpeallacht rialaithe chuí i bhfeidhm trí

- na freagrachtaí bainistíochta a shainmhíniú go soiléir;
- glacadh le prionsabail an rialachais chorparáidigh atá le fáil i gCód Cleachtais 2016 chun Comhlachtaí Stáit a Rialú;
- nósanna imeachta foirmiúla a bhunú chun teipeanna rialaithe suntasacha a thuairisciú agus a chinntiú go ndéantar gníomh ceartaitheach cuí; agus
- nósanna imeachta foirmiúla a bhunú chun monatóireacht a dhéanamh ar ghníomhaíochtaí na heagraíochta agus chun a sócmhainní a chosaint;

Tá próisis curtha i mbun ag an gComhairle chun rioscaí gnó a aithint agus a mheas

- tríd an cineál de rioscaí atá os comhair na hInstitiúide, an méid atá i gceist leo agus na himpleachtaí airgeadais a bhaineann leo a aithint, lena n-áirítear an méid agus na catagóirí a mheasann an Institiúid a bheith inghlactha;
- trí mheasúnú a dhéanamh ar an dóchúlacht go dtarlóidh rioscaí atá aitheanta;
- trí mheasúnú a dhéanamh ar an gcumas atá ag an Institiúid chun na rioscaí sin a tharlaíonn a bhainistiú agus a mhaolú;
- trí mheasúnú a dhéanamh ar na costais a bhaineann le rialuithe áirithe a chur i bhfeidhm i gcoibhneas leis an tairbhe a bhainfear amach astu.

Monatóireacht agus Athbhreithniú Leanúnach

Tá an córas rialaithe inmheánaigh airgeadais bunaithe ar chreat faisnéisithe rialta bainistíochta, nósanna imeachta riaracháin, agus an leithdheighilt dualgas, agus córas tarmligin agus cuntasachta ina measc.

Áirítear leis, ar bhonn ar leith:

- córas cuimsitheach buiséadaithe lena ngabhann buiséad bliantúil, a dhéanann Comhairle na hInstitiúde a athbhreithniú agus a chomhaontú;
- go ndéanann an Chomhairle athbhreithnithe rialta ar thuarascálacha tréimhsiúla agus bliantúla airgeadais ina léirítear an fheidhmíocht airgeadais i gcomparáid le réamhaisnéisí;
- spriocanna a leagan síos chun an fheidhmíocht airgeadais agus cineálacha eile den fheidhmíocht a thomhas;
- go gcloítear le treoirlínte maidir leis an soláthar poiblí;
- go ndéanann an Chomhairle athbhreithnithe rialta ar thionscadail taighde sheachtaigh.

An Soláthar

Deimhnímid go bhfuil gnásanna curtha i bhfeidhm ag an DIAS chun áirithiú go gcomhlíontar leis na rialacha agus treoracha reatha um an soláthar.

Dearbhaímid go bhfuil DIAS ag comhlíonadh na rialacha agus treoirlínte reatha maidir leis an soláthar sa bhliain dar críoch an 31 Nollaig 2018.

Saincheisteanna Rialaithe Inmheánaigh

Níor tugadh aon laigí sa rialú inmheánach i faoi deara ndáil le 2018 a éilíonn nochtadh sna ráitis airgeadais.

An Ráiteas ar an Rialú Inmheánach (ar lean)

Athbhreithniú ar an Éifeachtúlacht

Deimhnímid go bhfuil gnásanna curtha i bhfeidhm ag an DIAS chun monatóireacht a dhéanamh ar éifeachtúlacht a cuid gnásanna bainistíochta riosca agus rialaithe.

Tá monatóireacht agus athbhreithniú na Comhairle ar éifeachtacht an chórais rialaithe inmheánaigh bunaithe ar obair an iniúchóra inmheánaigh, an Cláraitheora agus oifigigh eile san Institiúid a bhfuil freagracht orthu as creat rialaithe inmheánaigh cuí a fhorbairt agus a chothabháil chomh maith le barúlacha an Choiste Iniúchta agus Riosca agus an Ard-Reachtaire Cuntas agus Ciste a thugann sé ina litir bhainistíochta nó i dtuarascálacha eile.

Deimhnímid go bhfuil athbhreithniú déanta ag an gComhairle ar éifeachtacht rialuithe inmheánacha na hInstitiúide sa bhliain dar críoch an 31 Nollaig 2018. Deimhnímid go bhfuil córas cuí rialaithe inmheánaigh agus airgeadais i bhfeidhm ag an Institiúid.

Sínithe thar ceann Chomhairle na hInstitiúidee

Dr. Vincent Cunnane
Cathaoirleach-Comhairle Na hInstitiúide

Dr. Eucharia Meehan
Cláraithheoir

Dáta 28 Meitheamh 2019.

Ard-Reachtaire Cuntas agus Ciste

Tuairisc le cur i láthair Thithe an Oireachtais

Institiúid Ard-Léinn Bhaile Átha Cliath

Tuairm ar na ráitis airgeadais

Tá ráitis airgeadais Institiúid Ard-Léinn Bhaile Átha Cliath don bhliain dar críoch 31 Nollaig 2018 iniúchta agam faoin Acht Um Institiúid Ard-Léinn, 1940. Tá na ráitis airgeadais comhdhéanta de

- an ráiteas ar ioncam agus caiteachas agus cúlchistí ioncaim coinnithe,
- an ráiteas ar ioncam cuimsitheach,
- an ráiteas ar shuíomh airgeadais,
- an ráiteas ar shreabhadh airgid, agus
- na nótaí gaolmhara, lena n-áirítear achoimre ar pholasaithe cuntasaíochta suntasacha.

I mo thuairimse, maidir leis na ráitis airgeadais, tugtar leo léargas fíor agus cothrom ar shócmhainní, dliteanais agus suíomh airgeadais na hInstitiúide ag 31 Nollaig 2018 agus ar a hioncam agus ar a caiteachas don bhliain 2018 i gcomhréir leis an gCaighdeán Tuairiscithe Airgeadais (FRS) 102- *An Caighdeán Tuairiscithe Airgeadais a bhaineann leis an Ríocht Aontaithe agus Poblacht na hÉireann.*

Bunús leis an tuairim

Rinne mé m'iniúchadh ar na ráitis airgeadais i gcomhréir leis na Caighdeáin Idirnáisiúnta maidir le hIniúchóireacht (ISAnna) mar atá molta ag an Eagraíocht Idirnáisiúnta Uasfhoras Iniúchóireachta. Tugtar cur síos san aguisín ar mo fhreagrachtaí faoi na caighdeáin sin. Táim neamhspleách ar an Institiúid agus tá mo fhreagrachtaí eitice eile comhlíonta agam i gcomhréir leis na caighdeáin.

Creidim go bhfuil an fhianaise iniúchta atá faighte agam imleor agus cuí chun bunús a sholáthar do mo thuairim.

Tuairisc ar fhaisnéis eile seachas na ráitis airgeadais, agus ar nithe eile

Tá faisnéis áirithe eile curtha i láthair ag an Institiúid chomh maith leis na ráitis airgeadais. Áirítear anseo ráiteas freagrachtaí na Comhairle agus an ráiteas maidir le rialú inmheánach. San aguisín leis an tuairisc seo, tugtar cur síos ar mo fhreagrachtaí i dtaca leis an bhfaisnéis sin, agus i dtaca le nithe eile a dtugaim cur síos orthu ar bhinn eisceachta.

Níl aon rud le tuairisciú agam ina leith sin.

Patricia Sheehan
Le haghaidh agus thar ceann an
Ard-Reachtaire Cuntas agus Ciste

Aguisín leis an tuairisc

Freagrachtaí chomhaltaí na Comhairle

Tá comhaltaí na Comhairle freagrach as

- na ráitis airgeadais a ullmhú san fhoirm a leagtar amach faoin den Acht Um Institiúid Ard-Léinn 1940
- a chinntiú go dtugtar leis na ráitis airgeadais léargas fíor agus cothrom i gcomhréir le FRS102
- rialtacht na n-idirbheart a chinntiú
- measúnú cé acu an bhfuil sé cuí an bonn gnóthais leantach na cuntasaíochta a úsáid, agus
- cibé rialachas inmheánach a chineann siad atá riachtanach chun ráitis airgeadais a ullmhú atá saor ó mhíráiteas ábhartha, cibé acu calaois nó neamhrialtacht is cúis leis sin.

Freagrachtaí an Ard-Reachtaire Cuntas agus Ciste

Éilítear orm faoin Acht Um Institiúid Ard-Léinn 1940 iniúchadh a dhéanamh ar ráitis airgeadais na hInstitiúide agus tuairisc a thabhairt do Thithe an Oireachtais ina leith.

Is é an aidhm atá agam agus an t-iniúchadh á dhéanamh agam dearbhú réasúnta a fháil faoi cé an bhfuil na ráitis airgeadais mar iomlán saor ó mhíráiteas ábhartha mar thoradh ar chalaois nó neamhrialtacht. Leibhéal ard dearbhaithe is ea dearbhú réasúnta, ach ní barántas é go n-aimseoidh iniúchadh a dhéantar i gcomhréir leis na ISAnna míráiteas ábhartha i gcónaí más ann dó. Féadfaidh míráitis a bheith ann mar thoradh ar chalaois nó earráid agus meastar go bhfuil siad ábhartha más rud é, iontu féin nó go carnach, go bhféadfaí a mheas go mbeadh tionchar acu ar chinntí eacnamaíochta úsáideoirí a rinneadh ar bhonn na ráiteas airgeadais seo.

Mar chuid d'iniúchadh i gcomhréir leis na ISAnna, cuirimse breithiúnas gairmiúil i bhfeidhm agus coinním sceipteachas gairmiúil le linn an iniúchta. Agus é sin á dhéanamh agam,

- Aithním agus déanaimse measúnú ar rioscaí míráitis ábhartha faoi na airgeadais cibé acu calaois nó neamhrialtacht is cúis leis; déanaimse nósanna imeachta iniúchta a dhearadh agus a chur i gcrích a fhreagraíonn do na rioscaí sin; agus faighimse fianaise atá imleor agus iomchuí chun bunús a sholáthar do mo thuairim. Tá riosca níos mó ann nach mbraithfear míráiteas ábhartha ag eascairt as calaois ná ceann ag eascairt as earráid, toisc go bhféadfaidh claonpháirtíocht, brionnú, easnaimh inteannacha, mífhaisnéisí nó sárú ar rialú inmheánach a bheith ann le calaois.
- Faighimse tuiscint ar rialú inmheánach atá ábhartha don iniúchadh d'fhonn nósanna imeachta iniúchta a dhearadh atá iomchuí do na cúinsí, ach ní chun críche tuairim a nochtadh maidir le héifeachtacht na rialuithe inmheánacha.
- Déanaimse meastóireacht ar oiriúnacht na bpolasaithe cuntasaíochta a úsáidtear agus ar réasúntacht na meastachán cuntasaíochta agus na nochtuithe gaolmhara.
- Déanaimse amach cé acu an bhfuil sé oiriúnach bonn gnóthais leantach na cuntasaíochta a úsáid agus, bunaithe ar an bhfianaise iniúchta a fhaightear, cé acu an bhfuil éiginnteacht ábhartha ann i dtaca le heachtaí nó coinníollacha a d'fhéadfadh amhras suntasach a chur ar chumas na hInstitiúide leanúint ar aghaidh mar ghnóthas leantach. Má mheasaim go bhfuil éiginnteacht ábhartha ann, tá orm aird a tharraingt i mo thuairisc ar na nochtuithe gaolmhara sna ráitis airgeadais nó, más rud é nach leor na nochtuithe sin, mo thuairim a leasú. Tá mo thuairimí bunaithe ar an bhfianaise iniúchta a fuarthas suas chomh fada le dáta mo thuairisce. D'fhéadfadh ócáidí nó coinníollacha sa todhchaí cur ar an Institiúid stopadh mar ghnóthas leantach, áfach.
- Déanaimse meastóireacht ar chur i láthair, struchtúr agus ábhar na ráiteas airgeadais ar an iomlán, lena n-áirítear na nochtuithe, agus cé acu an léiríonn na ráitis airgeadais na bun-idirbhearta agus na bun-eachtraí ar bhealach a bhaineann cur i láthair amach atá cóir.

Cuirimse in iúl dóibh siúd atá freagrach as rialachas, i measc nithe eile, an scóip agus an t-amú atá beartaithe don iniúchadh agus torthaí suntasacha an iniúchta, lena n-áirítear easnaimh shuntasacha ar bith sa rialú inmheánach a aithním le linn m'iniúchta.

Faisnéis seachas na ráitis airgeadais

Ní chlúdaíonn mo thuairim faoi na ráitis airgeadais an fhaisnéis eile a chuirtear i láthair leis na ráitis sin, agus ní léirím aon chineál de thuairim dearbhaithe ina leith sin.

I dtaca le m'iniúchadh ar na ráitis airgeadais, tá orm faoi na ISAnna an fhaisnéis eile a chuirtear i láthair a léamh agus, é sin á dhéanamh agam. a mheas cé acu an bhfuil an fhaisnéis eile neamhréireach go hábhartha leis na ráitis airgeadais nó le heolas a fuarthas le linn an iniúchta, nó más cosúil ar bhealach eile go bhfuil sé míráite go hábhartha. Más rud é, bunaithe ar an obair atá déanta agam, go ndéanaimse amach go bhfuil míráiteas ábhartha ar an fhaisnéis eile seo, tá orm an fhíric seo a thuairisciú.

Tuairisciú ar ábhair eile

Déantar m'iniúchadh le tagairt do na tosca speisialta a bhaineann le comhlachtaí Stáit i dtaca lena mbainistiú agus oibriú. Tuairiscím má tá aon nithe ábhartha a bhaineann leis an gcaoi ina bhfuil gnó poiblí déanta.

Féachaim le fianaise a fháil maidir le rialtacht na n-idirbheart airgeadais le linn iniúchta. Tuairiscím má tá aon chás ábhartha ann nár feidhmíodh airgead poiblí chun na gcríoch a bhí beartaithe nó sa chás nár lean na hidirbhearta do na húdaráis a rialaíonn iad.

Tuairiscím eisceachtaí más rud é, i mo thuairimse,

- nach bhfuair mé an fhaisnéis agus na mínithe ar fad a theastaigh uaim do m'iniúchadh, nó
- nár leor na taifid chuntasaíochta chun na ráitis airgeadais a iniúchadh go réidh agus mar ba cheart, nó
- nach bhfuil na the ráitis airgeadais ag teacht leis na taifid chuntasaíochta.

Ráiteas Ioncaim agus Caiteachais agus Cúlchistí Ioncaim Coinnithe

	Notaí	2018 €	2017 €
Ioncam	2		
Deontas Oireachtais		6,731,000	6,566,000
Glan-mhaoiniú iarchurtha do shochair scoir	9.d	1,230,721	811,160
Díolacháin Foilseachán		34,123	42,095
Ioncam Tionscadail	3	5,355,640	2,238,227
Ioncam ForchostasThionscadail		-	78,356
Eile	4	17,845	10,702
		13,369,329	9,746,540
Aistriú ó Cúlchiste Caipitil	14	(1,910,527)	11,654
		11,458,802	9,758,194
Caiteachas	2		
Scoil an Léinn Cheiltigh		1,875,337	1,675,927
Scoil na Fisice Teoiriciúla		1,985,873	1,633,748
Scoil na Fisice Cosmaí		5,090,140	4,046,186
Riarachán		2,418,614	2,342,113
		11,369,964	9,697,974
Barrachas don bhliain		**88,838**	**60,220**
Iarmhéid amhail an 1 Eanáir		973,057	912,837
Iarmhéid amhail an 31 Nollaig		**1,061,895**	**973,057**

Ráiteas ar Ioncam Cuimsitheach		2018 €	2017 €
Barrachas don bhliain		88,838	60,220
Gnóthachain/(caillteanais) ó thaithí ar oibleagáidí sochair scoir		241,000	(518,000)
Athruithe i bhfoshuíomhanna atá mar bhonn le luach reatha na n-oibleagáidí sochair scoir		-	13,000
(Caillteanas)/Gnóthachan Achtúireach ar Oibleagáidí Sochair Scoir	**9.c**	**241,000**	**(505,000)**
Leasú ar Mhaoiniú Sochair Scoir Iarchurtha		**(241,000)**	**505,000**
Iomlán aitheanta don bhliain		**88,838**	**60,220**

Is cuid de na ráitis airgeadais seo iad an Ráiteas ar Shreabhadh Airgid agus nótaí 1 go 17.

Ruairí Ó hUiginn
Comhalta Den Chomhairle

Dáta 28 Meitheamh 2019

Werner Nahm
Comhalta Den Chomhairle

Dáta 28 Meitheamh 2019

Ráiteas Faoi Staid Airgeadais

	Notaí	2018 €	2017 €
Sócmhainní			
Sócmhainní Seasta: Maoin, Fearas agus Treallamh	13	2,726,180	815,653
Sócmhainní Reatha			
Airgead sa Lámh agus ag an mBanc		3,560,455	6,185,822
Infháltais	16	380,168	721,753
Infháltais Tionscadail	3.a	1,030,313	214,064
Sócmhainní Iomlána		**7,697,116**	**7,937,292**
Lúide Dliteanais			
Nithe Iníoctha - Suimeanna le híoc laistigh de bhliain amháin			
Nithe Iníoctha	15	1,455,828	928,077
Nithe Tionscadail Iníoctha	3.a	2,425,455	4,565,458
Creidiúnaithe - méideanna atá dlite tar éis bliana amháin	15	27,758	655,047
Dliteanais Iomlána Roimh Phinsin		**3,909,041**	**6,148,582**
Sócmhainní lúide dliteanais Roimh Phinsin		**3,788,075**	**1,788,710**
Maoiniú an Phinsin Iarchurtha	9.d	60,113,000	59,123,000
Dliteanais Phinsin	9.c	(60,113,000)	(59,123,000)
		0	**0**
Sócmhainní Glana		**3,788,075**	**1,788,710**
Maoinithe ag:			
Cuntas Ioncaim agus Caiteachais		1,061,895	973,057
Cúlchiste Caipitil	14	2,726,180	815,653
		3,788,075	**1,788,710**

Is cuid de na ráitis airgeadais seo iad an Ráiteas ar Shreabhadh Airgid agus nótaí 1 go 17.

Ruairí Ó hUiginn
Comhalta Den Chomhairle

Dáta 28 Meitheamh 2019

Werner Nahm
Comhalta Den Chomhairle

Dáta 28 Meitheamh 2019

Ráiteas Sreabhadh Airgid

	Notaí	2018 €	2017 €
Réiteach barrachais oibríochta chuig glan-insreabhadh airgid ó ghníomhaíochtaí oibríochta			
Barrachas don bhliain		**88,838**	**60,220**
Ús infhaighte	4		(603)
Méadú/(Laghdú) ar Nithe Iníoctha		(99,538)	570,400
(Méadú) ar Infháltais		341,585	(453,672)
Glan ardú i gCláir Thaighde agus Táillí		(2,956,252)	(53,182)
Dímheas	13	431,973	284,451
Aistriú Cúlchiste Caipitil	14	1,910,527	(11,654)
Glan insreabhadh Airgid tirim ó ghníomhaíochtaí oibríochta		(282,867)	395,960
Ráiteas Sreabhadh Airgid			
Glan insreabhadh airgid tirim ó ghníomhaíochtaí oibríochta		(282,867)	395,960
Aischuir ar infheistíochtaí agus seirbhísiú airgeadais			
Ús Bainc Infhaighte	4	-	603
Caiteachas Caipitiúil			
Ceannach Sócmhainní Inláimhsithe	13	(2,342,500)	(272,797)
Ardú ar Airgead		**(2,625,367)**	**123,766**
Réiteach glaninsreabhadh airgead tirim chuig gluaiseacht i nglanchistí			
Ardú ar Airgead Tirim		(2,625,367)	123,766
Iarmhéid faoin 1 Eanáir		6,185,822	6,062,056
Iarmhéid faoin 31 Nollaig		**3,560,455**	**6,185,822**

Anailís ar athrú i nglanchistí	**Airgead infhaighte sa Bhanc €**	**Airgead infhaighte sa Bhanc €**
I dtús na bliana	6,185,822	6,062,056
Sreabhadh Airgid	(2,625,367)	123,766
Ag deireadh na bliana	**3,560,455**	**6,185,822**

Is cuid de na ráitis airgeadais seo iad an Ráiteas ar Shreabhadh Airgid agus nótaí 1 go 17.

Ruairí Ó hUiginn
Comhalta Den Chomhairle

Dáta 28 Meitheamh 2019

Werner Nahm
Comhalta Den Chomhairle

Dáta 28 Meitheamh 2019

Nótaí do na Ráitis Airgeadais

1. Polasaithe Chuntasaíochta

Bunaíodh an Institiúid faoin Acht um Institiúid Ard-Leighinn, 1940.

Áirítear ar a cuid feidhmeanna saoráidí a sholáthar le hard-léinn a chur chun cinn tuilleadh agus le taighde a dhéanamh i mbrainsí speisialtachta eolais. Tá trí Scoil inti - Scoil an Léinn Cheiltigh, Scoil na Fisice Teoiriciúla agus Scoil na Fisice Cosmaí.

a) Bunús Cuntasaíochta

Seo é an chéad chnuasach de ráitis airgeadais ullmhaithe ag Institiúid Ard-Léinn Bhaile Átha Cliath i gcomhréir le caighdeáin chuntasaíochta eisithe ag an gComhairle Tuairiscithe Airgeadais, lena n-áirítear FRS 102 "An Caighdeán Tuairiscithe Airgeadais is infheidhme sa Ríocht Aointaithe agus I bPoblacht na hÉireann" ("FRS 102").

Chun ráitis airgeadais a ullmhú i gcomhréir le FRS 102 ní mór meastacháin criticiúla cuntasaíochta áirithe a úsáid. Éilítear leis freisin go ndéanfaidh an bhainistíocht breithiúnas agus beartais chuntasaíochta na hInstitiúide á gcur i bhfeidhm. (Féach Nóta 17).

Ullmhaíodh na ráitis airgeadais ar bhonn fabhraithe faoin gcoinbhinsiún costais stairiúil agus comhlíonann siad caighdeáin tuairiscithe airgeadais na Comhairle Tuairiscithe Airgeadais.

Cuireadh na beartais chuntasaíochta seo a leanas i bhfeidhm:

b) Deontais Oireachtais

Taispeántar ioncam ar bhunús airgid isteach.

c) Sócmhainní Seasta

Is éard is Sócmhainní Seasta ann ná troscán, trealamh, ríomhairí agus mótarfheithiclí na hInstitiúide agus taispeántar iad ag costas lúide dímheas carntha. Is mar seo a leanas atá na rátaí dímheasa, ríofa ar bhunús dronlíneach:

Troscán agus Trealamh	10%
Ríomhairí	25%
Mótarfheithiclí	25%

Faightear áitribh atá i seilbh na hInstitiúide ar léas ó Oifig na nOibreacha Poiblí.

Ag gach tuairiscithe déanann an Institiúid measúnú cé acu an bhfuil aon chomhartha de bhearnúchán ann. Má tá a leithéid de chomhartha ann, déantar méid in-aisghabhála na sócmhainne a ríomh, is é sin an ceann is airde idir an luach cóir lúide costais le díol agus a luach in úsáid. Aithnítear caillteanas bearnúcháin má sháraíonn an tsuim ghlanluacha an tsuim in-aisghabhála.

Cinntear gnóthachain agus caillteanais ar dhiúscairtí trí chomparáid a dhéanamh idir na fáltais agus an tsuim in-aisghabhála agus aithnítear iad laistigh den Chuntas Ioncaim agus Caiteachais.

Sócmhainní Oidhreachta

Tá sócmhainní oidhreachta áirithe ag an Institiúid, mar shampla leabharlanna ina bhfuil lámhscríbhinní, bailiúcháin leabhar agus paimfléad, chomh maith le hionstraimí eolaíochta seanda, agus déanann an Institiúid cothabháil orthu uile.

Tá bailiúchán leabhar agus trealamh áirithe i liosta na sócmhainní, chomh maith le fearas réalteolaíocha seanda agus cloig seanda a bhfuil miondealú déanta orthu sa liosta de na hábhair faoi árachas.

Caomhnaíonn an Institiúid na sócmhainní seo le haghaidh taighde chomh maith le idirghníomhaíocht éagsúil idir an Institiúid agus an pobal.

De réir chaighdeán cuntasaíochta FRS102, ní dhéantar sócmhainní oidhreachta a fuarthas roimh an 1 Eanáir 2007 a chaipitliú sna ráitis airgeadais ós rud é nach bhfuil meastacháin iontaofa costais nó luacha ar fáil ar chostas réasúnta ina leith.

Nótaí do na Ráitis Airgeadais (ar lean)

1. Polasaithe Chuntasaíochta (ar lean)

c) Sócmhainní Seasta (ar lean)

Ní bhfuarthas aon sócmhainní oidhreachta tar éis an 1 Eanáir 2007, laistigh de na tairseacha de réir mar a shonraítear iad sa pholasaí seo. Déanfaidh an Institiúid caipitliú ar aon sócmhainní a fhaightear tar éis an dáta seo ar a gcostas (i gcás éadálacha a rinne an Institiúid), é sin nó ar a luach cóir (sa chás gur síntiús atá ann).

Déanfar sócmhainní oidhreachta bronnta a chaipitliú agus tagairt tugtha do dhíolacháin ar déanadh iad le déanaí ar rudaí dá macasamhail.

Ní dhéantar sócmhainní oidhreachta a bhfuil luach níos lú ná €10,000 orthu a chaipitliú sna ráitis airgeadais.

De réir mar a cheadaíonn cistí, agus más rud é go meastar gur gá, déantar caomhnú ar mhíreanna oidhreachta agus tuairiscítear an caiteachas a thabhaítear ina leith sna cuntais ioncaim agus caiteachais.

Ní dhiúscraíonn an Institiúid aon mhíreanna oidhreachta, bíodh siad faighte, bronnta nó fágtha le huacht.

d) Cúlchiste Caipitil

Léiríonn cúltaca caipitiúil luach neamh-amúchta ioncaim a úsáidtear le Sócmhainní Seasta a cheannach.

e) Leabharlann

Díscríobhtar caiteachas ar leabhair leabharlainne agus ábhair sa bhliain a dtabhaítear é.

f) Foilseacháin

Díscríobhtar caiteachas ar fhoilseacháin sa bhliain a dtabhaítear é.

g) Aoisliúntas

Oibríonn Institiúid Ard-Léinn Bhaile Átha Cliath scéim scoir sochair shainithe, atá cistithe go bliantúil ar bhonn 'íoc de réir a chéile' ó airgead atá ar fáil don Bhord, lena n-áirítear airgead arna sholáthar ag an Roinn Oideachais agus Scileanna agus ó ranníocaíochtaí bainte as tuarastail na mball foirne.

Tá téarmaí pinsin ag na baill foirne ar ceapadh iad roimh an 1 Eanáir 2013 faoin Scéim Aoisliúntais DIAS ábhartha mar atá leagtha amach i:

(a) Scéim Institiúid Ard-Léinn Bhaile Átha Cliath (Aoisliúntas) 1947, arna leasú

(b) Scéim Ranníocach Institiúid Ard-Léinn Bhaile Átha Cliath do Chéilí agus Leanaí, 1991

(c) Scéim d'Fhostaithe Neamhbhunaithe Institiúid Ard-Léinn Bhaile Átha Cliath (Aoisliúntas), 1983

(d) Scéim Aoisliúntais (Comhdhlúthú) d'Fhoireann Institiúid Ard-Léinn Bhaile Átha Cliath, 2008 agus Scéim Aoisliúntais Ranníocach d'Fhoireann Institiúid Ard-Léinn Bhaile Átha Cliath dá gCéilí agus Leanaí (Comhtháthú), 2008

Chomh maithe leis sin, déanann Institiúid Ard-Léinn Bhaile Átha Cliath an Scéim Pinsin Seirbhíse Poiblí Aonair (An Scéim Aonair) a fheidhmiú, gur scéim scoir sochair sainithe í do sheirbhísigh phoiblí ar ceapadh iad ar an 1 Eanáir 2013 nó i ndiaidh an dáta sin.

Is leis an Roinn Caiteachais Phoiblí agus Athchóirithe a íochtar ranníocaíochtaí de chuid bhaill na Scéime Aonair.

De réir mar a éilítear faoi chiorclán 28/2016, íocann Institiúid Ard-Léinn Bhaile Átha Cliath ranníocaíochtaí fostóra na Scéime Aonair, de réir ráta gurb ionann é agus trí oiread ranníocaíocht an fhostaí, leis an Roinn Caiteachais Phoiblí agus Athchóirithe.

Sna costais sochair scoir, léirítear na sochair scoir a thuill an fostaí sa tréimhse ábhartha agus léirítear iad glan ó ranníocaíochtaí sochair scoir foirne a choinníonn Institiúid Ard-Léinn Bhaile Átha Cliath iad.

Aithnítear suim atá cothrom leis an táille um shochar scoir mar ioncam sa mhéid is go bhfuil sé in-aisghabhála, agus seach-churtha ag deontais a fuarthas sa bhliain d'fhonn aistarraingt sochar scoir a scaoileadh.

Is sa Ráiteas faoi Ioncam Cuimsitheach a léirítear gnóthachain nó caillteanais achtúireacha ar dhliteanais scéime. Aithnítear coigeartú comhfhreagrach sa tsuim is in-aisghabhála ón Roinn Oideachais agus Scileanna.

1. Polasaithe Chuntasaíochta (ar lean)

g) Aoisliúntas (ar lean)

Is ionann dliteanais sochair scoir agus luach reatha íocaíochtaí sochair phinsin amach anseo a thuill an ball foirne go dtí seo. Is ionann cistiú iarchurtha sochar scoir agus an tsócmhainn chomhfhreagrach a bheidh le haisghabháil i dtréimhsí amach anseo ón Roinn Oideachais agus Scileanna.

h) Tionscadail

Faigheann Institiúid Ard-Léinn Bhaile Átha Cliath maoiniú seachtrach ón tionscal, ó chomhlachtaí rialtais agus ón gCoimisiún Eorpach.

Coinnítear cairt na gcuntas in aghaidh gach uile thionscadal.

Tuairiscítear fáltais ó thionscadail mar ioncam tionscadail, ag leibhéal atá cothrom leis an gcaiteachas bliantúil a thabhaítear ar chostais dhíreacha agus ar fhorchostais ar tuilleadh iad sa tionscadal gaolmhar.

Ag deireadh shaolré an tionscadail, tuairiscítear aon bharrachas nó easnamh atá fágtha ar an tionscadal sna ráitis airgeadais.

Faigheann Institiúid Ard-Léinn Bhaile Átha Cliath for-ioncam ar roinnt tionscadal a mhaoinítear go seachtrach iad.

Cuirtear for-ioncam ó thionscadail chun sochair cuntais ioncaim agus caiteachais na tréimhse ina dtuilltear é.

Ag brath ar an leibhéal den fhorchaiteachais a bhí i gceist leis an tionscadal laistigh den tréimhse, d'fhéadfadh barrachas nó easnamh ar an fhorioncam a bheith tuairiscithe sna ráitis airgeadais.

Tuairiscítear an forioncam de réir na socruithe atá déanta maidir leis an maoiniú.

i) Infháltais

Tomhaistear infháltais ghearrthéarma ag praghas an idirbhirt, lúide bearnú ar bith.

j) Nithe Iníoctha

Tomhaistear nithe iníoctha gearrthéarma ag praghas an idirbhirt.

k) Airgead Tirim agus Coibhéisí Airgid

Léirítear airgead tirim le hairgead ar láimh agus taiscí le hinstitiúidí airgeadais iníoctha gan pionós ar fhógra nach mó ná 24 uair a' chloig.

Is éard is coibhéisí airgid ann infheistíochtaí an-leachtacha a thagann in aibíocht tráth nach mó ná trí mhí ó dháta an tsealbhaithe agus atá inaistrithe go héasca chuig suimeanna aitheanta airgid le riosca neamhsuntasach d'athrú sa luach.

l) Ionstraimí Airgeadais

Ní théann an Institiúid isteach ach in idirbhearta um bhunionstraimí airgeadais a mbíonn aitheantas ar shócmhainní agus dliteanais airgeadais mar thoradh orthu amhail cuntais trádála agus cuntais infhála agus iníoctha eile. Taifeadtar bunionstraimí airgeadais ar phraghas an idirbhirt.

m) Pá Saoire

Aithnítear dliteanas go feadh mhéid teidlíochta pá saoire nár úsáideadh atá fabhraithe ar dháta an chláir chomhardaithe agus tógtha ar aghaidh chuig tréimhsí sa todhchaí. Tomhaistear é seo ag costas tuarastail neamhlascainithe na teidlíochta saoire sa todhchaí agus fabhraítear é ar dháta an chláir chomhardaithe.

n) Léasanna oibriúcháin

Gearrtar cíosanna atá iníoctha faoi léasanna oibriúcháin ar an gCuntas Ioncaim agus Caiteachais de réir mar a thabhaítear iad thar téarma an léasa.

o) Airgeadra Feidhmiúil

Is é an euro airgeadra feidhmiúil agus láithritheach na hInstitiúide.

Nótaí do na Ráitis Airgeadais (ar lean)

1. Polasaithe Chuntasaíochta (ar lean)

p) Deontais Neamh-Thionscadail.

Taifeadtar deontais ó thríú páirtithe sna ráiteas airgeadais ag baint úsáide as an Modh Fabhruithe agus leithdháiltear ar ioncam iad sa chaoi is go meaitseáiltear iad leis an gcaiteachas ábhartha lena mbaineann siad.

q) Breithiúnais nuair a a chuirtear Polasaithe Cuntasaíochta agus Príomhfhoinsí Meastacháin i bhFeidhm

Chun na ráitis airgeadais seo a ullmhú ní mór don bhainistíocht breithiúnais, meastacháin agus toimhdí a dhéanamh a théann i gcionn ar chur i bhfeidhm na bpolasaithe agus na suimeanna tuairiscithe de shócmhainní agus dliteanais, ioncam agus speansais. Déantar measúnú leanúnach ar bhreithiúnais agus ar mheastacháin agus tá siad bunaithe ar thaithí stairiúil agus ar thosca eile, lena n-áirítear ionchais d'eachtraí sa todhchaí a chreidtear a bheith réasúnta faoi na cúinsí.

Déanann an Institiúid meastacháin agus toimhdí i dtaca leis an todhchaí. Dá bhrí sin, is annamh a bheidh na meastacháin cuntasaíochta a tharlaíonn dá bharr ionann go hiomlán le torthaí ábhartha iarbhír. Maidir leis na meastacháin agus toimhdí a bhfuil riosca suntasach ina leith go mbeidh siad ina gcúis le leasú ábhartha a dhéanamh ar mhéid na sócmhainní agus na ndliteanas laistigh den bhliain airgeadais atá ag teacht, pléitear anseo thíos iad.

Saolta Úsáideacha de Shócmhainní Socair Inbhraite

Is cuid shuntasach d'iomlán na sócmhainní iad sócmhainní fadsaoil - Troscán agus Trealamh, Ríomhairí agus Mótarfheithiclí den chuid is mó. Braitheann an muirear dímheasa bliantúil go príomha ar an bhfad saoil measta atá ag gach cinéal sócmhainne agus, i gcúinsí áirithe, meastacháin ar luachanna iarmharacha.

Déanann an Chomhairle athbhreithniú go rialta ar na saolta úsáideacha seo agus athraíonm siad iad más gá chun coinníollacha reatha a léiriú. Agus na saolta úsáideacha seo á gcinneadh déanann an bhainistíocht machnamh ar athrú teicneolaíoch, pátrúin tomhaltais, riocht fhisiciúil agus úsáid mheasta na sócmhainní. Féadfaigh athruithe sna saolta úsáideacha dul i bhfeidhm go suntasach ar an muirear díluachála don bhliain airgeadais.

Foshuíomhanna Achtúireacha i dTaca le Scéimeanna Sochair Scoir le Sochar Sainithe

Déantar cur i bhfeidhm na bhfoshuíomhanna achtúireacha i dtaca le scéimeanna sochair scoir le sochar sainithe a chorpú sna ráitis airgeadais I gcomhéir le FRS 102. Agus FRS 102 á chur i bhfeidhm, glactar le comhairle ó achtúirí cáilithe neamhspleácha. Sa chomhthéacs seo, déantar breithiúnas suntasach i líon réimsí, lena n-áirítear athruithe sa todhchaí ar thuarastail agus boilsciú, rátaí báis agus rátaí lascaine a roghnú. Déantar sócmhainn le sochar sainithe a thaifeadadh atá ag teacht leis an dliteanas ar an bunús go bhfuil an dliteanas maoinithe ag an stát.

Soláthairtí

Déanann an Institiúid soláthairtí d'oibleagáidí dleathacha agus cruthaitheacha, arb eol di a bheith fós le híoc ag deireadh na tréimhse. I gcoitinne, déantar na soláthairtí seo bunaithe ar fhaisnéis stairiúil nó ar fhaisnéis ábhartha eile, leasaithe do threochtaí le déanaí más cuí. Mar sin féin, is meastacháin iad ar chostais airgeadais eachtaí nach dtarlóidh le roinnt blianta, b'fhéidir. Mar thoradh air seo agus ar leibhéal na héiginnteachta a bhaineann leis na torthaí deiridh, féadfaidh difríocht shuntasach a bheith idir an toradh agus an meastachán.

2. Anailís Shonraithe d'Ioncam & Caiteachas don bhliain dár críoch 31/12/2018

IONCAM	Nótaí	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	Riarachán €	2018 Iomlán €	2017 Iomlán €
Deontais Oireachtais		1,666,719	969,534	2,534,128	1,560,619	6,731,000	6,566,000
*Glanmhaoiniú iarchurtha do Shocahir Pinsin	9.d	383,148	83,272	615,933	148,368	1,230,721	811,160
Díolacháin Foilseachán		34,123	-	-	-	34,123	42,095
Ioncam Tionscadail	3.a	47,069	207,167	4,949,496	151,908	5,355,640	2,238,227
Ioncam ForchostasThionscadail		-	-	-	-	-	78,356
Ioncam Eile	4	360	-	16,735	750	17,845	10,702
		2,131,419	1,259,973	8,116,292	1,861,645	13,369,329	9,746,540
Aistriú (chuig) ó Chúlchiste Caipitil	14	-	-	-	(1,910,527)	(1,910,527)	11,654
		2,131,419	1,259,973	8,116,292	(48,882)	11,458,802	9,758,194
CAITEACHAS							
Costais Phárolla	5	1,139,776	761,691	1,446,819	521,226	3,869,512	4,129,355
*Costais Sochair Scoir	9.b	610,174	900,789	743,656	468,859	2,723,478	2,256,393
Costais Tionscnamh	3.a	32,472	207,085	2,695,724	-	2,935,281	1,805,950
Stóráil Leabharlainne agus Leabhar		34,833	66,760	28,377	-	129,970	134,556
Dímheas	13	-	-	-	431,973	431,973	284,451
Cíos, Rátaí agus Árachas		-	-	-	253,271	253,271	200,819
Costais Ghinearálta	7	15,512	3,428	57,180	280,263	356,383	241,778
Costais Taistil agus Seimineáir		12,064	42,605	61,622	6,774	123,065	123,992
Cothabháil Áitribh agus Slándáil		-	-	-	202,441	202,441	169,895
Costais ríomhairí agus Idirlín		2,003	974	33,592	68,345	104,914	128,414
Breosla Solas agus Cumhacht		-	-	-	141,197	141,197	121,752
Post agus Teileafón		-	-	-	20,611	20,611	21,373
Páipéarachas		11,863	2,384	9,548	11,716	35,511	19,285
Foilseacháin		16,267	-	4,170	-	20,437	46,627
Fógraíocht		-	157	-	3,946	4,103	5,759
Mion Trealamh Oifige		373	-	9,452	7,992	17,817	7,575
		1,875,337	1,985,873	5,090,140	2,418,614	11,369,964	9,697,974
BARRACHAS/DON BHLIAIN		**256,082**	**(725,900)**	**3,026,152**	**(2,467,496)**	**88,838**	**60,220**
Iarmhéid amhail an 1 Eanáir		541,828	(409,908)	2,702,694	(1,861,557)	**973,057**	**912,837**
Iarmhéid amhail an 31 Nollaig		**797,910**	**(1,135,808)**	**5,728,846**	**(4,329,053)**	**1,061,895**	**973,057**

Nóta (a) * Déantar an Maoiniú Iarchurtha Glan do Shochair Scoir a leithdháileadh ar bhonn pro rata chuig an tsuim a íocadh le pinsinéirí sa bhliain.
* The Maoiniú Iarchurtha Glan do Chostais Sochair Scoir a leithdháileadh ar bhonn pro rata chuig na ranníocaíochtaí ón bhfoireann sa bhliain.
Nóta (b) Cionroinneadh costais a bhaineann go díreach le taighde (m.sh. pá, leabharlann, costais ríomhaire, taisteal) ar an scoileanna. Gearradh forchostais ar nós cíos, árachas, fóntais agus cothabháil maoine ar Riarachán.
Nóta (c) Deontais Fuarthas suim €6,731,000 (2017: €6,566,000) ón Roinn Oideachais agus Scileanna. Tugann an Roinn Oideachais agus Scileanna an deontas i gcomhair dliteanas faoi chostais pá agus neamhphá ghinearálta agus tarraingíonn an Institiúid aníos í ar bhonn bliantúil.

Nótaí do na Ráitis Airgeadais (ar lean)

3. (a) Tionscadail

	2018 €	2017 €
Iarmhéideanna Tosaigh	4,351,396	4,404,578
Admhálacha	2,399,386	2,185,045
	6,750,782	6,589,623
Iarmhéideanna Deiridh (Féichiúnaithe €1,030,313 Creidiúnaithe €2,425,455)	(1,395,142)	(4,351,396)
Curtha i bhfeidhm mar ioncam	5,355,640	2,238,227
Leithroinnt Ioncaim		
	151,908	-
Scoil an Léinn Cheiltigh	47,069	53,127
Scoil na Fisice Teoiriciúla	207,167	86,329
Scoil na Fisice Cosmaí	4,949,496	2,098,771
	5,355,640	2,238,227
Ioncam Iomlán Thionscadal*	5,355,640	2,238,227

Nóta * Tá an figiúr seo déanta suas den Ioncam tionscadail don Riarachán Lárnach €151,908, den ioncam tionscadail do Scoileanna €2,927,354 agus den chaiteachas caipitil ar thionscadail de €2,276,378.

Costais Tionscadal

	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	2018 Total €	2017 Iomlán €
* Tuarastail/Scoláireachtaí	30,692	180,335	1,610,209	1,821,236	1,352,418
** Taisteal					
Intíre			378,882	378,882	69,449
Idirnáisiúnta	1,681	14,149	234,233	250,063	109,084
Eile	99	12,601	472,400	485,100	274,999
Costas Iomlán Tionscadal	32,472	207,085	2,695,724	2,935,281	1,805,950

*** Nóta (a)** Líon na mBall Foirne Taighde agus Scoláirí Maoinithe go Seachtrach (WTE) 45 (2017: 51).
** **Nóta (b)** Áirítear costais loinge de €277,857 mar chuid de na costais taistil intíre i Scoil na Fisice Cosmaí.

3. (b) Sonraí Tionscadail

	Udarás Cistiúcháin	Iarmhéid Tosaigh €	Admhálacha €	Caiteachas Aisfhillteach €	Curtha I bhfeidhmmar Ioncam €	Curtha I bhfeidhmmar Ioncam (Caipteal san áireamh) €	Iarmhéid Deiridh €	Caipiteal €
Scoil an Leinn Cheiltigh								
Irish Script on Screen		14,587	-	99	-	14,587	-	14,488
Peadar O Muircheartaigh IRC Fellowship	IRC	11,129	21,353	32,373	-	32,482	-	-
Iomlán-Leánn Ceilteach		**25,716**	**21,353**	**32,472**	**-**	**47,069**	**-**	**14,488**
Scoil na Fisice Teoiriciúla								
G Kells	SFI	77,117	144,158	117,739	25,882	118,452	76,941	-
S Kovacik IRC Fellowship	IRC	12,654	46,524	45,654	-	45,654	13,524	-
D Benincasa IRC Fellowship	IRC	12,095	19,292	32,018	-	31,387	-	-
I Jubb IRC Fellowship	IRC	-	22,962	11,674	-	11,674	11,288	-
Iomlán-FisicTheoiriciúil		**101,866**	**232,936**	**207,085**	**25,882**	**207,167**	**101,753**	**-**
Scoil na Fisice Cosmaí								
Nam Conference	A. Observ'tory	4,769	-	-	-	-	4,769	-
NGST Project	ESA	25,459	119,159	156,324	-	156,324	(11,706)	-
Horizon 2020 Catalyst MKID	SFI	(2,447)	1,723	(724)	-	(724)	-	-
J Mackey Royal Society Fellowship	Royal Society	20,335	73,875	88,629	5,515	88,530	165	-
IRC New Horizons DIAS/UCD	IRC	(21,037)	-	-	-	-	(21,037)	-
MKID Camera IP T Ray	SFI	27,170	393,211	272,523	19,684	451,741	(51,044)	179,436
R Garcia Lopez Dig Deep EC Fellowship	EC	61,617	-	80,360	19,728	64,532	(22,643)	-
Maria Koutoulaki IRC Scholarship	IRC	8,919	24,000	28,582	-	28,582	4,337	-
Radionet EC Project	EC	48,667	40,881	67,696	3,310	67,872	18,366	-
T Ray ERC Easy	EC	563,949	-	237,737	12,654	237,737	313,558	-
DIAS Summer School	Various	-	48,100	68,809	-	48,100	-	-
Royal Society Enhancement Award	Royal Society	-	36,425	26,224	1,605	26,224	8,596	-
HIRES IRC -Laureate Award	IRC	-	108,824	-	-	-	108,824	-
Iomlán-Réaltfhisic		**737,401**	**846,198**	**1,026,160**	**62,496**	**1,168,918**	**352,185**	**179,436**

Nótaí do na Ráitis Airgeadais (ar lean)

3. (b) Sonraí Tionscadail (ar lean)

	Udarás Cistiúcháin	Iarmhéid Tosaigh €	Admhálacha €	Caiteachas Aisfhillteach €	Curtha I bhfeidhmmar Ioncam €	Curtha I bhfeidhmmar Ioncam (Caipteal san áireamh) €	Iarmhéid Deiridh €	Caipiteal €
Geophysics Schools Seismology	Various	7,209	1,220	2,681	-	8,429	-	-
CTBTO	Dept.For. Affairs	2,865	-	6,401	-	2,865	-	-
ESA UWB Grant	ESA	8,968	-	5,352	-	8,968	-	3,616
Structure and Seismicity of Ireland's Crust	SFI	120,714	505	94,506	5,940	97,517	17,762	-
ICRAG	SFI	(140,948)	505	578,399	30,626	584,482	(755,551)	7,231
iMARL Infrastructure	SFI	2,951,071	-	258,766	-	2,192,502	758,569	1,933,736
Geo External Services	Various	28,749	123,058	104,183	-	151,807	-	46,512
ERC Development iTHERC	SFI	84,142	195,398	182,427	11,842	222,905	44,793	29,489
NIAP-PassVel	Marine Institute	9,976	-	-	-	-	9,976	-
Duygu Kiyan Fellowship	SFI	(6,452)	6,452	-	-	-	-	-
IRC Geotherm	IRC	32,471	19,999	44,966	2,860	51,325	(1,715)	-
ESA 3D Earth	ESA	(43,179)	40,000	73,554	-	73,554	(76,733)	-
GSI Fellowship P Arroucau	GSI	4,932	(4,932)	-	-	-	-	-
SEA-SEIS	SFI	154,218	-	174,996	9,763	234,339	(89,884)	55,241
GSI Shortcall HERSK M. Molhoff	GSI	12,400	12,400	24,800	-	24,800	-	-
GSI Shortcall C Bean 2017-SC-046	GSI	9,277	12,252	20,601	487	21,042	-	-
GSI Seimic Network Support	GSI	250,000	125,000	47,403	-	47,403	327,597	-
Eurovolc -Research and Innovation	EC	-	150,000	3,033	190	3,601	146,209	-
Geothermica EC Call-URBAN	GSI	-	21,083	648	16	697	20,370	-
Geothermica EC Call-COSEISMIQ	GSI	-	66,653	8,040	201	8,643	57,809	-
EC-PACIFIC	EC	-	506,344	28,577	1,605	35,468	469,271	6,629
Ka Lok Li Fellowship	IRC	-	22,962	10,231	-	10,231	12,731	-
Iomlán-Geoifisic		**3,486,413**	**1,298,899**	**1,669,564**	**63,530**	**3,780,578**	**941,204**	**2,082,454**
Iomlán Fisic Chosmach		**4,223,814**	**2,145,097**	**2,695,724**	**126,026**	**4,949,496**	**1,293,389**	**2,261,890**
Iomlán DIAS		**4,351,396**	**2,399,386**	**2,935,281**	**151,908**	**5,203,732**	**1,395,142**	**2,276,378**

Nótaí Áirítear fáltais ó thograí mar ioncam ó thograí, ar leibhéal atá ionann agus an caiteachas bliantúil a tabhaíodh agus forchostais a tuilleadh ag an togra lena mbaineann.

Is ionann na comharduithe deiridh thuas agus forchostas a tuilleadh go dtí seo agus réamh-mhaoiniú chun ceangaltais airgeadais in 2019 a shásamh.

Léiríonn an colún caipitil an caiteachas ar shócmhainní seasta i rith 2018.

4. Ioncam Eile

	2018 €	2017 €
Ús bainc	-	603
Táillí & Deontais	750	7,040
Eile	17,095	3,059
Iomlán	**17,845**	**10,702**

5. Costais Phárolla

	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	Riar. €	2018 Iomlán €	2017 Iomlán €
Poist Lárnacha Maoinithe						
* Tuarastal/Pá	1,041,980	727,415	1,290,194	521,226	3,580,815	3,695,784
Costais Sochair Scoir	-	-	-	-	-	117,417
** Scoláireachtaí	97,296	34,276	156,625	-	288,197	316,502
Airgead Oinigh	500	-	-	-	500	(348)
	1,139,776	761,691	1,446,819	521,226	3,869,512	4,129,355

Nóta maidir le Poist Lárnacha Maoinithe
* Líon na mBall Foirne Lárnach (WTE) 51.5 (2017:51.5), Líon ECF (WTE) 55 (2017: 55).
** Scoláirí Lárnacha (WTE) 12 (2017: 13).

Nóta maidir le Poist Seachtracha Maointh
Líon na Foirne Taighde agus na Scoláirí a Mhaoinítear go Seachtach Iad (Coibhéis Lánaimseartha) 45 (2017: 51). Íocadh asbhaintí do thobhach pinsin de €231,908 (2017: €214,857) leis an Roinn Oideachais agus Scileanna le linn 2018.

Pá na bPríomhbhall Bainistíochta
Áiríonn na príomhbhaill bainistíochta an Cláraitheoir agus an fhoireann shinsearach bainistíochta as a raibh costas €635,507 (2017 €621,910) sa bhliain.

(b) Iomlán na Sochar Fostaithe

	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	Riar. €	2018 Iomlán €	2017 Iomlán €
Tuarastail/Pá	984,185	674,233	1,227,628	468,453	3,354,499	3,457,053
Ragobair	-	-	-	-	-	-
Liúntais	-	-	-	-	-	-
ÁSPC Fostóra	57,795	53,182	62,566	52,773	226,316	238,731
Costais Sochair Scoir	-	-	-	-	-	117,417
	1,041,980	727,415	1,290,194	521,226	3,580,815	3,813,201

6. Líon Fostaithe le Sochair í 2018 that fall within bands of €10,000 from €60,000 onwards.

	2018	2017
€60,000 to €69,999	1	2
€70,000 to €79,999	2	7
€80,000 to €89,999	5	1
€90,000 to €99,999	1	-
€100,000 to €109,999	2	3
€110,000 to €119,999	2	-
€120,000 to €129,999	-	-
€130,000 to €139,999	6	7

7. Speansais Ghinearálta

	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	Riar. €	2018 Iomlán €	2017 Iomlán €
Ilghnéitheach	5,765	1,989	43,823	19,969	71,546	42,868
* Bolscaireachtaí/Lóin	5,697	1,339	9,480	20,454	36,970	24,130
Táillí Gairmiúla/ Comhairleoireacht	3,850	-	1,382	104,055	109,287	126,146
Oiliúint	200	100	2,495	2,050	4,845	14,955
Costais Bainc	-	-	-	1,750	1,750	1,636
Speansais Chruinnithe Boird	-	-	-	16,587	16,587	23,510
Sláinte agus Sábháilteacht	-	-	-	5,968	5,968	8,533
An Chumarsáid	-	-	-	109,430	109,430	-
	15,512	3,428	57,180	280,263	356,383	241,778

Nóta
* B'ionann agus €25,695 an Caiteachas Fáilteachais in 2018.
** Gearradh costais deartha agus foilseacháin maidir leis an straitéis ar an gcumarsáid.

Táillí Gairmiúla/Costais Comhairleoireachta

	2018 Iomlán €	2017 Iomlán €
Costais Earcaíochta	-	38,576
Communications	109,430	-
Costais Poiblíochta	16,975	14,230
Iniúchtaí Inmheánacha/Seachtracha	20,000	17,000
Athbhreithniú Rialachais	-	5,289
Táillí Dlí	1,476	18,946
Athbhreithnithe Eile agus Comhairleoireachtaí Ginearálta	70,836	32,105
	218,717	126,146

8. Léasáil

Léasanna Oibríochta

Tá na háitribh atá i seilbh na hInstitiúide ar léas ó Oifig na nOibreacha Poiblí.

Is iad na háitribh a n-airítear ná Réadlann Dhún Since, 5 Cearnóg Mhuirfean, 9-10 Bóthar Burlington agus 31Plás Mhic Liam.

Tá téarma 80 bliana fágtha ar an léas do Réadlann Dhún Since agus athnuaitear na léasanna eile ar bhonn bliantúil.

Is é tiomantas ar bhonn léasanna den sórt sin maidir le 2019 na €113,609.

Léasanna Oifig na nOibreacha Poiblí	Cíos Bliantúil €
Réadlann Dhún Since	330
5, Cearnóg Mhuirfean	5,022
9-10 Bóthar Burlington	50,167
31, Plás Mhic Liam.	58,090
	113,609

An 31 Nollaig 2018 bhí na híocaíochtaí léasa íosta seo a leanas ag an Institiúid faoi léasanna oibriúcháin dochealaithe do gach ceann de na tréimhsí seo a leanas:

	2018 €	2017 €
Iníoctha laistigh de bhliain amháin	113,609	113,609
Idir dhá bhliain agus cúig bliana	990	990
I ndiaidh cúig bliana	25,080	25,410

Nóta
Tá comhaontú ceadúnais déanta ag an Institiúid le hOifig na nOibreacha Poiblí le haghaidh limitéar siopaí suite i sráid na bhFínínt ar chostas de €1,000 in aghaidh na bliana.

9. Costais Sochair Scoir

a) Cuntas Rialúcháin Sochar Scoir

(a) Dublin Institute for Advanced Studies (Superannuation) Scheme 1947 as amended

(b) Dublin Institute for Advanced Studies Spouses and Children's Contributory Scheme 1991

(c) Dublin Institute for Advanced Studies Non-Established Employees (Superannuation) Scheme 1983

(d) Dublin Institute for Advanced Studies Staff Superannuation (Consolidation) Scheme, 2008 and Dublin Institute for Advanced Studies Staff Superannuation Spouses' and Children's Contributory Pension (Consolidation) Scheme, 2008

Is é atá sa scéim pinsean ná socrú aoisliúntais shochair shonraithe chríoch-thuarastail le sochair agus ranníocaíochtaí sainithe ag rialacháin reatha scéime 'eiseamláire' na hearnála poiblí. Soláthraíonn an scéim pinsean (ochtóidí in aghaidh na bliana seirbhíse), aisce nó cnapshuim (trí hochtóidí in aghaidh na bliana seirbhíse) agus pinsin do chéilí agus leanaí.

Is é an 65ú breithlá an Ghnáthaois Scoir agus tá baill a thosaigh roimh 2004 i dteideal éirí as ag aois 60 gan aon laghdú achtúireach ó aois 60. De ghnáth, méadaíonn na pinsin atá á n-íoc (agus pinsin iarchurtha) de réir bhoilsciú ginearálta na hearnála poiblí.

Bunaíodh an luacháil a úsáideadh i gcás nochtadh faisnéise faoi FRS17 ar luacháil iomlán achtúireach a rinne achtúire neamhspleách cáilithe a chuir ceanglais FRS san áireamh chun dliteanais na scéime amhail an 31 Nollaig 2018 a mheasúnú.

9. Costais Sochair Scoir (ar lean)

a) Cuntas Ríalúcháin Sochar Scoir (ar lean)

Is í an Scéim Pinsin Seirbhíse Poiblí Aonair (Scéinm Aonair) an scéim um shochar scoir le leas sainithe do sheirbhísí poiblí inphinsin a ceapadh an 1 Eanáir 2013 nó ina dhiaidh sin i gcomhréir leis an Acht um Pinsin na Seirbhíse Poiblí (Scéim Aonair agus Forálacha Eile) 2012. Tá foráil sa scéim do shochar scoir agus cnapshuim scoir bunaithe ar mheán gairme de phá inphinsin agus pinsin céile agus leanaí.

Is í an aois pinsin íosta 66 bliana (ag éirí i gcomhréir le hathruithe in aois pinsin an Stáit). Áirítear áis luathscoir laghdaithe go hachtúireach ó aois 55. Ardaíonn Sochair Scoir atá á n-íoc i gcomhréir leis an bpraghasinnéacs tomhaltóirí.

Is mar a leanas a bhí na príomh-thoimhdí achtúireacha a úsáideadh:

	2018	2017	2016
Ráta na nArduithe Tuarastail	2.75%	2.75%	2.50%
Ráta Ardaithe i Sochair Pinsin atá á n-Íoc	2.25%	2.25%	2.00%
Ráta Lascaine	2.00%	2.00%	1.75%
Ráta Boilscithe	1.75%	1.75%	1.50%

Leis an mbonn mortlaíochta atá á leanadh, is féidir dul chun cinn in ionchas saoil le himeacht ama a chur san áireamh; mar sin, braithfidh ionchas saoil ag dul ar scor ar an mbliain a shroichfidh ball aois scoir (65 bliana). Léiríonn an tábla thíos ionchas saoil na mball a shroichfidh aois 65 in 2018 agus in 2038.

	31/12/2018		31/12/2017	
Aois 65 sa bhliain	2018	2038	2017	2037
Ionchas saoil – fir	87.3	89.9	87.3	89.9
Ionchas saoil – mná	88.7	90.9	88.7	90.9

b) Anailís ar na costais iomlána pinsin curtha chun dochair do Chaiteachas

	2018 (€'000)	2017 (€'000)
Costas na Seirbhíse Reatha	1,681	1,396
Ús ar Dhliteanais Sochair Pinsin	1,168	999
Ranníocaíochtaí Fostaí	(126)	(139)
	2,723	2,256

c) Gluaiseacht i nGlan-Dliteanas Sochair Scoir i rith na bliana airgeadais

	2018 (€'000)	2017 (€'000)
Glan-Dliteanas Sochair Pinsin amhail an 1 Eanáir	(59,123)	(57,807)
Costas na Seirbhíse Reatha	(1,681)	(1,396)
Costais Úis	(1,168)	(999)
(Gnóthachan)/caillteanas achtúireach	241	(505)
Sochair Pinsin íoctha sa bhliain	1,618	1,584
***Glan-Dliteanas Pinsin amhail an 31 Nollaig**	(60,113)	(59,123)

*Cosnaíonn dliteanais a bhaineann leis an Scéim Aonair €746,000 agus don Scéim DIAS cosnaíonn sé €59,367,000.

9. Costais Sochair Scoir (ar lean)

d) Cistiú Iarchurtha do Phinsin

Aithníonn DIAS na méideanna seo mar shócmhainn a chomhfhreagraíonn don dliteanas iarchurtha neamh-mhaoinithe do phinsin bunaithe ar na toimhdí thuaslaithe agus ar roinnt imeachtaí a tharla cheana. Áirítear ar na himeachtaí seo an bonn reachtúil chun sceim aoisliúntais a bhunú, agus an polasaí agus an cleachtas i ndáil le pinsin seirbhíse poiblí a mhaoiniú, lena n-áirítear ranníocaíochtaí ag fostóirí agus próiseas na measctacháin bliantúil. Cé nach bhfuil aon socrú foirmiúil maidir leis na méideanna sonracha seo déanta leis an Roinn Oideachais agus Scileanna, níl aon fhianaise ag DIAS nach leanfaidh an polasaí maoinithe seo de bheith ag freastal ar a leithéid de shuimeanna de réir an chleachtais reatha.

Sa Chuntas Ioncam agus Caitheachais, aithníodh an Glan-Mhaoiniú Iarchurtha do Phinsin sa bhliain mar seo leanas:

	2018 (€'000)	2017 (€'000)
Maoiniú inaisghabhála i ndáil le costais phinsin na bliana reatha	2,849	2,395
Deontas Stáit feidhmithe chun pinsinéirí a íoc	(1,618)	(1,584)
	1,231	811

Ba í €60.113 milliún (2017: €59.123 milliún) an tsócmhainn mhaoinithe iarchurtha do phinsin amhail an 31 Nollaig 2018.

e) Stair na nOibleagáidí faoin scéim shochair shainithe.

	2018 (€'000)	2017 (€'000)	2016 (€'000)
Oibleagáidí Shochair Shainithe	60,113	59,123	57,807
(Gnóthachain)/caillteanais iarbhíre ar dhliteanais na scéime	(241)	518	(765)
Céatadán de Luach Dhliteanais na Scéime	(.40%)	0.88%	(1.32%)

Tá (gnóthachan)/caillteanas achtúireach carnach €7,402,000 (2017: €7,643,000) aitheanta sa Ráiteas d'Iomlán na nGnóthachan agus na gCaillteanas Aitheanta.

10. Nochtadh Idirbheartaíochtaí

Glacann Comhairle na hInstitiúide le nósanna imeachta de réir threoirlínte atá eisithe ag an Roinn Airgeadais maidir le leasana a nochtaíonn Comhaltaí na Comhairle agus chloígh Comhaltaí na Comhairle leis na nósanna imeachta sin le linn na bliana. Níor léirigh aon Chomhalta de chuid na Comhairle leas.

Nótaí do na Ráitis Airgeadais (ar lean)

11. Nochtadh Comhaltaí na Comhairle/Tuarastal an Chláraitheora, Táillí agus Costais

		Luach Saothair Iomláin 2018 €	Speansais Iomlána 2018 €	Luach Saothair Iomláin 2017 €	Speansais Iomlána 2017 €
Comhalta den Chomhairle					
Dr Vincent Cunnane		-	995	-	928
Baill ceaptha ag Boird Rialaithe na gComhScoileanna					
An tOllamh Gerry Wrixon		-	228	-	460
An tOllamh Arthur Jaffe		-	1,872	-	1,228
An tOllamh Anders Ahlqvist	RIP 23/8/18	-	2,625	-	7,108
An tOllamh Werner Nahm		-	-	-	-
An tOllamh Chris Bean		-	-	-	-
An tOllamh Ruairí Ó hUiginn		-	-	-	-
An tOllamh Máire Ní Mhaonaigh	Ó 1/1/18	-	195	-	-
Cláraitheoir					
Cecil Uasal Keaveney *	Ar Scor 06/17	-	-	48,226	100
Dr. Eucharia Meehan *		104,768	525	62,566	-
		104,768	6,440	110,792	9,824

*** Nóta** Is tuarastal amháin a fhaigheann na Cláraitheoirí. Ní íoctar bónas ar bith leo. Ní sháraíonn teidlíochtaí scoir an Chláraitheora na teidlíochtaí caighdeánacha i scéim eiseamláireach aoisliúntais ar leas sainithe na hearnála poiblí. Chuaigh an Cláraitheoir, an tUas. Cecil Keaveney ar scor i Meitheamh 2017. Fuair sé cnapshuim de €117,417.

12. Ranníocaíochtaí Pinsin Fostóra

Ranníocaíochtaí Fostóra í 2018 = €208,491 (2017: €170,987)

13. Sócmhainní Seasta

Costais	Troscán & Trealamh €	Mótarfheithicilí €	Ríomhairí €	2018 Iomlán €	2017 Iomlán €
Iarmhéid Tosaigh 1/1/2018	3,955,104	15,131	2,431,847	6,402,082	6,132,741
Breiseanna *	2,234,775	-	107,725	2,342,500	272,797
Riartha	(25,753)	-	(88,435)	(114,188)	(3,456)
	6,164,126	15,131	2,451,137	8,630,394	6,402,082
Dímheas					
Iarmhéid Tosaigh 1/1/2018	3,363,240	9,197	2,213,992	5,586,429	5,305,434
Muirear	334,846	3,780	93,347	431,973	284,451
Riartha	(25,753)	-	(88,435)	(114,188)	(3,456)
	3,672,333	12,977	2,218,904	5,904,214	5,586,429
Luach glan de réir na leabhar 31/12/2018	2,491,793	2,154	232,233	2,726,180	815,653

Nota * Caipitlítear na sócmhainní seasta de bhreis ar €3,000 I leabhair DIAS.

14. Cúlchiste Caipitil

	2018 (€'000)	2017 (€'000)
Iarmhéid amhail an 1 Eanáir	815,653	827,307
Aistriú ó/(chuig) Cuntas Ioncaim agus Caiteachais		
Ioncam leithroinnte le sócmhainní seasta a fháil (Maoinithe ag Tionascadal)	2,276,378	207,525
Ioncam leithroinnte le sócmhainní seasta a fháil (Maoinithe ag an Státchiste)	66,122	65,272
Amúchadh ag teacht le dímheas sócmhainní	(431,973)	(284,451)
	1,910,527	(11,654)
Iarmhéid amhail an 31 Nollaig	2,726,180	815,653

15. Creidiúnaithe - Méideanna atá dlite laistigh de bhliain amháin

	2018 (€'000)	2017 (€'000)
Creidiúnaithe Trádála	163,603	229,360
Fabhruithe	234,468	432,092
CBL	66,638	117,703
Nithe Iníoctha Ioncaim	154,333	148,922
Cuntas Ríalúcháin Sochar Scoir*	836,786	-
	1,455,828	928,077

***Nóta**
Baineann an figiúr seo le Ranníocaíochtaí fostóra d'fhoireann taighde a mhaoinítear go seachtrach iad. Tá an DIAS tar éis dul i mbun caidreamh leis an ROS/RCPA maidir le híocaíocht na Ranníochtaí.

Creidiúnaithe dlite tar éis dhá mhí dhéag	2018 €	2017 €
Tá an t-airgead a bhaineann leo seo sealbhaithe mar éarlais.		
Comhdhéanta as: Vernam Hull Bequest	25,297	25,272
Carmody Fund	2,461	2,461
Cuntas Rialaithe Sochair Scoir	-	627,314
	27,758	655,047

16. Féichiúnaithe

	2018 (€'000)	2017 (€'000)
Réamhíocaíochtaí	332,527	703,160
Infháltais ó Dhíolacháin Leabhar	2,370	3,292
Ilnithe	15,271	15,301
Féichiúnaí	30,000	-
	380,168	721,753

17. Ceadú Cuntais

Cheadaigh an Chomhairle na Ráitis Airgeadais ar an 24 Bealtaine 2019.

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