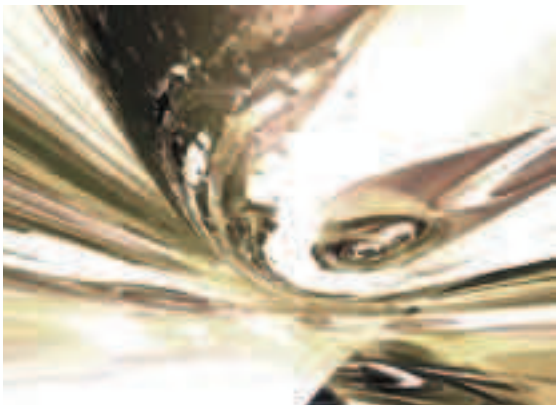
Dublin Institute for Advanced Studies
Institiúid Ard-Léinn Bhaile Átha Cliath

Annual Report 2007
Tuairisc Bhliantúil 2007



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Chairman's Introduction
Réamhrá an Chathaoirligh

The annual review shows that 2007 was an exceptionally active year for the Dublin Institute for Advanced Studies (DIAS). An integral part of the research activities of the Institute is to conduct fundamental research on specialised areas of advanced scholarship and in addition to provide training for scholars in advanced research, publications in both print and electronic form resulting from its research and to provide other support services for selected postgraduate scholars.

It is in this area that the Institute's contribution to the National e-Infrastructure deserves recognition. The aim of identifying a system that would cost effectively deliver a strategic step up in the level of computational science in Ireland led to the acquisition of the IBM Blue Gene computer. The system was installed and commissioned in record time. This purchase by DIAS, with the sanction of the HEA, was completed on the understanding that it will be run as a national service by the Irish Centre for High-End Computing (ICHEC). All seven Universities, the Tyndall National Institute the Royal College of Surgeons of Ireland (RCSI) and Dublin Institute of Technology (DIT) have agreed to support the operational costs of running this national facility in a unique partnership of third level research Institutions, under our leadership. The Council recognises and thanks Professor Luke Drury, Senior Professor in the School of Cosmic Physics and the Registrar Mr. Cecil Keaveney for their individual and exceptional skills in negotiating and handling this purchase.

This year was marked by the completion of the merger of the former Astronomy and Astrophysics Sections into a single Section in the School of Cosmic Physics and the move of their research activities to a new premises in 31 Fitzwilliam Place. An increase in the outreach activities in Dunsink Observatory also took place during 2007. Congratulations are in order to the HESS (High Energy Stereoscopic System) consortium of which DIAS is a member, for the achievement in the award of the Descartes Prize for collaborative European Research.

In November 2007, Professor Alan Jones resigned as Director of the School of Cosmic Physics. Council wishes to thank Professor Alan Jones for the hard work and commitment he has given both of which were essential for the School and the Institute to grow and prosper and to play an invaluable role in the promotion of research and scholarship in Ireland and internationally.

Léiríonn an t-athbhreithniú bliantúil gur bhliain shuntasach ghníomhach d'Institiúid Ard-Léinn Bhaile Átha Cliath (DIAS) í 2007. Is cuid riachtanach de ghníomhaíochtaí taighde na hInstitiúide ná: buntaighde a dhéanamh i sainréimsí den ardscoláireacht, oiliúint a chur ar fáil do scoláirí freisin sa saintaighde; torthaí an taighde seo a fhoilsiú, i bprionta agus go leictreonach; agus seirbhísí tacaíochta eile a chur ar fáil do scoláirí iarchéime tofa.

Is sa réimse seo atá aitheantas tuillte ag obair na hInstitiúide don ríomh-Infreastruchtúir Náisiúnta. Ceannaíodh ríomhaire Géin-Ghorm IBM toisc go raibh éifeachtúltacht chostais ag baint leis agus go ndéanfadh sé ardú céime straitéiseach ar leibhéal na ríomheolaíochta in Éirinn chun rud a sholáthair rochtain chuig an gcóras ríomhaireachta iltréitheach. Cuireadh isteach agus coimisiúnadh an córas go han-tapa. Thug an HEA cead don DIAS é a cheannach ar an tuiscint go n-oibreoidh Ionad na hÉireann don Ard-Ríomhaireacht (ICHEC) é mar sheirbhís náisiúnta. Aontaíonn na seacht n-ollscoil uile, Institiúid Náisiúnta Tyndall, Coláiste Ríoga na Máinlia in Éirinn (RCSI), agus Institiúid Teicneolaíochta Bhaile Átha Cliath (DIT) go dtacóidh siad le costas reatha na háise náisiúnta seo i gcomhoibriú uathúil d'Institiúidí thaighde náisiúnta a bheidh faoinár gceannaireacht. Aithníonn agus gabhann an Chomhairle a buíochas leis an Ollamh Luke Drury, Ollamh Sinsearach i Scoil na Fisice Cosmaí, agus leis an gCláraitheoir, An tUasal Cecil Keaveney, as a scileanna ar leith maidir le hidirbheartú agus le láimhseáil an cheannacháin seo.

I mbliana, cuireadh i gcríoch comhcheangail na Rannóg Réalteolaíochta agus Réaltfhisice in aon Rannóg amháin i Scoil na Fisice Cosmaí, agus bhog siad gníomhaíochtaí a dtaighde isteach le chéile chuig áras nua i 31 Plás Mhic Liam. Tháinig méadú ar na gníomhaíochtaí for-rochtanna i Réadlann Dhún Since i rith 2007 freisin.

Tá comhghairdeas ag dul do chuibhreannas HESS (córas steiréascóipeach ard-fhuinnimh), ar comhalta de DIAS é, as Duais Descartes a fháil, gradam a bhronntar ar son taighde comhoibríoch san Eoraip.

I mí na Samhna 2007, d'éirigh an tOllamh Alan Jones as Stiúrthóireacht Scoil na Fisice Cosmaí. Is mian leis an gComhairle buíochas a ghabháil leis an Ollamh Alan Jones as a obair chrua agus a dhíogras: bhí an dá rud sin riachtanach d'fhás agus do rath na Scoile agus na hInstitiúide agus lena ról fíorluachmhar i gcur chun cinn an taighde agus na scoláireachta in Éirinn agus go hidirnáisiúnta.

Professor Werner Nahm, the Director of the School of Theoretical Physics was instrumental in introducing, for the first time into Europe, an international workshop on Topological Quantum Computing in collaboration with the School of Mathematics in Trinity College Dublin (TCD) and the Department of Mathematical Physics in the N.U.I. Maynooth.

The strengthening collaboration between the Universities and DIAS is welcome, for modern research requires a balance among the educational strata in order to reap the fruits made available by scientific insights and progress.

Council wishes to thank Professor Liam Breatnach for his time and commitment to the School of Celtic Studies during the last three years as Director and welcomes once again Professor Fergus Kelly as the incoming holder of the position. A highlight of the School's year was the launch of Dr. Brian Ó Curnain's comprehensive four volume study *The Irish of Iorras Aithneach, Co Galway,* which occurred in May and the President of Ireland, Her Excellency Mary McAleese was presented with a copy in Áras an Uachtaráin in early June 2007. Professor Liam Breatnach commenced the planning and the organisation of an international Summer School that shall take place in the Institute in 2008.

The School's website (www.celt.dias.ie) continues to receive visitors especially due to the high profile of Irish Script on Screen (ISOS) project. The first phase of the digitisation of the Maynooth collection of Irish manuscripts has been completed and Council thanks Professor Pádraig Ó Macháin for his deep commitment to this ISOS programme over so many years, a project which is invaluable to Ireland and especially to so many scholars worldwide.

The achievements of the Institute in this year would not have been possible without the commitment and enthusiastic involvement of the Professors, the Fellows, the Scholars, the research students and all the staff.

I wish to thank sincerely the Chairmen of the Governing Boards and the Board Members for their commitment to the Institute and their willingness to give so generously of their time.

The Council thanks the Department of Education and Science for their continued interest in the work of the Institute.

I take this opportunity to thank the members of Council and to pay tribute to the staff for their hard work and loyalty to the Institute.

Bhí an tOllamh Werner Nahm, Stiúrthóir Scoil na Fisice Teoiriciúla, gníomhach i dtabhairt isteach, den chéad uair san Eoraip, ceardlann idirnáisiúnta ar ríomhaireacht chandamach thoipeolaíoch, i gcomhoibriú le Scoil na Matamaitice i gColáiste na Tríonóide agus le Roinn na Fisice Mhatamaiticiúla, Ollscoil na hÉireann, Maigh Nuad.

Tá treisiú ar an gcomhoibriú idir na hOllscoileanna agus DIAS agus ta fáilte roimhe seo toisc go bhfuil cothromaíocht idir na strataim oideachasúla riachtanach sa taighde nua-aimseartha chun torthaí a bhaint as léargas agus dul chun cinn na heolaíochta.

Is mian leis an gComhairle buíochas a ghabháil don Ollamh Liam Breatnach as a chuid ama agus a dhílseacht do Scoil an Léinn Cheiltigh i rith na dtrí bliana a chaith sé mar Stiúrthóir agus fáiltímid arís roimh an Ollamh Fergus Kelly atá ag teacht i gcomharbacht air. Buaic i mbliain na Scoile ba ea é nuair a seoladh staidéar chuimsithigh 4-iml. an Dr. Brian Ó Curnáin, *The Irish of Iorras Aithneach Co Galway,* i mí an Mhárta, agus go luath i mí an Mheithimh 2007, bronnadh cóip ar Uachtarán na hÉireann, A Shoilse, Máire Mhic Ghiolla Íosa, in Áras an Uachtaráin. Thosaigh an tOllamh Liam Breatnach ar phleanáil agus ar eagrú Scoil Samhraidh idirnáisiúnta a bheidh ar siúil san Institiúid i 2008.

Leanann cuairteoirí ag teacht chuig suíomh Gréasáin na Scoile (www.celt.dias.ie) de bharr ardíomhá ISOS go háirithe. Tá céim a haon de dhigitiú chnuasach láimhscríbhinní Mhaigh Nuad curtha i gcrích agus tá buíochas na Comhairle ag dul don Ollamh Pádraig Ó Macháin as an gceangail láidir atá aige le clár ISOS le blianta fada, tionscadal atá fíorluachmhar d'Éirinn agus go háirithe don oiread sin scoláirí ar fud an domhain.

Ba dheacair mórghníomhartha na hInstitiúide a chur i gcríoch i mbliana gan tiomantas agus gan páirtíocht dhíograsach na nOllúna, na nÁnraí, na mac léinn taighde agus na foirne ar fad.

Is mian liom m'fhíorbhuíochas a ghabháil le Cathaoirligh na mBord Rialaithe agus le Baill na mBord as a dtiomantas don Institiúid agus go raibh siad toilteanach bheith chomh fial lena gcuid ama.

Gabhann an Chomhairle buíochas leis an Roinn Oideachais agus Eolaíochta as a suim leanúnach in obair na hInstitiúide.

Glacaim leis an deis seo chun buíochas a ghabháil le baill na Comhairle, agus chun an fhoireann a mholadh as a gcuid oibre crua agus a ndílseacht don Institiúid.

School of Celtic Studies
Scoil an Léinn Cheiltigh: Achoimre

Dr. Brian Ó Curnáin's comprehensive four-volume study entitled *The Irish of Iorras Aithneach, Co. Galway* was launched on 17 May 2007, and a copy was presented to Her Excellency Mary McAleese, President of Ireland, in a ceremony at Áras an Uachtaráin on 11 June 2007. It was also launched in Acadamh na hOllscolaíochta Gaeilge in Carna on 20 December 2007. Two other publications of the School were launched at the Royal Irish Academy on 26 September 2007. They are Celtica 25 (edited by Professor Malachy McKenna and Professor Fergus Kelly) and a *Catalogue of Irish Manuscripts in the University of Villanova, Pennsylvania* by William Mahon. A provisional text and translation which the late Professor David Greene made of the Middle Irish poem Saltair na Rann was published on the School's website during the year.

The ongoing demand for our publications made it necessary to reprint the following books during this period: R. I. Best and M. A. O'Brien (ed.), *The Book of Leinster* volume IV, J. Vendryes, *Lexique étymologique de l'irlandais ancien: lettres RS*, Kuno Meyer (ed.), *Fianaigecht*, Sir Ifor Williams (ed.), Armes Prydein: *The Prophecy of Britain*.

The Irish Script on Screen (ISOS) project made steady progress during the year under the direction of Professor Pádraig Ó Macháin. The first phase of the digitisation of the Maynooth collection of Irish manuscripts has been completed, and further work was carried out on the collection of manuscripts in the Royal Irish Academy. The high profile of ISOS is reflected in the fact that the total number of visits to the website during 2007 amounted to 2,116,865. The School website (www.celt.dias.ie) continued to develop under the guidance of Professor Pádraig Ó Macháin and Andrew McCarthy.

Current and retrospective cataloguing of the library continued under the direction of the Librarian Margaret Kelly and acquisitions continued in subject areas relevant to the research work of the School. Research and bibliographic queries from members of the School and from visitors were dealt with. Heritage Online was launched in February: the online catalogue can now be searched by members of the School from their offices via the intranet. At the same time, the library intranet website was launched. A library security system was purchased during the year. During the summer two students – Maureen Quinn and Stephanie Rousseau – were employed, and made good progress on various projects in the library: the indexing of the special collection and of the map collection, and retrospective cataloguing.

Professor Malachy McKenna continued work on his

Seoladh staidéar cuimseathach an Dr. Brian Ó Curnáin i gceithre imleabhar dar teideal *The Irish of Iorras Aithneach, Co. Galway* ar an 17 Bealtaine 2007, agus bronnadh cóip ar a Soillse Máire Mhic Ghiolla Íosa, Uachtarán na hÉireann, ag ceiliúradh in Áras an Uachtaráin ar an 11 Meitheamh 2007. Seoladh arís é in Acadamh na hOllscolaíochta Gaeilge i gCarna ar an 20 Nollaig 2007. Seoladh dhá fhoilseachán eile de chuid na Scoile in Acadamh Ríoga na hÉireann ar an 26 Meán Fómhair 2007. Is iad sin Celtica 25 (curtha in eagar ag an Ollamh Malachy McKenna agus ag an Ollamh Fergus Kelly) agus *Catalogue of Irish manuscripts in the University of Villanova, Pennsylvania* le William Mahon. Foilsíodh téacs agus aistriúchán sealadach a rinne an tOllamh Daithí Ó hUaithne (nach maireann) ar an ndán Meán-Ghaeilge Saltair na Rann ar shuíomh idirlín na Scoile i rith na bliana.

Mar gheall ar an éileamh leanúnach a bhíonn ar ár gcuid foilseachán caitheadh na leabhair seo leanas a chur i gcló arís sa tréimhse seo: R. I. Best agus M. A. O'Brien (eag.), *The Book of Leinster* imleabhar IV, J. Vendryes, *Lexique étymologique de l'irlandais ancien: lettres RS*, Kuno Meyer (eag.), *Fianaigecht*, Sir Ifor Williams (eag.), *Armes Prydein: The Prophecy of Britain*.

Rinne an tionscnamh Meamram Páipéar Ríomhaire (MPR) dul chun cinn cothrom i rith na bliana faoi stiúradh an Ollaimh Pádraig Ó Macháin. Críochnaíodh an chéad ré de dhigitiú chnuasach lámhscríbhinní Gaeilge Mhá Nuad, agus leanadh le hobair ar an gcnuasach lámhscríbhinní in Acadamh Ríoga na hÉireann. Fuair suíomh idirlín MPR 2,116,865 cuairt in aghaidh na bliana, a léiríonn dea-cháil an tionscnaimh seo. Lean suíomh idirlín na Scoile (www.celt.dias.ie) ag fás faoi stiúradh an Ollaimh Pádraig Ó Macháin agus Andrew McCarthy.

Leanadh le catalógú reatha agus aisbhreathnaitheach na leabharlainne faoi stiúradh an Leabharlannaí Margaret Kelly, agus leanadh ag cur le líon na bhfoilseachán i réimsí a bhaineann le hobair taighde na Scoile. Déileáladh le ceisteanna taighde agus bibleagrafaíochta ó bhaill na Scoile agus ó chuairteoirí. Cuireadh tús le Heritage Online i mí Feabhra: is féidir le baill na Scoile an chatalóg a chuardach anois óna n-oifig tré mheán an inlín. Ag an am chéanna cuireadh tús le suíomh inlín na Leabharlainne. Ceannaíodh córas slándála leabharlainne i rith na bliana. I rith an tsamhraidh, fostaíodh beirt mhac léinn, Maureen Quinn agus Stephanie Rousseau, agus rinne siad dul chun cinn maith ar thionscnaimh áirithe sa leabharlann: innéacsú an chnuasaigh speisialta agus an chnuasaigh léarscáileanna, agus catalógú

linguistic study of the Irish of Rann na Feirste, Co. Donegal, and made a number of field-trips to the area. Dr. Brian Ó Curnáin worked on a monograph devoted to the Irish of East Galway.

Work leading to the completion of the fourth volume of the *Bibliography of Irish Linguistics and Literature* has been carried out by the Bibliographer, Alexandre Guilarte, with the inclusion of new material from academic periodicals in the field of Irish studies.

Professor Liam Breatnach finished his seminar on a Middle Irish poem on Viking Dublin, and Professor Pádraig Breatnach commenced a seminar on poetry on the O'Donnells. Professor Pádraig Ó Macháin continued his work of preparing previously unedited poems by Fearghal Óg mac an Bhaird for publication in *Celtica*. Bergin Fellow Dr. Roisín McLaughlin finalised her book on *Early Irish Satire*, which is due for publication in 2008. She also continued her seminar on a Middle Irish metrical tract. Bergin Fellow Dr. Clodagh Downey worked on an edition of the poems of Cúán Ua Lothcháin († 1024). O'Donovan scholar Dr. Nora White continued work on an edition of the Old Irish 'Rule of Mochuta', and O'Donovan scholar Dr. Brent Miles completed an edition of a Middle Irish version of the Theban cycle entitled *Riss in Mundtuirc*. O'Donovan scholar Gordon Ó Riain continued work on editing the poems of Maol Eachlainn na nUirscéal Ó hUiginn for his doctoral thesis.

Professor Liam Breatnach continued with his edition of the Old Irish law-text *Córus Bésgnai*, and Professor Fergus Kelly made progress on his edition of the Legal Treatise by Giolla na Naomh Mac Aodhagáin († 1309). Dr. Michelle O Riordan's book *Irish Bardic Poetry and Rhetorical Reality* was published by Cork University Press, and launched in the Institute on 26 June 2007. O'Donovan scholar Freya Verstraten finalised her doctoral thesis 'The Anglicisation of the Gaelic Irish nobility c. 1169 – c. 1366'.

The Annual Tionól took place on Friday 16 and Saturday 17 November 2007, organised by Professor Pádraig Ó Macháin with assistance from the School Administrator Eibhlín Nic Dhonncha. The attendance numbered more than a hundred, and a total of twenty papers were presented in Irish and English by speakers from Ireland, Wales, England, Brittany, Germany, Sweden, Canada and the USA. The statutory public lecture was given by Dr Katharine Simms, senior lecturer in the School of History, Trinity College Dublin, who spoke to a large attendance on the topic 'The Nature and Function of Bardic Poetry: an introduction to the DIAS bardic poetry database'.

The second Myles Dillon Memorial Lecture was delivered

aisbhreathnaitheach.

Lean an tOllamh Malachy McKenna ag obair ar a staidéar teangeolaíochta ar chanúint Rann na Feirste, Co. Dhún na nGall, agus rinne sé obair pháirce sa cheantar sin. D'oibrigh an Dr. Brian Ó Curnáin ar mhonagraf faoi Ghaeilge Oirthir na Gaillimhe.

Choinnigh Alexandre Guilarte air ag obair ar thionscnamh Bhibleagrafaíochta Theangeolaíocht is Litríocht na Gaeilge, agus tá dul chun cinn déanta aige ar imleabhar IV, le breis ábhair ó irisleabhair acadúla i réimse an Léinn Cheiltigh.

Chríochnaigh an tOllamh Liam Breatnach a sheimineár ar dhán Mheán-Ghaeilge ar Bhaile Átha Cliath na Lochlannach, agus chuir an tOllamh Pádraig Breatnach tús le seimineár ar dhánta ar Chlann Dálaigh. Choinnigh an tOllamh Pádraig Ó Macháin air ag ullmhú eagráin de dhánta neamhfhoilsithe Fhearghail Óig Mhic an Bhaird le haghaidh *Celtica*. Chuir an Dr. Roisín McLaughlin, Comhalta Uí Aimhirgín, bailchríoch ar a leabhar *Early Irish Satire*, a fhoilseofar i 2008. Chomh maith leis sin, lean sí ar a seimineár ar thráchtas meadarachta Meán-Ghaeilge. D'oibrigh an Dr. Clodagh Downey, Comhalta Uí Aimhirgín, ar eagrán de dhánta Chúáin Uí Lothcháin († 1024). Lean an Dr. Nora White, scoláire Uí Dhonnabháin, ar eagrán de 'Riagail Mochuta', agus chríochnaigh an Dr. Brent Miles, scoláire Uí Dhonnabháin, eagrán de leagan Mheán-Ghaeilge den Sraith Théibeach *Riss in Mundtuirc*. Choinnigh Gordon Ó Riain, scoláire Uí Dhonnabháin, air ag obair ar eagrán de dhánta Mhaol Eachlainn na nÚirscéal Uí Uiginn le haghaidh a thráchtais dochtúireachta.

Lean an tOllamh Liam Breatnach lena eagrán den téacs dlí Sean-Ghaeilge *Córus Bésgnai*, agus choinnigh an tOllamh Fergus Kelly air ag obair ar eagrán den *Tráchtas Dlí* de chuid Ghiolla na Naomh Mhic Aodhagáin († 1309). Foilsíodh leabhar an Dr. Michelle O Riordan, *Irish Bardic Poetry and Rhetorical Reality*, Cló Ollscoile Corcaigh, agus seoladh é san Institiúid ar an 26 Meitheamh. Chuir Freya Verstraten, scoláire Uí Dhonnabháin, bailchríoch ar a tráchtas dochtúireachta 'The Anglicisation of the Gaelic Irish nobility c. 1169 – c. 1366'.

Reachtáladh Tionól bliantúil na Scoile Dé hAoine agus Dé Sathairn an 16 agus an 17 Samhain 2007; is é an tOllamh Pádraig Ó Macháin, le cabhair ó Riarthóir na Scoile Eibhlín Nic Dhonncha, a d'eagraigh é. Bhí níos mó ná céad duine páirteach ann, agus léadh fiche páipéar le scoláiri ó Éirinn, ón Bhreatain Bheag, ó Shasana, ón Bhriotáin, ón Ghearmáin, ón tSualainn, ó Cheanada, agus óna Stáit Aontuithe. Ba í an Dr. Katharine Simms, léachtóir sinnsearach i Scoil na Staire i gColáiste na Tríonóide a thug an léacht reachtúil ar an ábhar 'The Nature and Function of Bardic Poetry: an introduction to the DIAS bardic poetry database', agus bhí líon maith daoine i

to an audience of approximately one hundred on 18 May 2007. The lecturer was Professor Peter Schrijver of the University of Utrecht, who spoke on the topic 'The neighbours of Celtic: Family or Friends? The relationship between Celtic, Italic and Germanic revisited'.

The School of Celtic Studies was well represented at the Thirteenth International Congress of Celtic Studies, held from 23-27 July 2007 at the University of Bonn in Germany, where six papers were delivered by members of the School. Professor Fergus Kelly gave a series of lectures in April 2007 at Moscow and St Petersburg State Universities.

The School's application to the Irish Research Council for the Humanities and Social Sciences was successful, and Dr Gerald Manning was awarded a Postdoctoral Fellowship commencing on 1 September 2007. He will prepare a critical edition of the Old Irish law-text *Uraicecht Becc* under the supervision of Professor Liam Breatnach. Dr Caoimhín Breatnach (University College Dublin) was appointed a Visiting IRCHSS Research Fellow from 1 September 2007. Freya Verstraten was appointed an O'Donovan scholar from 1 October 2007.

The death occurred in the Isle of Man of Robert L. Thomson, formerly Reader in Celtic at the University of Leeds, and Research Associate at the School from 1991. Over the years he carried out a great deal of work on behalf of the School, and edited three texts for the Medieval and Modern Welsh Series: *Pwyll Pendeuic Dyuet* (1957), *Owein* (1968), and *Ystorya Gereint uab Erbin* (1997), all of which are still in much demand.

láthair ag an ócáid seo.

Tugadh an dara Léacht Chuimhneacháin Mhaolmhuire Díolúin ar an 18 Bealtaine 2007, agus bhí tuairim céad duine i láthair. Is é an tOllamh Peter Schrijver as Ollscoil Utrecht, a thug an léacht 'The Neighbours of Celtic: Family or Friends? The relationship between Celtic, Italic and Germanic revisited'.

Tionóladh an 13ú Comhdháil Idirnáisiúnta ar an Léann Cheilteach idir 23-27 Iúil 2007 in Ollscoil Bonn sa Ghearmáin. Léadh sé páipéar le baill na Scoile ar an ócáid seo. I mí Aibreáin 2007 thug an tOllamh Fergus Kelly sraith léachtaí in Ollscoil Stáit Mhoscó agus in Ollscoil Stáit St Petersburg.

D'éirigh le hiarratas na Scoile ar an gComhairle um Thaighde sna Dána agus sna hEolaíochtaí Sóisialta, agus bronnadh Comhaltacht Iardhochtúireachta ar an Dr Gerald Manning ag tosú ar an 1 Meán Fómhair 2007. Ullmhóidh sé eagrán criticiúil den téacs dlí Sean-Ghaeilge *Uraicecht Becc* faoi stiúradh an Ollaimh Liam Breatnach. Ceapadh Dr Caoimhín Breatnach (Ollscoil na hÉireann, Baile Átha Cliath) mar Chomhalta Cuairte CTDES ó 1 Meán Fómhair 2007. Ceapadh Freya Verstraten mar scoláire Uí Dhonnabháin ó 1 Deireadh Fómhair 2007.

Cailleadh in Inis Mhanainn Robert L. Thomson, iar-Léitheoir le Ceiltis in Ollscoil Leeds, agus Comhalta Taighde de chuid na Scoile ón mbliain 1991 i leith. Thar na blianta rinne sé neart oibre ar son na Scoile agus chuir sé in eagar trí théacs don Sraith Meán- agus Nua-Bhreathnaise: *Pwyll Pendeuic Dyuet* (1957), Owein (1968), agus *Ystorya Gereint uab Erbin* (1997), leabhair a bhfuil an-éileamh orthu i gcónaí.

The Chairman of the Board, Professor Anders Ahlqvist with Professors Malachy McKenna and Fergus Kelly, editors of *Celtica 25*, in the Royal Irish Academy.

Cathaoirleach an Bhoird, an tOllamh Anders Ahlqvist, in éineacht le heagarthóirí Celtica 25, na hOllúna Malachy McKenna agus Fergus Kelly, in Acadamh Ríoga na hÉireann.

Professor Fergus Kelly with students and staff at the Faculty of History, State University of Moscow.

An tOllamh Fergus Kelly in éineacht le mic léinn agus foireann ag Dámh na Staire, Ollscoil Stáit Mhoscó.

School of Cosmic Physics
Scoil na Fisce Cosmaí

Astronomy and Astrophysics Section Research Summary 2007

1 Introduction

The year was marked by the completion of the merger of the former Astronomy and Astrophysics Sections into a single Section, and the move of the research activities of this Section to new premises in 31 Fitzwilliam Place. The IT support staff put in an enormous amount of work to have the necessary infrastructure available on time and, despite the inevitable teething problems, the move went remarkably smoothly, in large part due to the fact that everyone helped out as necessary. The Section retains the use of two huts in Merrion Square to provide accommodation for Emeritus staff and some back-office functions as well as Dunsink Observatory for outreach activities, visitor accommodation, library storage and other ancillary functions.

Despite the disruption caused by this reorganisation and relocation, the year was productive in terms of scientific output with some sixty four refereed publications appearing in print, a further fifty nine non-refereed publications, and another book in the JETSET lecture notes series. In addition, two major conferences were hosted in Dublin and members of the Section were regularly asked to give invited talks at major international meetings and to serve on the scientific organising committees for such meetings.

2 Research highlights

The H.E.S.S. (High Energy Stereoscopic System) of four imaging atmospheric Cherenkov telescopes, operated in Namibia by a consortium, of which DIAS is a member, continues to produce a steady stream of new results and has opened up a new astronomical window in very high energy gamma-rays of energy around 0.1 TeV. These gamma-rays can only be produced by charged particles which themselves have energies around 1 TeV. To put this in context, a simple estimate shows that supernova remnants can accelerate particles at about 1000 volts per second; thus after only a few seconds one is at the keV energy scale typical of X-ray astronomy, but to reach the TeV scale one has to wait some 30 years! The TeV sky revealed by HESS has proven to be remarkably rich with a variety of Galactic sources including the long anticipated shell-type supernova remnants, pulsar wind nebulae, young star clusters, microquasars and X-ray binary systems, but also a significant number of mysterious unidentified sources (the so-called dark accelerators).

Réalteolaíocht agus Réaltfhisic Achoimre Taighde 2007

1 Réamhrá

I mbliana tháinig an dá Rannóg seo, Réalteolaíocht agus Réaltfhisic, le chéile nuair a bhog gníomhaíochtaí taighde na Rannóg seo go dtí áitreamh nua i 31 Plás Mhic Liam. Rinne an fhoireann IT an t-uafás oibre chun an infreastruchtúr riachtanach a chur ar fáil in am, agus in ainneoin roinnt fadhbanna tosaigh dosheachanta, d'imigh an t-aistriú bog go leor, de bharr gur chabhraigh gach aon duine nuair ba ghá. Tá dhá bhothán in úsáid ag an Rannóg i gCearnóg Mhuirfean mar chóiríocht oifige don fhoireann Emeritus agus roinnt feidhmeanna cúloifige, chomh maith le Réadlann Dhún Since le haghaidh gníomhaíochtaí for-rochtána, cóiríocht do chuairteoirí, stóráil leabharlainne, agus feidhmeanna eile.

In ainneoin go ndearna an t-atheagrú seo agus an t-athlonnú seo cíor thuathail de na Rannóga, bliain shuntasach tháirgiúil a bhí ann maidir le táirgeacht eolaíochta; foilsíodh ceithre cinn is seasca d'fhoilseachán measúnaithe, foilsíodh naoi gcinn is caoga d'fhoilseachán eile neamh-mheasúnaithe, agus leabhar eile sa tsraith nótaí léachta JETSET. Anuas air sin, óstáileadh dhá chomhdháil mhóra i mBaile Átha Cliath agus iarradh go rialta ar bhaill rannóige cainteanna a thabhairt ag cruinnithe móra idirnáisiúnta agus chun freastail ar na coistí eolaíochta a eagraíonn a leithéid.

Participants in the international conference 'High-Energy Phenomena associated with Relativistic Outflows' pictured before the conference dinner on the steps of the TCD dining hall.

Grianghraf de na rannpháirtithe sa chomhdháil idirnáisiúnta 'Feiniméin Ardfhuinnimh comhcheangailte le hEis-sreafaí coibhneasaíocha' a tógadh roimh an dinnéar comhdhála ar chéimeanna seomra bia TCD.

2 Buaiceanna thaighde

Leanann córas steiréascópach ardfhuinnimh HESS – ceithre theileascóp íomháuithe Cherenkov ar an atmaisféar atá cuibhreannas ag oibriú sa Namaib, agus is ball den chuibhreannas é DIAS. Soláthraíonn HESS sruth rialta de thorthaí suntasacha agus tá fuinneog réalteolaíochta nua oscailte aige i ngáma-ghathanna ardfhuinnimh thart ar 0:1 TeV. Ní féidir na gáma-ghathanna seo a tháirgeadh ach amháin le cáithníní luchtaithe d'fhuinnimh thart ar 1 TeV. Léiríonn meastachán simplí gur féidir le hiarsmaí ollnóva cáithníní a luasghéarú ag thart ar 1000 volta sa soicind;

Interpreting these observations almost always requires the use of information from a number of other astronomical wavelengths and techniques as well as a detailed theoretical and numerical study of possible models.

A particular highlight of this work during the year was the detection by Prof. Felix Aharonian, with Japanese collaborators, of rapid (one year time scale) brightening and fading of non-thermal X-ray emission spots on the rim of the supernova remnant RXJ1713-3945, an iconic HESS source and the first supernova remnant to be spatially resolved in TeV emission. The importance of this result (reported in the prestigious journal Nature) is that it confirms the expectation from theory that in these objects the local magnetic fields can be amplified by significant factors (a hundred times or more) and that there is very fast local acceleration at the outer shock front bounding these remnants. This is necessary if, as long suspected, they are the sources of the bulk of the Galactic cosmic rays. A definitive, but very difficult test of this idea, would be the detection of high-energy neutrinos from such objects and the Section is participating in a European Design Study, KM3NeT, which is planning a large underwater neutrino telescope to be located in the Mediterranean sea.

In extragalactic TeV astronomy, perhaps the most exciting results were the detection of very rapid time variability in a strong flare from the southern blazar PKS 2155-304 as well as in M87. M87 is of great interest as the first non-blazar Active Galactic Nucleus (AGN) to be seen at TeV energies, but the observations gain further interest because the variability, on time scales of days, constrains the emission to come from rather close to the central black hole. In the case of PKS2155-304 we are looking straight down the jet and Doppler beaming corrections have to be applied, but in this case the variability down to scales of a few minutes implies that we must again be looking at emission coming from very close to the black hole and with a Doppler factor of about 100.

The extraordinary success of the H.E.S.S. (High Energy Stereoscopic System) project was recognised by the award of the Descartes prize 2006 for collaborative European research at a ceremony in Brussels on 7 March 2007.

Another major area of research in the Section is the study of star formation, and in particular the jets and outflows that appear to be universal accompaniments of this process. The universality of the phenomenon was underlined by the recent detection, as reported last year, of jets from brown dwarfs (objects so light that they fail to ignite nuclear burning and thus do not become proper stars).

tar éis cúpla soicind mar sin, bíonn ceann amháin ag an scála fuinnimh keV atá tipiciúil sa réalteolaíocht x-ghathach; ach chun an scála TeV a shroicheadh, is gá feitheamh 30 bliana! Is léir gur réimse an-saibhir suntasach d'fhoinsí réaltrach í an spéir TeV atá nochtaithe ag HESS, ina measc, tá na hiarmsmaí den ollnóva fadréamh-mheasta le cruth blaoisc, réaltnéalta gaoithe pulsáir, braislí de réaltaí óga, mícrea-cuasáir agus córais déréalta x-ghathach, ach chomh maith leis sin, líon suntasach d'fhoinsí mistéaracha neamhaitheanta (na luasairí dorcha, mar a thugtar orthu). Chun ciall a bhaint as na breathnuithe seo, bíonn sé riachtanach eolas a úsáid ó thonnfhaid agus ó theicnící eile chomh maith le mionscrúduithe teoiriciúla agus uimhriúla ar shamhlacha a d'fhéadfadh a bheith ann.

Buaic faoi leith den obair seo i rith na bliana ba ea gur fhionn an tOll. Felix Aharonian lena chomhoibreoirí Sheapánaigh gealadh agus laghdú an-tapa (amscála bliana amháin) de spotaí astúcháin x-ghathacha neamhtheirmeacha ar imeall an iarsma ollnóva RXJ1713-3945, foinse íocónach HESS agus an chéad iarsma ollnóva a rinneadh taifeach spásúil air in astú TeV. Is é tábhacht an toraidh seo (tuairiscithe san iris cháiliúil Nature) ná go ndeimhníonn sé an t-ionchas ón dteoiric gur féidir na réimsí maighnéadacha áitiúla sna réada seo a aimpliú faoi fhachtóirí suntasacha (céad uaire nó níos mó) agus go bhfuil luasghéarú áitiúil an-tapa ag an éadan turrainge seachtrach ar imeall na n-iarsmaí seo. Tá sé seo riachtanach más iad seo foinsí toirte na ngathanna cosmacha réaltracha, faoi mar a ceapadh le fada. Tastáil dheifnídeach ach casta ar an idé seo ba ea í a d'fhionnfadh neoidríonónna ardfhuinnimh óna leithéid de réada agus tá an rannóg páirteach i ndearadh staidéar Eorpach, KM3net, atá ag pleanáil le haghaidh teileascóp neoidríonó mór faoi uisce le bheith lonnaithe sa Mheánmhuir.

I réalteolaíocht eachtar-réaltrach TeV, is dócha gurb iad na torthaí ba spreagúla ná inathraitheacht ama an-mhear a aimsiú i mbladhm láidir ón mblazar deisceartach PKS 2155-304 agus in M87 freisin. Tá M87 an-suimiúil mar an chéad núicléas gníomhach neamhblazar (AGN) a chonacthas ag fuinnimh TeV ach tá na breathnuithe níos suimiúla fós toisc na hinathraitheachta, ar amscálaí laethanta, a chuireann iallach ar an astú a thagann as gar go leor don dúpholl lárnach. I gcás PKS2155-304 táimid ag breathnú go díreach síos an scaird agus caithfear ceartúcháin léis Doppler a chur i bhfeidhm; ach sa chás seo tugann an inathraitheacht síos go scálaí roinnt nóiméid le fios go gcaithfidh go bhfuilimid ag breathnú ar astú ag teacht as áit an-ghar don dúpholl agus le fachtóir Doppler thart ar 100.

Aithníodh rath iontach an tionscnaimh HESS nuair a bronnadh gradam Descartes 2006 le haghaidh taighde Eorpaigh chomhoibríoch ag searmanas sa Bhruiséil ar an 7 Márta 2007.

This discovery, only the second reported and at a mere 26 Jupiter masses the lowest mass astronomical jet source known, was published by Dr Emma Whelan and collaborators during the year. A press release describing the work was issued by the European Southern Observatory (ESO 24/07 issued on 23 May) and a further 30 hours of observing time on the Very Large Telescope was granted to extend it to other objects. Initial results already indicate the discovery of a third outflow associated with another brown dwarf.

The star formation work pushes the limits of what can be achieved in terms of angular resolution using currently available instruments. The successor to the Hubble Space Telescope, the James Webb Space Telescope (JWST), will take this a step further. The Institute is contributing to one of the European instruments being built for the JWST and organised a review meeting for the JWST project in the Royal Hospital, Kilmainham (RHK), in June which was attended by some 300 project administrators, contractors and scientists. A full-scale model of the JWST was on display in the grounds of the RHK and attracted considerable public interest.

The full-scale model of the James Webb Space Telescope on display in the grounds of the Royal Hospital Kilmainham.

An tSamhail lánscála den Teileascóp Spáis James Webb ar taispeáint í dtailte an Ospidéil Ríoga, Cill Mhaighneann.

Gamma-ray bursts (GRBs), for many decades an enigma, are now known to originate in the most violent explosions in the universe and to be located at cosmological distances. The breakthrough was the discovery several years ago of faint, rapidly fading, X-ray and optical afterglows associated with the GRB. To capture these afterglows, robotic telescopes are required which automatically swivel to the location of a burst when triggered by satellite observations. The Section is involved with two such projects, REM and ROTSE. The detection by the REM telescope collaboration, for which DIAS constructed part of the camera system in 2006, of the initial rise and subsequent decay of the optical afterglow emission in two events was published by the REM team with Susanna Vergani, a Hamilton scholar in the school, and used to estimate the initial expansion speed of the explosion. This work was also the subject of a European Southern Observatory (ESO) press release (ESO 26/07 issued on 12 June). The ROTSE consortium published an

Réimse taighde thábhachtaigh eile sa rannóg is ea staidéar ar fhoirmíocht réaltaí, ach go háirithe na scairdeanna agus na heis-sreafaí a ghabhann leis an bpróiseas i gcónaí de réir dealramh. Leagadh béim ar uilíocht an fheiniméin le déanaí, mar a tuaraiscíodh anuraidh, nuair a fionnadh scaird as abhaic donna (réada atá chomh héadrom sin go dteipeann orthu dó núicléach a adhaint agus dá réir nach n-éiríonn siad ina réaltaí cearta). D'fhoilsigh an Dr Emma Whelan agus a comhoibritheoirí an fhionnachtain seo i rith na bliana, an dara ceann a tuairiscíodh riamh; agus níl sé ach 26 uair mais an phláinéid lúpatar; seo é an fhoinse réaltrach is ísle mais scaird a breathnaíodh riamh. Bhí cur síos ar an obair i bpreaseisiúint ESO 24/07 (23 Bealtaine) ó Réadlann Dheisceart na hEorpa agus fuarthas 30 uair an chloig bhreise d'am breathnaithe ar an Teileascóp Ollmhór chun é a leathnú go dtí réada eile. Cheana féin, léiríonn na chéad torthaí fionnachtan tríú eis-sreabhadh in éineacht le habhac donn eile.

Leathnaíonn an obair ar fhoirmíocht réaltaí teorainneacha na rudaí is féidir a chur i gcrích maidir le taifeach uilleach ag baint úsáid as na hionstraimí atá ar fáil. Bogfaidh Spásteileascóp James Webb (JWST, a leanfaidh Spásteileascóp Hubble) é céim eile ar aghaidh. Tá an Institiúid ag cuidiú le ceann de na hionstraimí atá á thógáil don JWST, agus i mí an Mheithimh d'eagraigh sí cruinniú athbhreithnithe don tionscadal JWST san Ospidéal Ríoga, Cill Mhaighneann, agus bhí thart ar 300 i láthair, ina measc, riarthóirí tionscadail, conraitheoirí agus eolaithe. Bhí samhail lánscála den JWST ar taispeáint ar thailte an ORCM agus bhí an-suim ag an bpobal inti.

Bhí foinse roiseanna gáma-gha (GRB) ina dhúcheist ar feadh cuid mhaith de bhlianta, ach tuigtear anois go dtosaíonn siad sna pléascanna is foréignî sa chruinne agus go bhfuil siad le fáil ag faid chosmeolaíocha. Tháinig an dul chun cinn seo chun cinn roinnt blianta ó shin nuair a fuarthas iarlaomanna laga x-ghathacha optúla a laghdaigh go tapa a raibh baint acu le GRB. Chun na hiarlaomanna seo a ghabháil, tá teileascóip róbatacha de dhíth a sclóineann go huathoibríoch go dtí suíomh an roise, nuair a chuireann breathnuithe satailíte ar siúl é. Tá an rannóg páirteach in dhá thionscadal den chineál seo, REM agus ROTSE. Bhí DIAS ag comhoibriú le REM agus thóg DIAS cuid de cheamara an teileascóip a d'fhionn ardú tosaigh agus ansin dul i leig astú an iarlaoma optúil in dhá teagmhas. D'fhoilsigh foireann REM, agus Susanna Vergani (scoláire Hamilton sa Scoil) na torthaí, agus baineadh úsáid astu chun luas tosaigh fhairsingiú na pléisce a mheas. Bhí an obair seo i bpreaseisiúint ESO freisin (ESO 26/07, a eisíodh ar an 12 Meitheamh). D'fhoilsigh cuibhreannas ROTSE anailís ar rois chianda ag deargaistriú z =5:47 agus léirigh siad

analysis of a very distant burst, at a red-shift z =5:47 and showed that these events can be used as probes of the very early universe (the so-called "Dark Ages").

The High-Energy Physics Associated with Relativistic Outflows in a broad range of sources, from Galactic binary systems and pulsars to GRBs and AGNs was the topic of a workshop organised by DIAS from 24 to 28 September 2007. The meeting attracted some 116 scientists including a number of "big names" and produced a lot of excellent presentations and discussions. The proceedings will be published as a special edition of the International Journal of Modern Physics D in 2008.

A final important caveat is that, in addition to the above highlights, there were also a great many more technical contributions dealing with interstellar dust properties, the role of magnetic fields, plasma physics, runaway stars, details of specific models, computational techniques etc. This short summary can of necessity only focus on a few topics of broad interest or novelty and the detailed research report should be consulted for a proper overview of the activity of the section.

3 Contributions to the National e-Infrastructure

The section has been actively involved in building up the national computational infrastructure over the last five years, initially through the PRTLI cycle 3 programme CosmoGrid. Cosmo-Grid, together with NUI,Galway, other university partners and another PRTLI-3 project, the Trinity College Dublin-based IITAC, were successful in leveraging additional funding from Science Foundation Ireland (SFI) to set up the Irish Centre for High-End Computing, ICHEC. Prof. Luke Drury stepped down as acting director of ICHEC at the start of the year, but continued as a member of the oversight board. He coordinated the Institute's application under PRTLI cycle 4 which secured a further 9.5MEuro for the development of an integrated national e-Infrastructure through the e-INIS programme.

In parallel to this activity, the European public procurement exercise, begun in 2006 under the aegis of HEAnet on behalf of DIAS, ICHEC and the third level community with the support of the Higher Education Authority (HEA) to identify a capability computing system, concluded. The aim was to identify a system that would cost-effectively deliver a strategic step-up in the level of computational science in Ireland by providing access to a true capability computing system and the final recommendation was for an IBM Blue Gene solution. Contracts were signed at the end of November and the system was installed and commissioned in record time, completing its acceptance tests just after Christmas. Formal acceptance of delivery took place on 27 December 2007.

gur féidir na teagmhais seo a úsáid mar rud a dhéanann scrúdú ar an gcruinne fhíorluath (an "Ré Dhorcha" mar a thugtar air).

Is í an bhaint atá ag an bhfisic ardfhuinnimh le heis-sreafaí coibhneasaíocha i réimse leathan d'foinsí, ó chórais déréalta réaltracha agus pulsáir go GRB agus AGN, a bhí mar théama ag ceardlann a d'eagraigh DIAS ón 24 go 28 Meán Fómhair 2007. Mheall an cruinniú 116 eolaí, roinnt díobh an-cháiliúil, agus bhí a lán cur i láthair agus pléanna den scoth. Foilseofar na himeachtaí mar eagrán speisialta den International Journal of Modern Physics D i 2008.

Caveat tábhachtach deiridh: anuas ar na buaic thuasluaite, bhí an-chuid ionchur eile chomh maith ag baint le hairíonna deannaigh idir-réaltaigh, ról réimsí maighnéadacha, fisic phlasma, réaltaí éileathacha, sonraí samhlacha faoi leith, teicnící ríomhaireachtúla, srl. San achoimre ghairid seo ní féidir ach díriú ar roinnt ábhar spéise ginearálta nó ábhar le húrnuacht ag baint leo; ba chóir breathnú ar an miontuairisc thaighde chun forbhreathnú ceart a fháil ar ghníomhaíocht na rannóige.

3 Rudaí atá déanta ar son r-Infreastruchtúr Náisiúnta

Bhí an rannóg gníomhach le cúig bliana anuas i dtógáil infreastruchtúir ríomhaireachtúil náisiúnta, ar dtús tríd an gclár CosmoGrid faoi PRTLI timthriall 3. D'éirigh le CosmoGrid, i gcomhar le NUI,G, comhpháirtithe ollscoile eile agus tionscadal eile faoi PRTLI-3, IITAC, lonnaithe i TCD, cistiú breise a fháil ó SFI chun Ionad na hÉireann don Ard-Ríomhaireacht (ICHEC) a bhunú. D'éirigh an tOll. Luke Drury as a phost mar stiúrthóir gníomhach ICHEC ag tús na bliana ach lean sé mar bhall den bhord maoirseachta. Chomhordaigh sé iarratas na hInstitiúide faoi PRTLI timthriall 4 a fuair 9.5M euro breise d'fhorbairt r-Infreastruchtúir comhtháite náisiúnta tríd an gclár INIS.

Comhthreomhar leis an ngníomhaíocht seo, tháinig deireadh leis an ghníomh Eorpach chun soláthar don earnáil phoiblí, a thosaigh i 2006 faoi choimirce HEAnet ar son DIAS, ICHEC agus an phobail tríú leibhéil le tacaíocht an HEA chun córas olléifeachtach ríomhaireachta náisiúnta a aithint. Ba é an cuspóir ná córas a aithint a sholáthródh go costéifeachtach uaschéimniú straitéiseach i leibhéal na heolaíochta ríomhaireachtúla in Éirinn sa dóigh is go mbeidh córas ríomhaireachta fíoréifeachtach ar fáil agus moladh IBM Blue Gene sa deireadh. Síníodh conraí ag deireadh mhí na Samhna agus cuireadh an córas isteach agus coimisiúnadh é i mbarr-ama, ag críochnú a thástála inghlacthachta díreach tar éis na Nollag. Glacadh go foirmiúil lena sheachadadh ar an 27 Nollaig 2007.

The Blue Gene system, consisting of one rack of Blue Gene/P to be run as a production system, and one rack of Blue Gene/L for development and testing, has been purchased by DIAS with the sanction of the HEA on the understanding that it will be hosted in the national hosting service operated by HEAnet, and that it will be run as a national service by ICHEC. All seven universities, as well as the Tyndall National Institute, the Royal College of Surgeons (RCSI) and Dublin Institute of Technology (DIT) have agreed to support the operational costs of running the national facility in a unique partnership of third level research institutes under the leadership of the Institute.

4 Community contributions

Members of the Section gave advanced lectures to undergraduate classes in various local universities, served on various academic committees, acted as PhD examiners, peer reviewers for journals and funding agencies etc. In addition Prof. Felix Aharonian served as a member of the European Astronet Infrastructure Roadmap Panel A and was one of the referees for the European Space Agency's Cosmic Vision 2015–2025 strategic planning exercise. He was also a co-director of the LEA (Laboratoire Européen Associé) on High-Energy Astrophysics and an external scientific member of the Max Planck Institut f'ur Kernphysik in Heidelberg and a member of the Heidelberg Graduate School of Fundamental Physics at the University of Heidelberg.

Prof. Tom Ray served as chairman of the e-MERLIN steering committee overseeing radio astronomy facilities in the UK and also as a member of the European Space Agency's Time Allocation Committee for the Herschel space observatory. Prof. Evert Meurs served as a member of the joint management committee of the Armagh Observatory and Planetarium and also edited a national plan for astronomy on behalf of the Royal Irish Academy's (RIA's) Astronomy and Space Science Committee.

5 Statutory Public Lecture and Outreach

The JWST project scientist, Prof. John Mather, who was awarded the Nobel Prize for Physics in 2006, delivered the School's statutory public lecture on 14th June 2007 in the Clinton auditorium, UCD.

An expanded programme of open nights and other outreach events was commenced in Dunsink and will be progressively expanded in 2008.

Schröedinger, the national capability computing Blue Gene/P machine installed in HEAnet's national hosting facility.

Schröedinger, an gléas ríomhaireachta Blue Gene/P a suiteáladh in áisínteacht náisiúnta aíochta HEAnet.

Sa chóras Blue Gene tá raca amháin de Blue Gene/P le bheith oibrithe mar chóras táirgthe, agus tá raca amháin de Blue Gene/L le haghaidh forbairt agus tástáil. Cheannaigh an DIAS é, le cead an HEA, ar an tuiscint go n-óstáilfear é sa seirbhís óstála náisiúnta a oibríonn HEAnet agus go rithfidh ICHEC é mar sheirbhís náisiúnta. Aontaíonn na seacht n-ollscoil uile, Institiúid Náisiúnta Tyndall, Coláiste Ríoga na Máinlia in Éirinn (RCSI), agus Institiúid Teicneolaíochta Bhaile Átha Cliath (DIT) go dtacóidh siad le costas reatha na háise náisiúnta seo i gcomhoibriú uathúil d'Institiúidí taighde tríú leibhéil náisiúnta a bheidh faoi cheannaireacht na hInstitiúide.

4 Rudaí atá déanta ar son phobal

Thug baill rannóige ardléachtaí do ranganna fochéimithe in ollscoileanna éagsúla áitiúil, d'fóin siad ar choistí éagsúla acadúla, bhí siad ina scrúdaitheoirí PhD, ina n-athbhreithnitheoirí piaraí d'irisí agus do ghníomhaireachtaí mhaoiniúcháin, srl. Anuas air sin, d'fhóin an tOll. Felix Aharonian mar bhall den tSlí chun Infreastruchtúir Eorpaigh Astronet, Painéal A, agus ba dhuine é de na moltóirí don bheart pleanála straitéiseach Fís Chosmach 2015-2025 de chuid Ghníomhaireachta Spáis na hEorpa. Chomh maith leis sin, bhí sé ina chomhstiúrthóir den Laboratoire Européen Associé ar Réaltfhisic Ardfhuinnimh agus ina bhall eolaíochta seachtrach den Max Planck Institut f'ur Kernphysik i Heidelberg agus ina bhall den Scoil Chéimithe Bhunfhisic Heidelberg ag Ollscoil Heidelberg.

D'fhóin an tOll. Tom Ray mar chathaoirleach an choiste stiúrtha e-Merlin ag déanamh maoirseachta ar shaoráidí radairéalteolaíochta sa Ríocht Aontaithe agus freisin mar bhall de Choiste Ghníomhaireacht Spáis na hEorpa a Roinn an tAm le haghaidh Réadlann spáis Herchel. D'fhóin an tOll. Evert Meurs mar bhall de Réadlann agus de Phláinéadlann Ard Mhacha agus rinne sé eagarthóireacht ar phlean náisiúnta réalteolaíochta thar ceann Choiste Réalteolaíochta agus Spáseolaíochta an RIA chomh maith.

5 Léacht Phoiblí Reachtúil agus For-rochtain

Thug an tOll. John Mather, eolaí den tionscadail JWST, léacht phoiblí reachtúil na Scoile ar an 14 Meitheamh 2007 i Halla Éisteachta Clinton, UCD. Bronnadh Duais Nobel don Fhisic air i 2006.

Thosaigh clár leathnaithe d'oícheannta oscailte agus d'ócáidí for-rochtana i nDún Since agus forbrófar é de réir a chéile i 2008.

Geophysics Section Research Summary 2007

The highlight of the Geophysics Section for 2007 was the culmination of the search for a seismologist into the academic ranks. Professor Sergei Lebedev of Utrecht accepted the position, and will join the School in 2008. Professor Lebedev is quickly establishing himself as one of the world's foremost seismologists in full waveform modelling of seismic waves travelling through a highly complex inhomogeneous Earth. Many around the world are already using his approaches and codes, and his move to DIAS will enhance DIAS's international reputation.

The year saw a turn-over of some of those who had started at the same time as Senior Professor Alan Jones in 2004. The Ph.D. thesis of Mr. Chuong Van Do was examined in January, and was accepted. Dr. Max Moorkamp, working on joint inversion of seismic and electromagnetic data, successfully defended his thesis in September 2007. Dr. Moorkamp stayed on with the Section for five months as a Post-Doctoral Scholar in order to advance the non-linearized genetic algorithm approach to include other types of seismic data. Dr. Moorkamp moves to the German Marine Institute, GEOMAR, in March, but intends to continue his collaboration with Professor Alan Jones and the new Post-Doctoral Fellow and Ph.D. student in Joint Inversion, funded by Science Foundation Ireland (SFI). Mark Hamilton also submitted his thesis, and moved to industry, EMGS of Norway, in November 2007. Dr. Anna Chabert left in November 2007 for a Post-Doctoral position with the Southampton Oceanography Centre. Dr. Tadashi Yamasaki, the CosmoGrid Fellow undertaking numerical modelling of the Earth, joined Professor Sierd Cloetingh's group at the Vrjie University of Amsterdam in the summertime after a very productive two and a half years in the Section. Finally, Ms. Jessica Spratt left the group after three years as the Geophysical Field Technician focussed on magnetotellurics. After a competitive search, Mr. Colin Hogg was appointed to the vacant position in November 2007.

On a national front, Professor Alan Jones was successful in securing funding, through a Griffith award, for the staff required to initiate the Irish Geoscience Graduate Programme (IGGP). As currently envisioned, the IGGP will expose graduate students to broad-based geoscience through the provision of Short Courses at the appropriate institution, wherever that may be across the whole of the island of Ireland. A competition will be held in early 2008 to hire a Co-ordinator for two years to develop the initiative, and subsequently an Administrator will be hired to run it.

Geoifisic

I 2007 ba bhuaic í do Rannóg na Geoifisice gur aimsíodh seismeolaí don fhoireann. Ghlac an tOllamh Sergei Lebedev, Utrecht, leis an bpost agus beidh sé ag teacht go dtí an Scoil i 2008. Tá an tOllamh Lebedev á chruthú féin go tapa mar dhuine de phríomhsheismeolaithe an domhain i samhaltú tonnchruthach de thonnta seismeacha ag taisteal trí Dhomhan sárchoimpléacs neamhaonchineálach. Cheana féin, tá a mhodhanna agus a chóid in úsáid go forleathan timpeall an domhain agus cuirfidh a theacht go DIAS go mór le clú idirnáisiúnta DIAS.

Bhí athrú foirne i gcás cuid díobh siúd a thosaigh ag an am céanna leis an Ollamh Sinsearach Alan Jones i 2004. Rinneadh iniúchadh ar thráchtas PhD an Uas. Chuong Van Do i mí Eanáir agus glacadh leis. D'éirigh le Dr. Max Moorkamp, ag obair ar chomhinbheartú sonraí seismeacha agus leictreamaighnéadacha, a thráchtas a chosaint i mí Mheáin Fhómhair, agus lean sé ar aghaidh sa Rannóg ar feadh cúig mhí mar Scoláire Iardhochtúra d'fhonn cur chuige algartaim géinitigh neamhlíneachtaithe a chur ar aghaidh le cineálacha sonraí seismeacha eile san áireamh. Beidh an Dr Moorkamp ag bogadh go dtí Foras Mara na Gearmáine i mí an Mhárta ach tá sé beartaithe aige leanúint ag comhoibriú leis an Ollamh Alan Jones agus leis an Ánra Iardhochtúireachta nua agus an mac léinn Ph.D. sa Chomhinbheartú atá maoinithe ag Fondúireacht Eolaíochta Éireann. Chuir Mark Hamilton a thráchtas isteach freisin agus bhog sé go tionscal, EMGS san Iorua, i mí na Samhna 2007. D'fhág Anna Chabert i mí na Samhna 2007 le haghaidh post Iardhochtúireachta leis an Iárionad aigéaneolaíochta i Southampton. D'imigh an tÁnra CosmoGrid, Dr. Tadashi Yamasaki ag tabhairt faoi mhúnlú uimhriúil an domhain, le grúpa an Ollaimh Sierd Cloetingh in Ollscoil Vrjie, Amsterdam, sa samhradh tar éis dhá bhliain go leith an-táirgiúla a chaitheamh sa Rannóg. D'fhág Ms. Jessica Spratt an grúpa tar éis trí bliana mar Theicneoir Geoifisice Allamuigh, ag díriú ar chúrsaí mhaighnéadaiteallúireacha. Tar éis cuardach comórtais a dhéanamh, ceapadh an tUasal Colin Hogg don bhfolúntas i mí na Samhna 2007.

Ag an leibhéal náisiúnta d'éirigh leis an Ollamh Alan Jones maoiniú a fháil, trí ghradam Griffith, don fhoireann atá riachtanach chun tús a chur leis an gClár Éireannach Geo-eolaíochta do Chéimithe (IGGP). Faoin IGGP, mar a shamhlaítear faoi láthair é, geobhaidh mic léinn iarchéime taithí leathan ar an ngeo-eolaíocht trí Ghearrchúrsaí in institiúidí cuí, cibé áit a bhfuil siad ar oileán na hÉireann. Cuirfear comórtas ar bun go luath i 2008 chun Comhordaitheoir a earcú ar feadh thréimhse dhá bhliain chun an tionscnamh a fhorbairt agus earcófar Riarthóir le hé a rith ina dhiaidh sin.

On the European research front, TOPO-EUROPE was accepted as a European Science Foundation's EUROCORES project, and over 70 provisional Common Research Projects (CRPs) were submitted in Spring. Of those, some 24 went forward to full proposal stage in the Autumn, with two having strong involvement from Section members (Professor Alan Jones and Professor Lebedev). One of the two was finally approved by the EUROCORES committee, and the relevant Research Councils involved will be asked to give their commitment to this proposal, named TOPO-MED, in early 2008. TOPO-MED will focus on the tectonics of the Western Mediterranean, and complements PICASSO activities.

On the international front, the Section continued to support the AfricaArray initiative through providing a mentor, Ms. Marion Miensopust, to the University of the Witwatersrand's Geophysical Field School. The Section will continue to try to support AfricaArray, which is a unique programme for geophysical research and education in sub-Saharan Africa, through seeking funding for seismological observatories.

The research activities of the Section continued at the frenetic pace of the last few years. In total, members of the Section were authors or co-authors on a total of eight papers published in international journals, and a further six were submitted for consideration and are in the review process.

Combining seismological and electromagnetic data, both quantitatively and qualitatively, progressed significantly in 2007. In particular, the Section hosted the first St. Patrick's Geophysical Workshop for three days prior to St. Patrick's Day, on the topic Joint Inversion of Geophysical Data. Over 20 people attended the workshop, with approx. three-quarters coming from outside Ireland. Dr. Max Moorkamp and Professor Alan Jones, together with Professor David Eaton, an Honorary Professor of the School, published the first international journal paper on the work of jointly inverting receiver function data and magnetotelluric data using data from sites in northern Canada. Mark Hamilton and Professor Alan Jones continued to study seismic and electrical anisotropy of Southern Africa, and developed a new model to explain the observations of seismic anisotropy of vertically-travelling waves, the so-called SKS phase. This new model more completely explains the observations than any prior model, including the two end-member models of the anisotropy residing wholly within the lithosphere (Silver model) or wholly within the asthenosphere (Vinnik model).

Ag leibhéal an taighde Eorpaigh, glacadh le TOPO-EUROPE mar thionscadal EUROCORES de chuid Fondúireacht Eolaíochta na hEorpa agus seoladh isteach breis is 70 Comhthionscadal Taighde sealadacha san Earrach. Shroich 24 díobh seo céim an togra iomlán san Fhomhar, agus bhí baint mhór ag baill Rannóige an Ollaimh Jones agus an Ollaimh Lebedev le dhá cheann díobh. Faoi dheireadh, cheadaigh coiste EUROCORES ceann den dá cheann agus go luath i 2008, iarrfar ar na Comhairlí Taighde cuí atá páirteach geallúntas a thabhairt don togra, ar a dtugtar TOPO-MED. Díreoidh TOPO-MED ar theicteonaic na Meánmhuirí iartharaigh agus déanfaidh sé gníomhaíochtaí PICASSO a chomhlánú.

Ag an leibhéal idirnáisiúnta, lean an Rannóg ag tacú le tionscnamh AfricaArray trí mheantóir, Ms Marion Miensopust, a sholáthar do Scoil Geoifisiceach Allamuigh Ollscoil Witwatersrand. Leanfaidh an Rannóg le tacaíocht a thabhairt d'AfricaArray, clár uathúil don taighde geoifisice agus don oideachas san Afraic fho-Shahárach, trí mhaoiniú a lorg do réadlanna seismeolaíochta.

Lean gníomhaíochtaí thaighde na Rannóige ag ráta fraochmhar na mblianta beaga anuas. San iomlán, foilsíodh ocht bpáipéar le baill foirne, mar údair nó mar chomhúdair, in irisí idirnáisiúnta, agus cuireadh sé cinn eile faoi bhráid eagarthóirí agus tá siad fós sa phróiseas athbhreithnithe.

Bhí dul chun cinn suntasach cáilíochtúil agus cainníochtúil maidir le comhcheangailt sonraí seismeolaíochta agus leictreamaighnéadacha i 2007. Go háirithe, d'óstaigh an Rannóg an chéad Cheardlann Geoifisice Naomh Pádraig ar feadh trí lá roimh Lá Fhéile Pádraig, ar an ábhar Comhinbheartú Sonraí Geoifisice. D'fhreastail os cionn 20 duine ar an gceardlann, thart ar thrí cheathrú díobh ó thíortha eile. D'fhoilsigh an Dr. Max Moorkamp agus an tOllamh Alan Jones, in éineacht le David Eaton, duine d'Ollúna Oinigh na Scoile, an chéad pháipéar in iris idirnaisiúnta ar an obair faoi aisiompú sonraí ar fheidhm glacadóirí agus sonraí maighnéadaiteallúireacha le chéile, ag úsáid sonraí ó láithreáin i dtuaisceart Cheanada. Lean Mark Hamilton agus ag an tOllamh Alan Jones ag staidéar ainiostrópacht sheismeach agus leictreonach dheisceart na Afraice agus d'fhorbair siad samhail nua leis na breathnuithe d'ainiostrópacht sheismeach i dtonnta taistil ingearacha, an chéim SKS mar a thugtar air, a mhíniú. Tugann an tsamhail nua seo míniú níos iomláine ar na breathnuithe ná aon samhail roimhe seo, fiú an dá shamhail cheannbhaill den ainiostrópacht a bhíonn go hiomlán sa litisféar (samhail Silver), no go hiomlán san astanaisféar (samhail Vinnik).

Research as part of the Southern African Magnetotelluric Experiment (SAMTEX) continued through the activities of Post-Doctoral Fellow Dr. Mark Muller and Ph.D. candidates Mark Hamilton and Marion Miensopust, and Professor Alan Jones. A scientific highlight for 2007 was the development of the anisotropy model (above). Dr. Muller spent a considerable time preparing for the 2008 Phase IV acquisition. This phase will include measurements in the Central Kalahari Game Reserve, an area 75% the size of the island of Ireland but without any towns or villages whatsoever and with testing conditions, such as thick Kalahari sands, that requires particular attention to logistics and to Health and Safety. Over twenty presentations, seven invited keynote presentations, were made on SAMTEX work at international workshops and conferences.

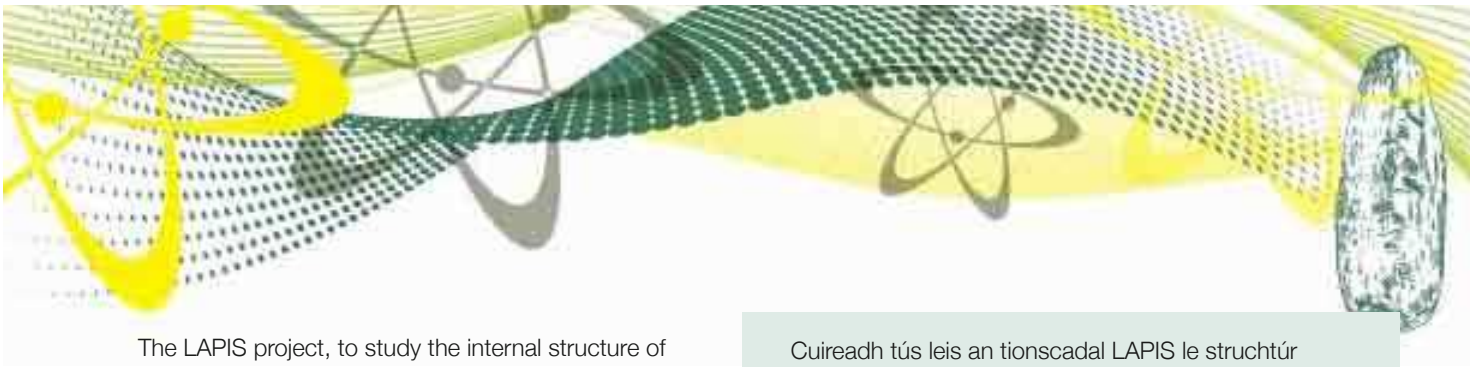
DIAS's part of the PICASSO project, Program to Investigate the Cause of the Alboran-AtlaS System convective Overturn, was initiated with a successful field programme in October-November in Spain. Ph.D. candidate Jan-Philipp Schmoldt led the acquisition, ably assisted by Mr. Colin Hogg. Magnetotelluric data were acquired with Phoenix broadband systems at a total of 26 sites in 52 days. On 21 sites additional measurements with LVIV long period instruments were carried out to enable higher resolution investigation of the Earth's upper mantle.

The Marine EM group carried out the SFI-funded Galway Bay project. This project studies the upper 20m of the seafloor using a multidisciplinary approach. Unfortunately, the EM instrument malfunctioned after 1 hour of operation, but the survey continued with acquisition of acoustic data, sediment and water samples, and also current speed. Additional funding from the INFOMAR project allowed us to acquire four 6 m vibro-cores in the Bay. These will be used to constrain the physical properties of the physical methods that we used, and to study the sediment deposition of Galway Bay and try to unravel its glacial history. The Malin sea experiment EM data have been successfully integrated with other datasets, allowing us to constrain the physical properties of the sediments in the area in an unprecedented way. Two manuscripts with results from this experiment are being prepared.

Is trí ghníomhaíochtaí an Ánra Iardhochtúireachta, an Dr. Mark Muller, iarrthóirí Ph.D. Mark Hamilton agus Marion Miensopust, agus an tOllamh Alan Jones a lean an taighde ar aghaidh mar chuid den Turgnamh Maighnéadaiteallúireach na hAfraice Theas (SAMTEX). Buaic eolaíochta i 2007 ba ea forbairt na samhla ainiostrópachta (thuas). Chaith an Dr Muller cuid mhór ama ag ullmhú do Chéim IV den chlár fála do 2008. Sa chéim seo beidh tomhais á ndéanamh in Anaclann Ghéime an Kalahari Láir, ceantar atá 75% d'achar oileán na hÉireann ach gan baile ná sráidbhaile ar bith ann agus tá coinníollacha deacra ann, gainimh tiubha mar shampla, ina bhfuil gá ann aird a dhíriú ar lóistíochta agus ar Shláinte agus Sábháilteacht. Cuireadh níos mó ná fiche léacht i láthair, ina measc seacht léacht thábhachtacha ó chuairteoirí, ar obair SAMTEX ag ceardlanna agus comhdhálacha idirnáisiúnta.

Cuireadh tús le cuid DIAS de thionscadal PICASSO, clár chun an t-aisiompú dronnach sa chóras Alborach-Atlas a scrúdú, le clár rathúil allamuigh i mí Dheireadh Fómhair agus i mí na Samhna sa Spáinn. Bhí Jan-Philipp Schmoldt, iarrthóir Ph.D., i gceannas ar an bhfáil, agus chabhraigh an tUasal Colin Hogg leis go héifeachtach. San iomlán, fuarthas sonraí maighnéadaiteallúireacha le córais leathanbhanda Phoenix ag 26 láithreán thar 52 lá. Ar 21 láithreán, rinneadh tomhais bhreise le huirlisí fadtréimhseacha LVIV chun iniúchadh taifeach níos airde a dhéanamh ar an maintlín is uachtaraí den Domhain.

Rinne grúpa EM na Mara an tionscadal a mhaoinigh SFI i mBá na Gaillimhe. Scrúdaíonn an tionscadal seo na 20 m is uactaraí de ghrinneall na farraige ag baint úsáide as cur chuige idirdhisiplíneach. Ar an drochuair, theip ar an uirlis EM tar éis uair an chloig ach lean an suirbhé ar aghaidh ag fáil sonraí fuaime, samplaí de dhríodair agus d'uisce, agus fuarthas eolas ar luais reatha freisin. Le maoiniú breise ón tionscadal INFOMAR, bhíomar in ann ceithre shampla talún de dhoimhneacht 6 m a fháil sa Bhá. Úsáidfear iad seo chun airíonna fisiceacha na modhanna fisiciúla a d'úsáideamar a thuiscint; chun slí-leagan dríodair Bá na Gaillimhe a scrúdú agus a stair oighreach a réiteach. Tá na sonraí EM ó thurgnamh Mhuir Mhálanna comhtháite go maith le tacair sonraí eile ag tabhairt deise dúinn airíonna fisiceacha na ndríodar sa limistéar a thuiscint ar bhealach nárbh fhéidir linn go dtí seo. Tá dhá lámhscríbhinn le torthaí ón turgnamh seo á n-ullmhú.



The LAPIS project, to study the internal structure of the island of La Palma, was initiated. The goal of this project is to explore and map the western flank of the island to understand the evolution of the island and map a potentially unstable block that, if released, would generate a catastrophic tsunami wave that would engulf much of the northern Atlantic. The results from this preliminary project show a 1 km thick structure on the western flank that correlates well with one mapped by geologists using surface information.

Numerical simulation of the Earth's three-dimensional electrical resistivity structure continued through the CosmoGrid-funded support to Research Fellow Dr. Dmitry Avdeev and Ph.D. candidate Anna Avdeeva, and the work of Professor Alan Jones and Ph.D. candidate Marion Miensopust. The work of both groups is focussed on determining both the responses from a 3-D model of the Earth, the "forward" problem, and the geometry of 3-D structure from surface observations, the "inversion" problem. Advances by Dr. Dmitry Avdeev and Anna Avdeeva were made in the area of how to choose the optimum path for reducing the misfit whilst simultaneously finding the smoothest model (Tikhonov regularization). Anna Avdeeva submitted her thesis for examination in mid-December. Marion Miensopust and Professor Alan Jones, with colleagues Professors Anna Marti and Pilar Queralt of the University of Barcelona, considered primarily the forward problem, and compared and contrasted a number of codes for determining the surface response functions. Marion Miensopust, Professor Pilar Queralt and Professor Alan Jones prepared test models and datasets for distribution around the EM induction community in advance of the 2008 St. Patrick's Geophysical Workshop, which will have the theme Three-Dimensional Inversion of Magnetotelluric Data.

The ISLE and ISLE-MT projects, for seismological and magnetotelluric studies of the Iapetus suture which closed the Iapetus ocean that separated northern Ireland from southern Ireland, concluded. The first paper from ISLE-MT was published during the year, and subsequent papers are being completed by the PostDoctoral Fellow Dr. C.K. Rao from his home institution in Mumbai, India. Professor Peter Readman was funded by Science Foundation Ireland to continue the seismological work (ISLE-2).

The HADES project, which is studying the crustal structure below the Hatton Bank of offshore Ireland below the Atlantic Ocean, came to conclusion with Ph.D. candidate Anne Chabert leaving in November 2007.

Cuireadh tús leis an tionscadal LAPIS le struchtúr inmheánach oileán La Palma a scrúdú. Is é aidhm an tionscadail seo ná cliathán iartharach an oileáin a iniúchadh agus a mhapáil le héabhlóid an oileáin a thuiscint agus chun bloc a mhapáil a d'fhéadfadh a bheith chomh héagobhsaí sin, dá dtitfeadh sé, go slogfadh tonn ollmhór súnámaí cuid mhór den Atlantach Thuaidh. Léiríonn torthaí an réamhthionscadail seo struchtúr tiúis 1 km ar an gcliathán iartharach a réitíonn go maith le ceann a mhapáil geo-eolaithe ag baint úsaide as sonraí an dromchla.

Leanadh ar aghaidh le hinsamhladh uimhriúil ar struchtúr friotachais leictreach tríthoiseach an domhain le hairgead CosmoGrid don Ánra Taighde an Dr. Dmitry Avdeev agus don iarrthóir Ph.D. Anna Avdeeva, mar aon le hobair an Ollaimh Alan Jones agus an iarrthóra Ph.D Marion Miensopust. Díríonn taighde an dá ghrúpa araon ar dhearbhú na bhfreagairtí ó shamhail 3T den Domhan, an fhadhb "chun tosaigh", agus céimseata an struchtúir 3T ó bhreathnaithe dromchla, an fhadhb "aisiompaithe". Rinne an Dr. Dmitry Avdeev agus Anna Avdeeva dul chun cinn sa réimse conas an bealach is fearr a roghnú leis an mhí-oiriúnacht a laghdú fhad is atá an tsamhail is réidhe á aimsiú (tabhairt chun rialtacht Tikhonov). Chuir Anna Avdeeva a tráchtas faoi bhráid na scrúdaitheoirí i lár mhí na Nollag. Dhírigh Marion Miensopust agus an tOllamh Alan Jones, lena gcomhleacaithe, na hOllúna Anna Marti agus Pilar Queralt ó Ollscoil Barcelona, go príomha ar an bhfadhb chun tosaigh, agus chuir siad roinnt cód chun feidhmeanna na bhfreagairtí dhromchla a dhearbhú i gcomparáid agus i gcodarsnacht lena chéile. D'ullmhaigh Marion Miensopust, Queralt agus an tOllamh Alan Jones samhlacha tástála agus tacair sonraí le dáileadh ar chuallacht an ionduchtaithe EM roimh Ceardlann Geoifisice Naomh Pádraig 2008 a mbeidh Three-Dimensional Inversion of Magnetotelluric Data mar théama aici.

Críochnaíodh na tionscadail ISLE agus ISLE-MT le haghaidh staidéar seismeach maighnéadaiteallúireach ar an uaim Iapetus, a dhún an tAigéan Iaipéitis idir tuaisceart agus deisceart na hÉireann. Foilsíodh an chéad pháipéar ó ISLE-MT i rith na bliana agus tá tuilleadh páipéar á gcríochnú ag an Ánra Iardhochtúireachta, an Dr. C.K. Rao, óna institiúid i Mumbai, san India. Mhaoinigh Fondúireacht Eolaíochta Éireann an tOllamh Peter Readman chun leanúint lena chuid oibre seismeolaíochta (ISLE-2).

Críochnaíodh tionscadal HADES, a scrúdaíonn an screamhstruchtúr faoi Bhruach Hatton amach ó chósta na hÉireann faoin Aigéan Atlantach, le himeacht iarrthóir Ph.D. Anne Chabert i mí na Samhna 2007.

One highlight of the geodynamic modelling was the generation of data from analogue modelling experiments, conducted at the modelling facility of Vrjie University, for comparison with numerical codes. The final quarter of 2007 saw the return visit of John Sheehan to the Vrije University in Amsterdam. The visit was to the analogue modelling laboratory, headed by Professor Dimitrios Sokoutis, that forms part of Professor Sierd Cloetingh's group. The goal of the visit was to perform extensional, lithosphere scale analogue models in ambient gravity. The purpose of the experiments was to investigate the effects of weakened zones on the resulting rifting process. The models were completed successfully and currently the implications of the results from these experiments are under consideration. As well as providing direct insights into the rifting process, the models also provide an excellent opportunity for the benchmarking of numerical codes. Courtesy of the internal parallel computing cluster provided by DIAS, and the ICHEC Rowan computing cluster in UCD, work on the comparison of these two differing methodologies, analogue and numerical, is ongoing.

Two seismic stations, namely DSB in the Dublin mountains and VAL at the Met Éireann Valentia Observatory, now report data in real-time through internet connection into DIAS. These data are further transmitted to Potsdam for inclusion in the global GEOFON network for automatic earthquake event location determination. Efforts continued to convince the Government of the need for a modern seismic network for Ireland, particularly as an integral component in a national Tsunami Warning System and as a contribution to a Northeast Atlantic and Mediterranean Tsunami Warning System.

Finally, the Section's Outreach grew enormously with the incipient Seismology in Schools (Seismeolaiocht sa Scoil) programme. The Section purchased 7 seismometers from the U.K. manufacturer, and another 38 have been ordered for the Educational Centres and for the Geological Survey of Ireland. The Seismology in Schools Pilot Project is being introduced and promoted by the Geophysics Section and Discover Science as a result of increasing interest by students in earthquakes, and Earth science in general, and both primary and secondary schools will participate in the pilot programme. DIAS held a very successful "Train the Teachers" Day in December 2007 to introduce teachers to the pilot programme and how to promote the pilot programme in the schools. The Section is introducing this pilot programme as its contribution to the International Year of Planet Earth (IYPE) Programme as inaugurated by the UN earlier in 2007.

Buaic amháin den samhaltú geoidinimice ba ea na sonraí a ghin trialacha sa samhaltú analógach a rinneadh ag saoráid samhaltaithe Ollscoil Vrjie, le comparáid a dhéanamh le cóid uimhriúla. I ráithe dheiridh 2007, rinne John Sheehan athchuairt ar Ollscoil Vrije, Amsterdam, chuig an saotharlann samhaltaithe analógach atá faoi cheannas an Ollaimh Dimitrios Sokoutis atá ina chuid de ghrúpa an Ollaimh Sierd Cloetingh. Ba é aidhm a chuairte ná chun samhlacha analógacha sínte litisféar de réir scála a dhéanamh i ndomhantharraingt chomhthimpeallach. Ba é aidhm na dturgnamh ná scrúdú a dhéanamh ar iarmhairtí na gcriosanna lagaithe ar an bpróiseas scoilte a tharla dá bharr. Críochnaíodh na samhlacha go rathúil agus tá impleachtaí thorthaí na dturgnamh faoi bhreithniú faoi láthair. Chomh maith le léargais dhíreacha a sholáthar ar an bpróiseas scoilte, soláthraíonn na samhlacha deis iontach chun na cóid uimhriúla a thagarmharcáil. Tá braisle ríomhaireachta comhuainí inmheánaí DIAS agus braisle ríomhaireachta ICHEC Rowan UCD á soláthar chun obair ar chomparáidí idir an dá mhodheolaíocht éagsúla, an modh analógach agus an modh uimhriúil.

Soláthraíonn dhá stáisiúin seismeacha sonraí i réad-am anois trí nasc idirlín le DIAS, .i., DSB i Sléibhte Átha Cliath agus VAL ag Réadlann Dhairbhre Met Éireann. Cuirtear na sonraí seo ar aghaidh ansin chuig Potsdam le cur isteach sa líonra domhanda GEOFON, d'fhonn a fháil amach go huathoibríoch na háiteanna a bhfuil creathanna talún ag tarlú. Leanadh le hiarrachtaí a chur ina luí ar an Rialtas go bhfuil líonra nua-aimseartha seismeach riachtanach d'Éirinn, go háirithe mar bhunchuid de Chóras Réamhrabhaidh Súnámaí (CRS) agus mar chuid de CRS don Atlantach Thoir Thuaidh agus don Mheánmhuir.

Mar fhocail scoir, bhí fás mór ar Fhor-rochtain na Rannóige leis an gclár nua Seismeolaiocht sa Scoil. Cheannaigh an Rannóg 7 seismiméadar ón déantóir sa Ríocht Aontaithe agus tá 38 eile ar ordú dos na hlonaid Oideachais agus do Shuirbhéireacht Gheolaíochta na hÉireann. Tá an Tionscadal Seismeolaiocht sa Scoil á thabhairt isteach agus á chur chun cinn ag Rannóg na Geoifisice agus Discover Science mar thoradh ar an méadú suime i measc mac léinn i gcreathanna talún agus sa Domhaneolaíocht go ginearálta, agus beidh bunscoileanna agus méanscoileanna araon páirteach sa chlár píolótach. Bhí "Lá Oiliúna na nOidí" an-rathúil ag DIAS i mí na Nollag 2007 leis an gclár píolótach a thaispeáint dóibh agus conas é a chur chun cinn sna scoileanna. Tá an Rannóg ag tabhairt an chláir phíolótaigh seo isteach mar a cuid féin de Chlár Bhliain Idirnáisiúnta Phlainéad an Domhain (IYPE) a bhunaigh na Náisiúin Aontaithe níos luaithe i 2007.

School of Theoretical Physics
Scoil na Fisce Teoiriciúla

In the wide field of understanding and controlling nature, the main task of the School is research in fundamental problems of physics. The emergence of technological consequences is expected, but it is well known that the most important applications are usually unforeseen when the research is carried out. A strong push by funding agencies towards applications often resembles the attempt to make plants grow by pulling. Nevertheless, the importance of applications was already stated by the founders of the Institute and never forgotten. Indeed, the late Professor John Lewis developed the use of probability theory for communication networks, which led to the founding of a successful company, Corvil Networks. At present the theoretical and experimental study of the fractional quantum Hall effect has created favourable circumstances for a new initiative. Quantum Information, Quantum Computing Information and Communication Technology are currently entering the quantum age. Quantum encoding has been achieved and even commercialized, whereas quantum computing will need many years of development. Both areas need much theoretical study.

At DIAS and during an extended visit to Cambridge, Prof. Dorlas determined the capacity of a large class of channels with long-term memory to transmit quantum coded information, in collaboration with Dr. Nilanjana Datta and Y. Suhov (Cambridge). With PhD student Ciara Morgan he obtained the capacity of an amplitude-damping channel and constructed an example of a channel with long-term memory for which the capacity to carry quantum information has new features.

Quantum computers will revolutionize computations in chemistry, molecular biology and certain areas of mathematics. They will allow the rapid solution of problems which on ordinary computers would take longer than human history. If the laws of quantum mechanics can be applied to large systems, their construction is possible, but their operation depends on an extremely efficient shielding from external noise. The study of fractional quantum Hall systems in the context of conformal quantum field theory strongly suggests the existence of quasi-particles which would be largely immune from external perturbations. According to our best judgement this is a research direction with great practical potential in which Ireland can take the lead. The School has much experience in the study of quantum information and conformal field theory and it is to be hoped for that funding agencies can be convinced that an investment in this area will be beneficial for Ireland's future.

Ríomse leathan na tuisceana agus i rialú an nádúir, is í príomhfheidhm na Scoile taighde a dhéanamh ar bhunfhadhbanna na fisice. Cé go mbíonn súil le teacht chun cinn torthaí teicneolaíochta, tuigtear go maith nach mbíonn súil leis na torthaí praiticiúla is tábhachtaí a thagann chun cinn agus an taighde á dhéanamh. Bíonn brú láidir ó na gníomhaireachtaí maoiniúcháin i dtreo torthaí praiticiúla: is ionann an dearcadh seo agus duine ag tarraingt ar phlanda chun é a fhás. Mar sin féin bhí tábhacht na dtorthaí praiticiúla luaite ag bunaitheoirí na hinstitiúide agus ní dhearnadh dearmad di riamh. Go deimhin, d'fhorbair an tOllamh John Lewis, nach maireann, úsáid theoiric na dóchúlachta do líonraí cumarsáide, ónar eascair comhlacht rathúil Corvil Networks. Inniu, tríd an staidéar teoiriciúil agus trialach ar iarmhairt chodánach chandamach Hall, tá cúinsí báúla cruthaithe do thionscnamh nua, Faisnéis Chandamach agus Ríomhaireacht Chandamach.

Tá an Teicneolaíocht Faisnéise agus Cumarsáide ag teacht isteach i ré an chandaim faoi láthair. Tá ionchódú candamach bainte amach agus tá sé in úsáid i ndomhan na tráchtála fiú, ach beidh blianta fada forbartha riachtanach i gcás na ríomhaireachta candamaí. Beidh go leor staidéir theoiriciúil riachtanach sa dá réimse.

Ag DIAS, agus i rith cuairte fadaithe go Cambridge, dhearbhaigh an tOllamh Dorlas, i gcomhar leis an Dr. Nilanjana Datta agus Y. Suhov (Cambridge), toilleadh d'aicme mhór de chainéil a raibh cuimhne fhadthéarmach acu chun faisnéis chódaithe chandamach a thraschur. Le mac léinn PhD Ciara Morgan, fuair sé amach toilleadh de cainéal amplitiúid-mhaolaithe agus chuir sé sampla le chéile de chainéal a bhfuil cuimhne fhadthéarmach aige a bhfuil gnéithe nua ag a thoilleadh le faisnéis chandamach a iompar.

Le ríomhairí candamacha, beidh réabhlóid ríomhaireachta sa chemic, sa bhitheolaíocht mhóilíneach agus i réimsí áirithe den mhatamaitic. Beidh siad in ann fadhbanna a réiteach go tapa a thógfadh tréimhsí níos faide ar ghnáthríomhairí ná stair an chine daonna. Más féidir dlithe na meicnice candamaí a chur i bhfeidhm ar chórais mhóra, is féidir iad a thógáil, ach braithfidh a n-oibriú ar sciath fhíoréifeachtach in éadan fuaime seachtraí. I gcomhthéacs na réimsetheoirice candamaí comhfhoirmiúil tugann an scrúdú ar chórais chodánacha chandamacha Hall le fios go láidir go bhfuil cuasaí-cháithníní ann a bheadh saor go mór ó chorraíolacha seachtracha. De réir na breithe is fearr againn, is treo taighde é seo a bhfuil féidearthacht mhór phraiticiúil aige inar féidir le hÉirinn bheith chun tosaigh. Tá mórán taithí ag an Scoil i staidéar na faisnéise candamaí agus na réimsetheoirice comhfhoirmiúla agus bheifí ag súil leis gurbh fhéidir cur ina luí ar

In January 2007, interviews were held for the appointment of a Schrodinger fellow. The committee consisting of Professors Dorlas, Nahm and O'Connor from STP and Michael Douglas from Rutgers decided to offer the position to Dr. Joost Slingerland. He joined the School in September 2007 and it is a pleasure to welcome him to the staff. Dr. Joost Slingerland is an expert on conformal field theory who used this background to work on quantum computation, with experience both at universities and Microsoft. He is well known for work which will allow verifying the presence of quasi-particles with properties suitable for quantum encoding and quantum computation in systems exhibiting the fractional quantum Hall effect. His appointment was a key step in the development of a program for quantum computation.

Quantum Field Theory

Professor Denjoe O'Connor's work is centred on applications of non-commutative geometry to quantum field theory. A basic example is quantum field theory on the fuzzy sphere. This line of research holds promise both for an understanding of the properties of spacetime on small scales and as a technique to do calculations in standard quantum field theories. With his former PhD student Julieta Medina and W. Bietenholz, Professor O'Connor developed a numerically tractable version of a scalar quantum field theory in three dimensions which uses the fuzzy sphere as an alternative to lattice regularization. With STP post-doc Dr. Christian Saemann, he developed a new analytical approach for the case of a scalar field, based on considering a perturbative expansion of the kinetic term. With Dr. Brian Dolan from NUIM and the doctoral students Mr. Idrish Huet and Sean Murray he found a universal Dirac operator for fuzzy complex projective spaces. With STP post-doc Dr. Badis Ydri and PhD student Rodrigo Delgadillo-Blando he found a model whose behaviour may be analogous to the emergence of space in the very early universe. Professor Denjoe O'Connor has supervised six Mexican PhD students at our School, five of who now have successfully completed their projects.

Sinéad Keegan from UCD, who had been supervised by Prof. W. Nahm finished her thesis on ''Algebraic K-Theory and Partition Functions in Conformal Field Theory'' and obtained her PhD in September 2007. The complete solution of the discreet Hirota equation for orthogonal Lie algebras still had to be worked out and was obtained later. Professor Nahm also proved a duality property for partition functions of fermionic type which is related to the level-rank duality occurring in the Langlands program.

ghníomhaireachtaí maoiniúcháin gur maith do thodhchai na hÉireann infheistíocht sa réimse seo.

I mí Eanáir 2007 bhí agallaimh ann chun Ánra Schrodinger a cheapadh. Bhí na hOllúna Dorlas, Nahm agus O'Connor ó SFT, agus Michael Douglas ó Rutgers, ar an gcoiste. Shocraigh siad an post a thairiscint don Dr Joost Slingerland. Thosaigh sé sa Scoil i mí Mheáin Fhómhair 2007 agus tá áthas orainn fáiltiú roimhe chuig an bhfoireann. Is saineolaí é an Dr. Joost Slingerland sa réimsetheoiric chomhlíonach agus d'úsáid sé an cúlra seo chun obair ar ríomh candamach, agus tá taithí aige in ollscoileanna agus le Microsoft. Tá clú agus cáil ar a chuid oibre. Cabhróidh an obair seo le cruthú go bhfuil cuasaí-cháithníní ann a bhfuil airíonna oiriúnacha acu le haghaidh ionchódú candamach agus le haghaidh ríomha candamaigh i gcórais a léiríonn iarmhairt chodánach chandamaigh. Eochairchéim ba ea a cheapadh i bhforbairt chláir le haghaidh ríomha chandamaigh.

Réimsetheoiric Chandamach

Tá obair an Ollaimh Denjoe O'Connor dírithe ar fheidhmeanna céimseatan neamh-inmhalartaithe do réimsetheoiric chandamach. Bunsampla is ea réimsetheoiric chandamach ar an sféar doiléir. Tá féidearthachtaí ann i dtaighde sa réimse seo le tuiscint a fháil ar airíonna spás-ama ar mhionscálaí agus mar theicníc chun ríomhaireachtaí a dhéanamh i réimsetheoiricí candamacha caighdeánacha. Lena hiarscoláire PhD Julieta Medina agus le W. Bietenholz, d'fhorbair an tOllamh O'Connor leagan uimhriúil so-oibrithe de réimsetheoiric chandamach scálaithe thríthoiseach a úsáideann an sféar doiléir mar leagan eile den laitís á tabhairt chun rialtachta. Le hiardhoch. SFT an Dr. Christian Saaemann, d'fhorbair sé bealach nua anailíse do chás réimse scálaithe, bunaithe ar leathnú corraitheach den téarma cinéiteach. Leis an Dr. Brian Dolan ón NUIM agus na mic léinn dochtúireachta Idrish Huet agus Sean Murray, d'aimsigh sé oibreoir Dirac uilechoiteann os cionn spásanna coimpléascacha teilgeacha doiléire. Le hiardhoch. SFT an Dr. Badis Ydri agus le mac léinn PhD Rodrigo Delgadillo-Blando, d'aimsigh sé samhail agus tá seans ann go bhfuil a hiompraíocht analógach le nochtadh spáis sa chruinne fhíorluath. Mhaoirsigh An tOllamh Denjoe O'Connor seisear mac léinn PhD Mheicsiceacha sa Scoil againn ar éirigh cuigear críoch rathúil a chur lena gcuid tionscadail.

Chríochnaigh Sinéad Keegan ó UCD, a bhí faoi stiúir an Ollaimh W. Nahm, a tráchtas ar "K-Teoiric Ailgéabrach agus Feidhmeanna Deighilte sa Réimsetheoiric Chomhfhoirmiúil" agus fuair sí a PhD i mí Mheáin Fhómhair 2007. Ag an bpointe sin ní raibh réiteach iomlán ar cothromóid dhiscréideach Hirota le haghaidh ailgéabar ortagónach Lie ach fuarthas í níos déanaí. Chruthaigh an tOllamh Nahm airí dúbailteachta do

This program is of central importance for contemporary mathematics and has strong connections to mathematical physics, in particular string theory. Professor S. Shatashvili from TCD and Professor Werner Nahm applied for SFI funding in the context of the Mathematics Initiative but could not obtain it despite strong support from international reviewers. Criticism concerned industrial applicability and integration in the local community. Whereas support for mathematics with perceived industrial applications has been strong and well spread over Ireland, support for core mathematics remains weak and needs to be addressed.

Conferences and Outreach

No conference on topological quantum computing is yet been held in Europe, partly because a driving force comparable to the Bell Laboratories of Alcatel-Lucent and to Microsoft Station Q is lacking. In the week of 10-14 September 2007 the School of Mathematics (TCD), the Department of Mathematical Physics (NUIM) and our School jointly held an International Workshop on Topological Quantum Computing at the Hamilton Mathematics Institute at TCD. Most of the internationally leading experts gave talks, in particular Professor Mike Freedman, mathematician and Fields medal winner, who now works at Microsoft Station Q on the development of a quantum computer and Steve Simon from Alcatel-Lucent. During the conference the European participants decided to make joint applications for a European project in this area with its central hub at the School, of Theoretical Physics.

Professor O'Connor organized an International Workshop on Fuzzy Physics and Non-commutative Geometry, which was held from 5-16 June 2007.

On 13 and 14 December 2007 the Irish Mathematical Society and our School held the annual Winter Symposium at DIAS. A key talk was given by Professor Luke Drury, Senior Professor at the School of Cosmic Physics, who reported on the acquisition of the Bluegene computer and its potential for computations in Ireland. Dr. Johnny Coleman from the School of Physics at TCD gave the first report of his work on mass production of graphene flakes by chemical exfoliation. This is a very important result with potential for topological quantum computing, since graphene is the major hope for an alternative to Gallium Arsenite for the construction of fractional quantum hall states.

feidhmeanna deighilte den chineál fhearmóineach atá gaolta leis an dúbailteacht leibhéal-rang atá ar siúil i gclár Langlands. Tá tábhacht lárnach ag an gclár seo don mhatamaitic chomhaimseartha agus tá naisc láidre aige leis an bhfisic mhatamaiticiúil, an tsreangtheoiric ach go háirithe. Chuir an tOllamh S. Shatashvili ó TCD agus an tOllamh Werner Nahm isteach ar mhaoiniú SFI i gcomhthéacs an Tionscnaimh Matamaitice ach ní bhfuair siad é in ainneoin tacaíochta láidre ó athbhreithneoirí idirnáisiúnta. Fuarthas locht ar an mbaint a bheadh aige le tionscal agus an tslí a gceanglófaí é leis an bpobal áitiúil. Cé go bhfuil tacaíocht láidir, fhorleathan in Éirinn don mhatamaitic a bhraitear a bhfuil feidhmeanna tionsclaíochta aici, tá an tacaíocht don bhunmhatamaitic lag i gcónaí agus caithfear tabhairt faoi seo.

Comhdhálacha agus For-rochtain

Ní raibh comhdháil riamh faoin ríomhaireacht chandamach thoipeolaíoch san Eoraip, go pointe áirithe toisc nach bhfuil aon rud inchurtha le Bell Laboratories Alcatel-Lucent nó le Microsoft Station Q chun í a spreagadh. Sa tseachtain 10-14 Meán Fomhair 2007, bhí Ceardlann Idirnáisiúnta ar Ríomhaireacht Chandamach Thoipeolaíoch ag an Scoil againn, ag Scoil na Matamaitice TCD agus ag Roinn na Fisice Matamaiticiúla, NUIM, in Institiúid Matamaitice Hamilton, TCD. Thug formhór na bpríomhshaineolaithe idirnáisiúnta léachtaí, go háirithe an tOllamh Mike Freedman, matamaiticeoir a bhuaigh bonn Fields agus atá ag obair anois ag Microsoft Station Q agus a labhair ar fhobairt ríomhaire chandamaigh agus thug Steve Simon ó Alcatel-Lucent léacht freisin. I rith na comhdhála rinne na rannpháirtithe Eorpacha cinneadh comhiarratais a chur isteach le haghaidh tionscadail Eorpaigh sa réimse seo ina mbeadh an mol lárnach sa Scoil againn. D'eagraigh an tOllamh O'Connor Ceardlann Idirnáisiúnta ar an Fhisic Dhoiléir agus An Chéimseata Neamh-inmhalartaithe, a bhí ar siúl ón 5-16 Meitheamh 2007.

Ar an 13 agus 14 Nollaig 2007, bhí an Siompóisiam Geimhridh bliantúil ag an Scoil agus Cumann Matamaitice na hÉireann i DIAS. Thug Luke Drury, Ollamh Sinsearach i Scoil na Fisice Cosmaí, eocharchaint inar thug sé tuairisc faoin ríomhaire Bluegene a fuarthas agus faoi na féidearthachtaí a bhaineann leis maidir leis an ríomhaireacht in Éirinn. Thug an Dr. Johnny Coleman ó Scoil na Fisice, TCD, an chéad thuairisc ar a chuid oibre ar olltáirgeadh calóga graiféine trí scamhadh ceimiceach. Is toradh an-thábhachtach é seo a bhfuil féidearthachtaí aige don ríomhaireacht chandamach thoipeolaíoch, ós rud é gurb í an ghraiféin an príomhdhóchas mar leagan eile in áit arsainíde gailliam chun staideanna codánacha candamacha Hall a thógáil.

The Third series of Distinguished John Lewis Lectures was given by Professor Ya. Sinai (Princeton) in the week 24-30 May. The lecture series is jointly organised between the Dias and Hamilton Mathematics Institute at Trinity College and benefits from a generous donation by Corvil Networks. The topic of the lectures was ''Blow-ups in Navier-Stokes Systems and Renormalisation Group Theory''. Professor Sinai forged connections between the study of deterministic and probabilistic systems which elucidated many physical phenomena. He is greatly respected by both the mathematics and the physics community.

The statutory public lecture of our School was given on 16 May by Professor Lene Hau, Harvard University, with title ''Wizardry with light: freeze, teleport, and go!''. The talk was given in the Schrodinger Lecture Theatre of Trinity College. Professor Hau became a celebrity due to her experiments which first slowed down light to the speed of a fast biker, then brought it to complete standstill and let it loose again. Her talk created great public interest and she was interviewed on the 18 May 2007 on RTE1 Radio's programme ''Today with Pat Kenny''.

Thug an tOllamh Ya. Sinai (Princeton) an Tríú sraith de Léachtaí Oirirce John Lewis sa tseachtain 24-30 Bealtaine. Tá an tsraith léachtaí comheagraithe idir Institiúid Ard-Léinn Bhaile Átha Cliath agus Institiúid Matamaitice Hamilton, TCD, agus baineann sé tairbhe as deontas flaithiúil ó Corvil Networks. Ba é téama na léachtaí ná ''Blow-ups in Navier-Stokes Systems and Renormalisation Group Theory''. Chruthaigh an tOllamh Sinai naisc idir staidéir ar chórais chinntitheacha agus ar chórais dhóchúlacha, rud a rinne soiléiriú ar go leor feiniméan fisiciúil. Tá meas mór air i bpobal na matamaitice agus i bpobal na fisice araon.

Thug an tOllamh Lene Hau, Ollscoil Harvard, léacht reachtúil na Scoile againn i mbliana, faoin teideal ''Wizardry with light: freeze, teleport, and go!'' i Léachtlann Shrodinger i gColáiste na Tríonóide. Thuill an tOllamh Hau cáil de bharr a cuid turgnamh a mhoilligh solas go dtí luas rothaí ar dtús, ansin go dtí stad iomlán, agus a scaoil ar luas arís é. Chruthaigh a léacht an-suim i measc an phobail agus cuireadh agallamh uirthi ar an gclár raidió RTE1, ''Today with Pat Kenny'', ar an 18 Bealtaine 2007.

Administration and Finance
Riarachán agus Airgeadas

Administration and Finance

In 2007 the Institute continued its search to identify the most suitable site for co-locating and following a detailed internal review it was agreed that the preferred location would be 10 Burlington Road. Subsequent to this, the Registrar and the Finance Officer met with representatives of the capital division of the Department of Education and Science in June and agreed a capital allocation for the first time.
The matter of the preferred site at Burlington Road was also discussed with the OPW.

HR

Training courses were provided in the following areas: Writing competitive external funding proposals in particular Framework 7, management development programme and IBEC information session on fixed-term contracts.

Other

Following the completion of renovation works in Fitzwilliam Place, the School of Astronomy/Astrophysics moved from Merrion Square and Dunsink to Fitzwilliam Place. Also, there was quite a substantial amount of work involved in the procurement of the Bluegene supercomputer and the Strategy Statement was completed and printed in 2007.

Finance

In the area of finance the Institute received a capital allocation of €150,000 in November 2007. The following projects benefited from this allocation: Maintenance of the physical IT network, new library security system, upgrade of the server room, new storage facilities at Fenian Street, new VOIP telephone system at Burlington Road, replacement seismic data recorder and outreach equipment.

The attached financial statements report a surplus of €163,796 for the year. This compares with a surplus of €16,570 in the year to 31st December 2006. Total income for the Institute increased from €11,306,748 in 2006 after adjusting for pensions to €16,546,437 for 2007. This represents an improvement of €5,239,689 or 46.34% and the main increases arose in projects and Oireachtas income. The respective increases were €3,977,907 and €930,000.

The Institute's total costs, after adjusting for the transfer to the capital reserves, also increased from €11,290,178 in 2006 to €16,382,641 in 2007 i.e. an increase of €5,092,463 or 45.10%.

The significant movements in costs took place in payroll, pensions and projects where the respective increases of €589,347, €334,114 and €1,432,586 arose. Also, there was an increase of €2,454,947 in the amount transferred to capital reserves which represents the investment in the supercomputer at a cost of €2,322,279.

Riarachán agus Airgeadas

I 2007 lean an Institiúid lena cuardach chun an suíomh is oiriúnaí a aithint le haghaidh comhlogaithe agus tar éis mionathbhreithniú inmheánach socraíodh gurbh é 10 Bóthar Burlington an suíomh roghnaithe. Ina dhiaidh sin, bhuail an Cláraitheoir agus an tOifigeach Airgeadais le hionadaithe ó na ranna caipitil sa Roinn Oideachais agus Eolaíochta í mí an Mheithimh agus d'aontaigh siad ar leithdháileadh caipitil don chéad uair. Pléadh ceist an tsuímh roghnaithe ag Bóthar Burlington freisin leis an OPW.(le hOifig na nOibreacha Poiblí).

Acmhainní Daonna

Cuireadh cúrsaí oiliúna ar fáil sna réimsí seo a leanas: Scríobh moltaí seachtracha iomaíocha maoinithe go háirithe Frámaíocht 7, clár forbartha bainistíochta agus seisiún eolais IBEC ar chonarthaí ar théarmaí seasta.

Eile

Nuair a críochnaíodh na hoibreacha athchóirithe í bPlás Mhic Liam, d'aistrigh Scoil na Réalteolaíochta/Réaltfhisice ó Chearnóg Mhuirfean agus Dún Since chuig Plás Mhic Liam. Freisin, bhí roinnt mhaith oibre i gceist chun sár-ríomhaire Bluegene a fháil agus críochnaíodh agus cuireadh an Ráiteas Straitéise i gcló i 2007.

Airgeadas

I réimse an airgeadais, fuair an Institiúid leithdháileadh caipitil de €150,000 i mí na Samhna 2007. Bhain na tionscadail seo, a leanas, sochar as an leithdháileadh seo: Cothabháil líonra fisiceach na FT; córas slándála nua na leabharlainne; uasghrádú an tseomra freastalaithe; saoráidí stórála nua i Sráid na bhFíníní; córas guthán nua VOIP ag Sráid Bhurlington; taifeadán sonraí seismeach nua; trealamh for-rochtana.

Tuairiscíonn na ráitis airgeadais ag gabháil leis seo barrachas €163,796 don bhliain. Tá sé seo i gcomparáid le barrachas €16,570 sa bhliain go dtí 31 Nollaig 2006. Tar éis coigeartú le haghaidh pinsean, mhéadaigh ioncam iomlán na hInstitiúide ó €11,306,748 i 2006 go €16,546,437 i 2007. Seo méadú €5,239,689, nó 46.34%, agus tháinig na príomhmhéaduithe i gcás thionscadal agus ioncaim an Oireachtais. Tháinig méadú de €3,977,907 agus de €930,000 faoi seach.

Tar éis coigeartú d'aistriú chuig cúlchistí caipitil, mhéadaigh costais iomlán na hInstitiúide freisin, ó €11,290,178 i 2006 go €16,382,641 i 2007, .i. méadú €5,092,463 nó 45.10%.

Tharla na hathruithe ba shuntasaí i gcás párolla, pinsean agus tionscadal, mar tháinig méadú de €589,347,€334,114 agus €1,432,586 faoi seach. Bhí méadú €2,454,947 freisin ar an tsuim a aistríodh chuig cúlchistí caipitil, a sheasann d'infheistíocht de €2,322,279 ar an tsár-ríomhaire.

Staff
An Fhoireann

Council of the Institute

Chairman

D. Donnelly

Ex-Officio Members

H. Brady, President, UCD
J. Slevin, President, RIA
J. Hegarty, Provost, TCD

Members Appointed by the Governing Boards of Constituent Schools

G. Wrixon
A. Jaffe
A. Ahlqvist
W. Nahm
A. Jones
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 hUigínn
E. Ní Dhea
A. Bourke
K. Simms
N. Ó Muraíle
L. Mac Mathúna

Governing Board of the School of Theoretical Physics

Chairman

A. Jaffe

Senior Professors

T.C. Dorlas
D. O'Connor
W. Nahm

Appointed Members

A. Breslin
S. Ryan
H. Nicolai
M. Grünewald
M. Tuite
P. Knight
L. Hau
R. Dijkgraaf
S. Shatashvili

Governing Board of the School of Cosmic Physics

Chairman

G. Wrixon

Senior Professors

L.O'C. Drury
E. Meurs
A.G. Jones

Appointed Members

A. Khan
O. Glaser
C. Stehlé-Cojan
L. Enright
R. Perrott
L. Hanlon
M. Fowler

Administrative Staff of the Institute 2007

Registrar:

C. Keaveney

Finance Officer:

G. Forkin

Senior Administrative Officer:

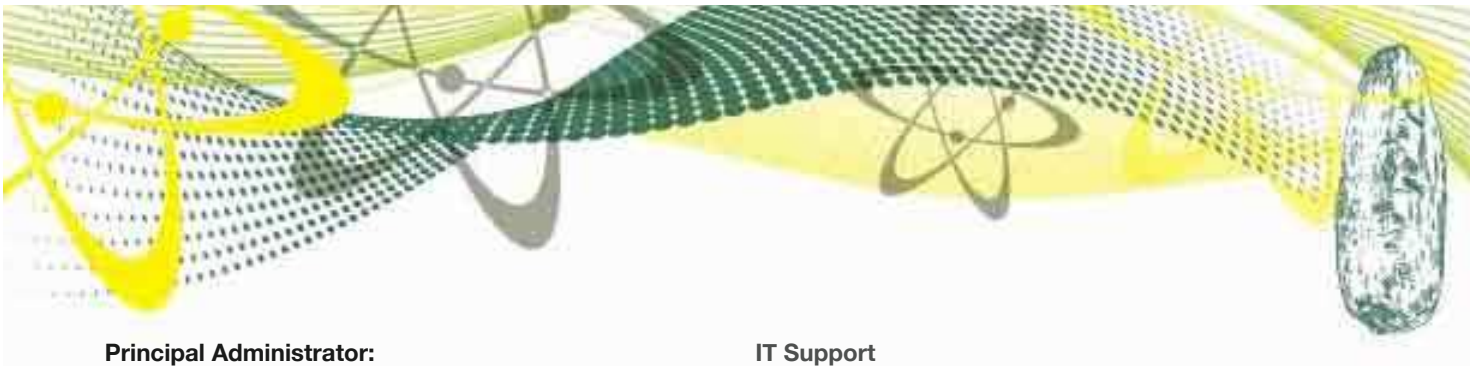
M. Burke

Assistant Finance Officer:

R. Byrne

Clerks:

T. Broderick
N. Granahan
M. Loughman
H. Moynihan



Principal Administrator:
M. Seoighe (on leave of absence)

Senior Administrator:
M. Ó Gliasáin

Temporary Administrative Staff:
E. Barrett
M. Brennan

Support Staff:
N. Carney (to 22 December)
G. Casey
R. Jones
B. Judge
P. McDonald
M. Quinn †
C. Doyle
T. O Griofa

Staff and Scholars of the School of Celtic Studies 2007

Senior Professors
F. Kelly (Director)
L. Breatnach
P. Breatnach

Professors
M. McKenna
P. Ó Macháin

Assistant Professors
A. Nic Dhonnchadha
M. O Riordan
B. Ó Curnáin

Assistant Librarians
M. Kelly

Library Assistant
Ó. Ní Chanainn

School Administrator
E. Nic Dhonncha

Technical Staff
ISOS
A.M. O'Brien

IT Support
A. McCarthy (part-time)
S. McCullagh (part-time)

Bibliographer
A. Guilarte (contract)

Bergin Fellow
R. McLaughlin
C. Downey

Scholars
E. O'Raghallaigh (Ireland) (to 30 September)
B. Miles (Canada)
N. White (Ireland)
G. Ó Riain (Ireland)
F. Verstraten (Holland) (from 1 October)

Irish Research Council for the Humanities and Social Sciences (IRCHSS) Government of Ireland Fellowship
G. Manning (Ireland) (from 1 September)

Temporary Support Staff
J. O'Brien (from 30 May)

Professor Emeritus
M. Ó Murchú

Vacation Students
S. Rousseau (5 June to 10 August)
M. Quinn (18 June to 24 August)

Staff School of Theoretical Physics 2007

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

Librarian
A. Goldsmith

School Administrator
M. Matthews

Systems Administrator
A. Jimenez

† Died 2 January 2008

Post-Doctoral Scholars
M. Leitner (Germany)
C. Sämann (Germany) (to 30 September)

Pre-Doctoral Scholars
C. Morgan (Ireland)
A. Ghesquiere (France)
P. Abramski (Russia) (from 1 April)
S. Murray (Ireland) (from 24 September)
S. Ní Chiagáin (Ireland) (from 1 April to 30 September)

Schroedinger Fellow
A. Povolotsky (Russia)
C. Romelsberger (Germany) (to 30 November)
J. Slingerland (Netherlands) (from 3 September)

Project Staff
M. Samsonov (Russia) (from 9 January) "*Mathematical Analysis of the Bethe Ansatz Solution of Spin Models*".

Embark Initiative Postdoctoral Research Fellow
S. Bal (India) *"Dynamical Generation of space time and gauge group".*
O. Rosten (U.K.) "*Manifestly Gauge Invariant QCD*".
F. Dolan (Ireland) "*Aspects of N=4 Super Yang Mills*".
B. Qureshi (Pakistan) (from 15 December) "*Noncommutative Spacetime Physics, Matrix Models and Hopf Algebras.*"

Embark Initiative Postgraduate Research Scholar
S. Ní Chiagáin (Ireland) (to 31 March)
S. Murray (Ireland) (to 23 September)

Vacation Student
B. Caffrey (from 23 July to 10 October)

Staff School of Cosmic Physics 2007

Senior Professors
A. Jones (Director to November)
L. Drury
E. Meurs

Professors
T. Ray
F. Aharonian

Assistant Professors
B. O'Reilly
P. Readman

Fellows
C. del Burgo (Spain)
X. Garcia (Spain)
A. Lim (England)
M. Chernyakova (Russia) (from 1 April)

Experimental Officers
T. Blake
S. Dudzinski (contract)

Senior Technical Assistants
C. Horan
M. Smyth
G. Wallace

Technical Assistants
E. Flood
A. Grace
H. O'Donnell
L. Collins
J. Spratt (contract) (to 31 August)
C. Hogg (contract) (from 24 May)

IT Technician
S. O'Sullivan (contract) (from 20 March)

Clerical Staff
A. Byrne (to 23 January)
P. Daly
C. Woods (contract) (to 27 April)
J. Lee (contract) (from 24 September)

Scholars
A. Avdeeva (Russia) (to 31 December)
A. Chabert (France) (to 30 September)
M. Hamilton (South Africa) (to 31 October)
C. Melody (Ireland) (to 30 October)
M. Moorkamp (Germany)
J. Sheehan (Ireland) (to 31 December)
P. Ward (Ireland) (to 31 October)
M. Miensopust (Germany)
S. Vergani (Italy)
J. Mackey (Ireland) (from 1 October 06)
E. Nichelli (Italy) (from 30 April)
J. Schmoldt (Germany) (from 1 April)
S. Delaney (Ireland) (from 17 September)
D. Malyshev (Ukraine) (from 15 October)

Project Staff

R. Curran SFI project
M. Muller SFI project
F. Hauser PIMS (to 30 September)
E. Whelan JETSET
F. de Colle JETSET
J. Gracia JETSET
P. Dempsey IRCSET (from 1 October)
L. Podio IRCSET (from 17 December)
S. Gabici COSMIC RAY ORIGIN (from 1 October)

CosmoGrid

Project Scientist
T. Lery (to 22 January)

Senior Researcher
C. Masterson (from 1 January to 28 February, Project Scientist from 1 March to 16 July)

Cluster Manager
D. Golden (to 14 April)
P. Grange (from 3 September to 31 December)

Project Administrator
A. Shaw (to 31 December)

Post-Doctoral Researchers
S. Leygnac (to 31 October)
S. Wang (to 31 December)
T. Yamasaki (to 30 June)

Vacation Students

S. Doogan (29 May to 13 Sept)
A. Stewart (5 June to 21 September)
P. Dawson (11 June to 3 August)
L. Fennell (11 June to 31 August)
B. Whelan (5 June to 29 June)

Temporary Support Staff

L. O'Neill (from 2 April to 6 June)
I. Pelcer (from 17 October)

Financial Statements
for year ended 31 December 2007

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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 & Science 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.

Dervilla Donnelly
Chairman - Council of the Institute

Fergus Kelly
Council Member

Statement on the System of Internal Financial Control

Responsibility for system of 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 and Internal Auditor. In 2007, the Audit Committee met on two occasions.

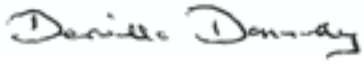
In addition, the 2007 report on internal control systems as provided by the Internal Auditor has been made available to Members of Council.

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 2007 Council conducted a review of the effectiveness of the system of internal financial controls of the Institute.

Signed on behalf of the Council of the Institute



Dervilla Donnelly
Chairman - Council of the Institute

DATE: 15 May 2008

Report of the Comptroller and Auditor General

for presentation to the Houses of the Oireachtas

I have audited the financial statements of Dublin Institute for Advanced Studies for the year ended 31 December 2007 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.

Respective Responsibilities of the Council and the Comptroller and Auditor General

The Council is responsible for preparing the financial statements in accordance with the Institute for Advanced Studies Act, 1940, and for ensuring the regularity of transactions. The Council prepares the financial statements in accordance with Generally Accepted Accounting Practice in Ireland. The accounting responsibilities of the Members of the Council are set out in the Statement of Responsibilities of the Council.

My responsibility is to audit the financial statements in accordance with relevant legal and regulatory requirements and International Standards on Auditing (UK and Ireland).

I report my opinion as to whether the financial statements give a true and fair view, in accordance with Generally Accepted Accounting Practice in Ireland. I also report whether in my opinion proper books of account have been kept. In addition, I state whether the financial statements are in agreement with the books of account.

I report any material instance where moneys have not been applied for the purposes intended or where the transactions do not conform to the authorities governing them.

I also report if I have not obtained all the information and explanations necessary for the purposes of my audit.

I review whether the Statement on Internal Financial Control reflects the Institute's compliance with the Code of Practice for the Governance of State Bodies and report any material instance where it does not do so, or if the statement is misleading or inconsistent with other information of which I am aware from my audit of the financial statements. I am not required to consider whether the Statement on Internal Financial Control covers all financial risks and controls, or to form an opinion on the effectiveness of the risk and control procedures.

I read other information contained in the Annual Report, and consider whether it is consistent with the audited financial statements. I consider the implications for my report if I become aware of any apparent misstatements or material inconsistencies with the financial statements.

Basis of Audit Opinion

In the exercise of my function as Comptroller and Auditor General, I conducted my audit of the financial statements in accordance with International Standards on Auditing (UK and Ireland) issued by the Auditing Practices Board and by reference to the special considerations which attach to State bodies in relation to their management and operation. An audit includes examination, on a test basis, of evidence relevant to the amounts and disclosures and regularity of the financial transactions included in the financial statements. It also includes an assessment of the significant estimates and judgments made in the preparation of the financial statements, and of whether the accounting policies are appropriate to the Institute's circumstances, consistently applied and adequately disclosed.

I planned and performed my audit so as to obtain all the information and explanations that I considered necessary in order to provide me with sufficient evidence to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or other irregularity or error. In forming my opinion I also evaluated the overall adequacy of the presentation of information in the financial statements.

Opinion

In my opinion, the financial statements give a true and fair view, in accordance with Generally Accepted Accounting Practice in Ireland, of the state of the Institute's affairs at 31 December 2007 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.

Gerard Smyth

For and on behalf of the Comptroller and Auditor General

30 May 2008

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%
Supercomputer	33.3%

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 Science 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 Science.

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 Science.

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	2007 €	2006 €
Income			
Oireachtas Grant		7,882,000	6,952,000
Net deferred funding for pensions	10.b	1,638,031	1,431,296
Sales of Publications		63,010	51,931
Projects	2	6,829,359	2,851,452
Other	3	134,037	20,069
		16,546,437	11,306,748
Transfer (to)/from Capital Reserve	5	(2,555,965)	(101,018)
		13,990,472	11,205,730
Expenditure	1		
School of Celtic Studies		1,569,355	1,472,665
School of Theoretical Physics		1,206,836	1,133,968
School of Cosmic Physics		6,157,433	4,585,163
Administration		4,893,052	3,997,364
		13,826,676	11,189,160
Surplus/(Deficit) for year		**163,796**	**16,570**
Balance at 1 January		548,868	532,298
Balance at 31 December		**712,664**	**548,868**

Statement of Recognised Gains and Losses		2007	2006
Surplus for the year		163,796	16,570
Experience losses /(gains) on pension scheme liabilities		85,000	(3,627,000)
Changes in assumptions underlying the present value of pension scheme liabilities		4,805,000	2,961,000
Actuarial Loss /(Gain) on Pension Liabilities	10.e	**4,890,000**	**(666,000)**
Adjustment to Deferred Pension Funding		**(4,890,000)**	**666,000**
Total recognised gain/(loss) for the year		**163,796**	**16,570**

The Statement of Accounting Policies and notes 1 to 12 form part of these financial statements.

Dervilla Donnelly
Chairman - Council of the Institute

Fergus Kelly
Council Member

Balance Sheet

	Notes	2007	2006
		€	€
Assets			
Fixed Assets	4	3,500,091	944,126
Current Assets:			
Cash on Hand and at Bank		4,080,992	4,014,385
Debtors and Prepayments		351,263	269,637
Total Assets		**7,932,346**	**5,228,148**
Less Liabilities			
Creditors - Amounts falling due within one year			
Creditors and Accruals		496,199	449,716
Projects	2	3,164,916	3,228,222
Creditors - Amounts falling due after one year	6	58,476	57,216
Total Liabilities Before Pensions		**3,719,591**	**3,735,154**
Assets Less Liabilities Before Pensions		**4,212,755**	**1,492,994**
Deferred Pension funding	10.d	29,712,000	32,964,000
Pension Liabilities	10.e	(29,712,000)	(32,964,000)
		0	**0**
Net Assets		**4,212,755**	**1,492,994**
Financed by:			
Income and Expenditure Account		712,664	548,868
Capital Reserve	5	3,500,091	944,126
		4,212,755	**1,492,994**

The Statement of Accounting Policies and notes 1 to 12 form part of these financial statements.

Dervilla Donnelly
Chairman - Council of the Institute

Fergus Kelly
Council Member

Cash Flow Statement

	Notes	2007 €	2006 €
Reconciliation of operating surplus to net cash inflow from operating activities			
Surplus for year		163,796	16,570
Interest received	3	(107,151)	(17,288)
Increase in Creditors		47,743	57,232
(Increase) in Debtors		(81,626)	(54,438)
Net Increase/(Decrease) in Research Programmes and Fees		(63,306)	967,158
Depreciation	4	273,817	275,888
Capital Reserve Transfer	5	2,555,965	101,018
Loss on disposal		1,720	-
Net Cash Inflow from operating activities		2,790,958	1,346,140
Cash Flow Statement			
Net Cash Inflow from operating activities		2,790,958	1,346,140
Returns on investments and servicing of finance			
Bank Interest Received	3	107,151	17,288
Capital expenditure			
Purchase of Tangible Assets	4	(2,831,502)	(376,906)
Increase/(Decrease) in Cash		**66,607**	**986,522**
Reconciliation of net cash flow to movement in net funds			
Increase in Cash		66,607	986,522
Net Funds at 1 January		4,014,385	3,027,863
Net (Debt)/Funds at 31 December		**4,080,992**	**4,014,385**

Analysis of change in net (debt)/funds

	Cash at bank and in hand €	Total €
At beginning of year 2007	4,014,385	4,014,385
Cash flows	66,607	66,607
At end of year 2007	4,080,992	4,080,992

The Statement of Accounting Policies and notes 1 to 12 form part of these financial statements.

Dervilla Donnelly
Chairman - Council of the Institute

Fergus Kelly
Council Member

Notes to the Financial Statements

1 Detailed Analysis of Income & Expenditure for the year ended 31/12/2007

Income	Notes	School of Celtic Studies	School of Theoretical Physics	School of Cosmic Physics	Adminis-tration	2007 Total	2006 Total
		€	€	€	€	€	€
Oireachtas Grants		1,897,796	1,079,775	2,811,491	2,092,938	7,882,000	6,952,000
Net deferred funding for pensions	10.b	(376,079)	(72,624)	(635,144)	2,721,878	1,638,031	1,431,296
Sales of Publications		62,958	2	50	–	63,010	51,931
Projects	2	12,136	200,790	3,955,403	2,661,030	6,829,359	2,851,452
Other	3	_	_	24,804	109,233	134,037	20,069
		1,596,811	1,207,943	6,156,604	7,585,079	16,546,437	11,306,748
Transfer (to)/ from Capital Reserve *		–	–	–	(2,555,965)	(2,555,965)	(101,018)
		1,596,811	1,207,943	6,156,604	5,029,114	13,990,472	11,205,730
Expenditure							
Payroll Costs	7	1,449,778	890,487	2,020,684	833,497	5,194,446	4,605,098
Pension costs	10.c	(49,217)	(38,716)	(89,645)	2,748,740	2,571,162	2,237,047
Project Costs	2	12,136	196,984	3,951,502	–	4,160,622	2,728,036
Library and Book Storage		38,818	95,930	67,865	17,213	219,826	217,240
Depreciation	4	–	–	–	273,817	273,817	275,888
Rent, Rates and Insurance		–	–	–	157,471	157,471	113,526
General Expenses	8	18,510	6,064	45,047	278,685	348,306	226,190
Travel and Seminar Expenses		26,738	32,425	88,826	6,978	154,967	139,373
Premises Maintenance and Security		1,222	175	12,251	274,978	288,626	150,988
Computer and Internet expenses		7,804	14,665	39,269	59,902	121,640	140,780
Fuel Light and Power		–	–	–	113,569	113,569	100,829
Postage and Telephone		–	–	–	62,125	62,125	51,134
Stationery		17,471	2,255	7,717	33,074	60,517	64,854
Publications		45,266	–	2,036	–	47,302	106,267
Advertising		–	4,023	327	9,924	14,274	14,742
Minor Office Equipment		829	2,544	11,554	21,359	36,286	17,168
Loss on Disposal		–	–	–	1,720	1,720	–
		1,569,355	1,206,836	6,157,433	4,893,052	13,826,676	11,189,160
Surplus / (Deficit) for Year		**27,456**	**1,107**	**(829)**	**136,062**	**163,796**	**16,570**
Balance at 1 January		242,662	103,721	(263,579)	466,064	548,868	532,298
Balance at 31 December		270,118	104,828	(264,408)	602,126	712,664	548,868

**Note: In 2007 the DIAS invested in a supercomputer at a cost of €2,322,279 to be used by the research staff within the Institute and other research staff working in Ireland.*

2. Projects

	2007	2006
	€	€
Opening Balances	3,228,222	2,261,064
Receipts	6,766,053	3,818,610
	9,994,275	6,079,674
Closing Balances	(3,164,916)	(3,228,222)
Applied as Income	6,829,359	2,851,452

Income Allocation

School of Celtic Studies	12,136	1,708
School of Theoretical Physics	200,790	140,173
School of Cosmic Physics	3,955,403	2,682,350
	4,168,329	2,824,231
*Administration	2,661,030	27,221
Total Project Income	6,829,359	2,851,452

Project Costs

	Celtic Studies	Theoretical Physics	Cosmic Physics	2007 Total	2006 Total
	€	€	€	€	€
Payments to Partners/Associates			2,821,703	2,821,703	1,728,145
Salaries/Scholarships	11,719	170,363	645,676	827,758	810,325
Travel	–	20,697	183,205	203,902	126,298
Other	417	5,924	300,918	307,259	63,268
Total Project Costs	12,136	196,984	3,951,502	4,160,622	2,728,036

**Note: In 2007 the DIAS invested in a supercomputer at a cost of €2,322,279 to be used by the research staff within the Institute and other research staff working in Ireland.*

3. Other Income

	2007	2006
	€	€
Bank Interest	107,151	17,288
Fees and Grants	–	500
Other	26,886	2,281
Total	134,037	20,069

4. Fixed Assets

	Furniture & Equipment	Motor Vehicles	Computers	Total
Cost	€	€	€	€
Opening Balance 1/1/2007	2,149,222	53,200	1,214,226	3,416,648
Additions	214,952	–	2,616,550	2,831,502
Disposals	–	–	(11,812)	(11,812)
	2,364,174	53,200	3,818,964	6,236,338
Depreciation				
Opening Balance 1/1/2007	1,507,026	12,586	952,910	2,472,522
Charge 2007	106,220	13,291	154,306	273,817
Disposals	–	–	(10,092)	(10,092)
	1,613,246	25,877	1,097,124	2,736,247
Net book value 31/12/2007	750,928	27,323	2,721,840	3,500,091
Net book value 31/12/2006	642,196	40,614	261,316	944,126

5. Capital Reserve

	2007 €	2006 €
Balance at 1 January	944,126	843,108
Transfer from/(to) Income and Expenditure Account		
Income allocated to acquire fixed assets	2,831,502	376,906
Amortisation in line with asset depreciation	(273,817)	(275,888)
Amount released on disposals	(1,720)	–
	2,555,965	101,018
Balance at 31 December	**3,500,091**	**944,126**

6. Creditors due after twelve months

		2007 €	2006 €
These comprise:	Vernam Hull Bequest	56,053	54,803
	Carmody Fund	2,423	2,413
		58,476	**57,216**

The funds relating to the above are held on deposit. No amounts were utilised during the year.

7. Payroll Costs

	Celtic Studies	Theoretical Physics	Cosmic Physics	Admin.	2007 Total	2006 Total
	€	€	€	€	€	€
Salaries/Wages	1,334,650	750,695	1,852,003	833,497	4,770,845	4,126,751
Scholarships	92,208	77,513	115,062	–	284,783	291,675
Visitors	21,820	62,279	53,619	–	137,718	184,272
Honoraria	1,100	–	–	–	1,100	2,400
	1,449,778	890,487	2,020,684	833,497	5,194,446	4,605,098

8. General Expenses

	Celtic Studies	Theoretical Physics	Cosmic Physics	Admin.	2007 Total	2006 Total
	€	€	€	€	€	€
Miscellaneous	4,596	2,346	33,910	86,259	127,111	81,155
Promotions/Lunches	11,698	3,618	8,531	3,397	27,244	20,925
Professional Fees	–	–	–	158,907	158,907	79,851
Training	2,175	100	2,481	3,387	8,143	17,370
Audit Fee	–	–	–	18,800	18,800	16,750
Bank Charges	–	–	–	250	250	3,317
Health & Safety	41	–	125	7,685	7,851	6,822
	18,510	6,064	45,047	278,685	348,306	226,190

9. 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 89 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 2008 is €113,609.

10. Superannuation

a) Pension Scheme

The Board operates a defined benefit superannuation scheme for its employees. The valuation used for FRS17 has been based on a full actuarial valuation updated to 31st December 2007 by a qualified independent actuary to take account of the requirements of FRS17 in order to assess the scheme liabilities at 31 December 2007. The financial assumptions used to calculate the components of the defined benefit cost for the year ended December 31, 2007 were as follows:

	At 31/12/07	At 31/12/06	At 31/12/05
Discount Rate	5.50%	4.60%	4.70%
Inflation Rate	2.25%	2.25%	2.25%
Rate of Salary Increases	4.00%	4.00%	4.00%
Rate of Pension Increases	4.00%	4.00%	4.00%

b) Net Deferred Funding for Pensions in year	2007 (€ '000)	2006 (€ '000)
Funding recoverable in respect of current year pension costs	2,781	2,340
State Grant applied to pay pensioners	(1,143)	(909)
	1,638	1,431

c)Analysis of total pension costs charged to Expenditure	2007 (€ '000)	2006 (€ '000)
Current service cost	1,262	1,071
Interest on Pension Scheme Liabilities	1,519	1,269
Employee Contributions	(210)	(103)
	2,571	2,237

d) Deferred Funding Asset for Pensions

DIAS recognises these amounts as an asset corresponding to the unfunded deferred liability for pensions on the basis of a number of past events. These events include the statutory basis for the establishment of the superannuation 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 Science, the DIAS has no evidence that this funding policy will not continue to meet this amount in accordance with current practice. The deferred funding asset for pensions as at 31 December 2007 amounted to €30 million (2006: €33 million).

e) Movement in Net Pension Liability during the financial year	2007 (€ '000)	2006 (€ '000)
Net Pension Liability at 1 January	(32,964)	(30,868)
Current Service Cost	(1,262)	(1,071)
Interest Costs	(1,519)	(1,269)
Actuarial loss/(gain)	4,890	(666)
Pensions paid in the year	1,143	910
Net Pension Liability at 31 December	(29,712)	(32,964)

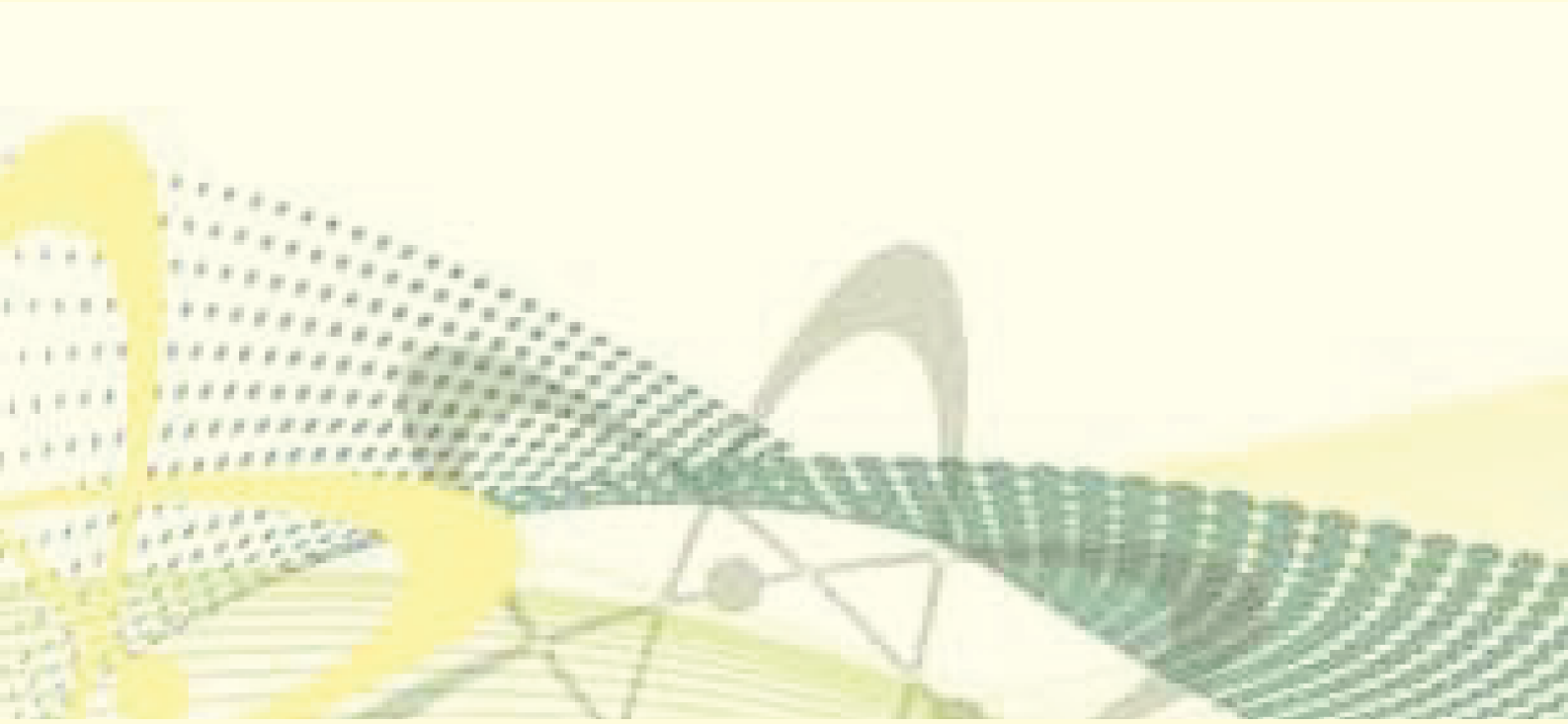
f) History of experience gains and losses	2007 (€ '000)	2006 (€ '000)	2005 (€ '000)
Experience (gains)/losses on scheme liabilities.	85	(3,627)	830
Percentage of the present value of scheme liabilities.	0.29%	(11.00%)	2.69%
Total Amount recognised in Statement of total recognised gains and losses	(4,890)	666	4,653
Percentage of the present value of scheme liabilities	(16.46%)	2.02%	15.07%

11. 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.

12. Approval of Accounts

The Financial Statements were approved by Council on the 15th May 2008.



Ráitis Airgeadais
don bhliain dár críoch 31 Nollaig 2007

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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 comhthoiliú an Aire Airgeadais. Agus an Chomhairle ag ullmhú na ráitis airgeadais sin éilítear uirthi:

- polasaithe cuntasaíochta 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 nochtaíonn 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 chalaois agus ar neamhrialtachtaí eile agus iad a aimsiú.

Cathaoirleach-Comhairle Na hInstitiúide

Fergus Kelly
Comhalta den Chomhairle

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 chuí i bhfeidhm trí

- sainmhíniú soiléir a thabhairt maidir le freagrachtaí bainistíochta;
- nósanna imeachta foirmiúla a bhunú le teipeanna rialaithe suntasacha a thuairisciú agus lena chinntiúgo 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 thuairiscí 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.

Tuarascáil an Ard-Reachtaire Cuntas agus Ciste

le cur i láthair Thithe an Oireachtais

Tá ráitis airgeadais Institiúid Ard-Léinn Bhaile Átha Cliath don bhliain dar críoch 31 Nollaig 2007 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 Caillteanas Aitheanta Iomlán, an Clár Comhardaithe, an Ráiteas ar Shreabhadh Airgid, agus na nótaí gaolmhara.

Freagrachtaí na Comhairle agus an Ard-Reachtaire Cuntas agus Ciste faoi seach

Tá an Chomhairle freagrach as na ráitis airgeadais a ullmhú de réir an Achta Um Institiúid Ard-Léinn, 1940, agus as rialtacht na n-idirbheart a chinntiú. Ullmhaíonn an Chomhairle na ráitis airgeadais de réir Cleachtais Chuntasaíochta a nGlactar Leis go Coitianta in Éirinn. Tá freagrachtaí cuntasaíochta Chomhaltaí na Comhairle leagtha amach sa Ráiteas um Fhreagrachtaí na Comhairle.

Is é m'fhreagrachtsa ná na ráitis airgeadais a iniúchadh de réir cheanglas ábhartha dlí agus rialúcháin agus Caighdeán Idirnáisiúnta maidir le hIniúchóireacht (Ríocht Aontaithe agus Éire).

Tuairiscím mo thuairim maidir le cibé an dtugann na ráitis airgeadais léargas fíorcheart, de réir Cleachtais Chuntasaíochta a nGlactar Leis go Coitianta in Éirinn. Tuairiscím freisin cibé, dar liom, an raibh leabhair chuntais chuí coinnithe. Lena chois sin, deirim cibé an dtagann na ráitis airgeadais leis na leabhair chuntais.

Tuairiscím ar aon chás ábhartha nár feidhmíodh suimeanna airgid chun na gcríoch a bhí beartaithe nó sa chás nach leanann na hidirbhearta do na húdaráis a rialaíonn iad.

Tuairiscím freisin mura bhfuil an fhaisnéis agus na mínithe ar fad faighte agam agus atá riachtanach chun críocha m'iniúchta.

Scrúdaím an Ráiteas maidir le Rialú Inmheánach Airgeadais le féachaint an léirítear ann gur chomhlíon an Institiúid an Cód Cleachtais maidir le Rialachas Comhlachtaí Stáit agus tuairiscím ar aon chás ábhartha nach ndéanann sé amhlaidh, nó más rud é go bhfuil an ráiteas míthreorach nó nach dtagann sé le faisnéis eile atá ar eolas agam de bharr na ráitis airgeadais a bheith iniúchta agam. Ní cheanglaítear orm a bhreithniú cibé an gclúdaíonn an Ráiteas maidir le Rialú Inmheánach Airgeadais gach priacal agus rialú airgeadais, ná teacht ar thuairim maidir le héifeachtacht na nósanna imeachta maidir le priacail agus rialú.

Léim faisnéis eile atá sa Tuarascáil Bhliantúil, agus breithním cibé an dtagann sé leis na ráitis airgeadais iniúchta. Breithním na himpleachtaí do mo thuarascáil má thagaim ar an eolas faoi aon rud atá, de réir cosúlachta, ina mhíráiteas nó ina neamhréireacht ábhartha leis na ráitis airgeadais.

An Bunús atá le mo Thuairim ar na Ráitis

I mbun m'fheidhme mar Ard-Reachtaire Cuntas agus Ciste, rinne mé m'iniúchadh ar na ráitis airgeadais de réir Caighdeán Idirnáisiúnta maidir le hIniúchóireacht (Ríocht Aontaithe agus Éire) arna n-eisiúint ag an mBord um Chleachtais Iniúchóireachta agus trí thagairt a dhéanamh do na nithe ar leith is gá a chur san áireamh i ndáil le cúrsaí bainisteoireachta agus oibriúcháin a ghabhann le comhlachtaí Stáit. Déantar scrúdú mar chuid den iniúchadh, ar bhonn tástála, ar fhianaise a bhaineann le suimeanna agus rialtacht na n-idirbheart airgeadais a chuirtear san áireamh sna ráitis airgeadais, agus leis na hidirbhearta a fhoilsítear iontu. Chomh maith leis sin, cuimsíonn an t-iniúchadh measúnacht ar na meastacháin agus ar na breitheanna suntasacha a rinneadh agus na ráitis airgeadais á n-ullmhú, agus measúnacht le féachaint 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.

Phleanáil mé agus rinne mé m'iniúchadh sa chaoi is go bhfaighinn an fhaisnéis agus na mínithe ar fad a mheas mé a bheith riachtanach ionas go mbeadh leordhóthain fianaise agam a d'fhágfadh cinnteacht réasúnach ann go bhfuil na ráitis airgeadais saor ó mhíráiteas ábhartha, cibé acu calaois nó neamhrialtacht eile nó earráid is cúis leis sin. I dteacht ar mo thuairim, rinne mé meastóireacht ar a shásúla is a cuireadh faisnéis i láthair sna ráitis airgeadais san iomlán freisin.

Tuairim

Is é mo thuairim go dtugann na ráitis airgeadais léargas fíorcheart, de réir Cleachtais Chuntasaíochta a nGlactar Leis go Coitianta in Éirinn, ar riocht ghnóthaí na hInstitiúide ag 31 Nollaig 2007 agus ar a hioncam agus ar a caiteachas don bhliain dar críoch sin.

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

Gerard Smyth
Le haghaidh agus thar ceann an Ard-Reachtaire Cuntas agus Ciste

30 Bealtaine 2008

Polasaith Chuntasaíochta

Ginearálta

Bunaíodh an Institiúid faoin Acht um Institiúid Ard-Leighinn, 1940. Áirítear ar a cuid feidhmeanna saoráidí a sholáthar le hard-léinn a chur chun cinn tuilleadh agus le taighde a dhéanamh i mbrainsí speisialtachta eolais.

Tá trí Scoil inti - Scoil an Léinn Cheiltigh, Scoil na Fisice Teoiriciúla agus Scoil na Fisice Cosmaí.

Polasaithe Cuntasaíochta

1. Bunús Cuntasaíochta

Tá na ráitis airgeadais ullmhaithe ar bhonn fabhraithe 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 dímheas carntha. Is mar seo a leanas atá na rátaí dímheasa, ríofa ar bhunús dronlíneach:-

Troscán agus Trealamh	10%
Ríomhairí	25%
Mótarfheithiclí	25%
Sár-ríomhaire	33.3%

Faightear áitribh atá i seilbh na hInstitiúide ar léas ó Oifig na nOibreacha Poiblí.

4. Cúlchiste Caipitil

Léiríonn cúltaca caipitiúil luach neamh-amúchta ioncaim a úsáidtear le Sócmhainní Seasta a cheannach.

5. Leabharlann

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

6. Foilseacháin

Díscríobhtar caiteachas ar fhoilseacháin sa bhliain a dtabhaítear é.

7. Aoisliúntas

a) 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 Eolaíochta ar fáil agus ó ranníocaíochtaí a asbhaintear ó thuarastail foirne.

Léirionn costais phinsin na sochair phinsin a thuilleann fostaithe sa tréimhse agus léirítear iad glan ar ranníocaíochtaí pinsin foirne a bhíonn coinnithe ag Institiúid Ard-Léinn Bhaile Átha Cliath. Aithnítear suim a chomhfhreagraíonn don mhuirear 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 caillteanais achtúireacha ar dhliteanais na scéime léirithe sa Ráiteas ar Ghnóthachain agus Caillteanais Aitheanta agus aithnítear coigeartú comhfhreagrach sa mhéid is féidir a aisghabháil ón Roinn Oideachais agus Eolaíochta.

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 Eolaíochta.

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 tionscadal.

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

	Nótaí	2007 €	2006 €
Ioncam			
Deontas Oireachtais		7,882,000	6,952,000
Glan-mhaoiniú iarchurtha do phinsin	10.b	1,638,031	1,431,296
Díolacháin Foilseachán		63,010	51,931
Tionscadail	2	6,829,359	2,851,452
Eile	3	134,037	20,069
		16,546,437	11,306,748
Aistriú (chuig)/ó Cúlchiste Caipitil	5	(2,555,965)	(101,018)
		13,990,472	11,205,730
Caiteachas	1		
Scoil an Léinn Cheiltigh		1,569,355	1,472,665
Scoil na Fisice Teoiriciúla		1,206,836	1,133,968
Scoil na Fisice Cosmaí		6,157,433	4,585,163
Riarachán		4,893,052	3,997,364
		13,826,676	11,189,160
Barraíocht don bhliain		**163,796**	**16,570**
Iarmhéid amhail an 1 Eanáir		548,868	532,298
Iarmhéid amhail an 31 Nollaig		**712,664**	**548,868**

Ráiteas ar Ghnóthachain agus Caillteanais Aitheanta		2007	2006
Barrachas don bhliain		163,796	16,570
Caillteanais/(gnóthachain) iarbhíre ar dhliteanais na scéime pinsin		85,000	(3,627,000)
Athruithe i dtoimhdí is bonn do luach reatha dhliteanais na scéime pinsin		4,805,000	2,961,000
Caillteanas / (gnóthachan) achtúireach ar Dhliteanais Phinsin	10.e	**4,890,000**	**(4,653,000)**
Coigeartú ar Mhaoiniú an Phinsin Iarchurtha		**(4,890,000)**	**4,653,000**
Gnóthachan iomlán aitheanta don bhliain		**163,796**	**16,570**

Is cuid de na ráitis airgeadais sin é an Ráiteas Beartais Cuntasaíochta agus nótaí 1 go dtí 12.

Dervilla Donnelly
Cathaoirleach - Comhairle na hInstitúide

Fergus Kelly
Comhalta den Chomhairle

Clár Comhardaithe

	Nótaí	2007	2006
		€	€
Sócmhainní			
Sócmhainní Seasta	4	3,500,091	944,126
Sócmhainní Reatha:			
Airgead sa Lámh agus ag an mBanc		4,080,992	4,014,385
Féichiúnaithe agus Réamhíocaíochtaí		351,263	269,637
Sócmhainní Iomlána		**7,932,346**	**5,228,148**
Lúide Dliteanais			
Creidiúnaithe - Méideanna atá dlite laistigh de bhliain amháin			
Creidiúnaithe agus Fabhruithe		496,199	449,716
Tionscadail	2	3,164,919	3,228,222
Creidiúnaithe - méideanna atá dlite tar éis bliana amháin	6	58,476	57,216
Dliteanais Iomlána Roimh Phinsin		**3,719,594**	**3,735,154**
Sócmhainní Lúide dliteanais Roimh Phinsin		**4,212,752**	**1,492,994**
Maoiniú an Phinsin larchurtha	10.d	29,712,000	32,964,000
Dliteanais Phinsin	10.e	(29,712,000)	(32,964,000)
		0	0
Sócmhainní Glana		4,212,752	1,492,994
Maoinithe ag:			
Cuntas Ioncaim agus Caiteachais		712,664	548,868
Cúlchiste Caipitil	5	3,500,091	944,126
		4,212,755	**1,492,994**

Is cuid de na ráitis airgeadais seo é an Ráiteas Beartais Cuntasaíochta agus na nótaí ó 1 go dtí 12.

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Fergus Kelly
Comhalta den Chomhairle

Ráiteas Sreabhadh Airgid

	Nótaí	2007	2006
		€	€
Réiteach barrachais oibríochta chuig glan-insreabhadh airgid ó ghníomhaíochtaí oibríochta			
Barrachas don bhliain		163,796	16,570
Ús infhaighte	3	(107,151)	(17,288)
Ardú i gCreidiúnaithe		47,743	57,232
Ardú i bhFéichiúnaithe		(81,626)	(54,438)
Glan-ardú i gCláir Thaighde agus Táillí		-63,306	967,158
Dímheas	4	273,817	275,888
Aistriú Cúlchiste Caipitil	5	2,555,965	101,018
Caillteanas ar dhiúscairt		1,720	-
Glaninsreabhadh Airgead tirim ó ghníomhaíochtaí oibríochta		**2,790,958**	**1,346,140**
Ráiteas Sreabhadh Airgid			
Glaninsreabhadh airgid ó ghníomhaíochtaí oibríochta		2,790,958	1,346,140
Aischuir ar infheistíochtaí agus seirbhísiú airgeadais			
Ús Bainc Infhaighte	3	107,151	17,288
Caiteachas Caipitiúil			
Ceannach Sócmhainní Inláimhsithe	4	(2,831,502)	(376,906)
Ardú ar Airgead		**66,607**	**986,522**
Réiteach glaninsreabhadh airgead tirim chuig gluaiseacht i nglanchistí			
Ardú ar Airgead Tirim		66,607	986,522
Iarmhéid faoin 1 Eanáir		4,014,385	3,027,863
Iarmhéid faoin 31 Nollaig		**4,080,992**	**4,014,385**

Anailís ar athrú i nglanchistí (fiacha)

	Airgead infhaighte sa Bhanc	Ró tharraingt	Iomlán
	€	€	€
I dtús na bliana 2007	4,014,385	-	4,014,385
Sreabhadh Airgid	66,607	-	66,607
Ag deireadh na bliana 2007	4,080,992		4,080,992

Is cuid de na ráitis airgeadais seo é an Ráiteas Beartais Cuntasíochta agus nótaí 1 go dtí 12.

Dervilla Donnelly
Cathaoirleach - Comhairle na hInstitiúide

Fergus Kelly
Comhalta den Chomhairle

Nótaí do na Ráitis Airgeadais

1 Anailís Shonraithe d'Ioncam & Caiteachas don bhliain dár críoch 31/12/2007

Ioncam	Nótaí	Léann Cheilteach €	Fisic Theoiriciúil €	Fisic Chosmach €	Riarachán €	2007 Iomlán €	2006 Iomlán €
Deontais Oireachtais		1,897,796	1,079,775	2,811,491	2,092,938	7,882,000	6,952,000
Glan-mhaoiniú iarchurtha do phinsin	10.b	(376,079)	(72,624)	(635,144)	2,721,878	1,638,031	1,431,296
Díolacháin Foilseachán		62,958	2	50	–	63,010	51,931
Ioncam Tionscadail	2	12,136	200,790	3,955,403	2,661,030	6,829,359	2,851,452
Ioncam Eile	3	–	–	24,804	109,233	134,037	20,069
		1,596,811	1,207,943	6,156,604	7,585,079	16,546,437	11,306,748
Aistriú (chuig) ó Chúlchiste Caipitil*		–	–	–	(2,555,965)	(2,555,965)	(101,018)
		1,596,811	1,207,943	6,156,604	5,029,114	13,990,472	11,205,730
Caiteachas							
Costais Phárolla	7	1,449,778	890,487	2,020,684	833,497	5,194,446	4,605,098
Costais phinsin	10.c	(49,217)	(38,716)	(89,645)	2,748,740	2,571,162	2,237,047
Costais Tionscnamh	2	12,136	196,984	3,951,502	–	4,160,622	2,728,036
Stóráil Leabharlainne agus Leabhar		38,818	95,930	67,865	17,213	219,826	217,240
Dímheas	4	–	–	–	273,817	273,817	275,888
Cíos, Rátaí agus Árachas		–	–	–	157,471	157,471	113,526
Costais Ghinearálta	8	18,510	6,064	45,047	278,685	348,306	226,190
Costais Taistil agus Seimineáir		26,738	32,425	88,826	6,978	154,967	139,373
Cothabháil Áitribh agus Slándáil		1,222	175	12,251	274,978	288,626	150,988
Costais ríomhairí agus Idirlín		7,804	14,665	39,269	59,902	121,640	140,780
Breosla Solas agus Cumhacht		–	–	–	113,569	113,569	100,829
Post agus Teileafón		–	–	–	62,125	62,125	51,134
Páipéarachas		17,471	2,255	7,717	33,074	60,517	64,854
Foilseacháin		45,266	–	2,036	–	47,302	106,267
Fógraíocht		–	4,023	327	9,924	14,274	14,742
Mion Trealamh Oifige		829	2,544	11,554	21,359	36,286	17,168
Caillteanas ar dhiúscairt		–	–	–	1,720	1,720	–
		1,569,355	1,206,836	6,157,433	4,893,052	13,826,676	11,189,160
Barraíocht / (Easnamh) don bhliiain		**27,456**	**1,107**	**(829)**	**136,062**	**163,796**	**16,570**
Iarmhéid amhail an 1 Eanáir		242,662	103,721	(263,579)	466,064	548,868	532,298
Iarmhéid amhail an 31 Nollaig		270,118	104,828	(264,408)	602,126	712,664	548,868

**Nóta: I 2007 cheannaigh an Institiúid sár-ríomhaire ar chostas €2,322,279 a úsáidfidh foireann taighde na hInstitiúide agus foireann taighde eile a aibríonn in Éirinn.*

2. Tionscadail

	2007	2006
	€	€
Iarmhéideanna Tosaigh	3,228,222	2,261,064
Admhálacha	6,766,053	3,818,610
	9,994,275	6,079,674
Iarmhéideanna Deiridh	(3,164,916)	(3,228,222)
Curtha i bhfeidhm mar ioncam	6,829,359	2,851,452
Leithroinnt Ioncaim		
Scoil an Léinn Cheiltigh	12,136	1,708
Scoil na Fisice Teoiriciúla	200,709	140,173
Scoil na Fisice Cosmaí	3,955,403	2,682,350
	4,168,248	2,824,231
*Riarachán	2,661,030	27,221
Ioncam Iomlán Thionscadal	6,829,278	2,851,452

Costais Tionscadal

	Léann Cheilteach	Fisic Theoiriciúil	Fisic Chosmach	2007 Iomlán	2006 Iomlán
	€	€	€	€	€
Íocaíochtaí chuig Páirtithe/Comhlachais	–	–	2,821,703	2,821,703	1,728,145
Tuarastail/Scoláireachtaí	11,719	170,363	645,676	827,758	810,325
Taisteal	–	20,697	183,205	203,902	126,648
Eile	417	5,924	300,918	307,259	63,268
Iomlán	12,136	196,984	3,951,502	4,160,622	2,728,386

**Nóta: I 2007 cheannaigh an Institiúid sár-ríomhaire ar chostas €2,322,279 a úsáidfidh foireann taighde na hInstitiúide agus foireann taighde eile a aibríonn in Éirinn.*

3. Ioncam Eile

	2007	2006
	€	€
Ús bainc	107,151	17,288
Táillí & Deontais	–	500
Eile	26,886	2,281
Iomlán	134,037	20,069

4. Sócmhainní Seasta

	Troscán & Trealamh	Mótarfheithicilí	Ríomhairí	Iomlán
Costais	€	€	€	€
Iarmhéid Tosaigh 1/1/2007	2,149,222	53,200	1,214,226	3,416,648
Breiseanna	214,952	–	2,616,550	2,831,502
Riartha	–	–	(11,812)	(11,812)
	2,364,174	53,200	3,818,964	6,236,338
Dímheas				
Iarmhéid Tosaigh 1/1/2007	1,507,026	12,586	952,910	2,472,522
Muirear 2007	106,220	13,291	154,306	273,817
Riartha	–	–	(10,092)	(10,092)
	1,613,246	25,877	1,097,124	2,736,247
Luach glan de réir na leabhar 31/12/2007	750,928	27,323	2,721,840	3,500,091
Luach glan de réir na leabhar 31/12/2006	642,196	40,614	261,316	944,126

5. Cúlchiste Caipitil

	2007 €	2006 €
Iarmhéid amhail an 1 Eanáir	944,126	843,108
Aistriú ó/(chuig) Cuntas Ioncaim agus Caiteachais		
Ioncam leithroinnte le sócmhainní seasta a fháil	2,831,502	376,906
Amúchadh ag teacht le dímheas sócmhainní	(273,817)	(275,888)
Méid scaoilte ar diúscairtí	(1,720)	-
	2,555,965	101,018
Iarmhéid amhail an 31 Nollaig	**3,500,091**	**944,126**

6. Creidiúnaithe dlite tar éis dhá mhí dhéag

		2007 €	2006 €
Comhdhéanta as:	Vernam Hull Bequest	56,053	54,803
	Carmody Fund	2,423	2,413
		58,476	57,216

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

7. Costais Phárolla

	Léann Cheilteach	Fisic Theoiriciúil	Fisic Chosmach	Riar.	2007 Iomlán	2006 Iomlán
	€	€	€	€	€	€
Tuarastal/Pá	1,334,650	750,695	1,852,003	833,497	4,770,845	4,126,751
Scoláireachtaí	92,208	77,513	115,062	–	284,783	291,675
Cuairteoirí	21,820	62,279	53,619	–	137,718	184,272
Honoraria	1,100	–	–	–	1,100	2,400
	1,449,778	890,487	2,020,684	833,497	5,194,446	4,605,098

8. Costais Ghinearálta

	Léann Cheilteach	Fisic Theoiriciúil	Fisic Chosmach	Riar.	2007 Iomlán	2006 Iomlán
	€	€	€	€	€	€
Ilghnéitheach	4,596	2,346	33,910	86,259	127,111	81,155
Tionscnaimh cur chun cinn/Lóin	11,698	3,618	8,531	3,397	27,244	20,925
Táillí Gairmiúla	–	–	–	158,907	158,907	79,851
Oiliúint	2,175	100	2,481	3,387	8,143	17,370
Táille Iniúchta	–	–	–	18,800	18,800	16,750
Muirir Bhainc	–	–	–	250	250	3,317
Sláinte & Sábháilteacht	41	–	125	7,685	7,851	6,822
	18,510	6,064	45,047	278,685	348,306	226,190

9. Léasáil

Léasanna Oibríochta

Tá na háitribh atá i seilbh na hInstitiúide ar léas ó Oifig na nOibreacha Poiblí.

Is iad na háitribh a n-áirítear ná Réadlann Dhún Since, 5 Cearnóg Mhuirfean, 9-10 Bóthar Burlington agus 31 Plás Mhic Liam.

Tá téarma 89 bliana fágtha ar an léas do Réadlann Dhún Since agus ath nuaitear na léasanna eile ar bhonn bliantúil.

Is é an tiomantas ar bhonn léasanna den sórt sin maidir le 2008 na €113,609.

10. Aoisliúntas

a) Scéim Phinsin

Feidhmíonn an Bord scéim aoisliúntais shochair shonraithe dá fhostaithe. Bunaíodh an luacháil a úsáideadh do FRS17 ar luacháil iomlán achtúireach atá tugtha cothrom le dáta go dtí an 31ú Nollaig 2007 ag achtúire neamhspleách cáilithe chun ceanglais FRS17 a chur san áireamh chun dliteanais na scéime amhail an 31 Nollaig 2007 a mheasúnú. Is mar seo a leanas a bhí na toimhdí airgeadais a úsáideadh chun chomhchodanna an chostais shochair shonraithe a ríomh don bhliain dar chríoch an 31 Nollaig, 2007:

	Ar 31/12/07	Ar 31/12/06	Ar 31/12/05
Ráta Lacaine	5.50%	4.60%	4.70%
Ráta Boilscithe	2.25%	2.25%	2.25%
Ráta na nArduithe Tuarastail	4.00%	4.00%	4.00%
Ráta na nArduithe Pinsin	4.00%	4.00%	4.00%

b) Glan-Mhaoiniú Iarchurtha do Phinsin sa bhliain	2007 (€ '000)	2006 (€ '000)
Maoiniú inaisghabhála i ndáil le costais phinsin na bliana reatha	2,781	2,340
Deontas Stáit feidhmithe chun pinsinéirí a íoc	(1,143)	(909)
	1,638	1,431

c) Anailís ar na costais iomlána pinsin curtha chun dochair do Chaiteachas	2007 (€ '000)	2006 (€ '000)
Costas seirbhíse reatha	1,262	1,071
Ús ar Dhliteanais na Scéime Pinsin	1,519	1,269
Ranníocaíochtaí Fostaí	(210)	(103)
	2,571	2,237

d) Sócmhainn Mhaoinithe Iarchurtha do Phinsin

Aithníonn DIAS na méideanna seo mar shócmhainn a chomhfhreagraíonn don dliteanas iarchurtha neamh-mhaoinithe do phinsin bunaithe ar ar roinnt imeachtaí a tharla cheana. Áirítear ar na himeachtaí seo an bonn reachtúil chun scéim 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 Eolaíochta, níl aon fhianaise ag DIAS nach leanfaidh an polasaí maoinithe seo de bheith ag freastal ar an méid seo de réir an chleachtais reatha. Ba í €30 milliún (2006: €33 milliún) an tsócmhainn mhaoinithe iarchurtha do phinsin amhail an 31 Nollaig 2007.

e) Gluaiseacht i nGlan-Dliteanas Pinsin i rith na bliana airgeadais	2007 (€ '000)	2006 (€ '000)
Glan-Dliteanas Pinsin amhail an 1 Eanáir	(32,964)	(30,868)
An Costas Seirbhíse Reatha	(1,262)	(1,071)
Costais Úis	(1,519)	(1,269)
Caillteanas/(gnóthachan) achtúireach	4,890	(666)
Pinsin íoctha sa bhliain	1,143	910
Glan-Dliteanas Pinsin amhail an 31 Nollaig	(29,712)	(32,964)

f) Stair na ngnóthachan agus na gcaillteanas iarbhír	2007 (€ '000)	2006 (€ '000)	2005 (€ '000)
(Gnóthachain)/caillteanais iarbhíre ar dhliteanais na scéime.	85	(3,627)	830
Céatadán de luach reatha dhliteanais na scéime.	29.00%	(11.00%)	2.69%
Méid Iomlán aitheanta i Ráiteas d'iomlán na ngnóthachan agus na gcaillteanas aitheanta.	(4,890)	666	4,653
Céatadán de luach reatha dhliteanais na scéime.	(16.46%)	2.02%	15.07%

11. Nochtadh Idirbheartaíochtaí

Glacann Comhairle na hInstitiúide le nósanna imeachta de réir threoirlínte atá eisithe ag an Roinn Airgeadais maidir le leasanna a nochtaíonn Comhaltaí na Comhairle agus chloígh Comhaltaí na Comhairle leis na nósanna imeachta sin le linn na bliana. Níor léirigh aon Chomhalta de chuid na Comhairle leas.

12. Dliteanais Teagmhasacha

Thionscain an tlar-Chláraitheoir imeachtaí dlí in aghaidh na hInstitiúide.
Ní féidir toradh imeachtaí den sórt sin a thuar ná a dtionchar airgeadais, más ann.

13. Ceadú Cuntais

Cheadaigh an Chomhairle na Ráitis Airgeadais ar an 15 Bealtaine 2008.

Dublin Institute for Advanced Studies
10 Burlington Road, Dublin 4.
www.dias.ie