



Dublin Institute for
Advanced Studies

ANNUAL REPORT 2011

Institiúid Ard-Léinn
Bhaile Átha Cliath

TUAIRISC BHLIANTÚIL 2011



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Chairman's Statement

The Dublin Institute for Advanced Studies is dedicated to the pursuit of advanced fundamental research in Physics and Celtic Studies. The focus of its work is on the creation of new knowledge, advanced training and the dissemination of this knowledge for the benefit of the wider academic community. Whilst DIAS is small in size relative to the overall national academic community, it enjoys a high international profile and it makes a significant contribution to the development of the subject areas of its constituent Schools.

Despite the budgetary challenges, 2011 was a very productive year for all of the Schools. This is demonstrated by the level of research activity in terms of projects, publications, lectures, workshops, and conferences that are described in the Annual Report of the Schools. This summary report gives a general account, for each School, of the main developments that took place in research during 2011. More detailed information on the research activities of the Schools can be found in their respective annual Research Reports.

It is very heartening to see the level of opportunities offered by each of the Schools for postgraduate training. This was greatly strengthened during 2011 by the number of high profile international conferences hosted by the Schools on specialist research topics. The high level of attendance reflects the standard of these academic events. The XIV International Celtic Congress, co-hosted by the School of Celtic Studies and held in NUIM, attracted more than 600 scholars from all over the world. It is a very important conference for academics involved in Celtic Studies and this was the third time that it has been held in Ireland. There was also a Celtic Studies Summer School which was very well attended by national and international scholars. A new Summer School in the developing new area of astroparticle physics was initiated by the School of Cosmic Physics, in association with UCD. Astroparticle physics is regarded as one of the exciting frontier areas of modern physics and the workshop attracted many international scholars. The Irish Geophysics Graduate Programme was also launched during 2011. It was initiated in partnership with a number of Universities and under the programme, courses in specialist topics in geophysics are made available to national and international students and academics free of charge.

Each of the Schools continued to engage with the wider public through their Statutory Public lectures and outreach programmes. Outreach activities in Astronomy and Physics were extended last year with a developed programme of public and school-based activities at Dunsink Observatory. The School of Cosmic Physics' Seismology in Schools programme was extended during the year. The School of Celtic Studies was very pleased to be asked to digitise a primer of Irish Grammar from the 16th century for presentation to Queen Elizabeth II on her visit to Ireland last year. The original manuscript is retained in Farnleigh House and the book was originally given to Queen Elizabeth I as her "Irish Primer". A digitised copy of the manuscript is now available on the School's Irish Script on Screen website.

Senior staff members of the Schools received prestigious awards during the year for contributions they have made to the development of their subject areas. Professor Werner Nahm of the School of Theoretical Physics was elected to the Fellowship of the Royal Society in May. Another senior member of DIAS, Professor Luke Drury, who is the Director of the School of Cosmic Physics, was elected to the office of President of the Royal Irish Academy. These are very well deserved honours for the members of staff themselves and indeed for DIAS. I would like to take this opportunity to formally congratulate both of them on their achievements.



The Registrar, Cecil Keaveney, Professor Dervilla Donnelly and Chairman of Council, Dr. Vincent Cunnane.

An Cláraitheoir, Cecil Keaveney, An tOllamh Dervilla Donnelly agus Cathaoirleach na Comhairle, An Dr. Vincent Cunnane.

Ráiteas an Chathaoirligh

Tá Institiúid Ard-Léinn Bhaile Átha Cliath (DIAS) tiomanta do ard-bhuntaighde sa Fisic agus sa Léann Ceilteach. Tá an obair seo dírithe ar eolas nua a chruthú, ardoiliúint agus scaipeadh an eolais seo chun tairbhe an phobail acadúil níos leithne. Cé gur foras atá in DIAS i gcomparáid leis an bpobal acadúil náisiúnta ar an iomlán, tá próifíl ard idirnáisiúnta aici agus cuireann sí go mór le forbairt réimsí ábhair na gcomhscoileanna.

D'ainneoin na ndeacrachtaí buiséid, bliain an-táirgiúil ab ea 2011 do na Scoileanna uile. Léirítear é seo ag leibhéal na gníomhaíochta taighde i dtéarmaí na dtionscadal, na bhfoilseachán, na léachtaí, na gceardlann, agus na gcomhdhálacha a dtugtar cur síos orthu i dtuarascáil bhliantúil na Scoileanna. Tugann an tuarascáil achomair seo cuntas ginearálta, ar gach Scoil, agus ar na príomhfhorbairtí a tharla sa taighde le linn na bliana 2011. Is féidir eolas níos mionsonraithe ar ghníomhaíochtaí taighde na Scoileanna a fháil sna Tuarascálacha Taighde bliantúla faoi seach.

Ábhar misnigh is ea leibhéal na ndeiseanna a chuireann gach ceann de na Scoileanna ar fáil d'oiliúint iarchéime. Cuireadh go mór leis seo le linn 2011 ag líon na gcomhdhálacha idirnáisiúnta ardiomrá a d'eagraigh na Scoileanna ar thopaicí taighde speisialta. Léiríonn an leibhéal ard tinrimh caighdeán na n-ócáidí acadúla seo. Mheall an XIV Comhdháil Cheilteach Idirnáisiúnta, arna chomh-óstáil ag Scoil an Léinn Cheiltigh agus lonnaithe in OÉ Má Nuad, 550 scoláire ó gach cearn den domhan. Comhdháil an-tábhachtach atá ann don lucht acadúil atá ag gabháil don Léann Ceilteach agus ba í seo an tríú huair gur tionóladh in Éirinn í. Bhí Scoil Samhraidh sa Léann Ceilteach ann freisin le tinreamh maith ó scoláirí náisiúnta agus idirnáisiúnta. Thiomsaigh Scoil na Fisice Cosmaí, i gcomhar le UCD, Scoil Samhraidh nua i réimse nua na fisice réalt-cháithníní. Breathnaítear ar an Fhisc Réalt-Cháithníní mar cheann de na réimsí fionnachtana spreagúla san fhisc nua-aimseartha agus mealladh neart scoláirí idirnáisiúnta chuig an gceardlann. Seoladh an Clár Éireannach Geo-eolaíochta do Chéimithe freisin le linn 2011. Cuireadh ar bun é i gcomhpháirt le roinnt Ollscoileanna agus faoin gclár, cuirtear cúrsaí i dtopaicí speisialta sa gheoifisic ar fáil do mhic léinn agus an lucht acadúil náisiúnta agus idirnáisiúnta saor in aisce.

Lean gach ceann de na Scoileanna ag gabháil leis an bpobal níos leithne trína léachtaí poiblí reachtúla agus cláir for-rochtana. Leathnaíodh gníomhaíochtaí for-rochtana sa réalteolaíocht agus san fhisc anuraidh le clár forbartha de ghníomhaíochtaí poiblí agus scoilbhunaithe ag Réadlann Dhún Sinche. Leathnaíodh clár Seismeoilaíocht i Scoileanna de chuid Scoil na Fisice Cosmaí le linn na bliana. Bhí Scoil an Léinn Cheiltigh an-sásta gur iarradh orthu leagan digiteach a chruthú de leabhar ar Ghramadach na Gaeilge ón 16ú haois le bronnadh ar an mBanríon Éilís II nuair a thug sí cuairt ar Éirinn anuraidh. Coinnítear an leabhar i dTeach Farmleigh agus bronnadh an leabhar ar dtús ar an mBanríon Éilís I mar "Irish Primer" di. Tá leagan digiteach den lámhscríbhinn ar fáil anois ar shuíomh gréasáin na Scoile Irish Script on Screen.

Bronnadh gradaim arda ar chomhaltaí sinsearach na Scoileanna i rith na bliana as an méid atá déanta acu chun a réimsí ábhair a fhorbairt. Toghadh an tOllamh Werner Nahm ó Scoil na Fisice Teoiriciúla chuig Compántas an Chumainn Ríoga i mí Bealtaine. Toghadh comhalta sinsearach eile ó DIAS, an tOllamh Luke Drury, atá ina Stiúrthóir ar Scoil na Fisice Cosmaí, ina Uachtarán ar Acadamh Ríoga na hÉireann. Gradaim iad seo atá tuillte go maith ag na comhaltaí foirne féin agus, go deimhin, ag DIAS. Ba mhaith liom an deis seo a thógil chun comhghairdeas a ghabháil leo beirt go foirmiúil as a bhfuil bainte amach acu.

Faoi láthair tá Straitéis á chruthú againn do na cúig bliana seo atá romhainn. Tá an straitéis seo á hullmhú le cúlra ina bhfuil buiséid á laghdú agus athruithe suntasacha sa struchtúr ard-oideachais náisiúnta. Beidh gá le plean láidir d'fhonn a chinntiú go gcoimeádann DIAS an cháil atá aici as scoth an taighde agus go leanann sí di ag cur go mór le forbairt eolaíochta, chultúrtha agus eacnamaíochta na hÉireann.

Chairman's Statement (continued)

We are currently in the process of drawing up a Strategy for the next five years. This strategy is being prepared against a backdrop of reducing budgets and significant changes in the national higher education structure. A robust plan will be required to ensure that DIAS maintains its reputation for research excellence and that it continues to make an important contribution to the scientific, cultural and economic development of Ireland.

DIAS was delighted to welcome three new eminent scientists to its School Governing Boards during the year. Professor Don Zagier (Director, Max Planck Institute for Mathematics, Bonn) and Professor Jürg Fröhlich (Institute for Theoretical Physics, Zurich) took up membership of the Governing Board of the School of Theoretical Physics; Professor Alan Watson (University of Leeds) joined the Governing Board of the School of Cosmic Physics. DIAS is indebted to the members of its Governing Bodies who give voluntarily of their time and expertise for the benefit of DIAS. It is this expert direction and evaluation that ensures that DIAS maintains its high standards of excellence in research. I am grateful to all my colleagues on the Council and on the Governing Boards of the Schools and the staff of DIAS for their commitment and contribution during the past year.

Dr Vincent Cunnane

Chairman of Council

Ráiteas an Chathaoirligh (ar leanúint)

Bhí áthas ar DIAS fáilte a chur roimh thriúr eolaithe iomráiteacha ar Bhoird Bhainistíochta na Scoileanna i rith na bliana. Ghlac an tOllamh Don Zagier (Stiúrthóir, Max Planck Institute for Mathematics, Bonn) agus an tOllamh Jürg Fröhlich (Institute for Theoretical Physics, Zurich) ballraíocht ar Bhord Bainistíochta Scoile na Fisice Teoiriciúla; Tháinig an tOllamh Alan Watson (Ollscoil Leeds) isteach ar Bhord Bainistíochta Scoil na Fisice Cosmaí. Tá DIAS faoi chomaoin do chomhaltáí a mBord Bainistíochta a thugann a gcuid ama agus saineolais go deonach chun tairbhe DIAS. Is í an treoir agus measúnú saineolaíoch seo a chinntíonn go gcoinníonn DIAS a caighdeán arda feabhais sa taighde. Táim buíoch do mo chomhghleacaithe ar fad ar an gComhairle agus ar Bhoird Bhainistíochta na Scoileanna agus d'fhoireann DIAS as a dtiomantas agus as an obair atá déanta acu le linn na bliana seo a chuaigh thart.

Dr Vincent Cunnane

Cathaoirleach na Comhairle

School of Celtic Studies

Annual Report Summary 2011

The triennial Summer School of the School of Celtic Studies took place during the fortnight of 18-29 July. Professor Liam Breatnach was chairman of the organising committee, and all teaching and lectures were by School staff. School Administrator Eibhlín Nic Dhonncha made the arrangements. 46 participants, both undergraduates and graduates attended from Ireland and abroad (Australia, Austria, Canada, China, England, Israel, Italy, Norway, Russia, Scotland, USA, Wales). Language courses were offered in the morning in Old and Modern Irish and afternoons were taken up with lectures on aspects of the culture and literature of Early Irish and Early Modern Irish. Participants had the option of taking a beginners' course in Modern Irish (M. McKenna) or advanced Modern Irish (Pádraig Breatnach), and intermediate Old Irish (C. Downey) or advanced Old Irish (Liam Breatnach). Afternoon lecture sessions dealt with the following topics: 'Law and society in early Ireland' (F. Kelly) (6 lectures); 'Early Irish satire' (Roisin McLaughlin) (6 lectures); 'Mythological literature' (C. Downey) (3 lectures); 'Metre and poetry in the accentual tradition' (P. A. Breatnach)(3 lectures); 'Manuscripts and medical texts 1350-1650' (A. Nic Dhonnchadha) (3 lectures); 'Irish manuscript tradition' (P. Ó Macháin) (3 lectures).

XIVth International Congress of Celtic Studies

The Congress took place on the campus of NUI Maynooth in the week 1-5 August. The organisers were the School of Celtic Studies in conjunction with the School of Irish, NUI Maynooth, and the School of Irish, TCD. The members of the Organising Committee were Professor Liam Breatnach, School of Celtic Studies (Local President), Dr Katharine Simms, School of History, TCD, Professor Damian McManus, School of Irish, TCD, and Professor Ruairí Ó hUiginn, Roinn na Gaeilge, NUI Maynooth. Eibhlín Nic Dhonncha (School of Celtic Studies) gave administrative assistance and Andrew McCarthy, School of Celtic Studies gave IT assistance. More than 600 participants registered from countries around the world and some 370 papers were delivered in parallel sessions throughout the week of the Congress. Nine plenary lectures were delivered, and the Minister for Education and Skills was in attendance for plenary lectures by the Director of the School of Celtic Studies, Professor Pádraig Breatnach, and Dr Elizabeth FitzPatrick (4 August). The Minister addressed the Congress and affirmed the importance of

the position of the humanities in the national educational system.

Book launch, sales

A reception was held in the School of Celtic Studies on 29 July at which Professor Fergus Kelly spoke to mark the publication of *The cult of the sacred centre: Essays on Celtic ideology* by the late Proinsias Mac Cana. The large attendance included Réiltín Bean Mhic Cana and family. This book was one of a series of new publications by various publishers which were launched at a special function on the occasion of the XIV International Congress of Celtic Studies at the National University of Ireland, Maynooth (1 August).

Publications by the School of Celtic Studies sold well at the Congress. A large well-stocked facility was available at NUI Maynooth managed by two staff members from the School for the duration (Jennifer Flynn and Órla Ni Chanainn). Eibhlín Nic Dhonncha (School administrator) and Michelle O Riordan (Publications officer) planned and were responsible for the sales arrangements.

Publications committee; reprints etc.

The publications committee met in March and November (chairman: Liam Breatnach). Liam Breatnach continued as editorial advisor on behalf of the committee for the forthcoming publication *Collectio canonum Hibernensis* (Roy Flechner).



At the book launch of the publication 'The Cult of the Sacred Centre' were The Director of the School Professor Pádraig Breatnach, Professor Fergus Kelly and Réiltín Bn. Mhic Cana.

I láthair ag seloadh an leabhair 'The Cult of the Sacred Centre' bhí Stiúrthóir na Scoile an tOllamh Pádraig Breatnach, an tOllamh Fergus Kelly, agus Réiltín Bean Mhic Cana.

Scoil an Léinn Cheiltigh

Tuarascáil bhliantúil 2011

Scoil Shamhraidh

D'éagraigh Scoil an Léinn Cheiltigh Scoil Shamhraidh i dTeanga agus Litríocht na Gaeilge i rith na coicéise 18-29 Iúil. Reachtálar an Scoil Shamhraidh idirnáisiúnta seo gach trí bliana. An tOllamh Liam Breatnach a bhí mar chathaoirleach ar an gcoiste eagraíochta, foireann na Scoile a sholáthair idir theagasc agus chlár léachtaí, agus ba í riarthóir na Scoile Eibhlín Nic Dhonncha a dhein na socrúithe. Bhí 46 scoláire rannpháirteach, idir fho-chéimithe agus lucht iarchéime, ó Éirinn agus ó dhúthaí iasachta (Alba, An Astráil, An Bhreatain Bheag, An Iodáil, An Iorua, An Ostair, An Rúis, An tSín, Ceanada, Israel, Sasana, agus Stáit Aontaithe Mheiriceá). D'fhreastail siad ar chúrsaí teanga idir Shean-Ghaeilge agus Nua-Ghaeilge i rith na maidine, agus bhí léachtaí ar ghnéithe éagsúla de chultúr na Luath-Ghaeilge agus na Nua-Ghaeilge Moiche ar siúl san iarnóin. I gcúrsa na Nua-Ghaeilge bhí rogha ann idir cúrsa bun-leibhéil (Léachtóir: Malachy McKenna) agus cúrsa ard-leibhéil (dirithe ar an Nua-Ghaeilge Mhoch) (Léachtóir: Pádraig Breatnach), agus sa tSean-Ghaeilge bhí rogha idir cúrsa mean-leibhéil (Léachtóir: Clodagh Ní Dhubhnaigh) agus cúrsa ard-leibhéil (Léachtóir: Liam Breatnach). Is iad na gnéithe d'oidhreacht na Gaeilge a pléadh sna seisiúin iarnóna ná iad seo: Dlí agus pobal in Éirinn i ré na Sean-Ghaeilge (Fergus Kelly) (6 léacht); Filí na Luath-Ghaeilge agus an Aoir (Roisin McLaughlin) (6 léacht); An Litríocht Mhiotaseolaíochta (Clodagh Ní Dhubhnaigh) (3 léacht); Meadarachtaí na Filíochta Aiceanta (Pádraig Breatnach) (3 léacht); Traidisiún Lámhscríbhinní na Gaeilge (Pádraig Ó Macháin) (3 léacht); Lámhscríbhinní agus Téacsáil Leighis 1350-1650 (Aoibheann Nic Dhonnchadha) (3 léacht).

An XIV Comhdháil Idirnáisiúnta sa Léann Ceilteach

Tionóladh an XIV Comhdháil Idirnáisiúnta sa Léann Ceilteach i Maigh Nuad i rith na seachtaine 1-5 Lúnasa. Scoil an Léinn Cheiltigh i gcomhpháirt le Scoil na Gaeilge, Ollscoil na hÉireann, Maigh Nuad, agus Scoil na Gaeilge, Coláiste na Tríonóide, a d'éagraigh an Chomhdháil. Liam Breatnach, Scoil an Léinn Cheiltigh, a bhí mar Uachtarán Áitiúil ar an gComhchoiste Eagraíochta maraon leis an Dr Katharine Simms, leis an Ollamh Damian McManus (Coláiste na Tríonóide), agus leis an Ollamh Ruairí Ó hUiginn (Ollscoil na hÉireann, Maigh Nuad). Thug Eibhlín Nic Dhonncha tacaíocht riaracháin agus Andy McCarthy tacaíocht teicneolaíochta. Chláraigh breis is 600 scoláire ó thíortha ar fud an domhain le bheith páirteach sa Chomhdháil, agus

léadh 370 éigin de pháipéir i seisiúin chomhuaineacha in imeacht na Comhdhála. Tugadh naoi gcinn de léachtaí lánseisiúin, agus bhí an tAire Oideachais agus Scileanna, Ruairí Quinn T.D., i láthair ag léachtaí lánseisiúin a thug an tOllamh P. A. Breatnach, Stiúrthóir Scoil an Léinn Cheiltigh, agus an Dr Elizabeth FitzPatrick uathu ar an 4 Lúnasa. Labhair an tAire os comhair na Comhdhála ar an ócáid in aitheasc a dhearbhaigh an tábhacht a bhaineann leis na daonnachtaí sa chóras oideachais náisiúnta, agus d'fhreastal sé ar roinnt imeachtaí eile le linn seachtain na Comhdhála.

Seoladh leabhair, díolacháin

Ag fáiltiú i Scoil an Léinn Cheiltigh ar an 29 Iúil seoladh an leabhar *The cult of the sacred centre: Essays on Celtic ideology* le Proinsias Mac Cana (nach maireann), agus ba é an tOllamh Fergus Kelly a thug an t-aitheasc uaidh. Bhí Réiltín Bean Mhic Cana agus a clann i measc an tslua mhóir a tháinig i láthair i gcomhair na hócáide. Bhí an leabhar seo i measc sraith de leabhair nua ar cuireadh ócáid seolta speisialta ar bun dóibh ag fáiltiú tráthnóna ag tús an XIV Comhdháil Idirnáisiúnta sa Léann Ceilteach i Maigh Nuad (1 Lúnasa).

Bhí ceannach maith ar fhoilseacháin Scoil an Léinn Cheiltigh le linn seachtain na Comhdhála i Maigh Nuad, mar a raibh stáisiún scópúil in áirithe le haghaidh díolacháin agus beirt d'fhoireann na Scoile i bhfeighil air ar feadh an ama (Jennifer Flynn agus Órla Ní Chanainn). Eibhlín Nic Dhonncha agus Michelle O Riordan (an tOifigeach Foilseachán) a bhí freagrach as na socrúithe i gcomhairle le coiste na bhfoilseachán.

Coiste na bhFoilseachán; athchlónna etc.

Tháinig coiste na bhfoilseachán le chéile i mí na Márta agus i mí na Samhna (cathaoirleach: Liam Breatnach). Lean Liam Breatnach i mbun eagarthóireachta ar an saothar *Collectio Canonum Hibernensis* (Roy Flechner) atá cutha faoi bhráid an Choiste.

De bharr an éilimh a bhíonn ar fhoilseacháin na Scoile go leanúnach cuireadh athchló ar na leabhair seo leanas i 2011: *Seanmóna Chúige Uladh, Death Tales of the Ulster Heroes* (Kuno Meyer); *Irish Syllabic Poetry* (Eleanor Knott); *A Guide to Early Irish Law* (Fergus Kelly); *The Irish Penitentials* (Ludwig Bieler); *Gaeilge Chois Fhairrge* (Tomás de Bhaldraithe); *Dicuili Liber de Mensura Orbis Terrae* (J. J. Tierney); *Cnósach Focal Ó Bhaile Bhuirne* (Brian Ó Cuív); *Tromdámh Guaire* (Maud Joynt).

Due to continuing demand for the School's publications the following works were reprinted in 2011: *Seanmónta Chúige Uladh* (Ó Gallchobhair), *Death Tales of the Ulster Heroes* (Kuno Meyer); *Irish Syllabic Poetry* (Eleanor Knott); *A Guide to Early Irish Law* (Fergus Kelly); *The Irish Penitentials* (Ludwig Bieler); *Gaeilge Chois Fhairrge* (Tomás de Bhaldraithe); *Dicuilí Liber de Mensura Orbis Terrae* (J. J. Tierney); *Cnósach Focal Ó Bhaile Bhuirne* (Brian Ó Cuív); *Tromdámh Guaire* (Maud Joynt).

Research and editing

Liam Breatnach continued work on his edition-in-progress of the Old Irish law tract *Córus Bésnai* and the collection of materials for his projected *Grammar of Middle Irish*. He was co-editor of *Ériu*, vol. 61 (published by the Royal Irish Academy). Pádraig Breatnach continued research for the forthcoming volume of studies *The Four Masters and their manuscripts*. As part of this project he prepared a palaeographical inventory of manuscripts written by Cú Coigríche Ó Cléirigh, arranged chronologically based on a comparative text-critical study of the manuscripts' contents. He advanced his edition-in-progress of poems by Dubhthach Óg Ó Duibhgeannáin; completed his edition of *Cuirfead so ionnad a Aodh* (Eochaidh Ó hÉodhusa); worked on several eighteenth-century compositions for the series 'Togha na hÉigse', and on the catalogue of Irish manuscripts in Brussels. Fergus Kelly conducted research for his edition of the legal treatise ascribed to Giolla na Naomh Mac Aodhagáin (*CIH* ii 691.1-699.4). He made progress with his edition of the Old Irish legal tract on marriage disputes (*CIH* i 144.5-150.16) for publication in *Celtica* (2012). Clodagh Downey (Bergin Fellow) continued work on her project to critically edit and translate the extant works of the Middle-Irish author Cúán ua Lothcháin. A large number of manuscripts were consulted as part of continuing comparative analysis of the language, metre, subject matter and background of the material.

Malachy McKenna worked on revisions of his forthcoming monograph, *The Irish of Rann na Feirste: a phonemic study*. He completed the phonemic study and refined the terminological treatment of physical aspects of phoneme production. He made a number of field-trips to Rann na Feirste for purposes of data collection and to maintain contact with informants on whom the research project is dependent. Aoibheann Nic Dhonnchadha continued to catalogue important medieval medical manuscripts from the

collection in Trinity College Dublin (nos. 1314/4, 1319/2/6, 1315, 1341, 1435, 1436). Brian Ó Curnáin advanced work on his monograph on the Irish of East Galway, and made notes on aspects of phonology and grammar. He worked on the transcription, digitisation and cataloguing of recorded material from Connemara and has begun to assemble a database of metadata on particular phenomena (sandhi, accent, vocabulary etc.). Pádraig Ó Macháin continued his research on Irish manuscripts with special emphasis on projects connected with the work of ISOS. He prepared a catalogue description of the Irish Primer written for Elizabeth I which is preserved in Farmleigh House, and he made a detailed study of the relationship between that manuscript and the so-called 'Duanair Nuinseannach' (National Library of Ireland G 992, 'Nugent Manuscript') for publication in 2012. He provided a descriptive account of the history and palaeography of the important manuscript in private hands known as 'The Book of Lismore' (Leabhar Mhic Cárthaigh Riabhaigh) for exhibition at University College Cork. He continued with his edition-in-progress of the unpublished poems of Fearghal Ó Mac an Bhaird, and made a special study of poems composed in youth found in the Scottish manuscript Adv. 72.2.14 (National Library of Scotland) and RIA MS no. 475 (24 P 25) ('Leabhar Clainne Suibhne'). This project is closely linked to other research in which he is concurrently engaged to provide a history of Irish bardic poem-books and miscellanies. Michelle O Riordan worked on her monograph on the cultural context of Irish political poetry of the seventeenth century which will include discussion of senses of Irish identity at the time of the rebellion of 1641 and in the Cromwellian period.

Helen Imhoff (O'Donovan Scholar) continued work on her edition of *Fáistine Airt meic Cuind* and researched the historical background of the text. She completed an article on the manuscripts of the tale *Aided Chonchobair*. Elliot Lash (O'Donovan Scholar) was engaged in research for his project on the development of an automatic parsing template for Old and Middle Irish texts and on the functions of analogy vs. reanalysis in the understanding of linguistic change. Anna Matheson (O'Donovan Scholar) prepared an article on the structure of the Old Irish law text *Do drúthaibh 7 meraibh 7 dásachtaibh* and on the use of the terms *cáepthae* and *finelach* therein. Sorcha Nic Lochlainn (O'Donovan Scholar from September) completed her article 'Making the foreign familiar: the Gaelicisation of the classical ballad'; she commenced a project to make a

Taighde agus eagarthóireacht

Lean Liam Breatnach ag réiteach eagrán den tráchtas dlí Sean-Ghaeilge *Córus Bésgnai* agus choinnigh sé ar aghaidh ag bailiú ábhair dá shaothar *Grammar of Middle Irish*. Bhí sé ina eagarthóir (i gcomhar le D. McManus) ar *Ériu* iml. 61 (Acadamh Ríoga na hÉireann). D'oibrigh Pádraig Breatnach ar thaighde don tsraith staidéar *The Four Masters and their manuscripts* (le teacht). Mar chuid den obair sin réitigh sé clár pailéagrafaíochta in ord croneolaíoch de na lámhscríbhinní uile atá tagtha anuas ó lámh Chú Coigríche Uí Chléirigh, bunaithe ar scrúdú téacs-chriticiúil comparáideach ar ábhar na lámhscríbhinní éagsúla. Choinnigh sé air le obair eagarthóireachta ar dhánta le Dubhthach Óg Ó Duibhgeannáin agus Eochaidh Ó hEódhusa agus ar ábhar don sraith 'Togha na héigse', agus lean sé air ag réiteach chlár lámhscríbhinní na Bruiséile. Bhí Fergus Kelly i mbun taighde ar eagrán de thráchtas dlí atá leagtha ar Ghiolla na Naomh Mac Aodhagáin (*CIH* ii 691.1-699.4). Chuaigh sé chun cinn lena eagrán de thráchtas dlí Sean-Ghaeilge ina bhfuil plé ar chúiseanna idir lánúna pósta (*CIH* i 144.5-150.16), a fhoilseofar in *Celtica* (2012). Bhí Clodagh Downey (Comhalta Uí Amhírgín go Lúnasa) ag gabháil dá tionscnamh chun eagar criticiúil (maraon le haistriúchán) a chur ar shaothar an fhile Mheán-Ghaeilge Cúan ua Lothcháin. Ceadaíodh líon mór lámhscríbhinní mar chuid den obair seo agus cuireadh i gcomparáid iad, deineadh tráchtairacht anailíseach ar an véarsaíocht idir thréithe teanga agus meadarachta agus bunábhair, agus féachadh chun cúlra stairiúil na cumadóireachta a shoiléiriú. Bhí Malachy McKenna ag obair ar leasuithe ar a leabhar, *The Irish of Rann na Feirste: a phonemic study* (le teacht). Chuir sé bailchríoch ar an mion-chur síos fóinéimeach, agus d'oibrigh sé ar sholáthar téarmaíochta ar mhaithe le cur síos ar na coir fhisiciúla a bhaineann le gníomh na hurlabhra le linn táirgiú na bhfóinéimeanna. Chuaigh sé ar roinnt cuairteanna páirce go Rann na Feirste ag triall ar shaineolas agus ar mhaithe le caidreamh a choimeád le cainteoirí ar a bhfuil an tionscnamh ag brath. Lean Aoibheann Nic Dhonnchadha ar aghaidh le clárú na lámhscríbhinní leighis i gColáiste na Tríonóide, Baile Átha Cliath (uimh. 1314/4, 1319/2/6, 1315, 1341, 1435, 1436). Lean Brian Ó Curnáin air ag ullmhú monagraif ar Ghaeilge Achréidh na Gaillimhe, agus réitigh nótaí ar réimsí den fhoghraíocht agus den ghramadach. Chuaigh sé i mbun ábhar taifeadta ó Chonamara a thras-scríobh agus a aistriú go foirm dhigiteach agus a chlárú maidir le metashonraí, agus tá tús curtha aige le fardal fóinéimeach bunaithe ar na taifid pháirce i dtaca le feiniméin ar leith (srónáil,

sandhi, béim focal, stór focal, etc.). Bhí taighde ar siúl go leanúnach aige ar chor bheochanúintí na Gaeilge i gCúige Chonnacht go háirithe. Lean Pádraig Ó Macháin dá chuid taighde ar lámhscríbhinní na Gaeilge ag díriú go háirithe ar thionscnaimh a bhí comhcheangailte le obair ISOS. Sholáthair sé cuntas catalóige ar an mBunleabhar Gaeilge do Eilís I atá ar coimeád i dTeach Farmleigh agus scrúdaigh sé an comhchoibhneas atá idir an lámhscríbhinn sin agus 'An duanaire Nuinseannach' (Leabharlann Náisiúnta G 992) i dtaighde a fhoilseofar amach anseo (2012). Sholáthair sé taighde faisnéiseach ar stair agus peannaireacht na lámhscríbhinne Leabhar Leasa Móir le haghaidh taispeántais i gColáiste na hOllscoile, Corcaigh. Lean sé ar aghaidh lena chuid obair eagarthóireachta ar fhilíocht neamhfhoilsithe le Fearghal Óg Mac an Bhaird, agus dhírigh go speisialta ar dhánta a cumadh ina óige atá le fáil sa lámhscríbhinn Adv. 72.2.14 (Leabharlann Náisiúnta na hAlban) agus in Acadamh Ríoga na hÉireann, uimh. 475 (24 P 25) ('Leabhar Clainne Suibhne'). Tá dlúthcheangal idir an obair seo agus tionscnamh eile atá ar bun aige a thabharfaidh faisnéis ar stair na nduanairí in aimsir Fhilíocht na Scol. Tá Michelle O Riordan ag scríobh leabhair ar fhilíocht pholaitiúil na Gaeilge san 17ú haois agus an comhthéacs cultúrtha a bhain léi. Beidh trácht anseo ar thaighde atá á dhéanamh aici ar fhéintuiscint an phobail Éireannaigh in aimsir an Éirí Amach i 1641 agus le linn Chromaill.

Lean Helen Imhoff (Scoláire Uí Dhonnabháin) dá cuid oibre ar eagrán de *Fáistine Airt meic Cuind* agus ag déanamh taighde ar chúlra stairiúil an téacsa. Réitigh sí alt ar lámhscríbhinní an scéil *Aided Chonchobair*. D'oibrigh Elliott Lash (Scoláire Uí Dhonnabháin) ar a tionscnamh chun parsáil uathoibrítheach a chur i bhfeidhm ar théacsaí Sean- agus Meán-Ghaeilge, agus ar fheidhmeanna an analaigh vs. athanailís ar mhaithe le tuiscint ar an athrú teangeolaíoch. Lean Anna Matheson (Scoláire Uí Dhonnabháin) ag réiteach ailt ina mbeidh trácht ar struchtúr an téacs dlí Sean-Ghaeilge *Do drúthaibh 7 meraibh 7 dásachtaibh* agus ar úsáid na dtéarmaí *cáeptha* agus *finelach* ann, agus tá sí ag ullmhú staidéir ar na téarmaí *drúth go rath* agus *mer gin rath* le haghaidh an chló. Chríochnaigh Sorcha Nic Lochlainn (Scoláire Uí Dhonnabháin ó Mheán Fómhair) alt léi, 'Making the foreign familiar: the Gaelicisation of the classical ballad', agus dhírigh sí isteach ar tionscnamh chun bailiúchán a réiteach (maraon le haistí tráchtairachta) d'amhráin a mhaireann i dtraidisiún na hÉireann agus na hAlban araon.

D'oibrigh Roisin McLaughlin (Comhalta IRCHSS) ar eagrán chriticiúla a réiteach de na téacsanna *In Lebor Ollaman*

collection with commentary of songs surviving in both Irish and Scottish tradition.

Roisin McLaughlin (IRCHSS Fellow) worked on critical editions of *In Lebor Ollaman* and *Mittelirishce Verslehen III*. She transcribed two Latin texts as part of her involvement in the School's *Leabhar Breac* project.

Irish Script on Screen (ISOS)

The work of the ISOS project continued, directed by Pádraig Ó Macháin. In January two important tasks were completed, viz. (i) digitisation of three manuscripts from the State Library, Victoria, in Australia (the images were installed on line accompanied by catalogue descriptions provided by Pádraig Ó Macháin); (ii) digitisation of five manuscripts from the collection of UCC (these images were installed online accompanied by descriptions by Professor Breandán Ó Conchúir). By agreement between the School of Celtic Studies and University College Cork work will continue on the digitisation of the manuscript collection in the Special Collections of the Boole Library, as part of which digital images of MS 1 (19th cent., scribe Seán Ó Cléirigh) are now available on the ISOS website.

The pilot scheme agreed with UCC led also to a request to ISOS to undertake the digitisation of the Book of Lismore, an important fifteenth-century manuscript in private ownership in Chatsworth House, Derbyshire. The manuscript was brought to UCC for exhibition in the Glucksman Gallery (July-October). The images were made in situ in England prior to the exhibition and these were used to mount a digital display with touch screen descriptions prepared by Pádraig Ó Macháin. It is planned that the complete set of images will be made available online in the ISOS website.

The existing collaboration between the School of Celtic Studies/ISOS and the National Library of Scotland was continued and saw completion of the digitisation of a further 10 manuscripts now available on the website. In all 48 manuscripts from the Scottish collection are now available through ISOS accompanied by comprehensive catalogue descriptions provided by Ronald Black.

In the context of the long-standing agreement with the Royal Irish Academy further 5 manuscripts from the sixteenth century were digitised (nos. 439, 466, 471, 479, 1), of which 4 are medical manuscripts. An additional 4 items from the Franciscan collection at University College

Dublin were digitised, viz. OFM-UCD MSS A7 (15th cent.), A15 (17th cent.), A18 (18th cent.), A23 (18th cent.).

A new collaboration between the School of Celtic Studies/ISOS and the Office of Public Works was arranged whereby ISOS agreed to provide digitised images of the sixteenth-century manuscript of an Irish Primer made for Queen Elizabeth I. The manuscript is preserved in the Benjamin Iveagh library in Farmleigh House under the care of the Office of Public Works and Marsh's Library. The images created by ISOS now available on the website were used to produce three facsimiles of the Primer. One facsimile was presented to Queen Elizabeth II on the occasion of her visit to Ireland in 2011. A second was presented by the Office of Public Works to Her Excellency Mary McAleese on the occasion of the completion of her term of office as President of Ireland. The third facsimile is on display in Farmleigh House.

GLOR

The GLOR project was initiated in 2004 to digitize tape recordings held by the School of Celtic Studies and make these available online. The electronic transfer is complete and all material in the collection is accessible (c. 60 hrs) (CD and Online). The process of cataloguing the files according to speaker, subject, date and place of recording was continued during the year by Aoibheann Nic Dhonnchadha.

LEABHAR BREAC

The preparation of a digital diplomatic edition of the fifteenth-century manuscript continued. The project is directed by Liam Breatnach and is being conducted with the cooperation of the Bergin Fellows and O'Donovan Scholars.

BILL

Alexandre Guilarte worked on the preparation of volume IV of the *Bibliography of Irish linguistics and literature* and continued the development of the electronic version of the bibliographical project e-BILL. Data relating to Irish language and literature was catalogued from the following journals as part of the year's work: *Béaloideas* (vols. 39-41), *International Journal of the Sociology of Language* (vol. 1-), *Irish Historical Studies* (vols. 18/69); *Münchener Studien zur Sprachwissenschaft* (Band 30-), *Irish Sword* (from vol. 10-), *North Munster Antiquarian Journal* (vol. 15-), *Ossory Laois and Leinster* (vol. 1-), *Studia Celtica Japonica* (vol. 1-). A full index was made of contributions to *Studia Celtica*.

Scoil an Léinn Cheiltigh (ar leanúint)

agus *Mittelirische Verslehren III*. Dhein sí tras-scríobh ar dhá théacs Laidine mar chuid dá páirtíocht sa tionscnamh ar *Leabhar Breac*.

Meamram Páipéar Ríomhaire (ISOS)

Leanadh ar aghaidh i rith na bliana le obair an tionscnaimh Meamram Páipéar Ríomhaire / ISOS (stiúrthóir Pádraig Ó Macháin). Tugadh dhá thionscnamh chun críche i mí Eanáir, viz. (i) cuireadh ar líne íomhánna maraon le cur síos catalóige (réitithe ag Pádraig Ó Macháin) a bhaineann le trí lámhscríbhinn Ghaeilge ón State Library, Victoria san Astráil; (ii) críochnaíodh an próiseas digitithe ar chúig cinn de lámhscríbhinní Gaeilge as cnuasach Choláiste na hOllscoile, Corcaigh, agus cuireadh na híomhánna ar líne maraon le cuntas catalóige a sholáthair an tOllamh Breandán Ó Conchúir. Thángthas ar chomhaontú le Ollscoil Chorcaí go leanfar ar aghaidh feasta le digitiú an chnuasaigh lámhscríbhinní atá sna Bailiúcháin Speisialta i Leabharlann Boole, agus dá thoradh sin tá íomhánna de lámhscríbhinn uimh. 1 sa chnuasach (19ú haois, Seán Ó Cléirigh an scríobhaí) le fáil ar shuíomh líne ISOS cheana féin.

Toradh eile a bhí ar an scéim phiolóiteach idir Scoil an Léinn Cheiltigh agus údarás Leabharlann Boole ná gur iarradh ar ISOS a bheith freagrach as digitiú a dhéanamh ar Leabhar Leasa Móir, lámhscríbhinn tábhachtach ón 15ú haois atá i seilbh na n-úinéirí i Chatsworth House, Derbyshire, agus a tugadh go hOllscoil Chorcaí chun go gcuirfí ar taispeáint i san Glucksman Gallery (Iúil-Deireadh Fómhair). Deineadh an ghrianghrafadóireacht *in situ* i Sasana roimh an dtaispeántas, agus cuireadh íomhánna de na leathanaigh chun tairbhe i dteannta le cur síos orthu a réitigh Pádraig Ó Macháin i riocht digiteach do láithriú ar scáileán mar chuid den taispeántas. Tá sé beartaithe go mbeidh Leabhar Leasa Móir ar fáil i riocht digiteach ar shuíomh líne ISOS amach anseo.

Leanadh ar aghaidh i mbliana leis an scéim chomhoibrithe atá ar bun idir Scoil an Léinn Cheiltigh agus Leabharlann Náisiúnta na hAlban nuair a críochnaíodh an próiseas digitithe ar dheich gcinn breise de lámhscríbhinní ó chnuasach na Leabharlainne agus gur cuireadh in airde ar shuíomh an tionscnaimh ISOS iad. (Tá 48 lámhscríbhinn ar líne faoi seo ón gcnuasach seo, maraon le cuntais chatalóige réitithe ag Ronald Black.) Deineadh digitiú ar chúig lámhscríbhinn eile as cnuasach Acadamh Ríoga na hÉireann i rith na bliana (uimh. 439, 466, 471, 479, 1), ar lámhscríbhinní leighis ón 16ú haois ceithre cinn díobh. Deineadh digitiú ar cheithre lámhscríbhinn bhreise as

cnuasach na bProinsiasach atá sa Choláiste Ollscoile, Baile Átha Cliath, viz. OFM-UCD A7 (15ú haois), A15 (17ú haois), A18 (18ú haois), A23 (18ú haois).

Bunaíodh comhpháirtíocht nua i rith na bliana nuair a d'iarr Oifig na nOibreacha Poiblí ar Scoil an Léinn Cheiltigh/ISOS íomhánna digiteacha a chruthú de Ghraiméar Gaeilge ón 16ú haois a réitíodh mar bhunleabhar do Bhanríon Eilís I ('Elizabeth's Irish Primer'). Tá lámhscríbhinn an bhunleabhair ar coimeád mar chuid de Leabharlann Benjamin Íbh Eathach i dTeach Farmleigh faoi chúram Oifig na nOibreacha Poiblí (i gcomhar le Leabharlann Marsh). Tá na híomhánna a chruthaigh ISOS in airde ar shuíomh líne an tionscnaimh maraon le tuairisc ar an lámhscríbhinn a réitigh Pádraig Ó Macháin. Bunaithe ar na híomhánna a sholáthair ISOS cruthaíodh trí cinn de mhacasamhla den Ghraiméar. Bronnadh macasamhail amháin mar bhronntanas Stáit ar an mBanríon Eilís II le linn na cuairte a thug sí ar Éirinn, 2011. Bhronn Oifig na nOibreacha Poiblí macasamhail eile ar Uacharán na hÉireann, Máire Mhic Giolla Íosa, ar éirí as oifig di an bhliain chéanna. Agus tá an tríú macasamhail ar taispeáint i dTeach Farmleigh.

GLOR

Is é atá in GLOR ná tionscnamh a bunaíodh i 2004 chun na téipeanna fuaime atá i seilbh Scoil an Léinn Cheiltigh a dhigitíú agus a chur ar fáil ar shuíomh idirlín na Scoile. Tá an t-aistriú leictreonach i gcrích agus tá teacht go leictreonach ar an ábhar uile sa chnuasach (c. 60 uair a chloig taifeadta) (dlúthdhiosca agus ríomhaire). Tá clárú sonraí na gcomhad (cainteoir, ábhar cainte, dáta agus láthair taifeadta) idir lámha ag Aoibheann Nic Dhonnchadha.



Scoil Samhraidh 2011.

Summer School 2011.

LIBRARY

The current phase of cataloguing continued directed by Margaret Irons (Kelly), Librarian. The work-experience programme FAS WPP1 enabled engagement of Jennifer Flynn who worked on the recataloguing of old library records. She transferred 2000 records from reference cards to the electronic library management system. Órla Ní Chanainn, Library Assistant, circulated regular updates on new acquisitions, journals and online resources. The service hours of the library were increased for the period of the International Summer School (18-30) and a large increase in visitor numbers was registered as compared with previous years. The library committee met in February, June and October to consider policy and strategy issues and to oversee current library developments. The library floor and furniture were renewed. Margaret Irons was active as a committee member of the Academic and Special Libraries Section of the Library Association of Ireland and attended seminars organised by LIR (HEAnet User Group) and ANTL (Academic and National Library Training Cooperative).

Statutory Lecture and TIONÓL 2011

Professor Liam Breatnach delivered the annual Statutory Lecture of the School of Celtic Studies (2011) entitled 'Poet and Scholar: The Education of the *Fili* in Early Medieval Ireland'. The lecture took place before a large audience in Trinity College Dublin on 18 November as part of the School's annual Tionól 2011.

Professor Fergus Kelly assisted by School Administrator Eibhlín Nic Dhonncha organised Tionól 2011, 18-19 November. A large attendance numbering more than 100 was present on both days, and more than 20 papers were delivered on various aspects of Celtic Studies as follows: 'The legal context of *Eachtra Fergusa maic Léti*' (Fangzhe Qiu, Oxford University); 'On the terms *drúth go rath* and *mer gin rath* in early Irish commentary' (Anna Matheson, DIAS); 'In ár Lazarusannaí ag imeacht: campa géibhinn an Churraigh agus bunús *Cré na Cille*' (Mícheál Briody, University of Helsinki); 'Hagiographical links in late medieval Welsh poems to saints' (Barry Lewis, University of Aberystwyth); 'Irish phonology: examining how contrast works' (Raymond Hickey, University of Duisburg); 'The Milan Glosses database' (Vienna University); 'The date of O'Mulconry's Glossary and its place in the Irish glossary tradition' (Pádraic Moran, NUI Galway); 'Henry Bradshaw, Old Breton and the edition of glossed texts' (Paul Russell,

Cambridge University); 'Irish words and phrases in the English of Massbrook, Co. Mayo: notes from the 1960s' (Fergus Kelly, DIAS); 'The world according to *'neimed'*: categorising space, people, and legal procedures in early medieval Ireland' (Riitta Latvio, University of Helsinki); 'Not missing the *bád*: a spoken language corpus for Irish' (Alessio Frenda, Trinity College Dublin); 'The *Mythologies* of Fulgentius in the Irish reconstruction of pagan antiquity' (Michael Clarke, NUI Galway); 'At the helm: some new light on early Irish monasticism' (Máirín Ní Dhonnchadha, NUI Galway); 'A text on judges and poets in the pseudo-historical prologue to the *Senchas Már*' (Roisin McLaughlin, IRCHSS/DIAS); 'The transmission of an abridged version of the Gospel of Nicodemus in Irish sources' (Caoimhín Breatnach, University College Dublin); 'Cormac's Glossary: the Book of Uí Mhaine version' (Patricia Kelly, University College Dublin); 'The Ó Cléirigh compilation of the Martyrology of Donegal' (Dan McCarthy, Trinity College Dublin); 'What was *findruine*?' (Niamh Whitfield, Dublin).

Seminars and lectures

Weekly seminars on Early Irish law texts and on Old Irish and Middle Irish prose and verse texts were conducted by Professor Liam Breatnach. Participants included scholars from both Trinity College Dublin and University College Dublin. Professor Pádraig Breatnach conducted seminars on Irish bardic poetry and Early Modern Irish prose.

Papers and lectures were delivered by staff at national and international conferences as follows:

Liam Breatnach

- 'Gráid na bhfilí in Éirinn fadó' (St Patrick's College, Dublin 9, 9 March);
- 'The education of the poet in early medieval Ireland' (*Irish Studies Symposium* University of Uppsala, 4 October);
- 'Daniel A. Binchy as a legal scholar' (Conference, *UCD Lawyers and Public Life: 100 Years of Activism and Influence*, Newman House, St Stephen's Green, Dublin, 12 November);
- Statutory Lecture of the School of Celtic Studies: 'Poet and scholar: the education of the *fili* in early medieval Ireland' (Trinity College Dublin, 18 November).

Scoil an Léinn Cheiltigh (ar leanúint)

Leabhar Breac

Stiúraigh Liam Breatnach an obair leanúnach ar eagrán dioplamáideach den Leabhar Breac le rannphairtíocht ó chomhaltaí Uí Aimirín agus scoláirí Uí Dhonnabháin.

BILL

Lean Alexandre Guilarte air ag réiteach ábhair don cheathrú imleabhar den *Bibliography of Irish linguistics and literature* agus leis an obair ar an leagan leictreonach den saothar bibleagrafúil e-BILL. Cláraíodh ábhar a bhain le léann teanga agus litríocht na Gaeilge as na hirisí seo leanas i rith na bliana: *Béaloideas* (iml. 39-41), *International Journal of the Sociology of Language* (ó iml. 1-), *Irish Historical Studies* (iml. 18/69); *Münchener Studien zur Sprachwissenschaft* (iml. 30-), *Irish Sword* (ó iml. 10 ar aghaidh), *North Munster Antiquarian Journal* (iml. 15-), *Ossory Laois and Leinster* (iml. 1-), *Studia Celtica Japonica* (iml. 1-). Cóiríodh liostaí d'fhoilseachán le scoláirí aitheanta agus críochnaíodh innéacs d'iontrálacha cláraithe as *Studia Celtica*.

Leabharlann

Leanadh den obair chláráithe reatha sa leabharlann stiúraithe ag an Leabharlannaí Margaret Irons (Kelly). Faoin scéim taithí shaothair FÁS WPP1 chaith Jennifer Flynn naoi mí ag obair ar thionscnamh athchláráithe na seantaifead leabharlainne, agus d'éirigh léi 2000 taifead a aistriú ó chartaí tagartha go dtí an córas bainistíochta leabharlainne leictreonach. Scaip an cúntóir leabharlainne Órla Ní Chanainn tuairiscí rialta ar leabhair nua-cheannaithe, irisí agus acmhainní ar líne ar fhoireann na Scoile. Méadaíodh ar uaireanta seirbhíse na leabharlainne le linn na Scoile Samhraidh (18-30 Iúil) agus cuireadh fáilte roimh níos mó cuairteoirí ná riamh cheana. Tháinig an coiste leabharlainne le chéile i mí Feabhra, mí an Mheithimh agus mí Deireadh Fómhair chun ceisteanna polasaí agus straitéise a phlé agus leas agus forbairt na leabharlainne a chur chun cinn. Deineadh athnuachan ar úrlár agus troscán na leabharlainne. Bhí Margaret Irons gníomhach mar bhall coiste i gCumann Leabharlanna na hÉireann agus d'fhreastail sí ar sheiminéir a d'éagraigh LIR (HEAnet User Group) agus ANTLC (Academic and National Library Training Cooperative) faoi seach.

Léacht Reachtúil agus TIONÓL 2011

An tOllamh Liam Breatnach a thug Léacht Reachtúil Scoil an Léinn Cheiltigh (2011) uaidh faoin teideal: 'Poet and scholar: The education of the *filli* in early medieval Ireland'. Reachtáladh an léacht i gColáiste na Tríonóide ar an 18 Samhain mar chuid de Tionól 2011, agus bhí pobal mór éisteachta i láthair.

An tOllamh Fergus Kelly a d'éagraigh Tionól 2011 ar an dá lá 18-19 Samhain i gcomhpháirt le riarthóir Scoil an Léinn Cheiltigh, Eibhlín Nic Dhonncha. Bhí slua mór (os cionn céad duine) i láthair ag na himeachtaí i gcaitheamh an dá lá agus léadh scór éigin de pháipéir ar ghnéithe éagsúla den Léann Ceilteach do réir an chláir mar seo leanas: 'The legal context of *Eachtra Fergusa maic Léti*' (Fangzhe Qiu, Ollscoil Oxford); 'On the terms drúth go rath and mer gin rath in early Irish commentary' (Anna Matheson); 'In ár Lazarusannaí ag imeacht: campa géibhinn an Churraigh agus bunús *Cré na Cille*' (Mícheál Briody, Ollscoil Helsinki); 'Hagiographical links in late medieval Welsh poems to saints' (Barry Lewis, Prifysgol Aberystwyth); 'Irish phonology: examining how contrast works' (Raymond Hickey, Ollscoil Duisburg); 'The Milan Glosses database' (Ollscoil Vienna); 'The date of O'Mulconry's Glossary and its place in the Irish glossary tradition' (Pádraic Moran, Ollscoil na hÉireann, Gaillimh); 'Henry Bradshaw, Old Breton and the edition of glossed texts' (Paul Russell, Ollscoil Cambridge); 'Irish words and phrases in the English of Massbrook, Co. Mayo: notes from the 1960s' (Fergus Kelly); 'The world according to *'neimed'*: categorising space, people, and legal procedures in early medieval Ireland' (Riitta Latvio, Ollscoil Helsinki); 'Not missing the *bád*: a spoken language corpus for Irish' (Alessio Frenda, Coláiste na Tríonóide); 'The *Mythologies* of Fulgentius in the Irish reconstruction of pagan antiquity' (Michael Clarke, Ollscoil na hÉireann, Gaillimh); 'At the helm: some new light on early Irish monasticism' (Máirín Ní Dhonnchadha, Ollscoil na hÉireann, Gaillimh); 'A text on judges and poets in the pseudo-historical prologue to the *Senchas Már*' (Roisin McLaughlin); 'The transmission of an abridged version of the Gospel of Nicodemus in Irish sources' (Caoimhín Breatnach, An Coláiste Ollscoile, Baile Átha Cliath); 'Cormac's Glossary: the Book of Uí Mhaine version' (Patricia Kelly, An Coláiste Ollscoile, Baile Átha Cliath); 'The Ó Cléirigh compilation of the Martyrology of Donegal' (Dan McCarthy, Coláiste na Tríonóide, Baile Átha Cliath); 'What was *findruine*?' (Niamh Whitfield, Baile Átha Cliath).

Seiminéir agus léachtaí

I rith na bliana bhí an tOllamh Liam Breatnach i bhfeighil ar sheiminéir i Scoil an Léinn Cheiltigh ar sheandlithe na hÉireann agus ar théacsáí próis agus filíochta Sean- agus Meán-Ghaeilge agus bhí scoláirí ó institiúidí eile i measc an lucht freastail. Bhí an tOllamh Pádraig Breatnach i bhfeighil ar sheiminéir ar an bhfilíocht chlasaiceach agus ar phrós na Nua-Ghaeilge Moiche ó mhí Deireadh Fómhair.

School of Celtic Studies (continued)

Pádraig A. Breatnach:

- 'Book hand and cursive in later Irish manuscripts: a problematic distinction' (*5^e rencontre internationale du séminaire permanent sur la cursivité*, Institut de recherche et d'histoire des textes (IRHT), Paris, 15 April 2011);
- 'Múnlaí seanamhrán i ndánta Aogáin Uí Raithile' (Conference, *Sealbhú an Traidisiúin*, Humanities Institute of Ireland, University College Dublin, 20 May 2011);
- 'Metre and poetry in the accentual tradition' (3 lectures, International Summer School of the School of Celtic Studies, 21-23 July);
- Plenary Lecture: 'Irish handwriting in the seventeenth century' (XIV International Congress of Celtic Studies NUI Maynooth, 4 August);
- 'The anatomy of Irish bardic eulogy: a critical reading of a poem of solicitation (c. 1600)' (*Irish Studies Symposium*, University of Uppsala, 4 October).

Clodagh Downey (Clodagh Ní Dhubhnaigh):

- 'The life and work of Cúán ua Lothcháin, an eleventh-century poet' (Royal Society of Antiquaries of Ireland, Baile Átha Cliath, 31 Márta);
- 'Who was Ailill Mo*saulum?' (XIV International Congress of Celtic Studies, NUI Maynooth, 5 August).

Alexandre Guilarte

- 'BILL: Bibliography of Irish Linguistics and Literature' (XIV International Congress of Celtic Studies, NUI Maynooth, 4 August).

Fergus Kelly:

- 'Farming before the Norman invasion: the evidence of the law-texts' (Dublin University Early Irish Society, Trinity College Dublin, 22 February);
- 'Medical care in early Irish law' (Seminar, *Regimes of Care in Medieval Ireland*, University College Dublin, organised by Mícheál Ó Cléirigh Institute agus Centre for the History of Medicine in Ireland, 9 April);
- 'Early Irish law and society' (6 lectures, International Summer School of the School of Celtic Studies, 18-23 July);

- 'The status of professional women in early Irish law' XIV International Congress of Celtic Studies (NUI Maynooth, 1 August);
- 'Irish words and phrases in the English of Massbrook, Co. Mayo: notes from the 1960s' (*Tionól*, School of Celtic Studies, 18 November).

Aoibheann Nic Dhonnchadha:

- 'Léann Ghailéin i dtéacsanna leighis na Gaeilge, 1350-1650' (Conference, *Galen (c. 129-200 AD) in the Greek, Arabic, Jewish, Renaissance and Gaelic Worlds*, Tercentenary of the School of Physic, Trinity College Dublin, 15 June);
- 'The vocabulary of the "Almusór", an Irish treatise on general pathology composed in 1400' (*Progress in Medieval Lexicography Conference*, Queen's University, Belfast, 16 September);
- 'The Book of Lismore: the Ó Callanáin connection and medical texts associated with the family' (*Book of Lismore Colloquium*, Department of Irish, University College Cork, 22 October).

Brian Ó Curnáin:

- 'L'irlandais de l'orras Aithneach, Co. Galway' (*Séminaire de la Bretagne Linguistique*, Centre de recherches bretonnes et celtiques, Université de Bretagne Occidentale, Brest, 3 December);
- 'Extrapolating from the Irish condition: aspects of demography and discourse in bilingual minority language communities' (Conference, *Languages of the wider world: Understanding resilience and shift in regional and minority languages*, eagraithe ag School of Oriental and African Studies, University of London and Fryske Akademy (Leeuwarden), Leeuwarden, Netherlands, 6-8 April);
- 'Tógáil chlainne sa mhionteanga' (Scoil Earraigh, *Pleanáil Teanga*, Ollscoil na hÉireann, Gaillimh, eagraithe ag Acadamh na hOllscolaíochta Gaeilge, 28 Márta).

Pádraig Ó Macháin:

- 'Gaelic sources for pre-Famine social history' (*Dunhill Lecture Series*, Co. Waterford);

Scoil an Léinn Cheiltigh (ar leanúint)

Thug baill foirne páipéir agus léachtaí uathu ag comhdhála náisiúnta agus idirnáisiúnta i rith na bliana mar seo leanas:

Liam Breatnach

- 'Gráid na bhfilí in Éirinn fadó' (Coláiste Phádraig, Baile Átha Cliath 9, 9 Márta);
- 'The education of the poet in early medieval Ireland' (Ollscoil Uppsala, 4 Deireadh Fómhair);
- 'Daniel A. Binchy as a legal scholar' (Comhdháil UCD *Lawyers and Public Life: 100 Years of Activism and Influence*, Teach Newman, Faiche Stiabhna, Baile Átha Cliath, 12 Samhain);
- Léacht Reachtúil Scoil an Léinn Cheiltigh: 'Poet and scholar: the education of the fili in early medieval Ireland' (Coláiste na Tríonóide, 18 Samhain).

Pádraig A. Breatnach:

- 'Book hand and cursive in later Irish manuscripts: a problematic distinction' (*5^e rencontre internationale du séminaire permanent sur la cursivité*, Institut de recherche et d'histoire des textes (IRHT), Páras, 15 Aibreán 2011);
- 'Múnlaí seanamhrán i ndánta Aogáin Uí Raithile' (Comhdháil *Sealbhú an Traidisiúin*, Institiúid na hÉireann don Léann Daonna (HII), An Coláiste Ollscoile, Baile Átha Cliath, 20 Bealtaine 2011);
- 'Metre and poetry in the accentual tradition' (3 léacht, Scoil Shamhraidh, Scoil an Léinn Cheiltigh, 21-23 Iúil);
- 'Irish handwriting in the seventeenth century', *An XIV Comhdháil Idirnáisiúnta sa Léann Ceilteach*, Maigh Nuad (Léacht Lánseisiúin) (4 Lúnasa 2011);
- 'The anatomy of Irish bardic eulogy: a critical reading of a poem of solicitation (c. 1600)' (*Irish Studies Symposium*, Ollscoil Uppsala (4 Deireadh Fómhair 2011)).

Clodagh Downey (Clodagh Ní Dhubhnaigh):

- 'The life and work of Cúán ua Lothcháin, an eleventh-century poet' (Royal Society of Antiquaries of Ireland, Baile Átha Cliath, 31 Márta);
- 'Who was Ailill Mo*saulum?' (*An XIV Comhdháil Idirnáisiúnta sa Léann Ceilteach*, Maigh Nuad, 5 Lúnasa).

Alexandre Guilarte

- 'BILL: Bibliography of Irish Linguistics and Literature' *An XIV Comhdháil Idirnáisiúnta sa Léann Ceilteach*, Maigh Nuad (4 Lúnasa 2011).

Fergus Kelly:

- 'Farming before the Norman invasion: the evidence of the law-texts' (Dublin University Early Irish Society, Coláiste na Tríonóide, Baile Átha Cliath, 22 Feabhra);
- 'Medical care in early Irish law' (Seimineár, *Regimes of Care in Medieval Ireland*, An Coláiste Ollscoile, Baile Átha Cliath, eagraithe ag Mícheál Ó Cléirigh Institute agus Centre for the History of Medicine in Ireland, 9 Aibreán);
- 'Early Irish law and society' (6 léacht, Scoil Shamhraidh, Scoil an Léinn Cheiltigh, 18-23 Iúil);
- 'The status of professional women in early Irish law', *An XIV Comhdháil Idirnáisiúnta sa Léann Ceilteach*, Maigh Nuad, 1 Lúnasa);
- 'Irish words and phrases in the English of Massbrook, Co. Mayo: notes from the 1960s', *Tionól*, Scoil an Léinn Cheiltigh (18 Samhain).

Aoibheann Nic Dhonnchadha:

- 'Léann Ghailéin i dtéacsanna leighis na Gaeilge, 1350-1650' (Comhdháil, *Galen (c. 129-200 AD) in the Greek, Arabic, Jewish, Renaissance and Gaelic Worlds*, Tercentenary of the School of Physic, Coláiste na Tríonóide, 15 Meitheamh);
- 'The vocabulary of the "Almusóir", an Irish treatise on general pathology composed in 1400' (*Progress in Medieval Lexicography Conference*, Ollscoil na Ríona, 16 Meán Fómhair);
- 'The Book of Lismore: the Ó Callanáin connection and medical texts associated with the family' (*Book of Lismore Colloquium*, Roinn na Sean-Ghaeilge, Coláiste na hOllscoile, Corcaigh, 22 Deireadh Fómhair).

Brian Ó Curnáin:

- 'L'irlandais de Iorras Aithneach, Co. Galway' (*Séminaire de la Bretagne Linguistique*, Centre de recherches bretonnes et celtiques, Université de Bretagne Occidentale, Brest, 3 Nollaig);

School of Celtic Studies (continued)

- 'Irish medieval digital initiatives' (University College Cork, January);
- 'Gaelic exiles in Louvain in the early 17th century: their poetry and their books' (Conference IASIL, Leuven, July);
- 'Litríocht na Gaeilge i gceantar Phort Láirge' (Tionól an Fómhair, Comhairle Chontae Phort Láirge, Meán Fómhair);
- 'The Book of Lismore' (Glucksman Gallery, University College Cork, 11 October);
- 'Scribal features of the Book of Lismore' (*Book of Lismore Colloquium*, Irish Department, University College Cork, 22 October);
- 'The writing of the Book of Lismore' (Lismore Castle, Co. Waterford, 25 October).

Helen Imhoff (O'Donovan Scholar) 'Art and Treóit in *Fáistini Airt meic Cuind*' (*XIV International Congress of Celtic Studies*, NUI Maynooth, 2 August). Elliott Lash (O'Donovan Scholar): 'The reanalysis of pre-Old Irish to Old Irish copular clauses' (*International Congress of Historical Linguistics*, National Museum of Ethnology, Osaka, Japan, 25-30 July); 'Irish Network in Formal Linguistics, 2nd Workshop,' September); 'Degrammaticalisation and Irish ro' (*Celtic Linguistics Symposium*, Edinburgh University, December). Anna Matheson (O'Donovan Scholar): 'The herring as buffoon in the folktale *Am peata sgadain*' (*The Celts in the Americas Conference*, St Francis Xavier University, Nova Scotia, 29 June, via 'Skype'); 'Throwing clods at the insane and/or undesirable in early Irish sources: a study of the *cáepthae* "clodded one"' (*International Congress of Celtic Studies*, NUI Maynooth, 1 August); 'On the terms *drúth go rath* and *mer gen rath* in early Irish legal commentary' (*Tionól*, School of Celtic Studies, 19 November); 'On the *drúth go rath*, the *mer gin rath*, and the employability of the mentally impaired according to early Irish legal commentary' (*5th Annual Workshop on disease, Disability and Medicine in Medieval Europe*, University of Nottingham, 3-4 December).

Roisin McLaughlin (IRCHSS Fellow): 'Poets and satire in early Ireland' (6 lectures, International Summer School of the School of Celtic Studies, 24-29 July); 'A Middle Irish text on almsgiving in the *Leabhar Breac* and RIA MS 3 B 23' (*XIV International Congress of Celtic Studies*, NUI Maynooth, 5 August); 'Rarely attested words in a Middle-Irish metrical tract' (*Progress in Medieval Lexicography Conference*, Queen's University, Belfast, 16 September); 'A text on judges and poets in the pseudo-historical prologue to the *Senchas Már*' (*Tionól*, School of Celtic Studies, 19 November).

External work, editorships, memberships

Liam Breatnach continued as editor of *Ériu* (Royal Irish Academy); P. A. Breatnach and Fergus Kelly continued as editors of *Celtica*. Pádraig Ó Macháin and Aoibheann Nic Dhonnchadh are editors of the local journal *An Linn Bhuí*.

Fergus Kelly was appointed external examiner in the Department of Old and Middle Irish, University College Cork.

P. A. Breatnach was re-elected a member of the Council of the Royal Irish Academy (March).

Visitors to the School

Professor Robin Chapman Stacey was a guest of the School in September. She lectured on the topic 'Law and the Imagination in Medieval Wales' (20 September). Other research visitors were: Maxim Fomin (April); Roy Flechner, Cambridge (April-May); Nancy Stenson, Wisconsin (July-August); Jan Erik Rekdal, Oslo (August-December); Tomás Ó Cathasaigh, Harvard (August); Pádraig Ó Néill, University of North Carolina, Chapel Hill (August); Jim McCloskey, University of California, Santa Cruz (September-December).

Scoil an Léinn Cheiltigh (ar leanúint)

- 'Extrapolating from the Irish condition: aspects of demography and discourse in bilingual minority language communities' (Comhdháil *Languages of the wider world: Understanding resilience and shift in regional and minority languages*, eagraithe ag School of Oriental and African Studies, Ollscoil Londain i gcomhar le Fryske Akademy (Leeuwarden), Leeuwarden, An Ísiltír, 6-8 Aibreán);
- 'Tógáil chlainne sa mhionteanga' (Scoil Earraigh, *Pleanáil Teanga*, Ollscoil na hÉireann, Gaillimh, eagraithe ag Acadamh na hOllscolaíochta Gaeilge, 28 Márta).

Pádraig Ó Macháin:

- 'Gaelic sources for pre-Famine social history' (*Dunhill Lecture Series*, Co. Phort Láirge);
- 'Irish medieval digital initiatives' (Coláiste na hOllscoile, Corcaigh, Eanáir);
- 'Gaelic exiles in Louvain in the early 17th century: their poetry and their books' (Comhdháil, IASIL, Leuven, Iúil);
- 'Litriocht na Gaeilge i gceantar Phort Láirge' (Tionól an Fómhair, Comhairle Chontae Phort Láirge, Meán Fómhair);
- 'The Book of Lismore' (Glucksman Gallery, Coláiste na hOllscoile, Corcaigh, 11 Deireadh Fómhair);
- 'Scribal features of the Book of Lismore' (*Book of Lismore Colloquium*, Roinn na Sean-Ghaeilge, Coláiste na hOllscoile, Corcaigh, 22 Deireadh Fómhair);
- 'The writing of the Book of Lismore' (Caisleán Leasa Móir, Lios Mór, Co. Phort Láirge, 25 Deireadh Fómhair).

Helen Imhoff (Scoláire Uí Dhonnabháin) 'Art and Treóit in Fáistini Airt meic Cuind' (*An XIV Comhdháil Idirnáisiúnta sa Léann Ceilteach*, Maigh Nuad, 2 Lúnasa). Elliott Lash (Scoláire Uí Dhonnabháin): 'The reanalysis of pre-Old Irish to Old Irish copular clauses' (*International Congress of Historical Linguistics*, National Museum of Ethnology, Osaka, Japan, 25-30 Iúil); 'Irish Network in Formal Linguistics, 2nd Workshop,' Meán Fómhair); 'Degrammaticalisation and Irish ro' (*Celtic Linguistics Symposium*, Edinburgh University, Nollaig). Anna Matheson (Scoláire Uí Dhonnabháin): 'The herring as buffoon in the folktale *Am peata sgadain*' (*The Celts in the Americas Conference*, St Francis Xavier University, Nova Scotia, 29 Meitheamh, via 'Skype); 'Throwing clods at the insane and/or undesirable in early

Irish sources: a study of the *cáepthae* "clodded one" (An XIV Comhdháil Idirnáisiúnta sa Léann Ceilteach, Maigh Nuad, 1 Lúnasa); 'On the terms *drúth go rath* and *mer gen rath* in early Irish legal commentary' (Tionól, Scoil an Léinn Cheiltigh, 19 Samhain); 'On the *drúth go rath*, the *mer gin rath*, and the employability of the mentally impaired according to early Irish legal commentary' (*5th Annual Workshop on disease, Disability and Medicine in Medieval Europe*, Ollscoil Nottingham, 3-4 Nollaig).

Roisin McLaughlin (Comhalta IRCHSS): 'Poets and satire in early Ireland' (6 léacht, Scoil Shamhraidh Scoil an Léinn Cheiltigh, 24-29 Iúil); 'A Middle Irish text on almsgiving in the *Leabhar Breac* and RIA MS 3 B 23' (*An XIV Comhdháil Idirnáisiúnta sa Léann Ceilteach*, Maigh Nuad, 5 Lúnasa); 'Rarely attested words in a Middle-Irish metrical tract' (*Progress in Medieval Lexicography Conference*, Ollscoil na Ríona, Béal Feirste, 16 Meán Fómhair); 'A text on judges and poets in the pseudo-historical prologue to the *Senchas Már*' (Tionól, Scoil an Léinn Cheiltigh, 19 Samhain).

Cúraimí seachtracha agus ballraíochtaí

Lean Liam Breatnach dá chúraimí mar eagarthóir ar *Ériu* (Acadamh Ríoga na hÉireann). Is iad Fergus Kelly agus P. A. Breatnach eagarthóirí *Celtica*. Bhí Pádraig Ó Macháin agus Aoibheann Nic Dhonnchadha i mbun eagarthóireachta ar an iris áitiúil *An Linn Bhuí*.

Ceapadh Fergus Kelly mar Scrúdaitheoir Seachtrach i Roinn na Sean- agus na Meán-Ghaeilge, Coláiste na hOllscoile Corcaigh.

Athtoghadh P. A. Breatnach ina bhall de Chomhairle Acadamh Ríoga na hÉireann (Márta).

Cuairteoirí

Tháinig an tOllamh Robin Chapman Stacey ar cuairt i mí Meán Fómhair agus thug léacht phoiblí uaithe, 'Law and the Imagination in Medieval Wales' (20 Meán Fómhair). Chaith na scoláirí eile seo leanas tréimhsí i mbun taighde mar chuairoteoirí: Maxim Fomin (Aibreán); Roy Flechner, Cambridge (Aibreán-Bealtaine); Nancy Stenson, Wisconsin (Iúil-Lúnasa); Jan Erik Rekdal, Oslo (Lúnasa-Nollaig); Tomás Ó Cathasaigh, Harvard (Lúnasa); Pádraig Ó Néill, University of North Carolina, Chapel Hill (Lúnasa); Jim McCloskey, University of California, Santa Cruz (Meán Fómhair-Nollaig).

School of Cosmic Physics

Astronomy and Astrophysics



Dr. Martin Mansergh TD, Minister for State, Prof. Luke Drury and Prof. Dervilla Donnelly view the visitors book in Dunsink House.

Féachann An Dr. Martin Mansergh TD, Aire Stáit, An tOll. Luke Drury agus an tOll. Dervilla Donnelly ar leabhar na gcuairteoirí i dTeach Dhún Sinche.

In the calendar year 2011 the Astronomy and Astrophysics sections continued their strong research output with a remarkable total of 89 refereed publications appearing during the year as well as a further 29 non-refereed publications. Full details of all these publications, as well as more technical descriptions of the various research contributions, can be found in the accompanying CD. This high level of output is of course only possible because the sections are embedded in major international research collaborations which enable us to use our relatively limited local resources to leverage the much larger resources of cutting-edge research facilities and consortia around the world. This presence in leading international research networks not only delivers excellent value, but is also vital in ensuring that our work remains at the high standards expected of an Institute for Advanced Studies and in projecting a positive impression of Ireland among the international scientific community.

The major areas of research were in high-energy astrophysics and in star formation and associated phenomena (including the formation of planets) with some miscellaneous contributions of a more general nature. The work of the star formation group, led by T. Ray, is in an exciting field of research where advances in observational facilities as well as in theoretical and computational modelling are driving progress at an extraordinary pace. Little over a decade ago we could not answer the basic

question of how common planetary systems were; now we know that they are ubiquitous with many hundreds of exoplanets discovered. The accretion discs around forming stars, a theoretical concept until recently, can now be observed directly with the Hubble Space Telescope. With the next generation of instruments we will be able to see even more details. The James Webb Space Telescope, the successor to the Hubble Space Telescope, will be a key facility in this regard and one of the main instruments on board will be the European *Mid-Infra-Red-Instrument*, MIRI, of which T. Ray is a Co-Principal Investigator and where DIAS, supported by Enterprise Ireland through the PRODEX programme, has made significant contributions both to the hardware and the software. A highlight in 2011 was the successful testing of the flight model, in which DIAS personnel participated, at the Rutherford Appleton Laboratory in Oxfordshire.

The main emphasis of the work of the star formation group in 2011 has been on the formation of low mass stars (including the brown dwarfs, systems intermediate between true stars and planets) and their associated outflows. One highlight was the discovery, made during a systematic survey of nearby star-forming regions looking for brown dwarfs, of an object with a mass estimated to be as low as six times the mass of our own planet Jupiter - one of the lowest mass free-floating objects found to date. Another highlight was the first use of the new multi-wavelength *X-shooter* instrument on the European Southern Observatory's Very Large Telescope to improve studies of outflows from forming brown dwarfs, an effect first detected in the section back in 2005 using a novel technique that is now being exploited by several groups around the world.

In high-energy astrophysics the main focus was on work motivated by high-energy gamma-ray astronomy (where the section is a member of the H.E.S.S. *High Energy Stereo System* collaboration operating a very successful system of stereo imaging atmospheric Cherenkov telescopes in Namibia) to understand some of the most energetic phenomena observed in the universe. This is a rapidly evolving field with exciting new results coming from the FERMI satellite, the H.E.S.S. telescopes (soon to be upgraded) and plans for a future large international facility in the Cherenkov Telescope Array project CTA. As in most of modern astronomy interpretation of the data requires complementary information from a broad range of instruments and observational techniques ranging from radio astronomy through the infrared and optical to X-rays.

Scoil na Fisice Cosmaí

Réalteolaíocht agus Réaltfhisic

Sa bhliain féilire 2011 lean an rannóg Réalteolaíochta agus Réaltfhisice le aschur taighde láidir le méid an-suntasach de 89 foilseachán measúnaithe foilsithe i rith na bliana chomh maith le 29 eile foilseachán neamh-mheasúnaithe. Is féidir sonraí iomlána ar na foilseacháin seo, chomh maith le cur síos níos teicniúla ar an saothar taighde éagsúil, a fháil sa dhlúthdhiosca a ghabhann leis seo. Ar ndóigh, ní fhéadfadh an leibhéal ard táirgeachta seo a bheith ann murach go raibh na rannóga neadaithe i mór-chomhoibriú taighde idirnáisiúnta a cheadaíonn dúinn ár n-acmhainní teoranta áitiúla a úsáid chun leas a bhaint as na hacmhainní i bhfad níos mó atá ag áiseanna agus grúpaí taighde den scoth ar fud an domhain. Tugann an rannpháirtíocht seo i líonraí taighde idirnáisiúnta den scoth luach iontach, ach freisin tá sé rithábhachtach lena chinntiú go bhfanann ár gcuid oibre ag na caighdeáin arda a bhfuiltear ag súil leo ó Institiúid Ard-Léinn agus le híomhá dearfach ar Éirinn a thaispeáint i measc an phobail eolaíochta idirnáisiúnta.

Bhain na príomhréimsí taighde le réaltfhisic ardfhuinnimh agus le réaltfhoirmíocht agus gnéithe a bhaineann leo (foirmíocht na bpláinéad san áireamh) le roinnt píosaí saothair ilghnéitheacha de chineál níos ginearálta. Réimse taighde suimiúil is ea saothar an ghrúpa réaltfhoirmíochta, faoi stiúir T. Ray, ina bhfuil dul chun cinn in áiseanna réaltléimh chomh maith le múnú teoiriciúil agus ríomhaire ag cur leis an dul chun cinn ag ráta as cuimse. Thar ar deich mbliain ó shin ní rabhamar in ann freagra a thabhairt ar an gceist bhunúsach maidir le cé chomh coitianta agus a bhí córais phláinéadacha; anois tá a fhios againn go bhfuil siad ar fud na háite, agus tá na céadta eiseaphláinéad aimsithe. Is féidir na dioscaí fuillimh timpeall ar réalta atá ag foirmiú, coincheap teoiriciúil go dtí le déanaí, a fheiceáil go díreach anois le Spásteileascóp Hubble. Leis an gcéad ghlúin eile d'uirlisí beimid in ann tuilleadh sonraí fós a fheiceáil. Mór-áis a bheidh sa Spásteileascóp James Webb, comharba Hubble, maidir leis seo agus ceann de na príomhuirlisí a bheidh ar bord is ea an uirlis Eorpach *Mid-Infra-Red-Instrument*, MIRI, a bhfuil T. Ray ina chomh-Phríomhthaighdeoir air agus áit a bhfuil cion saothair suntasach, do na crua-earraí agus bogearraí araon, déanta ag DIAS, arna thacú ag Fiontraíocht Éireann trí chlár PRODEX. Buaicphointe sa bhliain 2011 ab ea tástáil rathúil ar an múnla eitilte, inar ghlac pearsanra DIAS páirt, i Saotharlann Rutherford Appleton in Oxfordshire.

Bhí príomhbhéim obair an ghrúpa réaltfhoirmíochta i 2011 dírithe ar fhoirmíocht réalta le mais íseal (lena n-áirítear na habhaic dhonn, córais atá idir fíor-réalta agus pláinéid) agus na heis-sreafaí a bhaineann leo. Buaicphointe amháin ab

ea an fhionnachtain, a rinneadh le linn suirbhé córasaigh ar réigiúin foirmíochta réalta ag cuardach abhac donn, de ní a meastar go bhfuil mais aige chomh híseal le sé oiread an mhais atá ag ár bpláinéad Iúpatar - ceann de na nithe scaoilte is ísle mais a aimsíodh go dtí seo. Buaicphointe eile ab ea an chéad úsáid a baineadh as an uirlis nua *X-shooter* ar Teileascóp An-Mhór de chuid Réadlainne Theas na hEorpa chun feabhas a chur ar staidéir ar eis-sreafaí ó abhaic dhonn atá ag foirmiú, éifeacht a aimsíodh ar dtús sa rannóg siar sa bhliain 2005 ag baint úsáide as teicníc nuálach atá in úsáid anois ag roinnt grúpaí ar fud an domhain.

Sa réaltfhisic ardfhuinnimh bhí an príomhfhócas ar obair á spreagadh ag réalteolaíocht ardfhuinnimh gáma-gha (áit a bhfuil an rannóg ina bhall den chomhoibriú H.E.S.S. *High Energy Stereo System* ag oibriú córais an-rathúil de theileascóip atmaisféaracha steiréa-íomhanna Cherenkov sa Namaib) chun tuiscint a fháil ar chuid de na feiniméin is fuinniúla a aimsíodh sa chruinne. Réimse is ea é seo atá ag fás go tapa le torthaí spreagúla nua ag teacht ó shatáilít FERMI, teileascóip H.E.S.S. (atá le huasghrádú go luath) agus pleananna d'áis mhór idirnáisiúnta sa todhchaí sa tionscadal Eagar Teileascóip Cherenkov CTA. Mar atá sa chuid is mór den réalteolaíocht nua-aimseartha éilíonn anailís ar na sonraí eolas comhlántach ó réimse leathan d'uirlisí agus teicnící réaltléimh a shíneann ó réalteolaíocht raidió trí infreadhearg agus optach, go dtí X-ghathanna. Tá ábharthacht ar leith ag an dul chun cinn reatha sa réalteolaíocht raidió ag



Prof. Werner Nahm, Prof. Pádraig Breatnach, Registrar, Cecil Keaveney, Dr. Martin Mansergh TD, Minister for State, Prof. Dervilla Donnelly, Prof. Alan Jones and Prof. Luke Drury.

An tOll. Werner Nahm, An tOll. Pádraig Breatnach, An Clariaitheoir, Cecil Keaveney, An Dr. Martin Mansergh TD, Aire Stáit, An tOll. Dervilla Donnelly, An tOll. Alan Jones agus An tOll. Luke Drury.

School of Cosmic Physics (continued)

Current advances in radio astronomy at low frequencies through the European LOFAR consortium as well as the imminent availability of data from ALMA (the *Atacama Large Millimetre Array* being built in the Chilean Andes) are particularly relevant here as is the potential of the Japanese X-ray satellite Astro-H (where F. Aharonian is a member of the science team). In addition to these relatively well-established branches of astronomy, the emerging area of high-energy neutrino astronomy also has great potential, particularly in its ability to cleanly separate hadronic from electronic emission processes and the high-energy astrophysics group participates in the European KM3NeT project to develop a large underwater neutrino telescope in the deep Mediterranean. To provide a focus for all these activities the Board decided to establish a Centre for AstroParticle Physics and Astrophysics using the residential facilities of Dunsink Observatory.

Some arbitrarily selected research highlights of the year in the area of high-energy astrophysics were the prediction that the mysterious recently-detected Fermi 'bubbles' should be detectably sources of neutrinos for KM3NeT if the model proposed by F. Aharonian is correct; a careful re-analysis of old data on the actinide composition of the cosmic rays indicating the possible detection of one Curium nucleus and an excess of Thorium over Uranium; and a detailed attempt to model the observations by the Pierre Auger observatory of the composition and arrival directions of ultra-high-energy cosmic rays in terms of relatively near-by sources of heavy nuclei.



*Dunsink Observatory.
Réadlann Dhún Sinche.*

The sections have cooperation agreements with all three Dublin universities as well as with NUI Maynooth and contribute specialised courses at postgraduate and advanced undergraduate level as well as sharing seminars. The highlight here was the organisation jointly between the School of Physics in UCD and the newly established Centre for AstroParticle Physics and Astrophysics of a two-week international Summer School in Astroparticle Physics which was attended by some seventy students, the majority from outside Ireland. In conjunction with this event Professor Malcolm Longair gave the School's 2011 statutory public lecture entitled "*The Dark Side of the Universe*".

In the area of public outreach the public open nights in Dunsink continued but were also complemented by an expanded range of additional more specialised events catering for specific interest groups, ranging from professional associations to youth groups to university societies. Currently over four thousand people a year pass through Dunsink and are exposed to some of the school's activities and the excitement of modern astronomy.

In the area of research infrastructure the development of an integrated e-infrastructure bringing together advanced networking, high-performance computing and large data management remains a key objective of the school which is the national coordinating body of the PRTL-funded e-INIS project. A highlight here was the transfer of the national federated identity management system, EDUGATE, developed under e-INIS, from a pilot project within HEAnet to a sustainable national service. The sections supported various proposals to increase access by Irish scientists to observational infrastructures including the proposal for an Irish node of LOFAR to be located in Birr - currently, although we have good access to space missions through Ireland's membership of the European Space Agency, we do not have any comparable access to ground-based facilities.

Scoil na Fisice Cosmaí (ar leanúint)

minicíochtaí isle trí chuibhreannas Eorpach LOFAR chomh maith leis na sonraí a bheidh ar fáil go luath ó ALMA (an *Atacama Large Millimetre Array* atá á thógáil i sléibhte na nAndéas sa tSile), mar atá ag an gcumas atá ag satailít X-gha Seapánach Astro-H (áit a bhfuil F. Aharonian ina bhall den fhoireann eolaíochta). Chomh maith leis na brainsí seo den réalteolaíocht atá réasúnta sean-bhunaithe, tá an-chumas ag réimse nua na réalteolaíochta ardfhuinnimh neodrionó freisin, ach go háirithe sa chumas atá ann le próisis eis-sreafa hadrónacha a scaradh go glan ó phróisis leictreonacha, agus glacann an grúpa réaltfhisice ardfhuinnimh páirt sa tionscadal Eorpach KM3NeT chun teileascóp neodrionó mór faoi uisce a fhorbairt go domhain sa Mheánmhuir. Chun fócas a thabhairt do na gníomhaíochtaí ar fad chinn an Bord ar Lárionad Fisice Réalt-Cháithníní agus Réaltfhisic a bhunú ag baint úsáide as áiseanna cónaithe Réadlann Dhún Sinche.

I measc na mbuaicphointí taighde sa bhliain i réimse na réaltfhisice ardfhuinnimh bhí an réamh-mheas go mbeadh na 'bolgáin' Fermi rúndiamhair a aimsíodh le déanaí ina bhfoinsí inaimsithe ar neodrionónna do KM3NeT má tá an múnla a mhol F. Aharonian ceart; athanailís chúramach ar shean-shonraí ar chomhdhéanamh achtainide na ngathanna cosmacha a léiríonn aimsiú féideartha de núicléas Chiúiriam amháin agus barrachas de Thóiriam thar Úráiniam; agus iarracht mhionsonrach chun múnla a dhéanamh de na réaltléamhanna ag réadlann Pierre Auger ar chomhdhéanamh agus treonna rochtana na ngathanna cosmacha ultrai-ardfhuinnimh i dtéarmaí fhoinsí núicléas troma atá réasúnta cóngarach.

Tá comhaontuithe comhair ag na rannóga leis na trí ollscoileanna i mBaile Átha Cliath chomh maith le OÉ Má Nuad agus cuireann siad cúrsaí speisialta ar fáil ag leibhéal iarchéime agus ardeibhéal fochéime chomh maith le seimineáir a chomhroinnt. Ba é an buaicphointe anseo ná an comheagrú idir Scoil na Fisice i UCD agus an Lárionad nuabhunaithe Fisice Réalt-Cháithníní agus Réaltfhisic ar Scoil Samhraidh idirnáisiúnta coicise san Fhisic Réalt-Cháithníní ar a d'fhreastal thart ar seachtó mac léinn, tromlach díobh ó lasmuigh d'Éirinn. I gcomhair leis an ócáid seo thug an tOllamh Malcolm Longair léacht phoiblí reachtúil na Scoile 2011 dar teideal "*The Dark Side of the Universe*".



Dunsink Dome.

Cruinneachán Dhún Sinche.

I réimse na for-rochtana poiblí leanadh de na hoícheanta oscailte poiblí i nDún Sinche ach cuireadh leo le réimse leathnaithe d'ócáidí breise níos speisialta ag freastal ar ghrúpaí le spéiseanna ar leith, ó eagrais ghairmiúla go grúpaí óige go cumainn ollscoile. Faoi láthair tugann breis agus ceithre mhíle duine in aghaidh na bliana cuairt ar Dhún Sinche agus faigheann siad eolas ar roinnt de ghníomhaíochtaí na scoile agus ar an réalteolaíocht nua-aimseartha spreagúil.

I réimse an infreastruchtúir taighde tá sé fós mar phríomhaidhm ag an scoil, atá mar eagrais comhordaithe náisiúnta ar thionscnamh e-INIS atá maoinithe ag PRTL, go mbunófar ríomh-infreastruchtúr comhtháite a thógann le chéile ard-líonraí, ríomhaireacht ardfheidhmíochta agus mór-bhainistiú sonraí. Buaicphointe anseo ab ea aistriú an chórais bainistíochta cónasctha aitheantais náisiúnta, EDUGATE, a forbraíodh faoi e-INIS, ó thionscadal piolótach laistigh de HEAnet chuig seirbhís náisiúnta inbhuanaithe. Thacaigh na rannóga le moltaí éagsúla chun méadú ar rochtain ag eolaithe Éireannacha ar infreastruchtúir réaltléimh, lena n-áirítear an moladh go mbeadh nód Éireannach de LOFAR lonnaithe i mBiorra - faoi láthair, cé go bhfuil rochtain mhaith againn ar mhísin spáis trí bhallaíocht na hÉireann ar Ghníomhaireacht Spáis na hEorpa, níl aon rochtain inchurtha leis sin againn ar áiseanna atá lonnaithe ar thalamh.

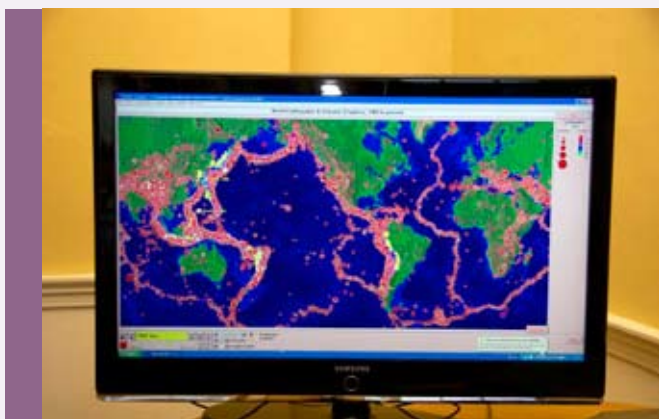
School of Cosmic Physics

Geophysics Section

1 Research highlights

1.1 IREATHERM

Funding was received in early 2011 for the successful SFI Principal Investigator grant application of Jones for IREATHERM. IREATHERM is a four-and-a-half year, all-island, North-South, academic-government-industry collaborative project between DIAS, UCD, UCC, GSI, GSNI, and SLR Consulting to develop a strategic and holistic understanding of Ireland's geothermal energy potential through integrated modelling of new and existing geophysical and geological data. IREATHERM will identify locations that offer the greatest opportunity for regional-scale space-heating and electricity generation from geothermal energy. Existing measurements indicate temperatures at depths to 5000m that are hot enough (100–150°C) to generate electricity using current technology and that could do so commercially in the future with ongoing technological advances. We will expand the available temperature database, establish a new database of necessary rock physical-properties and model the factors contributing to the observed temperature variations across Ireland, to allow more reliable targeting of prospective areas. Using electromagnetic imaging methods and by developing innovative software tools for jointly modelling electromagnetic and other existing geophysical data, we will study eight different "types" of geological environments to identify those that may host geothermal resources: deep aquifers or hot, dry rock. IREATHERM will significantly enhance the capacity to accurately characterise subsurface geology and potential geothermal resources.



Global Earthquake Distribution Map.

Léarscáil Dáileacháin Creathanna Talún Domhanda.

1.2 Continental Deformation

New pattern of lithospheric deformation discovered. Lebedev, Tirel and their co-workers in Germany have identified a previously unknown pattern of deformation of continental lithosphere. They measured slight directional variations of seismic wave speeds in the Aegean region and determined directions of flow of the rock at depth. They found that the extension in the region is accompanied by viscous-fluid-like flow in the deep lithosphere, parallel to the extension direction but at an angle to the major faults observed at the surface. The article on the research was accepted for publication in *Nature Geoscience*, and was highlighted in the press.

1.3 Penetrative melt progression

Evidence for northern growth of the Tibetan Plateau was published by Le Pape, Jones, Vozar, and a Chinese collaborator. Electrical anisotropy behaviour is interpreted as evidence for a hitherto unknown phenomenon of transgressive penetrative intrusion of melt from the Tibetan crust to the north, weakening the crust beneath the Kunlun Shan and accommodating the actual ongoing crustal shortening between India and the Qaidam basin.

1.4 Glacial Processes in the Irish Offshore

A general model for the glaciogenic development of the continental slope of Ireland, and its relationship to climate change, was developed. The model explains how the British-Irish Ice Sheet controlled slope evolution in the Rockall Trough during the last few glacial cycles.

1.5 Toroidal magnetic field induced by tidal ocean circulation

We are dealing with the magnetic field induced by ocean circulation. The study is motivated by the fact that observations of the ocean-induced magnetic field by the CHAMP magnetic space mission, and most likely by the SWARM magnetic mission have the potential to be used as constraints on ocean dynamics. This has already initiated theoretical studies on the poloidal magnetic field induced by the horizontal ocean-circulation flow where the ocean layer is approximated by a single conductive sheet.

Scoil na Fisice Cosmaí

An Rannóg Geoifisice

1 Buai ceanna taighde

1.1 IRE THERM

Fuarthas maoiniú go luath i 2011 don iarratas deontais SFI mar Phríomhthaighdeoir a rinne Jones i leith IRE THERM. Tionscadal comhoibríoch acadúil-rialtas-tionsclaíocht uile-oileáin, Thuaidh-Theas a mhaireann ceithre bliana go leith is ea IRE THERM ina bhfuil DIAS, UCD, UCC, GSI, GSNI, agus SLR Consulting páirteach chun tuiscint straitéiseach agus iomlánaíoch ar phoitéinseal fuinnimh geoiteirmigh na hÉireann a fhorbairt trí mhúnú comhtháite ar shonraí geoifisiciúla agus geolaíocha nua agus seanbhunaithe. Aithneoidh IRE THERM suíomhanna a thugann an deis is mó do théamh spáis agus gineadh leictreachais ar scála réigiúnda ó fhuinneamh geoiteirmeach. Léiríonn tomhais atá ann cheana go bhfuil teochtaí ag doimhneachtaí go 5000m atá te go leor (100–150°C) chun leictreachas a ghineadh ag baint úsáide as an teicneolaíocht reatha agus a d'fhéadfadh a leithéid a dhéanamh ar bhonn tráchtála sa todhchaí leis an dul chun cinn reatha atá ar siúl sa teicneolaíocht. Leathnóimid an bunachar teochtaí atá ar fáil, bunóimid bunachar nua de na hairíonna fisiciúla carraige riachtanacha agus múnlóimid na fachtóirí a chuireann leis na héagsúlachtaí teochta a bhreathnaítear ar fud na hÉireann, chun díriú níos iontaoifa de limistéir ionchasacha a cheadú. Ag baint úsáide as modhanna íomháiithe leictreamaighnéadacha agus trí uirlisí bogearraí nuálaíocha a fhorbairt chun comh-mhúnú a dhéanamh ar shonraí leictreamaighnéadacha agus geoifisiciúla eile atá ann, déanfaimid staidéar ar ocht "gcineál" éagsúla de thimpeallachtaí geolaíochta chun iad siúd a aithint ina mbeidh acmhainní geoiteirmeacha, b'fhéidir: uiscigh dhoimhne nó carraig the, thirim. Cuirfidh IRE THERM go mór leis an gcumas chun acmhainní fodhromchla geolaíochta agus geoiteirmeacha ionchasacha a aithint go cruinn.

1.2 Dífhoirmiú Ilchríche

Aimsíodh patrún nua de dhífhoirmiú litisféarach. D'aimsigh Lebedev, Tirel agus a gcomhoibríthe sa Ghearmáin patrún dífhoirmithe de litisféar ilchríche nach raibh ar eolas roimhe seo. Thomhais siad éagsúlachtaí treo beaga i luasanna tonnta seisimeacha sa limistéar Aeigéach agus ríomh siad treonna shruth na carraige ag doimhneacht. D'aimsigh siad go bhfuil an síneadh sa réigiún seo á thionlacan ag sruth atá cosúil le sreabhán slaodach sa litisféar domhain, comthreomhar le treo an tsínidh ach ag uillinn do na príomhéisc a bhreathnaítear ag an dromchla. Glacadh leis an alt ar an taighde d'fhoilsiú i *Nature Geoscience*, agus aibhsíodh sa phreas é.



Dr. Martin Mansergh T.D., Minsiter for State and Prof. Alan Jones.

An Dr. Martin Mansergh T.D., Aire Stáit agus An tOll. Alan Jones.

1.3 Gluaiseacht leátáin treáitigh

D'fhoilsigh Le Pape, Jones, Vozar, agus comhoibrí Síneach fianaise maidir le fás ó thuaidh san Ardchlár Tibéadach. Tuigtear gur fianaise is ea iompraíocht ainiseatrópachta leictreacha d'fheiriméan, nach raibh ar eolas roimhe seo, ar ionsá treáitigh tairmtheachtach de leátán ón screamh Thibéadach ó thuaidh, ag lagú na screimhe idir an Kunlun Shan agus a cheadaíonn an coimriú screimhe iarbhir atá ar siúl idir an Ind agus imchuach Qaidam.

1.4 Próisis Oighreacha amach ó chósta na hÉireann

Forbraíodh múnla ginearálta d'fhorbairt oighearghéineach fhána ilchríche na hÉireann, agus an gaol atá aige le hathrú aeráide. Míníonn an múnla cé mar a rialaigh an Oighearchlúid Bhriotanach-Éireannach éabhlóid fána in Umar Rocal sna timthriallacha oighreacha deiridh.

1.5 Réimse maighnéadach toróideach spreagtha ag cúrsaíocht aigéanach na taoide

Táimid ag plé leis an réimse maighnéadach spreagtha ag cúrsaíocht aigéanach. Tá an staidéar á spreagadh ag an fhír gur féidir breathnuithe atá déanta ag misean spáis maighnéadach CHAMP, agus is dócha ag misean maighnéadach SWARM, a úsáid mar shrianta ar dhinimic aigéanach. Thiomsaigh sé seo staidéar teoiriciúil cheana féin ar an réimse maighnéadach polóideach spreagtha ag an sruth cúrsaíochta aigéanaí chothrománach áit a bhfuil an scair aigéanach á shamhlú mar aon bhrat seoltach amháin.

1.6 A long-term memory of the Greenland Ice Sheet

According to ice core reconstructions, the present-day Greenland Ice Sheet (GIS) reflects former climatic conditions dating back to at least 250 thousand years before the present (kyr BP). This fact must be considered when initializing an ice sheet model. The common initialization techniques are paleoclimatic simulations driven by atmospheric forcing inferred from ice core records, and steady state simulations driven by the present-day or past climatic conditions. When paleoclimatic simulations are used, the information about the past climatic conditions is partly reflected in the resulting present-day state of the GIS. However, there are several important questions that need to be clarified. We conclude that (1) the choice of an ice-covered initial configuration shortens the initialization simulation time to 100 kyr, (2) the uncertainties in the GRIP-based forcing affect present-day modelled ice-surface topographies and temperatures only slightly, and (3) the GIS forced by present-day climatic conditions is overall warmer than that resulting from a paleoclimatic simulation.

2 New research activities

2.1 Downward continuation of secular magnetic variations

Martinec (1999) developed a time-domain spectral-finite element approach for the forward modelling of vector electromagnetic induction data as measured on ground-based magnetic observatories or by the CHAMP satellite. We used the same time and space representations of magnetic induction vector and designed a new method of computing the sensitivity of the ground-based or CHAMP magnetic induction data to a magnetic field prescribed at the core-mantle boundary, which we term the adjoint sensitivity method. The forward and adjoint initial boundary-value problems, both solved in the time domain, are identical, except for the specification of prescribed boundary conditions. The respective boundary-value data on the ground or at the satellite's altitude are the X magnetic component measured by a vector magnetometer for the forward method and the difference between the measured and predicted Z magnetic component for the adjoint method. The squares of the differences in Z magnetic component summed up over the time of observation and all spatial positions of observations determine the misfit. Then the sensitivities of observed data, that is the partial derivatives of the misfit with respect to the parameters characterizing the magnetic field at the core-mantle

boundary, are then obtained by the surface integral over the core-mantle boundary of the product of the adjoint solution multiplied by the time-dependent functions describing the time variability of magnetic field at the core-mantle boundary, and integrated over the time of observation.

We tested and benchmarked numerical code for 1-D electric conductivity model of the Earth's mantle.

3 Other highlights

3.1 Irish Geoscience Graduate Programme

The calendar year 2011 saw the very successful completion of the Pilot Year of the IGGP (www.iggp.ie), and the launch of the second year. In addition, the IGGP Administrator, Caroline Maloney, was hired to take the IGGP through the next four academic years.

The Second Year of the Irish Geoscience Graduate Programme (IGGP) is running smoothly, with the appointment of Caroline Moloney as the Administrator who will run the programme for the next four academic years.

The website (www.iggp.ie) has been updated and continues to be added to, with upcoming new courses being added. This provides details of the programme, modules, presenters and costs for outsiders and procedures for registration.



Dr. Martin Mansergh T.D., Minsiter for State, Mr. Tom Blake viewing the Seismology in Schools Seismometer.

An Dr. Martin Mansergh T.D., Aire Stáit, An tUas. Tom Blake ag féachaint ar an Seismiméadar Seismeolaíochta i Scoileanna.

1.6 Cuimhne fhadtárma Oighearchlúd na Graonlainne

De réir athchruthuithe ar chroileacáin oighir, léiríonn Oighearchlúd na Graonlainne (GIS) na linne seo cúinsí aeráide a bhíodh ann roimhe seo, ag dul siar ar a laghad 250 míle bliain roimh an lá inniu (kyr BP). Ní mór an fhírce seo a chur san áireamh nuair atá múnla d'oighearchlúd á thionscnamh. Is iad na teicnící tionscnaimh coitianta ná ionsamhlúcháin pailéa-aeráide á thiomáint ag fórsáil atmaisféarach a thuigtear ó thaifid oighearchlúide, agus ionsamhlúcháin fhoistine á thiomáint ag cúinsí aeráide sa lá atá inniu ann nó roimhe seo. Nuair a úsáidtear ionsamhlúcháin pailéa-aeráide, léirítear eolas faoi chúinsí aeráide san am atá thart i bpáirt sa riocht ina bhfuil an GIS sa lá atá inniu ann mar thoradh. Mar sin féin, tá roinnt ceisteanna tábhachtach a chaithfear a shoiléiriú. Cinnimid na nithe seo a leanas (1) giorraíonn an rogha de chomhdhéanamh tosaigh oighearchlúdaithe an t-am ionsamhlúcháin tosaigh go 100 kyr, (2) is beag an tionchar atá ag na héiginnteachtaí san fhórsáil GRIP-bhunaithe ar thopagrafaíochtaí agus teochtaí oighearchlúide múnlaíthe an lae inniu, agus (3) tá an GIS fórsáilte ag cúinsí aeráide an lae inniu ar an iomlán níos teo ná an ceann a fhaightear ó ionsamhlúcháin pailéa-aeráide.

2 Imeachtaí taighde nua

2.1 Downward continuation of secular magnetic variations

D'fhorbair Martinec (1999) cur chuige amfhearainn speictrea-chríochta eilimint chun sonraí ionduchtaithe leictreamhaighnéadach veicteoirí a réamh-mhúnlú mar a thomhastar ar réadlanna maighnéadacha talamh-bhunaithe nó ag an satailít CHAMP. D'úsáideamar na léirithe céanna ama agus spáis ar veicteoir ionduchtaithe maighnéadach agus dhearamar modh nua chun tomhas a dhéanamh ar íogaireacht na sonraí ionduchtaithe maighnéadacha talamh-bhunaithe nó CHAMP do réimse maighnéadach sainithe síos ag teorainn an chroí is an mhaintlín, ar a dtugaimid an modh íogaireachta cuingeach. Is ionann na fadhbanna um luach-teorainn tosaigh agus cuingeach tosaigh, a réitítear san amfhearann, ach amháin do shainiú na gcúinsí teorann sainithe. Is iad na sonraí luach-teorainn ar an talamh nó ag airde na satailíte faoi seach ná an chomhchuid mhaighnéadach X á thomhas ag maighnéadaméadar veicteoirí don mhodh tosaigh agus an difir idir an chomhchuid mhaighnéadach tomhaiste agus réamh-mheasta Z don mhodh cuingeach. Is iad cearnóga na ndifríochtaí sa chomhchuid mhaighnéadach Z suimithe suas

thar am an bhreathnuithe agus na suíomhanna spáis uile de na breathnaithe a chinneanna an mhí-acmhainn. Ansin faightear íogaireachtaí na sonraí breathnaithe, is é sin páirt-dhíorthaigh na mí-acmhainne maidir leis na paraiméadair is tréithe do réimse maighnéadach ag teorainn an chroí is an mhaintlín, tríd an suimeálaí dromchla thar teorainn an chroí us an mhaintlín d'íolrach an réitigh cuingigh méadaithe faoi na feidhmeanna am-spleách a thugann cur síos ar inathraitheacht ama an réimse maighnéadaigh ag teorainn an chroí is an mhaintlín, agus suimeáilte thar am an bhreathnuithe.

Rinneamar tástáil agus binsemharcáil cód uimhriúil do múnla seoltachta leictreacha 1-T ar mhaintlín an Domhain.

3 Buai ceanna eile

3.1 Clár Éireannach Geo-eolaíochta do Chéimithe

Sa bhliain féilire 2011 cuireadh críoch an-rathúil leis an mBliain Fhíolótach den IGGP (www.iggp.ie), agus seoladh an dara bliain. Ina theannta sin, fostaíodh Riarthóir IGGP, Caroline Maloney, chun IGGP a stiúradh trí na céad ceithre bliain acadúla eile.

Tá an Dara Bliain den Chlár Éireannach Geo-eolaíochta do Chéimithe (IGGP) ag rith go réidh, le ceapadh Caroline Moloney mar Riarthóir a stiúróidh an clár don chéad ceithre bliain acadúla eile.

Tá an suíomh gréasáin (www.iggp.ie) nuashonraithe agus leantar ag cur leis, le cúrsaí nua atá ag teacht á gcur leis. Tugann sé seo sonraí ar an gcúrsa, modúil, láithreoirí agus costais do dhaoine ón taobh amuigh agus gnásanna do chlárúcháin.

3.2 Seismeoilaíocht i Scoileanna

Taispeánadh an Tionscadal SIS ag seastán na Domhaneolaíochta ag taispeántas Eolaí Óg BT san RDS ó 11-15 Eanáir, agus bhí mic léinn iarchéime agus foireann na Rannóige Geoifisice i láthair.

Tionóladh ceardlann i DIAS in Aibreán d'fhoireann Gheopháirc Eorpach an Chósta Copair. Seo í an dara Geopháirc sa chlár SIS - tháinig Geopháirc Eorpach an Áirse Mharmair i gContae Fhear Manach isteach i 2010. Tugadh léargas ar an gclár don Aire Stáit sa Roinn Airgeadais, Martin Mansergh T.D. nuair a thug sé cuairt ar Réadlann Dhún Sinche.

3.2 Seismology in Schools

The SIS Project was displayed at the Earth Science stand at the BT Young Scientist exhibition in the RDS from January 11 – 15, and was manned by the post graduate students and staff from Geophysics.

A workshop was held in DIAS in April for the staff of the Copper Coast European Geo-park. This is the 2nd Geo-Park in the SIS programme, Marble Arch European Geo-park in County Fermanagh joined in 2010. The programme was also outlined to Minister of State at the Dept. of Finance, Martin Mansergh T.D. when he visited Dunsink Observatory.

Teachers and students continued to monitor the seismometer activity in the classroom and to receive the earthquake alerts from DIAS each time a significant earthquake occurs. A total of thirty six schools, universities and geo-parks have registered with the IRIS (*Incorporated Research Institutions for Seismology*) *International Seismographs in Schools* website and have been sharing their data with other education centres around the world. Teachers and students continue to upload data from the earthquakes they have recorded with their seismometers to the IRIS web-site.

3.3 The Irish National Seismic Network

The fifth permanent real-time seismic station, codename IWEX was installed in Wexford and became operational in April 2011. A site in Co Louth is being tested as the location for the 6th permanent seismic station.

Finally, Ireland has a modern high quality seismic network that is on a par with our European neighbours and meets international standards. The sustained maintenance and operation of these high quality standardized stations is essential for our national security, global monitoring of the environment, earthquake and tsunami hazard warning and response activities as well as the investigations and research that are at the core of what we do.

3.4 CTBTO - Comprehensive Nuclear Test Ban Treaty Organisation, National Data Centre (NDC)

Plans are underway for the official opening of the National Data Centre by An Tánaiste and Minister for Foreign Affairs and Trade, Mr. Eamon Gilmore T.D. and Dr. Lassina Zerbo from the International Data Centre CTBTO in Vienna.

4 Workshops/Courses

4.1 Workshops

Three Workshops were run during 2011. In the Spring the second MT 3D Inversion Workshop (MT3DINV2: <http://www.dias.ie/mt3dinv2/>) attracted 29 participants from across the globe. In the Autumn, the third ThermoDynaMix workshop (<http://www.dias.ie/ThermoDynaMixIII/>) brought together over 30 scientists from across the globe. A small, intimate workshop on Seismic Imaging brought collaborators from Bergen (Norway) and Kiel (Germany) to DIAS to discuss the development and application of new seismic imaging methods.

4.2 Short Courses

Two Short Courses were organized by the Section, one on Time Series Analysis and the other on Seismology for Non-Seismologists, and run under the auspices of the IGGP.

Martinec presented a weekly seminar on potential field theory and continuum mechanics to DIAS and other students.

Scoil na Fisice Cosmaí (ar leanúint)

Lean na múinteoirí agus na scoláirí de mhonatóireacht ar an ghníomhaíocht seisméadair sa seomra ranga agus faigheann siad na fógraí crith talún ó DIAS gach uair a bhíonn crith talún suntasach ann. Tá tríocha sé de scoileanna, ollscoileanna agus geopháirceanna cláraithe leis an suíomh gréasáin IRIS (*Incorporated Research Institutions for Seismology*) *International Seismographs in Schools* agus a sonraí á gcomhroinnt le hionaid oideachais eile ar fud an domhain. Leanann múinteoirí agus scoláirí de shonraí a uaslódáil ón na creathanna talún atá taifeadta acu lena seisméadair chuig an suíomh gréasáin IRIS.

3.3 Líonra Náisiúnta Seismeach na hÉireann

Lonnaíodh an cúigiú stáisiún seismeach buan réad-ama, dar códainm IWEX i Loch Garman agus thosaigh sé ag feidhmiú in Aibreán 2011. Tá láthair i gCo. Lú á thástáil mar shuíomh don 6ú stáisiún seismeach buan.

Faoi dheireadh, tá líonra seismeach nua-aimseartha den scoth atá inchurtha lenár gcomharsana san Eoraip agus a shásaíonn caighdeáin idirnáisiúnta. Tá sé riachtanach go leantar de na stáisiúin caighdeánacha den scoth seo a chothabháil agus a oibriú ar son na slándála náisiúnta, monatóireacht uilíoch ar an timpeallacht, foláireamh maidir le contúirtí crith talún agus súnamaí agus gníomhaíochtaí freagartha, chomh maith leis na fiosrúcháin agus taighde atá mar chroílár na hoibre a dhéanaimid.



DIAS exhibition stand at the Young Scientist 2011.

Seastán taispeántais DIAS ag an Eolaí Óg 2011.

3.4 ECCCTN (CTBTO) – Eagraíocht an Chonartha um Chosc Cuimsitheach ar Thrialacha Núicléach, Lárionad Náisiúnta Sonraí

Tá pleananna ar bun d’oscailt oifigiúil an Lárionaid Náisiúnta Sonraí ag an Tánaiste agus Aire Gnóthaí Éachtracha agus Trádála, An tUas, Eamon Gilmore T.D. agus an Dr. Lassina Zerbo ón Lárionad Sonraí Idirnáisiúnta CTBTO sa Vín.

4 Ceardlanna/Cúrsaí

4.1 Ceardlanna

Eagraíodh trí Cheardlann le linn 2011. San Earrach, d’fhreastal 29 rannpháirtí ó gach cearn den domhan ar an dara Ceardlann MT Aisiompú 3T (MT3DINV2: <http://www.dias.ie/mt3dinv2/>). San Fhómhair, chruinnigh an tríú ceardlann ThermoDynaMix (<http://www.dias.ie/ThermoDynaMixIII/>) le chéile breis agus 30 eolaí ón domhan mór. Tháinig comhoibrithe ó Bergen (san Iorua) agus Kiel (sa Ghearmáin) chuig DIAS le haghaidh ceardlainne beag ar Íomháú Seismeach chun forbairt agus forfheidhmiú na modhanna nua don íomháú seismeach a phlé.

4.2 Gearrchúrsaí

D’eagraigh an Rannóg dhá Ghearrchúrsa, ceann amháin ar Anailís Amshraitheanna agus an ceann eile ar Sheismeolaíocht do Neamh-Sheismeolaithe, agus á reáchtáil faoi choimirce IGGP.

Chuir Martinec seimineár seachtainiúil i láthair ar réimsetheoiric ionchasach agus meicnic chontanaim do mic léinn DIAS agus mic léinn eile.

School of Theoretical Physics



Prof. David Spearman, Prof. Cumrun Vafa, Prof. Werner Nahm, Prof. John Pethica and Prof. Jaffe at an event in honour of Prof. Nahm's election to the Fellowship of the Royal Society.

An tOll. David Spearman, An tOll. Cumrun Vafa, An tOll. Werner Nahm, An tOll. John Pethica agus An tOll. Jaffe ag ócáid ag comóradh toghchán an Oll. Nahm chuig Compántas an Chumainn Ríoga.

Staffing is stable, with the three senior professors and three Schroedinger fellows (V. Braun, S. Kovacs and I. Lyberg). In Tony Dorlas' group there is a new postdoc, Mathieu Beau, previously CPT Marseille. Tony's student Pavel Abramski defended his PhD in December. In Denjoe O'Connor's group there is a new IRCSET fellow, Matthias Ihl, previously in Austin and Rio de Janeiro. Sinead Keegan from W. Nahm's group left in December and moved to the US.

Though our budget for visitors and travel was much reduced, core activities were maintained. The IT group was successfully reorganized and concentrated in Fitzwilliam Place, with D. Grigoriev as new head (previously TCD). Unfortunately, protracted negotiations concerning journal costs were unsuccessful, so we had to start to cancel several journals.

The 18th Irish Quantum Field Theory Meeting was held at DIAS in June. Attempts to organize other events in cooperation were unsuccessful. In spite of a cooperation agreement with DCU, our suggestion of a joint summer school for graduate students was declined.

As we have stated repeatedly, DIAS would benefit greatly from a single site for Astrophysics and Theoretical Physics, which would lead to more opportunities for cooperation in the study of the early universe.

Research Report

Tony Dorlas and his former PhD student Ciara Morgan (now in Singapore) considered the information-carrying capacity of quantum channels. For memoryless channels it is independent of the error probability, but for quantum channels with memory this is no longer true. Dorlas and Morgan proved that for the quantum periodic channel, and also for the random channel, the capacity is a step function of the error probability, and calculated its form.

In his thesis Pavel Abramski considered a system of bosons in one space dimension interacting by a delta potential. In particular, he proved the completeness of the scattering states given by the Bethe Ansatz. Mathieu Beau calculated detailed features of the double-slit experiment using Feynman path integrals.

Denjoe O'Connor spent from January 7th to July 17th on sabbatical leave at the Perimeter Institute for Theoretical Physics. There he familiarised himself with the current status of research in several fields especially cosmology. Reviewing the status of quantum field in de Sitter space-time, he came to the conclusion that the correct quantization of field theories in this space-time may not always be that obtained from a Wick Rotation of S^4 . Taking into account that only half of the space-time is visible to a given observer allows one to choose alternative boundary conditions. A study of the exactly solvable large N limit of the $O(N)$ invariant self-interacting scalar field theory suggests that the unique alternative quantization corresponds to the Wick rotation of S^4 with an anti-podal puncture, i.e. the scalar Greens function has an additional negative charge at the antipode of equal strength to that at the origin.

He also studied the phase diagram of vortex phases of the Kitaev model on various lattices. One of the principal results is that the vortex phases typically have not just Fermi points but Fermi curves as the zero set of their spectral polynomials. A current working conjecture is that the continuum limit of the full model should be Abelian Chern Simons quantum electrodynamics.

The pre-doctoral scholars Thomas Kaltenbrunner and Martin Vachovski pursue research based on previous work by Denjoe and collaborators on the emergence of geometry from matrix models. This concerns a matrix model with an unusual phase transition. The phase transition behaves like a first order one when approached from the high

Scoil na Fisice Teoiriciúla i 2011

Tá líon na foirne seasmhach, le triúr ollúna shinsearacha agus triúr Comhaltaí Schroedinger (V. Braun, S. Kovacs agus I. Lyberg). I ngrúpa Tony Dorlas tá mac léinn iardhochtúireachta nua, Mathieu Beau, a bhíodh i CPT Marseille. Rinne mac léinn Tony, Pavel Abramski, a PhD a chosaint i mí na Nollag. I ngrúpa Denjoe O'Connor tá comhaltaí nua IRCSET, Matthias Ihl, a bhíodh in Austin agus Rio de Janeiro. D'fhág Sinéad Keegan ó ghrúpa W. Nahm i mí na Nollag agus bhog sí chuig na Stáit Aontaithe.

Cé gur laghdaíodh ár mbuiséad do chuartheoirí agus taisteal go mór, leanadh de na phríomhghníomhaíochtaí. Rinneadh an grúpa TF a atheagrú go rathúil agus a lárnú i bPlás Mhic Liam, le D. Grigoriev (a bhíodh i TCD) mar cheannaire nua. Ar an drochuair, ní raibh rath ar phlé fada maidir le costais irise agus, mar sin, bhí orainn tús a chur le roinnt irisí a chur ar ceal.

Tionóladh an 18ú Cruinniú Éireannach um Réimsetheoiric Chandamach i DIAS i mí an Mheithimh. Ní raibh rath ar iarrachtaí le hócáidí eile a eagrú i gcomhoibriú. D'ainneoin go raibh comhaontú comhoibríthe ann le DCU, níor glacadh lenár moladh le comhscoil samhraidh do scoláirí iarchéime a réachtáil.

Mar atá ráite arís agus arís eile againn, bhainfeadh DIAS tairbhe go mór as láthair amháin don Réaltfhisic agus don Fhisic Theoiriciúil, a chuireadh i bhfad níos mó deiseanna ar fáil don chomhoibriú sa staidéar ar an gcruinne luath.

Tuarascáil Taighde

Scrúdaigh Tony Dorlas agus a iar-mhac léinn Ciara Morgan (atá anois i Singapur) toilleadh tarchuir faisnéise atá ag cainéil chandamaigh. Do chainéil gan chuimhne tá sé neamhspleách ar an dóchúlacht earráide, ach do chainéil chandamaigh le cuimhne níl sé seo fíor a thuilleadh. Chruthaigh Dorlas agus Morgan, maidir leis an gcainéal peiriadach candamach, agus freisin maidir leis an gcainéal randamach, go bhfuil an toilleadh ina chéimfheidhm ar an dóchúlacht earráide, agus rinne siad a chruth a ríomh.

Ina thráchtas scrúdaigh Pavel Abramski córas de bhósóin i ndimínean spáis amháin ag idirghníomhú trí dheilte-phoitéinseal. Ach go háirithe, chruthaigh sé iomláine na staidéanna scaipthe tugtha ag an Bethe Ansatz. Ríomh Mathieu Beau tréithe mionsonraithe an turgnaimh scoiltín dúbailte ag baint úsáide as conair-shuimeáilaithe Feynman.

Chaith Denjoe O'Connor ón 7 Eanáir go dtí an 17 Iúil ar saoire shabóideach ag Perimeter Institute for Theoretical Physics. Ansin chuir sé eolas ar stádas reatha an taighde

i roinnt réimse, sa chosmeolaíocht ach go háirithe. Agus athbhreithniú á dhéanamh aige ar stádas réimse candamaigh i spásam de Sitter, chinn sé nach gá gurb é an candamú a fhaightear ó Rothlú Wick de S^4 i gcónaí an candamú ceart na dteoiric réimse sa spásam seo. Ag cur san áireamh nach bhfuil ach leath den spásam infheicthe do bhreathnóir ar bith, tá cead ag duine rogha cúinsí teorainn a roghnú. Spreagann staidéar ar mhórtéorainn N ar theoiric réimse scálach féin-idirghníomhach do-athraitheach $O(N)$, atá inréitithe go cruinn, an tuairim go bhfuil an candamú roghnach uathúil ag teacht le rothlú Wick S^4 le polladh frithionadach, .i. tá lucht diúltach breise ag feidhm Greens scálach ag an bhfrithionad atá ar chomhláidreacht lena bhfuil ag an bhfoinse.

Rinne sé staidéar freisin ar phasléaráid na gcéimeanna cuilithe de mhúnla Kitaev ar laitisí éagsúla. Ceann de na príomhthorthaí is ea nach pointí Fermi amháin atá ag na céimeanna cuilithe i gcoitinne ach cuair Fermi mar thacar nialasach a n-iltéarmach speictreacha. Meastachán oibre reatha is ea gur chóir go mbeadh teorainn contanaim an mhúnla iomlán ina leictreadhinimicí cantamacha Abelian Chern Simons.

Déanann na scoláirí réamhdhochtúireachta Thomas Kaltenbrunner agus Martin Vachovski taighde bunaithe ar obair a rinne Denjoe agus comhoibríthe roimhe seo ar theacht chun cinn na geoiméadrachta ó mhúnlaí maitrise.



Prof. John Pethica FRS, Mrs. Christine Knight, Sir Peter Knight and Prof. Werner Nahm at an event in honour of Prof. Nahm's election to the Fellowship of the Royal Society.

An tOll. John Pethica FRS, Mrs. Christine Knight, Sior Peter Knight agus An tOll. Werner Nahm ag ócáid ag comóradh toghchán an Oll. Nahm chuig Compántas an Chumainn Ríoga.

School of Theoretical Physics (continued)

temperature side, but shows the fluctuations of a second order transition when approached from low temperature. The high temperature phase is nongeometrical, but at low temperature the matrix eigenvalues condenses around the eigenvalues of the geometric Laplacian and angular momentum operators. Denjoe had studied a model with three matrices approximating CP^1 , which was generalized by Thomas to eight matrices for CP^2 . There are surprising novel features, in particular a very stable excited state. Martin Vachovski studies a scalar field on this background and the corresponding phase diagram. Both Martin and Thomas presented their work in April in Bucharest at an EU meeting on Non-commutative Geometry. Matthias Ihl has just arrived. He works on problems in traditional particle and nuclear physics using the AdF/CFT duality.

Sinead Keegan and Werner Nahm constructed more examples of modular q-hyper geometric functions, using cosets of affine Kac-Moody algebras at fractional level. This was motivated by mathematicians who got interested in Nahm's conjecture and asked for more examples. Among them were S. Zwegers and M. Vlasenko, who obtained significant new results on this conjecture. Cooperation with UCD in this area was ended, since Prof. S. Zwegers moved to Germany. This is partially compensated by the move of Masha Vlasenko from Max-Planck-Institute for Mathematics, Bonn to TCD, though her work as lecturer leaves her much less time for research.

Werner Nahm solved a thirty year old problem in mathematics: Assume that E and F are k -ample vector bundles. Show that their sum and tensor product are k -ample. This was known only under the assumption that E and F are generated by global sections. The method for a key step in the proof was inspired by Feynman graphs (presentation at the meeting).

Olaf Smits studied the properties of edge and tunnelling currents in fractional quantum Hall systems, for single and multiple point contacts between the edges of the system. The properties of the tunnelling currents are believed to show the presence of non-Abelian anyons at conductivity $5/2$, but the experimental situation is not entirely clear. Together with Joost Slingerland, Olaf derived a fluctuation-dissipation theorem which relates the noise in the tunnelling current to the noise in the edge current.

For Volker Braun the year was particularly productive. In the context of F-theory, he studied the Calabi-Yau hyper surfaces which arise from the 473800776 reflexive 4-dimensional polytopes. In particular, this list yields 102581 distinct cases which correspond to flat fibrations over CP^2 . The largest arising gauge group is $SU(27)$. On first sight, this case seems to violate a bound coming from anomaly cancellation, but this is due to the existence of extra tensor multiplets coming from the corresponding elliptic fibration. In a previous paper, Volker had shown that the most symmetric of the 473800776 polytopes can be used to construct a model with Hodge numbers $h_{1,1}$ and $h_{2,1}$ equal to 1. With L. Anderson and B. Ovrut, Volker determined numerical methods to solve the Hermitean Yang-Mills equations which are necessary to determine masses and couplings in heterotic string models. Their procedure generalizes the method used by S. Donaldson to find numerical approximations to Ricci-flat metrics.

Stefano Kovacs works on the construction of $N=4$ super symmetric Yang-Mills theory, which is the only interacting quantum field theory in four dimensions which has a chance to be exactly solvable. He published a reformulation of the theory in light-cone superspace, which exhibits hidden symmetries in manifest form and makes the theory more accessible to calculations. The theory is important in the context of the AdS/CFT correspondence. Our further work on fundamental properties of space, time, and matter will depend to a large extent on the results of the current experiments at CERN.



Prof. Cumrun Vafa and Prof. Werner Nahm, School of Theoretical Physics Statutory Public Lecture November 2011.

*An tOll. Cumrun Vafa agus An tOll. Werner Nahm
Léacht Reachtúil Scoil na Fisice Teoiriciúla Samhain 2011.*

Baineann sé seo le múnla mairtise le haistriú pasanna neamhghnách. Feidhmíonn an t-aistriú pasanna cosúil le ceann céadoird nuair a thagtar i ngaireacht dó ó thaobh an teochta aird, ach léiríonn sé iomlaidí an dara oird nuair a thagtar i ngaireacht dó ó theocht íseal. Tá an pas teochta aird neamh-gheoiméadrach, ach ag teocht íseal comhdhlúthaíonn luachanna Eigen na mairtise thart ar luachanna Eigen oibríteoirí geoiméadrach Laplacian agus móimintim uilligh. Rinne Denjoe staidéar ar mhúnla le trí mhaitris ag dul i dtreo CP^1 , agus rinne Thomas é a ghinearálú go hocht maitris do CP^2 . Tá tréithe nua iontacha ann, ach go háirithe staid fhiosctha atá an-sheasmhach. Déanann Martin Vachovski staidéar ar réimse scálach sa chúlra seo agus an phasléaráid chomhfhreagrach. Chuir Martin agus Thomas beirt a saothar i láthair i mí Aibreáin i mBucharest ag cruinniú AE ar Gheoiméadracht Neamhchómhalartach. Tá Matthias Ihl díreach tagtha. Oibríonn sé ar fhadhbanna san fhisic núicléach agus cáithníní traidisiúnta ag baint úsáide as an déacht AdS/CFT.

Chruthaigh Sinead Keegan agus Werner Nahm tuilleadh samplaí d'fheidhmeanna modhúlach q-hipirgheoiméadrach, ag baint úsáide as comhthacair d'ailgéabair fineacha Kac-Moody ag leibhéal an chodáin. Spreagadh é seo ag matamaiticeoirí a chuir suim i dtuairimíocht Nahm agus a lorg tuilleadh samplaí. Ina measc bhí S. Zwegers agus M. Vlasenko, a fuair torthaí suntasacha nua ar an tuairimíocht seo. Tháinig deireadh leis an gcomhoibriú le UCD sa réimse seo, ó bhog an tOllamh S. Zwegers go dtí an Ghearmáin. Tá cúiteamh de chineál faighte le bogadh Masha

Vlasenko ón Max-Planck-Institute don Mhatamaitic, Bonn go TCD, cé go bhfuil i bhfad níos lú ama aici don taighde mar thoradh ar a cuid oibre mar léachtóir.

Tháinig Werner Nahm ar réiteach ar fhadhb matamaitice a bhí ann le tríocha bliain anuas: Glac leis gur cuail veicteoirí k-imleor iad E agus F. Léirigh go bhfuil a suim agus a dtoradh teinseoirí k-imleor. Ní raibh sé seo ar eolas ach amháin faoin bhfoshuíomh go bhfuil E agus F ginte ag ranna uilíocha. Fuarthas ionspioráid don mhodh do mhórchéim sa chruthú ó ghraif Feynman (cur i láthair ag an gcruinniú).

Rinne Olaf Smits staidéar ar thréithe shruthanna imill agus tollánaithe i gcórais Hall cantamacha codánacha, do thadhaill pointe aonair agus ilphointe idir imill an chórais. Tá tréithe na gcruthanna tollánaithe in ainm agus a bheith ag léiriú go bhfuil ainióin neamh-Abelach ag seoltacht 5/2, ach níl an staid turgnaimh go hiomlán soiléir. In éineacht le Joost Slingerland, chum Olaf teoirim iomlaoide-ídithe a nascann an glór sa sruth tollánaithe leis an nglór sa sruth imill.

Bliain an-táirgiúil a bhí ann do Volker Braun. I gcomhthéacs na F-teoirice, rinne sé staidéar ar na hipeardhromchlaí Calabi-Yau a éiríonn ó na polaitóipeanna athfhillteacha 4-thoiseacha 473800776. Ach go háirithe, tugann an liosta seo 102581 cás ar leith atá ag teacht le snáithíní cothrom thar CP^2 . Is é an grúpa tomhais is mó a éiríonn ná $SU(27)$. Ar an gcéad amharc, is cosúil go sáraíonn an cás seo cuimse ag teacht ó chealú aimhrialtachta, ach tá sé seo ann mar thoradh ar ilphléid teinseoirí breise a bheith ann ag teacht ón snáithíní éilipseach comhfhreagrach. I bpáipéar roimhe sin, bhí sé léirithe ag Volker gur féidir na cinn is siméadraí de na hilphléid 473800776 a úsáid chun múnla a chruthú le huimhreacha Hodge $h_{1,1}$ agus $h_{2,1}$ cothrom le 1. Le L. Anderson agus B. Ovrut, chinn Volker modhanna uimhriúla chun na cothromóidí Hermitean Yang-Mills a réiteach atá riachtanach chun maiseanna agus cuplálacha i múnlaí teaghráin heitearótacha a ríomh. Déanann a ngnás ginearálú ar an modh úsáidte ag S. Donaldson chun teacht ar neastacháin uimheartha ar mhéadrachtaí Ricci-cothrom.

Oibríonn Stefano Kovacs ar chruthú na teoirice $N=4$ sárshiméadraigh Yang-Mills - an t-aon réimsetheoiric chandamach idirghníomhach i gceithre thoise a bhfuil seans a bheith inréitithe go cruinn. D'fhoilsigh sé athfhoirmiú ar an teoiric sa sárspás cóin éatrom, a léiríonn siméadrachtaí follaithe i bhfoirm fhollasach agus a dhéanann an teoiric níos inrochtana do ríomhanna. Tá an teoiric tábhachtach i gcomhthéacs na comhfhreagartha AdS/CFT.

Beidh tuilleadh oibre againn ar bhuntréithe spáis, ama agus damhna ag brath go mór ar thorthaí na dturgnamh reatha ag CERN.

Administration and Finance

DIAS has been actively looking at possibilities with regard to shared services. Progress has been made with regard to Library subscriptions and DIAS is now participating in a limited way in the IreL consortium (Irish Research e-Library). This arrangement has led to savings on the School's library budget and has given researchers access to additional online resources. It is hoped to extend the scope of this arrangement in the future. Exploratory discussions are taking place with other organisations in the higher education sector regarding shared service possibilities in certain areas of administrative support.

Three new Board members were appointed in 2011. Professor Alan Watson (University of Leeds) was appointed to the Board of the School of Cosmic Physics; Professor Jürg Fröhlich (ETH, Zurich) and Professor Don Zagier (Max Planck Institute for Mathematics) were appointed to the Governing Board of the School of Theoretical Physics.

A briefing session was held for each of the Governing Boards and Council on organisational governance. Council adopted new policies on Good Research Practice and on Whistleblowing. Work commenced during the latter part of the year on the development of a Strategy Statement.

IT support services have been centralised and the Head of IT is now responsible for managing the overall IT requirements for the whole of DIAS. He is supported in this role by a team of two full-time and one part-time IT technicians.

The buildings at Dunsink have been refurbished to provide enhanced outreach facilities. Dunsink House has been converted to provide accommodation for visiting researchers. As the visitor budgets have been severely cut, this facility will be very beneficial to the School as it will enable them to attract more visitors at a reduced cost.

Finance

The attached financial statements report a loss of €89,658 for the year. This compares with a loss of €300,162 in the year to 31st December 2010. The reason for this overspend in 2011 is due to the on-going investment in the refurbishment of Dunsink Observatory.

Total income for the Institute decreased from €13,267,262 in 2010 after adjusting for pensions to €11,894,998 in 2011.

This represents a decrease of €1,372,264 or 10.34% and the main decreases occurred in projects and contributions for the hosting costs of Bluegene. The supercomputer was removed from the books of DIAS and disposed of at the end of 2010.

The Institute's total costs, after adjusting for the transfer to the capital reserves, also decreased from €13,567,424 in 2010 to €11,984,656 in 2011 i.e. a decrease of €1,582,768 or 11.66%.

Riarachán agus Airgeadas

Tá DIAS ag féachaint go gníomhach ar na féidearthachtaí maidir le seirbhísí comhroinnte. Tá dul chun cinn déanta maidir le síntiús Leabharlainne agus tá DIAS páirteach anois ar bhealach teoranta sa chuibhreannas Irel (*Irish Research e-Library*). Mar thoradh ar an socrú seo sábháladh airgead ar bhuiséad leabharlainne na Scoile agus tá teacht ag na taighdeoirí ar acmhainní breise ar líne. Táthar ag súil go leathnófar scóip an tsocrúcháin seo amach anseo. Tá cainteanna tosaigh ar bun le heagraíochtaí eile in earnáil an ardoideachais maidir le féidearthachtaí do sheirbhísí comhroinnte i réimsí áirithe de thacaíocht riaracháin.

Ceapadh triúr comhaltaí Boird nua i 2011. Ceapadh an tOllamh Alan Watson (Ollscoil Leeds) ar Bhord Scoil na Fisice Cosmaí; Ceapadh an tOllamh Jürg Fröhlich (ETH, Zurich) agus an tOllamh Don Zagier (Max Planck Institute for Mathematics) ar Bhord Bainistíochta Scoil na Fisice Teoiriciúla.

Tionóladh seisiúin faisnéise do gach ceann de na Boird Bhainistíochta agus don Chomhairle ar rialú eagraíochta. Ghlac an Chomhairle le polasaithe nua ar Dheachleachtas Taighde agus ar Sceithireacht. Cuireadh tús sa chuid deiridh den bhliain le hobair ar Ráiteas Straitéise a fhorbairt.

Tá na seirbhísí tacaíochta TF lánaithe agus tá an Ceannaire TF freagrach anois as na riachtanais foriomlána TF do DIAS uile a bhainistiú. Tá sé á thacú sa ról seo ag foireann de bheirt teicneoirí lánaimseartha agus teicneoir páirtaimseartha amháin.

Tá na foirgnimh i nDún Sinche athchóirithe chun áiseanna taighde feabhsaithe a sholáthar. Tá Teach Dhún Sinche athchóirithe chun cóiríocht a sholáthar do thaighdeoirí ar cuairt. Ó gearradh na buiséid do chuartheoirí go géar, beidh an áis seo an-tairbheach don Scoil toisc go mbeifear in ann tuilleadh cuairteoirí a mhealladh ar chostas laghdaithe.

Airgeadas

Tuairiscíonn na ráitis airgeadais, atá ag gabháil leis seo, cailiteanas €89,658 don bhliain. Is féidir seo a chur i gcomparáid le cailiteanas €300,162 sa bhliain go dtí 31 Nollaig 2010. Infheistíocht leanúnach ar athchóiriú Réadlainne Dhún Sinche is cúis leis an róchaitheamh seo i 2011.

Tar éis coigeartú do phinsin i 2011, laghdaigh ioncam iomlán na hInstitiúide ó €13,267,262 i 2010 go €11,894,998 in 2011.

Leiríonn se seo laghdú €1,372,264 nó 10.34%. Tharla na laghdaithe is mó i dtionscadail agus i ranníocaíochtaí ar chostais a bhain le óstáil Blugene. Baineadh an sár-ríomhaire as leabhair chuntais DIAS agus diúscaíodh e ag deireadh 2010.

Tar éis coigeartú d'aistriú chuig cúlchistí caipitil, thit costais iomlána na hInstitiúide freisin ó €13,567,424 i 2010 go €11,984,656 i 2011, sin laghdú €1,582,768 nó 11.66%.

Institute Staff

Council of the Institute

Chairman

V. Cunnane

Ex-Officio Members

H. Brady, President, UCD

P. Prendergast, Provost, TCD

L. Drury, President, RIA

Members Appointed by the Governing Boards of Constituent Schools

G. Wrixon

A. Jaffe

A. Ahlqvist

W. Nahm

F. Kelly

Governing Board of the School of Celtic Studies

Chairman

A. Ahlqvist

Senior Professors

L. Breatnach

F. Kelly

P. Breatnach

Appointed Members

D. Ó Baoill

M. Herbert

R. Ó hUiginn

E. Ní Dhea

K. Simms

N. Ó Muraíle

A. O Corrain

M. Ni Mhaonaigh

J. McCloskey

U. Mac Gearailt

Governing Board of the School of Theoretical Physics

Chairman

A. Jaffe

Senior Professors

T. Dorlas

D. O'Connor

W. Nahm

Appointed Members

A. Breslin

H. Nicolai

M. Grünewald

M. Tuite

P. Knight

L. Hau

R. Dijkgraaf

S. Shatashvili

D. Gilbert

D. Zagier

J. Frohlich

Governing Board of the School of Cosmic Physics

Chairman

G. Wrixon

Senior Professors

A. Jones

L. Drury

Appointed Members

A. Khan

O. Glaser

L. Enright

R. Perrott

M. Fowler

S. Cloetingh

L. Pedersen

C. Ceccarelli

E. Meehan

A. Watson

Administrative Staff of the Institute 2011

Registrar

C. Keaveney

Finance Officer

G. Forkin

Senior Administrative Officer

M. Burke

Assistant Finance Officer

R. Byrne

Clerks

M. Loughman

H. Moynihan

E. Barrett

M. Brennan

Senior Administrator

M. Ó Gliasáin

Head of IT

Dmitri Grigoriev (from 1 December)

Support Staff

G. Casey

R. Jones

B. Judge

P. McDonald

C. Doyle

T. Ó Gríofa

K. Earley

P. Wynne

Staff and Scholars of the School of Celtic Studies 2011

Senior Professors

F. Kelly

L. Breatnach

P. Breatnach (Director)

Professors

M. McKenna

P. Ó Macháin

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. O'Brien

IT Support

A. McCarthy (part-time)

S. McCullagh (part-time)

Bibliographer

A. Guilarte

Bergin Fellows

C. Downey (to 31 July)

Scholars

N. White (Ireland) (to 7 November)

F. Verstraten (Holland) (to 5 April)

E. O'Flynn (Ireland) (to 30 September)

A. Matheson (Canada)

H. Imhoff (Germany)

E. Lash (U.S.A.) (from 4 April)

S. Ni Lochlainn (Ireland) (from 1 October)

Institute Staff (continued)

Irish Research Council for the Humanities and Social Sciences (IRCHSS) Government of Ireland Fellowship

R. McLaughlin

Professor Emeritus

M. Ó Murchú

Staff and Scholars of the School of Theoretical Physics 2011

Senior Professors

W. Nahm (Director)

T. Dorlas

D. O'Connor

Librarian

M. Williams

School Administrator

M. Matthews

Systems Administrator

J. Bucas

Post-Doctoral Scholars

S. Keegan (Ireland) (to 31 December)

M. Beau (France)

D. Foster (U.K.) SFI (to 30 September)

Pre-Doctoral Scholars

P. Abramski (Russia) (to 30 June)

O. Smits (Netherlands)

M. Vachovski (Bulgaria) (from 1 June)

T. Kaltenbrunner (Austria) Externally funded (from 1 June)

Schrodinger Fellows

V. Braun (Germany)

S. Kovacs (Italy)

I. Lyberg (Sweden)

Project Staff

T. Kaltenbrunner (Austria) Marie Curie
Non-Commutative Geometry. (to 31 May)

M. Vachovski (Bulgaria) Marie Curie
Non-Commutative Geometry. (to 31 May)

R. Delgadillo Blando (Mexico) Marie Curie
Non-Commutative Geometry (to 31 May)

E. Radu (Bulgaria) SFI *Soliton Solutions to Higher Dimensional Gravitating Gauged Scalar Field Systems, with applications to AdS/DFT and Branes* (to 31 August)

Irish Research Council for Science, Engineering & Technology (IRCSET) Government of Ireland Postdoctoral Research Fellows

V. Filev (Bulgaria) "*Phase Structure of Flavored Holographic Gauge Theories in external magnetic field*"

M. Ihl (Germany) "*Application of gauge/gravity correspondence to strongly coupled physical systems, with an emphasis on phenomenology of pions, mesons and baryons in holographic realizations of QCD-like flavour physics at zero and finite temperature*" (from 1 October)

Staff and Scholars of the School of Cosmic Physics 2011

Senior Professors

L. Drury (Director)

A. Jones

Professors

T. Ray

F. Aharonian

Z. Martinec

Assistant Professors

S. Lebedev

B. O'Reilly

Fellows

M. Chernyakova (Russia) (to 31 August)

M. Muller (South Africa)

A. Bamba (Japan) (to 31 March)

A. Scholz (Germany)

Experimental Officers

T. Blake
S. Dudzinski (to 8 June)

Senior Technical Assistants

C. Horan
M. Smyth

Technical Assistants

E. Flood
A. Grace
H. O'Donnell
L. Collins
C. Hogg

IT Technician

J. Barrett (to 19 August)

Clerical Staff

P. Daly
A. Sewielska

Scholars

M. Miensopust (Germany)
J. Schmoltdt (Germany) (to 30 November)
S. Delaney (Ireland) (to 16 March)
D. Khoza (South Africa)
L. Fallon (Ireland)
G. Polat (Turkey)
J. Buckenmeyer (France)
E. Mandolesi (Italy)
M. Agius (Malta)
N. Noorae (Iran)
F. le Pape (France)
D. Kiyani (Turkey)
G. Costigan (Ireland)
A. Schaeffer (Canada)
R. Ainsworth (USA)
P. Dawson (Ireland)
T. Farrell (Ireland) (from 1 September)
C. Yeomans (UK) (from 5 September)
S. Blake (Ireland) (from 1 October)
T. Fritschle (Germany) (from 1 September)

Project Staff

E. Whelan IRCSET
M. Kennedy IGGP (to 30 October)
K. Rochford e-INIS
D. Coffey IRCSET
G. Murphy SFI project
A. Caratti O Garatti SFI project (to 30 June)
C. Tirel SFI project (to 1 September)
J. Fulla TOPOMED (to 16 December)
J. Vozar SFI project (to 31 December)
J. Morin MIRI (to 30 September)
A. Scaife MIRI (to 30 September)
V. Bosch Ramon EU Marie-Curie

Professor Emeritus

P. Readman
D. O'Sullivan
A. Thompson

Vacation Students

S. Sihelnik (1 February to 31 August)
M. Loewer (1 February to 31 August)
E. Neenan (from 22 June to 16 September)
P. Lynch (from 22 June to 9 September)



Financial Statements for year ended 31 December 2011

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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.

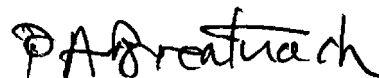
In preparing those financial statements the Council is required to:

- 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 proper books of account 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.



Werner Nahm
Council Member



Pádraig Breatnach
Council Member

Statement on Internal Financial Control

Responsibility for Internal Financial Control

On behalf of the Council of the Institute I acknowledge our responsibility for ensuring that an effective system of internal financial control is maintained and operated.

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.

Key Control Procedures

The Council has taken steps to ensure an appropriate control environment by

- clearly defining management responsibilities;
- establishing formal procedures for reporting significant control failures and ensuring appropriate corrective action.

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.

The system of internal financial 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.

The Audit Committee continues to review internal control matters and issues raised by the Comptroller and Auditor General. In 2011, the Audit Committee met on three occasions.

In addition, the 2011 report on internal control systems as provided by the Internal Auditor has been made available to Members of Council.

The Council's monitoring and review of the effectiveness of the system of internal financial 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 financial control framework and comments made by the Audit Committee and the Comptroller and Auditor General in his management letter or other reports.

Annual Review of Controls

I confirm that in the year ended 31st December 2011 Council conducted a review of the effectiveness of the internal financial controls of the Institute.

Signed on behalf of the Council of the Institute



Vincent Cunnane

Chairman - Council of the Institute

27 June 2012

Comptroller and Auditor General

Report for presentation to the Houses of the Oireachtas

I have audited the financial statements of the Dublin Institute for Advanced Studies for the year ended 31 December 2011 under the Institute for Advanced Studies Act 1940. The financial statements, which have been prepared under the accounting policies set out therein, comprise the Accounting Policies, the Income and Expenditure Account, the Statement of Total Recognised Gains and Losses, the Balance Sheet, the Cash Flow Statement and the related notes. The financial reporting framework that has been applied in their preparation is applicable law and Generally Accepted Accounting Practice in Ireland.

Responsibilities of the Council

The Council is responsible for the preparation of the financial statements, for ensuring that they give a true and fair view of the state of the Institute's affairs and of its income and expenditure, and for ensuring the regularity of transactions.

Responsibilities of the Comptroller and Auditor General

My responsibility is to audit the financial statements and report on them in accordance with applicable law.

My audit is conducted by reference to the special considerations which attach to State Bodies in relation to their management and operation.

My audit is carried out in accordance with the International Standards on Auditing (UK and Ireland) and in compliance with the Auditing Practices Board's Ethical Standards for Auditors.

Scope of Audit of the Financial Statements

An audit involves obtaining evidence about the amounts and disclosures in the financial statements, sufficient to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or error. This includes an assessment of

- whether the accounting policies are appropriate to the Institute's circumstances, and have been consistently applied and adequately disclosed
- the reasonableness of significant accounting estimates made in the preparation of the financial statements, and
- the overall presentation of the financial statements.

I also seek to obtain evidence about the regularity of financial transactions in the course of audit.

In addition, I read all the financial and non-financial information in the Annual Report to identify material inconsistencies with the audited financial statements. If I become aware of any apparent material misstatements or inconsistencies I consider the implications for my report.

Opinion on the Financial Statements

In my opinion, the financial statements, which have been properly prepared in accordance with Generally Accepted Accounting Practice in Ireland, give a true and fair view of the state of the Institute's affairs at 31 December 2011 and of its income and expenditure for the year then ended.

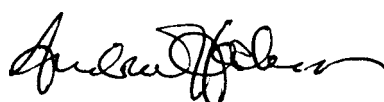
In my opinion, proper books of account have been kept by the Institute. The financial statements are in agreement with the books of account.

Matters on which I Report by Exception

I report by exception if

- I have not received all the information and explanations I required for my audit, or
- my audit noted any material instance where moneys have not been applied for the purposes intended or where the transactions did not conform to the authorities governing them, or
- the information given in the Institute's Annual Report for the year for which the financial statements are prepared is not consistent with the financial statements, or
- the Statement on Internal Financial Control does not reflect the Institute's compliance with the Code of Practice for the Governance of State Bodies, or
- I find there are other material matters relating to the manner in which public business has been conducted.

I have nothing to report in regard to those matters upon which reporting is by exception.



Andrew Harkness

For and on behalf of the Comptroller and Auditor General

29 June 2012

Accounting Policies

GENERAL

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.

ACCOUNTING POLICIES

1. Basis of Accounting

The financial statements have been prepared on an accruals basis under the historical cost convention and in accordance with generally accepted accounting practice. Financial Reporting Standards recommended by the recognised accounting bodies are adopted as they become applicable.

2. Oireachtas Grants

Income is shown on a cash receivable basis.

3. Fixed Assets

Fixed Assets comprise the furniture, equipment, computers, supercomputer 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%

Premises occupied by the Institute are leased from the Office of Public Works.

4. Capital Reserve

The capital reserve represents the unamortised value of income used for the purchase of Fixed Assets.

5. Library

Expenditure on library books and materials is written off in the year in which it is incurred.

6. Publications

Expenditure on publications is written off in the year in which it is incurred.

7. Superannuation

The Dublin Institute for Advanced Studies operates a defined benefit pension 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.

Pension costs reflect pension benefits earned by employees in the period and are shown net of staff pension contributions which are retained by the Dublin Institute for Advanced Studies. An amount corresponding to the pension charge is recognised as income to the extent that it is recoverable, and offset by grants received in the year to discharge pension payments.

Actuarial gains or losses arising on scheme liabilities are reflected in the Statement of Recognised Gains and Losses and a corresponding adjustment is recognised in the amount recoverable from the Department of Education and Skills.

Pension liabilities represent the present value of future pension payments earned by staff to date. Deferred pension funding represents the corresponding asset to be recovered in future periods from the Department of Education and Skills.

8. 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.

Income and expenditure on projects is reflected in the financial statements in the year to which they relate. A surplus or deficit on a project is reflected in the financial statements when realised.

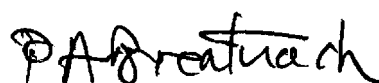
Income and Expenditure Account

	Notes	2011 €	2010 €
Income			
Oireachtas Grant		7,270,604	7,505,846
Net deferred funding for pensions	11.c	2,066,798	2,164,149
Sales of Publications		44,896	49,882
Projects	2	2,450,582	3,103,885
Other	3	62,118	63,438
Contribution-Hosting of Bluegene		-	380,062
		11,894,998	13,267,262
Transfer (to)/from Capital Reserve	5	76,698	913,223
		11,971,696	14,180,485
Expenditure			
	1		
School of Celtic Studies		1,524,227	1,566,278
School of Theoretical Physics		1,217,542	1,199,335
School of Cosmic Physics		3,884,122	4,993,356
Administration		5,435,463	6,721,678
		12,061,354	14,480,647
(Deficit)/Surplus for year		(89,658)	(300,162)
Balance at 1 January		917,009	1,217,171
Balance at 31 December		827,351	917,009
Statement of Total Recognised Gains and Losses			
		2011	2010
(Deficit)/Surplus for the year		(89,658)	(300,162)
Experience (gains)/losses on pension scheme liabilities		(188,000)	(1,998,000)
Changes in assumptions underlying the present value of pension scheme liabilities		(1,514,000)	(18,000)
Actuarial Loss on Pension Liabilities	11.b	(1,702,000)	(2,016,000)
Adjustment to Deferred Pension Funding		1,702,000	2,016,000
Total Recognised (Loss)/Gain for the Year		(89,658)	(300,162)

The Statement of Accounting Policies and notes 1 to 14 form part of these financial statements.



Werner Nahm
Council Member



Pádraig Breatnach
Council Member

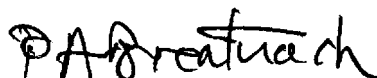
Balance Sheet

	Notes	2011 €	2010 €
Assets			
Fixed Assets	4	2,124,722	2,201,420
Current Assets:			
Cash on Hand and at Bank		3,989,556	5,201,182
Debtors and Prepayments	7	201,444	330,406
Project Debtors	2	148,896	136,828
Total Assets		6,464,618	7,869,836
Less Liabilities			
Creditors - Amounts falling due within one year			
Creditors and Accruals	6	1,272,320	2,001,233
Project Creditors	2	2,184,661	2,687,576
Creditors - Amounts falling due after one year			
	6	55,564	62,598
Total Liabilities Before Pensions		3,512,545	4,751,407
Assets Less Liabilities Before Pensions		2,952,073	3,118,429
Deferred Pension funding	11.c	40,506,000	36,736,000
Pension Liabilities	11.b	(40,506,000)	(36,736,000)
Net Assets		2,952,073	3,118,429
Financed by:			
Income and Expenditure Account		827,351	917,009
Capital Reserve	5	2,124,722	2,201,420
		2,952,073	3,118,429

The Statement of Accounting Policies and notes 1 to 14 form part of these financial statements.



Werner Nahm
Council Member



Pádraig Breatnach
Council Member

Cash Flow Statement

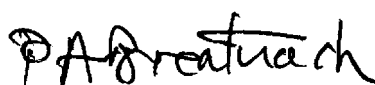
	Notes	2011 €	2010 €
Reconciliation of Operating (Deficit)/Surplus to Net Cash Inflow from Operating Activities			
(Deficit)/Surplus for Year		(89,658)	(300,162)
Interest Received	3	(37,924)	(41,662)
Increase/(Decrease) in Creditors		(735,947)	737,636
Decrease in Debtors		128,962	61,737
Net (Decrease)/Increase in Research Programmes and Fees		(514,983)	(1,682,618)
Depreciation	4	464,777	1,057,271
Capital Reserve Transfer	5	(76,698)	(913,223)
Loss on Disposal		21,915	174,815
Net Cash (Outflow)/Inflow from Operating Activities		(839,556)	(906,206)
Cash Flow Statement			
Net Cash (Outflow)/Inflow from Operating Activities		(839,556)	(906,206)
Returns on Investments and Servicing of Finance			
Bank Interest Received	3	37,924	41,662
Capital Expenditure			
Purchase of Tangible Assets	4	(409,994)	(318,863)
(Decrease)/Increase in Cash		(1,211,626)	(1,183,407)
Reconciliation of Net Cash Flow to Movement in Net Funds			
(Decrease)/Increase in Cash		(1,211,626)	(1,183,407)
Net Funds at 1 January		5,201,182	6,384,589
Net Funds at 31 December		3,989,556	5,201,182

Analysis of Change in Net Funds	Cash at bank and in hand €	Bank Overdraft €	Total €
At Beginning of Year 2011	5,201,182	-	5,201,182
Cash Flows	(1,211,626)	-	(1,211,626)
At End of Year 2011	3,989,556	-	3,989,556

The Statement of Accounting Policies and notes 1 to 14 form part of these financial statements.



Werner Nahm
Council Member



Pádraig Breatnach
Council Member

Notes to the Financial Statements

1 Detailed Analysis of Income & Expenditure for the year ended 31/12/2011

	Notes	School of Celtic Studies €	School of Theoretical Physics €	School of Cosmic Physics €	Adminis- tration €	2011 Total €	2010 Total €
INCOME							
Oireachtas Grants		1,758,218	1,070,939	2,600,018	1,841,429	7,270,604	7,505,846
Net Deferred Funding for Pensions	11.c	(338,984)	(93,558)	(705,033)	3,204,373	2,066,798	2,164,149
Sales of Publications		44,796	-	100	-	44,896	49,882
Project Income	2.a	58,815	248,384	1,943,272	200,111	2,450,582	3,103,885
Other	3	-	-	24,170	37,948	62,118	63,438
Contribution-Hosting of Bluegene		-	-	-	-	-	380,062
		1,522,845	1,225,765	3,862,527	5,283,861	11,894,998	13,267,262
Transfer (to)/from Capital Reserve					76,698	76,698	913,223
		1,522,845	1,225,765	3,862,527	5,360,559	11,971,696	14,180,485
EXPENDITURE							
Payroll Costs	8	1,362,280	901,150	1,732,106	725,811	4,721,347	4,985,260
Pension Costs	11.a	(38,551)	(42,644)	(84,568)	3,436,895	3,271,132	3,192,433
Project Costs	2.a	58,815	238,362	1,952,932	-	2,250,109	3,179,998
Hosting Costs Bluegene		-	-	-	-	-	310,680
Summer School High Energy Gamma Ray		-	-	22,160	-	22,160	-
Library and Book Storage		43,469	107,833	56,872	5,530	213,704	220,390
Depreciation	4	-	-	-	464,777	464,777	1,057,271
Rent, Rates and Insurance		-	-	-	195,058	195,058	196,249
General Expenses	9	15,052	988	88,560	104,988	209,588	306,378
Travel and Seminar Expenses		16,367	5,967	45,371	6,961	74,666	122,534
Premises Maintenance and Security		-	-	4,107	220,041	224,148	292,480
Computer and Internet Expenses		1,563	5,800	23,286	60,998	91,647	142,366
Fuel Light and Power		-	-	-	134,586	134,586	136,283
Postage and Telephone		-	-	-	30,578	30,578	35,961
Stationery		16,528	86	2,510	11,688	30,812	56,900
Publications		36,682	-	991	-	37,673	48,736
Advertising		-	-	333	5,067	5,400	6,012
Minor Office Equipment		12,022	-	39,462	10,570	62,054	15,901
Loss on Disposal	5	-	-	-	21,915	21,915	174,815
		1,524,227	1,217,542	3,884,122	5,435,463	12,061,354	14,480,647
SURPLUS/(DEFICIT) FOR YEAR		(1,382)	8,223	(21,595)	(74,904)	(89,658)	(300,162)
Balance at 1 January		270,348	99,220	1,132,716	(585,276)	917,009	1,217,171
Balance at 31 December		268,966	107,443	1,111,121	(660,180)	827,351	917,009

Notes to the Financial Statements (continued)

2. (a) Projects

		2011	2010		
		€	€		
Opening Balances		2,550,748	4,233,366		
Receipts		1,935,599	1,421,267		
		4,486,347	5,654,633		
Closing Balances (Project Debtors €148,896 Project Creditors €2,184,661)		(2,035,765)	(2,550,748)		
Applied as Income		2,450,582	3,103,885		
Income Allocation					
School of Celtic Studies		58,815	16,834		
School of Theoretical Physics		248,384	230,750		
School of Cosmic Physics		1,943,272	2,809,553		
		2,250,471	3,057,137		
Administration Capital		200,111	46,748		
Total Project Income		2,450,582	3,103,885		
Project Costs					
	Celtic	Theoretical	Cosmic	2011	2010
	Studies	Physics	Physics	Total	Total
	€	€	€	€	€
Payments to Partners/Associates	-	-	911,515	911,515	1,657,858
Salaries/Scholarships	36,442	196,965	755,549	988,956	1,120,220
Travel	96	40,109	151,718	191,923	227,325
Other	22,277	1,288	134,150	157,715	174,595
Total Project Cost	58,815	238,362	1,952,932	2,250,109	3,179,998

2.(b) Project Detail

	Opening		Recurrent	Applied	Closing	Capital
	Balance	Receipts	Expenditure	as Income	Balance	Capital
	€	€	€	(including	€	€
				Capital)		
				€		
School of Celtic Studies						
Irish Script on Screen	17,362	10,563	9,724	9,724	18,201	
Celtic Summer School	9,306	19,051	16,007	16,007	12,350	
R.Mclaughlin IRCHSS Fellow	8,628	33,076	33,084	33,084	8,620	
Total Celtic Studies	35,296	62,690	58,815	58,815	39,171	-

Notes to the Financial Statements (continued)

2.(b) Project Detail (continued)

	Opening Balance €	Receipts €	Recurrent Expenditure €	Applied as Income (including Capital) €	Closing Balance €	Capital €
School of Theoretical Physics						
S Ni Chiagain -IRCSET	2,944	-	-	2,944	-	
SFI Bethe Ansatz	25,784	-	1,804	1,804	23,980	
Non-Commutative Geometry	15,557	52,147	94,703	99,886	(32,182)	
Veselin Filev -IRCSET Fellow	1,196	-	-	1,196	-	
T. Tchakian SFI 07 Award	79,995	7,210	62,798	63,497	23,708	
B. Qureshi -IRCSET Fellow	9,464	(9,464)	-	-	-	
V. Filev Inspire Award PD2010	48,628	37,054	70,414	70,414	15,268	
M.Ihl IRCSET Fellow PD2011	-	19,820	8,643	8,643	11,177	
Total Theoretical Physics	183,568	106,767	238,362	248,384	41,951	-
School of Cosmic Physics						
Gamma Ray Bursts	18,593	-	1,300	1,300	17,293	
Total Astronomy	18,593		1,300	1,300	17,293	-
Dos Max	2,893	-	141	141	2,752	
PRTL-CosmoGrid	509,056	-	-	-	509,056	
Nam Conference	16,154	17,236	16,746	16,746	16,644	
Jetset	7,302	6,572	2,222	2,222	11,652	
SFI Felix GNM	28,027	11,725	17,737	17,737	22,015	
SFI Cores to Disks	28,711	8,153	24,707	24,638	12,226	
E-Inis -PRTL Cycle 4	874,568	1,074,239	932,647	1,033,178	915,629	(103,315)
Pic Simulations SFI 08	116,101	2,345	63,357	61,022	57,424	
D.Coffey IRCSET Fellow	35,026	1,250	32,614	31,823	4,453	
KM3Net -PP	8,821	-	2,593	2,593	6,228	
E.Whelan Inspire	61,971	8,246	73,028	73,028	(2,811)	
NGST Project	(90,174)	129,887	101,782	110,023	(70,310)	(3,042)
Cosmic Ray Origin	12,378	-	12,378	12,378	-	
Dobies	(4,661)	9,783	752	752	4,370	
KVM3Net	(845)	-	-	-	(845)	
Valenti EC Reintegration Grant	90,536	-	70,337	67,421	23,115	
A. Scholz SFI Brown Dwarfs	30,507	34,450	27,804	27,804	37,153	
A. Caratti Reintegration Grant	22,500	-	31,107	29,926	(7,426)	
Origin of Jets SFI T.Ray 2011	-	35,963	7,931	7,931	28,032	
Total Astrophysics	1,748,871	1,339,849	1,417,883	1,519,363	1,569,357	(106,357)

Notes to the Financial Statements (continued)

2.(b) Project Detail (continued)

	Opening Balance €	Receipts €	Recurrent Expenditure €	Applied as Income (including Capital) €	Closing Balance €	Capital €
Samtex	54,336	425	12,059	12,059	42,702	
SFI Samtex	12,918	-	12,956	12,918	-	
Geo External Funds	34,786	64,689	78,443	78,443	21,032	
Marem SFI -X Garcia/NUIG	1,632	(1,632)	-	-	-	
SFI Joint RFP	50,121	-	37,272	37,272	12,849	
SFI Isle 2 P. Readman	65,022	5,879	35,359	50,852	20,049	(15,493)
Geophysics Schools Seismology	16,116	5,900	10,080	10,080	11,936	
D Khosa -BHP Bill Support	4,918	(425)	4,493	4,493	-	
Dynamics of Cont. SFI Lebedev	62,817	-	69,892	68,600	(5,783)	
Indepth4 SFI A. Jones	64,764	389	65,277	63,670	1,483	
TopoMed	10,423	-	40,603	39,962	(29,539)	
Regional Seismic SFI 09 Lebedev	40,998	34,601	21,182	21,182	54,417	
SFI Picasso	(15,840)	15,094	(746)	(746)	-	
Irish Geoscience Graduate Programme	(25,308)	163,382	42,355	43,637	94,437	(1,282)
P. Share -CSIR Support	940	(940)	-	-	-	
IRETHERM SFI	185,777	106,881	104,312	180,086	112,572	(76,979)
GIANICE Zdenek SFI 11	-	32,050	212	212	31,838	
Total Geophysics	564,420	426,293	533,749	622,720	367,993	(93,754)
Total Cosmic Physics	2,331,884	1,766,142	1,952,932	2,143,383	1,954,643	(200,111)
Total Net Balances - DIAS	2,550,748	1,935,599	2,250,109	2,450,582	2,035,765	(200,111)

3. Other Income

	2011 €	2010 €
Bank Interest	37,924	41,662
Astrophysics Summer School	22,160	-
Fees and Grants	2,034	5,835
Other	-	15,941
Total	62,118	63,438

Notes to the Financial Statements (continued)

4. Fixed Assets

	Furniture & Equipment	Motor Vehicles	Computers	Total
Cost	€	€	€	€
Opening Balance 1/1/2011	3,665,865	53,200	2,076,622	5,795,687
Additions 2011	184,066	-	225,928	409,994
Disposals	(56,305)	-	(82,586)	(138,891)
	3,793,626	53,200	2,219,964	6,066,790
Depreciation				
Opening Balance 1/1/2011	1,942,913	53,200	1,598,154	3,594,267
Charge 2011	238,973	-	225,804	464,777
Disposals	(34,719)	-	(82,257)	(116,976)
	2,147,167	53,200	1,741,701	3,942,068
Net book value 31/12/2011	1,646,459	-	478,263	2,124,722
Net book value 31/12/2010	1,722,952	-	478,468	2,201,420

Note

All fixed assets in excess of €1,000 are capitalised in the books of DIAS.

5. Capital Reserve

	2011	2010
	€	€
Balance at 1 January	2,201,420	3,114,643
Transfer from/(to) Income and Expenditure Account		
Income allocated to acquire fixed assets	409,994	318,863
Amortisation in line with asset depreciation	(464,777)	(1,057,271)
Amount released on disposals	(21,915)	(174,815)
	(76,698)	(913,223)
Balance at 31 December	2,124,722	2,201,420

Notes to the Financial Statements (continued)

6. Creditors due within twelve months

	2011	2010
	€	€
Trade Creditors	163,139	461,422
Accruals	848,001	1,287,496
Sundry	555	3,119
VAT	23,194	15,992
Revenue Creditors	146,696	165,479
Pension Control Account	90,735	67,725
	1,272,320	2,001,233

6. Creditors due after twelve months

	2011	2010
	€	€
These comprise:		
Vernam Hull Bequest	53,105	60,137
Carmody Fund	2,459	2,461
	55,564	62,598

The funds relating to the above are held on deposit. Funds were utilised during the year.

7. Debtors

	2011	2010
	€	€
Prepayments	133,622	243,931
Contributions to Bluegene	-	38,000
Book Sales Debtors	3,490	5,050
Sundry	22,588	23,088
Accrued Income	41,744	20,337
	201,444	330,406

8. Payroll Costs

	Celtic	Theoretical	Cosmic	Admin.	2011	2010
	Studies	Physics	Physics	€	Total	Total
	€	€	€	€	€	€
Salaries/Wages	1,266,037	807,893	1,593,073	725,811	4,392,814	4,683,328
Scholarships	90,201	91,085	126,880	-	308,166	275,750
Visitors	6,042	2,172	12,153	-	20,367	26,182
	1,362,280	901,150	1,732,106	725,811	4,721,347	4,985,260

Note

Pension levy deductions of €319,112 were paid to the Department of Education and Skills during 2011.

Notes to the Financial Statements (continued)

9. General Expenses

	Celtic Studies	Theoretical Physics	Cosmic Physics	Admin.	2011 Total	2010 Total
	€	€	€	€	€	€
Miscellaneous	10,688	651	66,855	41,729	119,923	216,473
Promotions/ Lunches	3,208	287	6,568	2,662	12,725	12,215
Professional Fees	696	-	3,000	32,606	36,302	24,362
Training	460	50	11,917	2,270	14,697	27,532
Audit Fee	-	-	-	17,672	17,672	17,672
Bank Charges	-	-	-	3,743	3,743	3,351
Health & Safety	-	-	220	4,306	4,526	4,773
	15,052	988	88,560	104,988	209,588	306,378

10. 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 85 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 2012 is €113,609.

	Annual Rent
	€
Office of Public Works Leases	
Observatory House Dunsink	330
5 Merrion Square	5,022
9-10 Burlington Road	50,167
31 Fitzwilliam Place	58,090
	113,609

Notes to the Financial Statements (continued)

11. Pension Costs

a) Analysis of total pension costs charged to Expenditure	2011 (€'000)	2010 (€'000)
Current Service Cost	1,493	1,461
Interest on Pension Scheme Liabilities	1,970	2,002
Employee Contributions	(192)	(271)
	3,271	3,192

b) Movement in Net Pension Liability during the financial year	2011 (€'000)	2010 (€'000)
Net Pension Liability at 1 January	(36,736)	(32,556)
Current Service Cost	(1,493)	(1,461)
Interest Costs	(1,970)	(2,002)
Actuarial Loss/(Gain)	(1,702)	(2,016)
Pensions Paid in the Year	1,395	1,299
Net Pension Liability at 31 December	(40,506)	(36,736)

c) Deferred Funding for Pensions

DIAS recognises these amounts as an asset corresponding to the unfunded deferred liability for pensions on the basis of the set of assumptions described above and a number of past events. These events include the statutory basis for the establishment of the pension scheme, and the policy and practice in relation to funding public service pensions 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, the DIAS has no evidence that this funding policy will not continue to meet such sums amount in accordance with current practice.

The Net Deferred Funding for Pensions recognised in Income and Expenditure Account was as follows:

	2011 (€'000)	2010 (€'000)
Funding Recoverable in Respect of Current Year Pension Costs	3,463	3,463
State Grant Applied to Pay Pensioners	(1,395)	(1,299)
	2,068	2,164

The deferred funding asset for pensions as at 31 December 2011 amounted to €40.5 million (2010: €36.7 million).

d) History of Defined Benefit Obligations	2011 (€'000)	2010 (€'000)	2009 (€'000)
Defined Benefit Obligations	40,506	36,736	32,556
Experience (Gains)/Losses on Scheme Liabilities Amount.	(188)	(1,998)	(328)
Percentage of Scheme Liabilities.	(0.50%)	(5.40%)	(1.01%)

The cumulative actuarial (gain)/loss recognised in the Statement of Total Recognised Gains and Losses amounts to (€1,805,000).

Notes to the Financial Statements (continued)

11. Pension Costs (continued)

e) General Description of the Scheme

The pension scheme is a defined benefit final salary pension arrangement with benefits and contributions defined by reference to current "model" public sector scheme regulations. The scheme provides a pension (eightieths per year of service), a gratuity or lump sum (three eightieths per year of service) and spouse's and children's pensions. Normal Retirement Age is a member's 65th birthday, and pre 2004 members have an entitlement to retire without actuarial reduction from age 60. Pensions in payment (and deferment) normally increase in line with general public sector salary inflation. The valuation used for FRS17 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 2011.

	At 31/12/11	At 31/12/10	At 31/12/09
Rate of Increase in Salaries	3.50%	3.50%	4.00%
Rate of Increase in Pensions in Payment	3.25%	3.25%	4.00%
Discount Rate	5.00%	5.25%	6.00%
Inflation Rate	2.00%	2.00%	2.25%

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 2011 and 2040.

Year of Attaining Age 65	2011	2040
Life Expectancy - Male	86.0	88.8
Life Expectancy - Female	88.9	90.8

12. 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)

13. Disclosure of Council Members/Registrar Salary, Fees and Expenses

	Total Remuneration €	Total Expenses €
Council Member		
Dr Vincent Cunnane	-	None
Members Appointed by the Governing Boards of Constituent Schools		
Professor Gerry Wrixon	-	834
Professor Arthur Jaffe	-	1,758
Professor Anders Ahlqvist	-	8,497
Professor Werner Nahm	-	-
Professor Luke Drury	-	-
Professor Padraig Breatnach	-	-
Registrar		
Mr. Cecil Keaveney *	100,575	-
	100,575	11,089

***Note:**

The Registrar is in receipt of a salary only. He is not paid any bonus.

The Registrar's pension entitlements does not exceed the standard entitlements in the model public sector defined benefit superannuation scheme.

14. Approval of Accounts

The Financial Statements were approved by Council on the 15th June 2012.



Ráitis Airgeadais don bhliain dar críoch 31 Nollaig 2011

Clár

Ráiteas Freagrachtaí na Comhairle	60
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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 comhthoilíú an Aire Airgeadais.

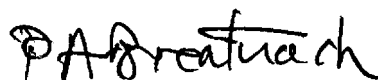
Agus an Chomhairle ag ullmhú na ráitis airgeadais sin éilítear uirthi:

- 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 leabhair chuntais chearta a choinneáil a nochtáíonn ag aon am le cruinneas réasúnach staid airgeadais na hInstitiúide agus a chuireann ar a cumas a chinntiú go gcloíonn 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 chalaíochtaí agus ar neamhrialtachtaí eile agus iad a aimsiú.



Werner Nahm
Council Member



Pádraig Breatnach
Council Member

Ráiteas faoin gCóras Rialaithe Airgeadais Inmheánaigh

Freagracht as an gCóras Rialaithe Airgeadais Inmheánaigh

Thar ceann Chomhairle na hInstitiúide is mian liom ár bhfreagracht a chur in iúl lena chinntiú go ndéantar cothabháil agus go n-oibrítear córas rialaithe airgeadais inmheánaigh.

Ní féidir leis an gcóras ach dearbhú réasúnach agus ní dearbhú críochnaitheach a chur ar fáil go ndéantar slánú ar shócmhainní, go mbíonn idirbheartaíochtaí údaraithe agus taifeadta i gceart, agus go gcuirtear cosc ar earráidí ábhartha nó ar neamhrialtachtaí nó go n-aimseofaí iad i dtréimhse chaoithiúil.

Nósanna Imeachta Rialaithe Lárnacha Tá céimeanna glactha ag an gComhairle lena chinntiú go mbeidh timpeallacht rialaithe chúil i bhfeidhm trí

- sainmhíniú soiléir a thabhairt maidir le freagrachtaí bainistíochta;
- nósanna imeachta foirmiúla a bhunú le teipeanna rialaithe suntasacha a thuiriscí agus lena chinntiú go dtógtar gníomh cuí leis an gceist a cheartú.

Tá próisis bunaithe ag an gComhairle le rioscaí gnó a aithint agus iad a luacháil trí

- nádúr, méid agus tionchar airgeadais na rioscaí a bhíonn os comhair na hInstitiúide a aithint lena n-áirítear méid agus catagóir a mheasann an Institiúid a bheith inghlactha;
- measúnú a dhéanamh ar an dóchúlacht atá ann go dtarlóidh na rioscaí aitheanta;
- measúnú a dhéanamh ar chumas na hInstitiúide na rioscaí a tharlaíonn a bhainistiú agus a mhaolú;
- measúnú a dhéanamh ar na costais a bhaineann le rialacháin áirithe a oibriú a bhaineann leis an sochar a bhaintear amach.

Tá an córas rialaithe airgeadais inmheánaigh bunaithe ar chreat oibre eolais bainistíochta rialta, nósanna imeachta riaracháin lena n-áirítear dualgais a roinnt, agus córas toscaireachta agus cuntasachta.

Áirítear leis go háirithe:

- córas buiséid cuimsitheach le buiséad bliantúil a ndéanann Comhairle na hInstitiúide athbhreithniú air agus a bhíonn comhaontaithe aici;
- athbhreithnithe rialta ag an gComhairle ar thuiriscí airgeadais tréimhseacha agus bliantúla a léiríonn feidhmíocht airgeadais in aghaidh réamhaisnéisí;
- spriocanna a leagan síos le feidhmíocht airgeadais agus feidhmíocht eile a thomhas;
- cloí le treoirlínte chun soláthar don earnáil phoiblí.
- athbhreithnithe rialta ag an gComhairle ar thionscadail taighde seachtaracha.

Leanann an Coiste Iniúchóireachta ag déanamh athbhreithniú ar chúrsaí rialaithe inmheánacha agus ar shaincheisteanna a d'ardaigh an tArd-Reachtaire Cuntas agus Ciste. I 2011, bhuail an Coiste Iniúchóireachta le cheile trí huair. Ina theannta sin, an tuarascáil ar chórais rialaithe inmheánacha don bhliain 2011 a chuir an tIniúcháir Inmheánach ar fáil tugadh do bhaill na Comhairle í.

Tá monatóireacht agus athbhreithniú na Comhairle ar éifeachtúlacht an chórais rialaithe airgeadais inmheánaigh coinnithe ar an eolas trí obair an iniúcháir inmheánaigh, trí obair an Chláraitheora agus oifigigh eile laistigh den Institiúid atá freagrach as creat oibre rialaithe airgeadais cuí a fhorbairt agus a chothabháil, agus trí thuirimí a dhéanann an Coiste Iniúchta agus an tArd-Reachtaire Cuntas agus Ciste ina litir bhainistíochta no i dtuiriscí eile.

Athbhreithniú Bliantúil ar Rialacháin

Dearbhaím go ndearna an Bord athbhreithniú ar éifeachtachas chórais rialaithe airgeadais inmheánaigh na hInstitiúide sa bhliain dár críoch 31ú Nollaig 2011.

Sínithe thar ceann Chomhairle na hInstitiúide



Vincent Cunnane

Cathaoirleach-Comhairle Na hInstitiúide

27 Meitheamh 2012

Tuarascáil an Ard-Reachtair Cuntas agus Ciste

le cur i láthair Thithe an Oireachtais

Institiúid Ard-Léinn Bhaile Átha Cliath

Tá ráitis airgeadais Institiúid Ard-Léinn Bhaile Átha Cliath don bhliain dar críoch 31 Nollaig 2011 iniúchta agam faoin Acht Um Institiúid Ard-Léinn, 1940.

Tá na ráitis airgeadais, a ullmhaíodh faoi na beartais chuntasaíochta arna leagan amach sna ráitis, comhdhéanta de na Beartais Chuntasaíochta, an Cuntas Ioncaim agus Caiteachais, an Ráiteas Gnóthachan agus Cailteanas Aitheanta Iomlán, an Clár Comhardaithe, an Ráiteas ar Shreabhadh Airgid, agus na nótaí gaolmhara. Tá an creat um thuairiscíú airgeadais a cuireadh i bhfeidhm ina n-ullmhúchán de réir dlí agus Cleachtas Chuntasaíochta a nGlactar Leis go Coitianta in Éirinn.

Freagrachtaí na Comhairle

Tá an Chomhairle freagrach as na ráitis airgeadais a ullmhú, as léargas fíorcheart ar riocht ghnóthaí na hInstitiúide a chinntiú, as a hioncam agus a caiteachas a chinntiú, agus as rialtacht na n-idirbheart a chinntiú.

Freagrachtaí an Ard-Reachtair Cuntas agus Ciste

Is é m'fhreagrachta ná na ráitis airgeadais a iniúchadh agus tuairisc a thabhairt orthu de réir dlí is infheidhme.

Riar mé m'iniúchadh trí thagairt a dhéanamh to na nithe ar leith is gá a chur san áireamh i ndáil le cúrsaí bainisteoireachta agus oibriúcháin a ghabhann le Comhlachtaí Stáit.

Rinne mé m'iniúchadh de réir Caighdeán Idirnáisiúnta maidir le hIniúcháireacht (Ríocht Aontaithe agus Éire) agus de réir Caighdeán Eiticíúil an Bhoird um Chleachtas Iniúcháireachta d'Iniúcháirí.

Réimse Iniúchta na Ráiteas Airgeadais

Cuimsíonn iniúchadh fianaise a fháil faoi na suimeanna agus na nochtuithe sna ráitis airgeadais, ionas go mbeadh leordhóthain fianaise agam a d'fhágfadh cinnteacht réasúnach ann go bhfuil na ráitis airgeadais saor ó mhíráiteas ábhartha, cibé acu calaíocht nó neamhrialtacht is cúis leis sin. Cuimsíonn sé seo measúnú

- an n-oireann na beartais chuntasaíochta don bhail atá ar chúrsaí na hInstitiúide, ar feidhmíodh na beartais sin ar bhealach leanúnach agus ar foilsíodh iad ar bhealach sásúil
- réasúntacht meastacháin suntasacha chuntasaíochta a rinneadh in ullmhúchán na ráiteas airgeadais, agus
- leagan amach foriomlán na ráiteas airgeadais.

Iarraim freisin fianaise a fháil faoi rialtacht na n-idirbheart airgeadais i gcúrsa iniúchta.

Mar aon leis sin, léim an fhaisnéis airgeadais agus neamhairgeadais sa Tuarascáil Bhliantúil chun neamhréireachtaí ábhartha a aithint leis na ráitis airgeadais iniúchta. Má thagaim ar an eolas faoi mhíráitis ábhartha dealraitheacha nó neamhréireachtaí cuirim na himpleachtaí san áireamh i mo thuarascáil.

Tuairim ar na Ráitis Airgeadais

Is é mo thuairim go dtugann na ráitis airgeadais, a ullmhaíodh i gceart de réir Cleachtas Chuntasaíochta a nGlactar Leis go Coitianta in Éirinn, léargas fíorcheart ar riocht ghnóthaí na hInstitiúide ag 31 Nollaig 2011 agus ar a hioncam agus ar a caiteachas don bhliain dar críoch sin.

Is é mo thuairim go raibh leabhair chuntais chúil coinnithe ag an Institiúid. Tá na ráitis airgeadais ag teacht leis na leabhair chuntais.

Nithe ar a dTuairiscím Eisceachtaí

Tuairiscím eisceachtaí

- mura bhfuair mé an fhaisnéis agus na mínithe ar fad a theastaigh uaim do m'iniúchadh, nó
- má d'aimsigh m'iniúchadh aon chás ábhartha nár feidhmíodh suimeanna airgid chun na gcríoch a bhí beartaithe nó sa chás nár lean na hidirbhearta do na húdaráis a rialaíonn iad, nó
- mura bhfuil an fhaisnéis a tugadh i dTuarascáil Bhliantúil na hInstitiúide don bhliain lena n-ullmhaítear na ráitis airgeadais de réir na ráiteas airgeadais, nó
- mura gcomhlíonann Ráiteas na hInstitiúide maidir le Rialú Inmheánach Airgeadais Cód Cleachtas maidir le Rialachas Comhlachtaí Stáit, nó
- má fhaighim amach go bhfuil nithe ábhartha eile maidir leis an modh a riaradh gnó poiblí.

Níl a thuilleadh le tuairiscíú agam maidir leis na nithe seo lena mbaineann tuairisceoireacht eisceachtaí.

Andrew Harkness

Le haghaidh agus thar ceann an Ard-Reachtair Cuntas agus Ciste

29 Meitheamh 2012

Polasaithe Chuntasaíochta

GINEARÁLTA

Bunaíodh an Institiúid faoin Acht um Institiúid Ard-Leighinn, 1940.

Áirítear ar a cuid feidhmeanna saoráidí a sholáthar le hardléinn 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.

POLASAITHE CHUNTASAÍOCHTA

1. Bunús Cuntasaíochta

Tá na ráitis airgeadais ullmhaithe ar bhonn fabhráithe faoin gcoinbhinsiún costais stairiúil agus de réir chleachtas cuntasaíochta a nglactar leo tríd is tríd. Glactar le Caighdeáin Thuairiscithe Airgeadais a bhí molta ag na comhlachtaí cuntasaíochta aitheanta mar is infheidhme iad.

2. Deontais Oireachtais

Taispeántar ioncam ar bhunús airgid isteach.

3. Sócmhainní Seasta

Is éard is Sócmhainní Seasta ann ná troscán, trealamh, ríomhairí agus mótarfheithiclí na hInstitiúide agus taispeántar iad ag costas lúide dímhéas carntha. Is mar seo a leanas atá na rátaí dímhéasa, 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.

4. Cúlchiste Caipitil

Léiríonn cúlchiste caipitil luach neamh-amúchta ioncain a úsáidtear le Sócmhainní Seasta a cheannach.

5. Leabharlann

Díscriobhtar caiteachas ar leabhair leabharlainne agus ábhair sa bhliain a dtabhaítear é.

6. Foilseacháin

Díscriobhtar caiteachas ar fhoilseacháin sa bhliain a dtabhaítear é.

7. Aoisliúntas Pinsin

Feidhmíonn Institiúid Ard-Léinn Bhaile Átha Cliath scéim phinsin shochair shonraithe a mhaoinítear go bliantúil ar bhonn íoc mar a imíonn tú ó chistí atá ar fáil dó, lena n-áirítear cistí a chuireann an Roinn Oideachais agus Scileanna ar fáil agus ó ranníocaíochtaí a asbhaintear ó thuarastail foirne.

Léiríonn costais phinsin na sochair phinsin a thuilleann fostaithe sa tréimhse agus léirítear iad glan ar ranníocaíochtaí pinsin foirne a bhíonn coinnte ag Institiúid Ard-Léinn Bhaile Átha Cliath. Aithnítear suim a chomhfhreagraíonn don mhúirear pinsin mar ioncam sa mhéid go bhfuil sé inaisghabhála, go ndéantar é a fhritháireamh in aghaidh deontais a bhíonn faighte sa bhliain chun íocaíochtaí pinsin a ghlanadh.

Tá gnóthachain nó cailteanais achtúireacha ar dhliteanais na scéime léirithe sa Ráiteas ar Ghnóthachain agus Cailteanais Aitheanta agus aithnítear coigeartú comhfhreagrach sa mhéid is féidir a aisghabháil ón Roinn Oideachais agus Scileanna.

Léiríonn na dliteanais phinsin luach reatha na n-íocaíochtaí pinsin don todhchaí atá tuillte ag an bhfoireann go dtí seo. Léiríonn maoiniú pinsin iarchurtha an tsócmhainn chomhfhreagrach a bheidh aisghafa i dtréimhsí amach anseo ón Roinn Oideachais agus Scileanna.

8. Tionscadail

Faigheann Institiúid Ard-Léinn Bhaile Átha Cliath maoiniú seachtarach ó thionscal, ó chomhlachtaí rialtais, agus ó Choimisiún na hEorpa. Coinnítear cairt chuntais i gcás gach tionscadail.

Léirítear ioncam agus caiteachas ar thionscadail sna ráitis airgeadais sa bhliain lena mbaineann siad. Taispeántar barrachas nó easnamh tionscadail sna ráitis airgeadais nuair a léirítear sin.

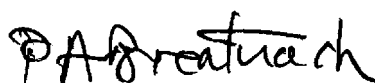
Cuntas Ioncaim agus Caiteachais

	Notes	2011 €	2010 €
Ioncam			
Deontas Oireachtais		7,270,604	7,505,846
Glan-mhaoiniú iarchurtha do phinsin	11.c	2,066,798	2,164,149
Díolacháin Foilseachán		44,896	49,882
Tionscadail	2	2,450,582	3,103,885
Eile	3	62,118	63,438
Ranníocaíocht-Óstáil Bluegene		-	380,062
		11,894,998	13,267,262
Aistriú (chuig)/ó Cúlchiste Caipitil	5	76,698	913,223
		11,971,696	14,180,485
Caiteachas			
	1		
Scoil an Léinn Cheiltigh		1,524,227	1,566,278
Scoil na Fisice Teoiriciúla		1,217,542	1,199,335
Scoil na Fisice Cosmaí		3,884,122	4,993,356
Riarachán		5,435,463	6,721,678
		12,061,354	14,480,647
(Easnamh)/Barrachas don bhliain		(89,658)	(300,162)
Iarmhéid amhail an 1 Eanáir		917,009	1,217,171
Iarmhéid amhail an 31 Nollaig		827,351	917,009
Ráiteas ar Ghnóthachain agus Cailteanais Aitheanta			
		2011	2010
(Easnamh)/Barrachas don bhliain		(89,658)	(300,162)
(Gnóthachain) iarbhíre ar dhliteanais na scéime pinsin		(188,000)	(1,998,000)
Athruithe i dtoimhdí is bonn do luach reatha dhliteanais na scéime pinsin		(1,514,000)	(18,000)
(Gnóthachan)/Cailteanas achtúireach ar Dhliteanais Phinsin	11.b	(1,702,000)	(2,016,000)
Coigeartú ar Mhaoiniú an Phinsin Iarchurtha		1,702,000	2,016,000
(Gnóthachan)/Cailteanas iomlán aitheanta don bhliain		(89,658)	(300,162)

Is cuid de na ráitis airgeadais sin é an Ráiteas Beartais Cuntasaíochta agus nótaí 1 go dtí 14.



Werner Nahm
Council Member



Pádraig Breatnach
Council Member

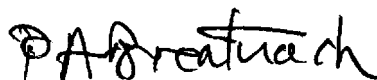
Clár Comhardaithe

	Notaí	2011 €	2010 €
Sócmhainní			
Sócmhainní Seasta	4	2,124,722	2,201,420
Sócmhainní Reatha:			
Airgead sa Lámh agus ag an mBanc		3,989,556	5,201,182
Féichiúnaithe agus Réamhíocaíochtaí	7	201,444	330,406
Féichiúnaithe Tionscadal	2	148,896	136,828
Sócmhainní Iomlána		6,464,618	7,869,836
Lúide Dliteanais			
Creidiúnaithe - Méideanna atá dlite laistigh de bhliain amháin			
Creidiúnaithe agus Fabhrúithe	6	1,272,320	2,001,233
Creidiúnaithe Tionsadail	2	2,184,661	2,687,576
Creidiúnaithe - méideanna atá dlite tar éis bliana amháin			
	6	55,564	62,598
Dliteanais Iomlána Roimh Phinsin		3,512,545	4,751,407
Sócmhainní lúide dliteanais Roimh Phinsin		2,952,073	3,118,429
Maoiniú an Phinsin Iarchurtha	11.c	40,506,000	36,736,000
Dliteanais Phinsin	11.b	(40,506,000)	(36,736,000)
Sócmhainní Glana		2,952,073	3,118,429
Maoinithe ag:			
Cuntas Ioncaim agus Caiteachais		827,351	917,009
Cúlchiste Caipitil	5	2,124,722	2,201,420
		2,952,073	3,118,429

Is cuid de na ráitis airgeadais sin é an Ráiteas Beartais Cuntasaíochta agus nótaí 1 go dtí 14.



Werner Nahm
Council Member



Pádraig Breatnach
Council Member

Ráiteas Sreabhadh Airgid

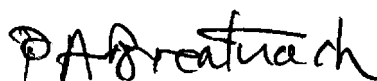
	Nótaí	2011 €	2010 €
Réiteach (easnaimh)/barrachais oibríochta chuig glan-insreabhadh airgid ó ghníomhaíochtaí oibríochta			
(Easnamh)/Barrachas don bhliain		(89,658)	(300,162)
Ús infhaighte	3	(37,924)	(41,662)
Ardú i gCreidiúnaithe		(735,947)	737,636
Laghdú i bhFéichiúnaithe		128,962	61,737
Glan-(laghdú)/ardú i gCláir Thaighde agus Táilí		(514,983)	(1,682,618)
Dímheas	4	464,777	1,057,271
Aistriú Cúlchiste Caipitil	5	(76,698)	(913,223)
Caillteanas ar dhiúscairt		21,915	174,815
Glan(eis-sreabhadh)/insreabhadh Airgid tirim ó ghníomhaíochtaí oibríochta		(839,556)	(906,206)
Ráiteas Sreabhadh Airgid			
Glan(eis-sreabhadh)/insreabhadh airgid tirim ó ghníomhaíochtaí oibríochta		(839,556)	(906,206)
Aischiú ar infheistíochtaí agus seirbhísiú airgeadais			
Ús Baint Infhaighte	3	37,924	41,662
Caiteachas Caipitiúil			
Ceannach Sócmhainní Inláimhsithe	4	(409,994)	(318,863)
(Laghdú)/Ardú ar Airgead		(1,211,626)	(1,183,407)
Réiteach glaninsreabhadh airgead tirim chuig gluaiseacht i nglanchistí			
(Laghdú)/Ardú ar Airgead Tirim		(1,211,626)	(1,183,407)
Iarmhéid faoin 1 Eanáir		5,201,182	6,384,589
Iarmhéid faoin 31 Nollaig		3,989,556	5,201,182

Anailís ar athrú i nglanchistí	Airgead infhaighte sa Bhanc €	Ró tharraingt €	Iomlán €
I dtús na bliana 2011	5,201,182		5,201,182
Sreabhadh Airgid	(1,211,626)		(1,211,626)
Ag deireadh na bliana 2011	3,989,556		3,989,556

Is cuid de na ráitis airgeadais sin é an Ráiteas Beartais Cuntasaíochta agus nótaí 1 go dtí 14.



Werner Nahm
Council Member



Pádraig Breatnach
Council Member

Nótaí do na Ráitis Airgeadais

1. Anailís Shonraithe d'Ioncam & Caiteachas don bhliain dár críoch 31/12/2011

IONCAM	Nótaí	Léann	Fisic	Fisic	Riarachán	2011	2010
		Cheilteach	Theoiriciúil	Chosmach		lomlán	lomlán
		€	€	€			
Deontais Oireachtais		1,758,218	1,070,939	2,600,018	1,841,429	7,270,604	7,505,846
Glan-mhaoiniú iarchurtha do phinsin	11.c	(338,984)	(93,558)	(705,033)	3,204,373	2,066,798	2,164,149
Díolacháin Foilseachán		44,796	-	100	-	44,896	49,882
Ioncam Tionscadail	2.a	58,815	248,384	1,943,272	200,111	2,450,582	3,103,885
Ioncam Eile	3	-	-	24,170	37,948	62,118	63,438
Ranníocaíocht-Óstáil Bluegene		-	-	-	-	-	380,062
		1,522,845	1,225,765	3,862,527	5,283,861	11,894,998	13,267,262
Aistriú (chuig) ó Chúlchiste Caipitil					76,698	76,698	913,223
		1,522,845	1,225,765	3,862,527	5,360,559	11,971,696	14,180,485
CAITEACHAS							
Costais Phárolla	8	1,362,280	901,150	1,732,106	725,811	4,721,347	4,985,260
Costais phinsin	11.a	(38,551)	(42,644)	(84,568)	3,436,895	3,271,132	3,192,433
Costais Tionscnamh	2.a	58,815	238,362	1,952,932	-	2,250,109	3,179,998
Costais Óstála Bluegene		-	-	-	-	-	310,680
Scoil Samhraidh Realtfhisice		-	-	22,160	-	22,160	-
Stóráil Leabharlaine agus Leabhar		43,469	107,833	56,872	5,530	213,704	220,390
Dímheas	4	-	-	-	464,777	464,777	1,057,271
Cíos, Rátaí agus Árachas		-	-	-	195,058	195,058	196,249
Costais Ghinearálta	9	15,052	988	88,560	104,988	209,588	306,378
Costais Taistil agus Seimineáir		16,367	5,967	45,371	6,961	74,666	122,534
Cothabháil Áitribh agus Slándáil		-	-	4,107	220,041	224,148	292,480
Costais ríomhairí agus Idirlín		1,563	5,800	23,286	60,998	91,647	142,366
Breosla Solas agus Cumhacht		-	-	-	134,586	134,586	136,283
Post agus Teileafón		-	-	-	30,578	30,578	35,961
Páipéarachas		16,528	86	2,510	11,688	30,812	56,900
Foilseacháin		36,682	-	991	-	37,673	48,736
Fógraíocht		-	-	333	5,067	5,400	6,012
Mion Trealamh Oifige		12,022	-	39,462	10,570	62,054	15,901
Caillteanas ar dhiúscairt	5	-	-	-	21,915	21,915	174,815
		1,524,227	1,217,542	3,884,122	5,435,463	12,061,354	14,480,647
BARRACHAS/(EASNAMH) DON BHLIAIN		(1,382)	8,223	(21,595)	(74,904)	(89,658)	(300,162)
Iarmhéid amhail an 1 Eanáir		270,348	99,220	1,132,716	(585,276)	917,009	1,217,171
Iarmhéid amhail an 31 Nollaig		268,966	107,443	1,111,121	(660,180)	827,351	917,009

Nótaí do na Ráitis Airgeadais (ar leanúint)

2.(a) Tionscadail

	2011 €	2010 €
Iarmhéideanna Tosaigh	2,550,748	4,233,366
Admhálacha	1,935,599	1,421,267
	4,486,347	5,654,633
Iarmhéideanna Deiridh (Féichiúnaithe €148,896 Creidiúnaithe €2,184,661)	(2,035,765)	(2,550,748)
Curtha i bhfeidhm mar ioncam	2,450,582	3,103,885
Leithroinnt Ioncaim		
Scoil an Léinn Cheiltigh	58,815	16,834
Scoil na Fisice Teoiriciúla	248,384	230,750
Scoil na Fisice Cosmaí	1,943,272	2,809,553
	2,250,471	3,057,137
Riarachán	200,111	46,748
Ioncam Iomlán Thionscadal	2,450,582	3,103,885

Costais Tionscadal

	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	2011 Iomlán €	2010 Iomlán €
Íocaíochtaí chuig Páirtithe/ Comhlachais	-	-	911,515	911,515	1,657,858
Tuarastail/Scoláireachtaí	36,442	196,965	755,549	988,956	1,120,220
Taisteal	96	40,109	151,718	191,923	227,325
Eile	22,277	1,288	134,150	157,715	174,595
Costas Iomlán Tionscadal	58,815	238,362	1,952,932	2,250,109	3,179,998

2.(b) Sonraí Tionscadail

	Iarmhéid Tosaigh €	Admhálacha €	Caitechas Aisfhillteach	Curtha i bhfeidhm mar Ioncam (Caipteal san áireamh) €	Iarmhéid Deiridh €	Caipiteal €
Scoil an Léinn Cheiltigh						
Irish Script on Screen	17,362	10,563	9,724	9,724	18,201	
Celtic Summer School	9,306	19,051	16,007	16,007	12,350	
R.Mclaughlin IRCHSS Fellow	8,628	33,076	33,084	33,084	8,620	
Iomlán-Leánn Ceilteach	35,296	62,690	58,815	58,815	39,171	-

Nótaí do na Ráitis Airgeadais (ar leanúint)

2.(b) Sonraí Tionscadail (ar leanúint)

	larmhéid Tosaigh €	Admhálacha €	Caiteachas Aisfhillteach	Curtha I bhfeidhm mar Ioncam (Caipiteal san áireamh) €	larmhéid Deiridh €	Caipiteal €
Scoil na Fisice Teoiriciúla						
S Ni Chiagain -IRCSET	2,944	-	-	2,944	-	
SFI Bethe Ansatz	25,784	-	1,804	1,804	23,980	
Non-Commutative Geometry	15,557	52,147	94,703	99,886	(32,182)	
Veselin Filev -IRCSET Fellow	1,196	-	-	1,196	-	
T Tchrakian SFI 07 award	79,995	7,210	62,798	63,497	23,708	
Babar Qureshi -IRCSET Fellow	9,464	(9,464)	-	-	-	
Veselin Filev Inspire Award PD2010	48,628	37,054	70,414	70,414	15,268	
M.Ihl IRCSET Fellow PD2011	-	19,820	8,643	8,643	11,177	
Iomlán-FisicTheoiriciúil	183,568	106,767	238,362	248,384	41,951	-
Scoil na Fisice Cosmaí						
Gamma Ray Bursts	18,593	-	1,300	1,300	17,293	
Iomlán-Réalteolaíocht	18,593		1,300	1,300	17,293	-
Dos Max	2,893	-	141	141	2,752	
PRTLl-CosmoGrid	509,056	-	-	-	509,056	
Nam Conference	16,154	17,236	16,746	16,746	16,644	
Jetset	7,302	6,572	2,222	2,222	11,652	
SFI Felix GNM	28,027	11,725	17,737	17,737	22,015	
SFI Cores to Disks	28,711	8,153	24,707	24,638	12,226	
E-Inis -PRTLl Cycle 4	874,568	1,074,239	932,647	1,033,178	915,629	(103,315)
Pic Simulations SFI 08	116,101	2,345	63,357	61,022	57,424	
D.Coffey IRCSET Fellow	35,026	1,250	32,614	31,823	4,453	
KM3Net -PP	8,821	-	2,593	2,593	6,228	
E.Whelan Inspire	61,971	8,246	73,028	73,028	(2,811)	
NGST Project	(90,174)	129,887	101,782	110,023	(70,310)	(3,042)
Cosmic Ray Origin	12,378	-	12,378	12,378	-	
Dobies	(4,661)	9,783	752	752	4,370	
KVM3Net	(845)	-	-	-	(845)	
Valenti EC Reintegration Grant	90,536	-	70,337	67,421	23,115	
Aleks Scholz SFI Brown Dwarfs	30,507	34,450	27,804	27,804	37,153	
Alessio Caratti Reintegration Grant	22,500	-	31,107	29,926	(7,426)	
Origin of Jets SFI T.Ray 2011	-	35,963	7,931	7,931	28,032	
Iomlán-Réaltfhisic	1,748,871	1,339,849	1,417,883	1,519,363	1,569,357	(106,357)

Nótaí do na Ráitis Airgeadais (ar leanúint)

2.(b) Sonraí Tionscadail (ar leanúint)

	Iarmhéid Tosaigh €	Admhálacha €	Caiteachas Aisfhillteach	Curtha I bhfeidhm mar Ioncam (Caipéal san áireamh) €	Iarmhéid Deiridh €	Caipiteal €
Samtex	54,336	425	12,059	12,059	42,702	
SFI Samtex	12,918	-	12,956	12,918	-	
Geo External Funds	34,786	64,689	78,443	78,443	21,032	
Marem SFI -X Garcia/NUIG	1,632	(1,632)	-	-	-	
SFI Joint RFP	50,121	-	37,272	37,272	12,849	
SFI Isle 2 P. Readman	65,022	5,879	35,359	50,852	20,049	(15,493)
Geophysics Schools Seismology	16,116	5,900	10,080	10,080	11,936	
D Khosa -BHP Bill Support	4,918	(425)	4,493	4,493	-	
Dynamics of Cont. SFI Lebedev	62,817	-	69,892	68,600	(5,783)	
Indepth4 SFI A. Jones	64,764	389	65,277	63,670	1,483	
TopoMed	10,423	-	40,603	39,962	(29,539)	
Regional Seismic SFI 09 Lebedev	40,998	34,601	21,182	21,182	54,417	
SFI Picasso	(15,840)	15,094	(746)	(746)	-	
Irish Geoscience Graduate Programme	(25,308)	163,382	42,355	43,637	94,437	(1,282)
Pieter Share -CSIR Support	940	(940)	-	-	-	
IRETHERM SFI	185,777	106,881	104,312	180,086	112,572	(76,979)
GIANICE Zdenek SFI 11	-	32,050	212	212	31,838	
Iomlán-Geoifisic	564,420	426,293	533,749	622,720	367,993	(93,754)
Iomlán Físic Chosmach	2,331,884	1,766,142	1,952,932	2,143,383	1,954,643	(200,111)
Iomlán DIAS	2,550,748	1,935,599	2,250,109	2,450,582	2,035,765	(200,111)

3. Ioncam Eile

	2011 €	2010 €
Ús bainc	37,924	41,662
Scoil Samhraidh Realtfhisice	22,160	-
Táillí & Deontais	2,034	5,835
Eile	-	15,941
Iomlán	62,118	63,438

Nótaí do na Ráitis Airgeadais (ar leanúint)

4. Sócmhainní Seasta

	Troscán			Iomlán
	& Trealamh	Mótarfheithicilí	Ríomhairí	
Costais	€	€	€	€
Iarmhéid Tosaigh 1/1/2011	3,665,865	53,200	2,076,622	5,795,687
Breiseanna	184,066	-	225,928	409,994
Riartha	(56,305)	-	(82,586)	(138,891)
	3,793,626	53,200	2,219,964	6,066,790
Dímheas				
Iarmhéid Tosaigh 1/1/2011	1,942,913	53,200	1,598,154	3,594,267
Muirear 2011	238,973	-	225,804	464,777
Riartha	(34,719)	-	(82,257)	(116,976)
	2,147,167	53,200	1,741,701	3,942,068
Luach glan de réir na leabhar 31/12/2011	1,646,459	-	478,263	2,124,722
Luach glan de réir na leabhar 31/12/2010	1,722,952	-	478,468	2,201,420

Nota

Caipitlítear na sócmhainní seasta de bhreis ar €1,000 i leabhair DIAS.

5. Cúlchiste Caipitil

	2011	2010
	€	€
Iarmhéid amhail an 1 Eanáir	2,201,420	3,114,643
Aistriú ó/(chuig) Cuntas Ioncaim agus Caiteachais		
Ioncam leithroinnte le sócmhainní seasta a fháil	409,994	318,863
Amúchadh ag teacht le dímheas sócmhainní	(464,777)	(1,057,271)
Méid scaoilte ar dhiúscairtí	(21,915)	(174,815)
	(76,698)	(913,223)
Iarmhéid amhail an 31 Nollaig	2,124,722	2,201,420

Nótaí do na Ráitis Airgeadais (ar leanúint)

6. Creidiúnaithe - Méideanna atá dlite laistigh de bhliain amháin

	2011 €	2010 €
Creidiúnaithe Trádála	163,139	461,422
Fabhruithe	848,001	1,287,496
Ilnithe	555	3,119
CBL	23,194	15,992
Creidiúnaithe Ioncaim	146,696	165,479
Cuntas Rialúcháin Pinsean	90,735	67,725
	1,272,320	2,001,233

6. Creidiúnaithe dlite tar éis dhá mhí dhéag

	2011 €	2010 €
Comhdhéanta as:		
Vernam Hull Bequest	53,105	60,137
Carmody Fund	2,459	2,461
	55,564	62,598

Tá an t-airgead a bhaineann leo seo sealbhaithe mar éarlais. Níor baineadh úsáid as aon mhéideanna le linn na bliana.

7. Féichiúnaithe

	2011 €	2010 €
Réamhíocaíochtaí	133,622	243,931
Ranníocaíocht-Óstáil Bluegene	-	38,000
Féichiúnaithe-Díolacháin Leabhar	3,490	5,050
Ilnithe	22,588	23,088
Ioncam Fabhráithe	41,744	20,337
	201,444	330,406

8. Costais Phárolla

	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	Riar. €	2011 Iomlán €	2010 Iomlán €
Tuarastal/Pá	1,266,037	807,893	1,593,073	725,811	4,392,814	4,683,328
Scoláireachtaí	90,201	91,085	126,880	-	308,166	275,750
Cuairteoirí	6,042	2,172	12,153	-	20,367	26,182
	1,362,280	901,150	1,732,106	725,811	4,721,347	4,985,260

Nota

Tocadh luach €319,112 laghdaithe tabhaidh pinsin leis on Roinn Oideachais agus Scileanna I rith 2011.

Nótaí do na Ráitis Airgeadais (ar leanúint)

9. Costais Ghinearálta

	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	Riar. €	2011 Iomlán €	2010 Iomlán €
Ilghnéitheach	10,688	651	66,855	41,729	119,923	216,473
Tionscnaimh cur chun cinn/Lóin	3,208	287	6,568	2,662	12,725	12,215
Táillí Gairmiúla	696	-	3,000	32,606	36,302	24,362
Oiliúint	460	50	11,917	2,270	14,697	27,532
Táille Iniúchta	-	-	-	17,672	17,672	17,672
Muirir Bhainc	-	-	-	3,743	3,743	3,351
Sláinte agus Sábháilteacht	-	-	220	4,306	4,526	4,773
	15,052	988	88,560	104,988	209,588	306,378

10. 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 31 Plás Mhic Liam. Tá téarma 87 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 2012 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

Nótaí do na Ráitis Airgeadais (ar leanúint)

11. Costais Pinsean

	2011 (€'000)	2010 (€'000)
a) Anailís ar na costais iomlána pinsin curtha chun dochair do Chaiteachas		
Costas seirbhíse reatha	1,493	1,461
Ús ar Dhliteanais na Scéime Pinsin	1,970	2,002
Ranníocaíochtaí Fostaí	(192)	(271)
	3,271	3,192
	2011 (€'000)	2010 (€'000)
b) Gluaiseacht i nGlan-Dlíteanas Pinsin i rith na bliana airgeadais		
Glan-Dlíteanas Pinsin amhail an 1 Eanáir	(36,736)	(32,556)
An Costas Seirbhíse Reatha	(1,493)	(1,461)
Costais Úis	(1,970)	(2,002)
(Gnóthachan)/cailteanas achtúireach	(1,702)	(2,016)
Pinsin íoctha sa bhliain	1,395	1,299
Glan-Dlíteanas Pinsin amhail an 31 Nollaig	(40,506)	(36,736)

c) Cistiú Iarchurtha do Phinsin

Aithníonn DIAS na méideanna seo mar shócmhainn a chomhfhreagraíonn don dlíteanas 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 meastachán 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:

	2011 (€'000)	2010 (€'000)
Maoiniú inaisghabhála i ndáil le costais pinsin na bliana reatha	3,463	3,463
Deontas Stáit feidhmithe chun pinsinéirí a íoc	(1,395)	(1,299)
	2,068	2,164

Ba í €40.5 milliún (2010: €36.7 milliún) an tsócmhainn maoinithe iarchurtha do phinsin amhail an 31 Nollaig 2011.

d) Stair na nOibleagáidí faoin scéim shochair shainithe.

	2011 (€'000)	2010 (€'000)	2009 (€'000)
Oibleagáidí shochair shainithe.	40,506	36,736	32,556
(Gnóthachain)/cailteanais iarbhíre ar dhliteanais na scéime.	(188)	(1,998)	(328)
Céatadán de luach dhliteanais na scéime.	(0.50%)	(5.40%)	(1.01%)

Tá (gnóthachan)/cailteanas achtúireach carnach (€1,805,000) aitheanta sa Ráiteas d'Iomlán na nGnóthachan agus na Cailteanas Aitheanta.

Nótaí do na Ráitis Airgeadais (ar leanúint)

11. Costais Pinsean (ar leanúint)

e) Cur síos ginearálta ar an Scéim

Is é atá sa scéim pinsean ná socrú aoisliúntais shochair shonraithe chríoch-thuarastail le sochair agus ranníocaíochtaí faoi threoir rialachán 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. De ghnáth, is é an 65ú breithlá an aois scoir agus tá baill a thosaigh roimh 2004 i dteideal éirí as ag aois 60 gan aon laghdú achtúireach. 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 dlíteanais na scéime amhail an 31 Nollaig 2011 a mheasúnú.

Is mar a leanas a bhí na príomh-thoimhdí achtúireacha a úsáideadh:

	At 31/12/11	At 31/12/10	At 31/12/09
Ráta na nArduithe Tuarastail	3.50%	3.50%	4.00%
Ráta na nArduithe Pinsin atá á n-íoc	3.25%	3.25%	4.00%
Ráta Lascaine	5.00%	5.25%	6.00%
Ráta Boilscithe	2.00%	2.00%	2.25%

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 2011 agus in 2040.

Aois 65 sa bhliain	2011	2040
Ionchas saoil – fir	86.0	88.8
Ionchas saoil – mná	88.9	90.8

12. Nochtadh Idirbheartaíochtaí

Glacann Comhairle na hInstitiúide le nósanna imeachta de réir threoirlínte atá eisithe ag an Roinn Airgeadais maidir le leasanna a nochtáíonn Comhaltaí na Comhairle agus chloigh 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 leanúint)

13. Nochtadh Comhaltaí na Comhairle/Tuarastal an Chláraitheora, Táillí agus Costais


	Luach Saothair Iomláin €	Speansais Iomlána €
Comhalta den Chomhairle		
Dr Vincent Cunnane	-	-
Baill ceaptha ag Boird Rialaithe na gComhScoileanna		
An tOllamh Gerry Wrixon	-	834
An tOllamh Arthur Jaffe	-	1,758
An tOllamh Anders Ahlqvist	-	8,497
An tOllamh Werner Nahm	-	-
An tOllamh Luke Drury	-	-
An tOllamh Padraig Breatnach	-	-
Cláraitheoir		
Cecil Uasal Keaveney *	100,575	
	<hr/> 100,575	<hr/> 11,089

*Nóta

Faigheann an Cláraitheoir turastail anháin. Ní íochtar aon bhónas leis. Ní sháraíonn teidlíochtaí pinsin an Chláraitheora gnáththeidlíochtaí scéim aoisliúntais le sochar sainithe na hearnála poiblí.

14. Ceadú Cuntais

Cheadaigh an Chomhairle na Ráitis Airgeadais ar an 15 Meitheamh 2012.



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