

TEAM MEMBER 4

1. NAME

Title	Forename(s)	Surname
Professor	Gerry	Doyle

2. POSITION HELD

Research Astronomer

3. DEPARTMENT/INSTITUTION OF TEAM MEMBER 4

FULL ADDRESS	
Armagh Observatory College Hill Armagh BT61 9DG ARMAGH	
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E-MAIL	
jgd@arm.ac.uk	

Professor J.G. Doyle

Education and posts held:

1974 – 1977 BSc Applied Maths QUB
1977 – 1980 PhD ``Interpretation of solar ultraviolet & X-ray emission lines`` QUB
1980 – 1982 Post doctoral fellow QUB
1982 – 1984 Research Astronomer Armagh Observatory
1984 – 1985 on leave at Mullard Space Science Laboratory
1985 – present Research Astronomer Armagh Observatory

Research grants: *My research has been funded by a number agencies, e.g. SERC, PPARC, NATO, British Council, Royal Society and the EEC for (i) telescope time, (ii) T&S and (iii) post-docs. Presently, I have funding for three post-docs (two PPARC and one from the Irish COSMOGRID project). In addition, I am Co-I on a PPARC Observational Visitors grant, a PPARC Theory Visitors grant, and a PATT Observers grant.*

Committee Membership:

I have served on several telescope and grant awarding bodies over the past twenty years, currently I am

- Chair of the Astronomical Science Group of Ireland
- Member of PPARC Solar System Grant Review Panel
- Member of the PPARC Projects Peer Review Panel
- Member of the RIA Astronomy & Space Science Committee

Publications:

Over 250 refereed papers plus 160 non-refereed conference papers

Current responsibilities:

- ❖ *Supervision of PhD. Students.*
- ❖ *Supervision of under-graduate summer students projects.*
- ❖ *Principle investigator of two PPARC research grants relating to the analysis of data from SoHO*
- ❖ *Principle investigator of a PRLTI research grant relating to solar data.*
- ❖ *The Armagh Observatory representative on the UK Southern African Large Telescope Consortium.*
- ❖ *The Armagh Observatory representative on the Radio Telescope for Ireland project.*

In addition, I am the astronomer in charge of the Observatory's library budget, the Reporting Officer for the Observatory's computer manager and the engineer, plus the Observatory's coordinator for all our PhD students.

Current supervision:

Over the past 15 years, I have supervised ten PhD students. At present, I am supervising three PhD students.

TEAM MEMBER 5

4. NAME

Title	Forename(s)	Surname
Dr.	Niall.	Smith

5. POSITION HELD

Head of Research

6. DEPARTMENT/INSTITUTION OF TEAM MEMBER 5

FULL ADDRESS	
Cork Institute of Technology App Physics & Instrumentation Bishopstown Campus Co. Cork	
CONTACT TELEPHONE NO. (021) 432-6369	FAX NO. (021)
E-MAIL nsmith@cit.ie	

Name: Dr. Niall Smith		
Institute: Cork Institute of Technology (CIT)		
School / Department: Head of Research at CIT		
Qualification / Awarding Body:		
Primary Degree(s)	B.Sc. (Hons)	Date of Award 1983
Post-graduate Degree(s)	Ph.D.	Date of Award 1990
Research Experience (<i>Higher Education / Industry</i>)		
1986 - Use of a fast photometer on the 1m telescope, La Palma.		
1988 - Lecturer, Cork RTC (CIT)		
1990 - Ph.D., "Fast Photometry of Active Galaxies and Observations of Haro Galaxies"		
1991 - £5000 grant from Eolas under the Applied Research scheme for a feasibility study entitled " Low Light Level Detection Avalanche Photodiodes.		
1993 - £6500 grant from Eolas under the Scientific Research programme.		
1995 - Member of Academic Council, Research Associate of UCC		
1996 - £25000 grant, Forbairt, under the Basic Research programme for a project entitled "Observations of Transitional AGN as a test of Unified Theories".		
1997 - Member of the International Astronomical Union.		
1998 - Chairman of R&D Committee of CIT Academic Council.		
1999 - £25000 grant from Enterprise Ireland through their Applied Research Scheme in collaboration with Eli-Lilly on a project to use CCDs to monitor air quality.		
2000 - €153,000 HEA grant - CCDs 2-D Tomography of Air Quality in Real-Time.		
2002 - €171,000 grant from the EU TMR Program - Low-light-imaging techniques.		
2004 – Conversion of Blackrock Castle in to a Robotic Observatory (€5m project)		
2005 - €185,000 SFI RFP grant to build a two-channel photometer		
Number of post-graduate research students supervised to date:		
4 M.Sc. (F/T), 1 M.Sc. (P/T), 3 Ph.D. (F/T), 1 Ph.D. (P/T)		
<u>Recent Peer-Reviewed Relevant Publications</u>		
28 publications, and one book chapter		

TEAM MEMBER 6

1. NAME

Title: Dr	Forename(s): Turlough Patrick	Surname: Downes
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2. POSITION HELD

Lecturer

3. DEPARTMENT/INSTITUTION OF TEAM MEMBER 6

FULL ADDRESS: School of Mathematical Sciences, Dublin City University, Glasnevin, Dublin 7, Ireland.	
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E-MAIL: turlough.downes@dcu.ie	

CV of Turlough Downes, School of Mathematical Sciences, DCU

Academic Resume

PhD in Astrophysics, Dublin University, 1997. Thesis entitled “Numerical Simulations of Jets from Young Stellar Objects”, supervised by Prof. T. Ray and Prof. L. O’C Drury, both of the Dublin Institute for Advanced Studies.

Employment history

10/2000 – present: Lecturer, School of Mathematical Sciences, DCU.

11/1998 – 10/2000: Hitachi Lecturer for High Performance Computing, School of Mathematics, Trinity College, Dublin.

12/1997 – 11/1998: Post-doctoral Research Assistant in the Massively Parallel Computing Cluster Project, University of Utrecht, the Netherlands.

3/1997 – 12/1997: Post-doctoral Research Assistant at the Dublin Institute for Advanced Studies.

Affiliations: member of the governing board of the Irish Centre for High-End Computing; Research Associate of the Dublin Institute for Advanced Studies; Fellow of the Royal Astronomical Society; member of the International Astronomical Union; member of the Irish Research Scientists’ Association; co-founder of the Irish Association for High Performance Computing; affiliated to the National Centre for Plasma Science and Technology.

Publications

A list of my publications can be found at

http://adsabs.harvard.edu/cgi-bin/nph-abs_connect?&author=Downes%2C+T.P.

Five of my recent publications are:

- Keegan, R., Downes, T.P., 2005, ‘Long-duration simulations of the evolution of jet-driven molecular outflows’, *Astron. Astrophys.* 437, 517-524
- Downes, T.P., Cabrit, S., 2003, ‘The mass-velocity and intensity-velocity relations in jet-driven molecular outflows’, *Astron. Astrophys.* 403, 135-140
- Downes, T.P., Duffy, P., Komissarov, S., 2002, ‘Relativistic blastwaves and synchrotron emission’, *MNRAS* 332, 144
- Downes, T.P., Ray, T.P., 1999, ‘On the transfer of momentum from stellar jets to molecular outflows’, *Astron. Astrophys.* 345, 977-985
- Downes, T.P., Ray, T.P., 1998, ‘Numerical simulations of the Kelvin-Helmholtz instability in radiatively cooled jets’, *Astron. Astrophys.* 331, 1130-1142

Current Grant Funding & Grant History of PI

- JETSET EU Research Training Network. Awarded 2005 for 4 years. Total award EUR 3,800,000. PI is not the main recipient.
- Enterprise Ireland Ulysses programme. Awarded 2005 for 1 year. Total award EUR 1,800. PI is the main recipient.
- IRCSET Postgraduate Research Scholarship Scheme. Awarded 2003 for 3 years. Total award EUR 57,150. PI is the supervisor of the recipient.
- CosmoGrid, funded under PRTL3. Awarded 2002 for 5 years. PI is the DCU PI for this project, and is not the main recipient. Total award EUR 8,125,956 of which EUR 370,181 is for DCU.
- Enterprise Ireland Basic Research Grant. Awarded 2001 for 3 years. Total award EUR 105,000. PI was a collaborating researcher for this project.
- Enterprise Ireland Basic Research Award. Awarded 1999 for 2 years. Total award EUR 31,750. PI was the main recipient.

TEAM MEMBER 7

4. NAME

Title: Dr	Forename(s): Tom P.	Surname: Ray
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5. POSITION HELD

Professor

6. DEPARTMENT/INSTITUTION OF TEAM MEMBER 7

FULL ADDRESS: School of Cosmic Physics, Dublin Institute for Advanced Studies, 5 Merrion Square, Dublin 2, Ireland	
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Brief CV: Professor T.P. Ray

Full Name: Thomas Patrick Ray

Contact Address: School of Cosmic Physics, Dublin Institute for Advanced Studies, 5 Merrion Square, Dublin 2, Ireland

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Fax: +353 1 6621477

E-mail: tr@cp.dias.ie

Date and Place of Birth 27th December 1956, Dublin

Nationality: Irish

After graduating from Trinity College Dublin with a first class honours degree in Theoretical Physics in 1978, I was awarded a University of Manchester Postgraduate Scholarship. This allowed me to carry out work for an MSc (awarded 1979) at Jodrell Bank before doing a Ph.D. (awarded 1981) on “Kelvin-Helmholtz Instabilities in Astrophysics” at the University's Department of Astronomy. My thesis work concerned the origin of the knots and “wiggles” seen in both galactic and extra-galactic jets as well as other astronomical bodies such as cometary tails.

During 1982 I spent one year at the Astronomy Centre of the University of Sussex working with L. Mestel on self-gravitating magnetic disks in the context of star formation. I then returned to Ireland to take up a post-doctoral position at the Physics Department University College Dublin for two years followed by temporary posts at University College Dublin and Dunsink Observatory. In 1986 I was appointed to the position of Assistant Professor in the School of Cosmic Physics at the Dublin Institute for Advanced Studies and in 1998 to the post of full Professor.

Since 1986 most of my research effort has centred on understanding mass loss from young stars during the earliest phase of their evolution both from an observational and theoretical perspective. Much of this work has been in collaboration with a network of European colleagues based in Arcetri Observatory Florence, Taunterberg Landessternwarte, University of Hertfordshire, as well the Joint Astronomy Centre in Hawaii. Many collaborative observing campaigns have been organised between the Dublin, Arcetri and Hawaiian groups including use on many occasions of the William Herschel and Isaac Newton Telescopes in La Palma, the 2.2m and 3.5m telescopes of the Max Planck Society in Calar Alto, Spain, the 2.2m and the New Technology Telescope in Chile and the United Kingdom Infrared Telescope in Hawaii. More recently we have also exploited the capabilities of the Keck, Gemini and ESO VLT facilities. I am an Alexander von Humboldt Fellow and I have spent an extended time in Heidelberg at the Max Planck Institute for Astronomy funded by the von Humboldt Foundation. Other long-term visits have included the Centre for Astrophysics in Harvard, Stockholm Observatory, Center for Astrophysics and Space Astronomy at the University of Boulder, the Joint Astronomy Centre in Hawaii and the University of New South Wales in Sydney. I have been awarded time on a number of occasions on the Hubble Space Telescope both as a principal investigator and as a co-investigator.

I was a member of the team that built the photometer on board the Infrared Satellite Observatory (ISO) known as ISOPHOT and I am currently a Co-I of the James Webb Space Telescope (NGST) Mid-Infrared Instrument (MIRI) team.

My theoretical work has concentrated on the development of codes capable of simulating jets from young stars (with T. Downes, Dublin City University and S. O'Sullivan, currently at NASA Goddard). Such codes are difficult to develop since one has to allow not only for magnetic fields but also for radiative cooling by atomic, molecular and neutral species. Molecular dissociation, atomic ionisation and recombination must also be taken account of.

Professional Bodies and Committee Memberships: I am, or have been, a member of many national and international committees including the Irish National Committee for Astronomy and Space Research, the National Committee for Physical Sciences, the Hubble Space Telescope Time Allocation Committee, the United Kingdom Panel for Allocation of Telescope Time.

Postgraduate Training: I have supervised ten PhD students and have acted as an external examiner in Britain, Italy, and Australia on many occasions. I was Chairman for many years of the European Astrophysical Doctoral Network (EADN), an organization that encouraged mobility of astrophysics students within Europe and *organized annual postgraduate summer schools*. I am currently the coordinator of a Marie Curie Research training network JETSET (Understanding JETs through Simulation, Experiment and Theory) involving ten European laboratories. The network directly employs 20 European researchers with a 4 Million Euro budget over 4 years.

Approximately we organize two postgraduate schools per year at different European locations.

Publications: I am the author of some 140 publications, I have co-edited 3 conference proceedings, and I have also published articles in popular journals such as Scientific American.

TEAM MEMBER 8

7. NAME

Title	Forename(s)	Surname
Dr.	Justin	Donnelly

8. POSITION HELD

Lecturer

9. DEPARTMENT/INSTITUTION OF TEAM MEMBER 8

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CV of Justin Donnelly

BSc MSc PhD
Lecturer,
School of Physics
Dublin Institute of Technology
Dublin 8

EDUCATION

PhD. (2004)
Dublin City University & Dublin Institute for Advanced Studies
Dissertation topic: Ultra-Heavy Galactic Cosmic Rays

MSc. (1997)
University College Dublin & Dublin Institute for Advanced Studies
Thesis topic: Cosmic-ray Dosimetry at Aviation Altitudes

BSc. (1995)
Dublin Institute of Technology (DIT) & Trinity College Dublin (TCD)

SELECTED PUBLICATIONS

Results from the LDEF Ultra-Heavy Cosmic-Ray Experiment
J. Donnelly et al., *The Astrophysical Journal*, (in prep., 2006).

Spallation Dominated propagation of Heavy Cosmic Rays and the Local Interstellar Medium (LISM), Combet. C., Maurin. D., Donnelly, J., et.al, *Astronomy & Astrophysics* (2005).

Pt and Beyond: Studies of Ultraheavy Nuclei in the Galactic Cosmic Rays
J. Donnelly, PhD Thesis (2004).

TEAM MEMBER 9

10. NAME

Title	Forename(s)	Surname
Dr	James Edward	Walsh

11. POSITION HELD

Astronomy and Remote Sensing Lecturer

12. DEPARTMENT/INSTITUTION OF TEAM MEMBER 9

FULL ADDRESS

School of Physics,
Dublin Institute of Technology,
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Dublin 8.

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James.Walsh@dit.ie

Curriculum Vitae of James Edward Walsh

Dr James Walsh,
School of Physics,
Dublin Institute of Technology,
Kevin Street, Dublin 8,
Ireland

Background

Graduated with B.Sc. in Physics NUI Dublin 1986

Graduated with M.Sc. by research NUI Dublin 1987

Graduated with Ph.D. by research NUI Dublin 1992

MInstP and CPhys

Postdoctoral research Physics Dept. NUI Dublin 1992-1995

Campus Company director NUI Dublin 1993-1995

Postdoctoral research Physics Dept. DCU 1995-1996

Appointed to permanent staff of DIT in January 1996.

Appointed Adjunct Associate Professor of the Optometry Faculty at the University of Houston in July 2000.

Research

Dr James Walsh is currently carrying out optical sensor research and development. The main research interest at the moment is in the area of optical design, in particular, the development of fibre optic sensors for use in areas such as analytical chemistry, biology environmental sciences, astronomy and the biomedical science.

Past research projects include the design, construction and testing of an airborne spectrometer system while at the Physics Department in University College Dublin and the Sensing of Chlorinated Hydrocarbons and Pesticides in Water using Polymer Coated Mid-infrared Optical Fibres while at the Physics Department in Dublin City University.

Research currently being carried out by Dr James Walsh in the Metrology and Optical Sensing Laboratory includes optical sensor research and development. In particular, novel fibre optic sensor systems for in-vitro and in-vivo analysis of mitochondrial redox reactions, improved I/O systems for fibre optic spectrometers and examining aspects of the physics/engineering of the data acquisition, characterisation of different food contaminations that occur in the food sorting industry and the optical sensing of hydrocarbons and other pollutants in water using polymer coated mid-infrared optical fibres. Dr Walsh is also in the process of setting up a combined Metrology and Optical Sensors laboratory in the School of Physics in DIT in conjunction with his colleague Dr Tom Cantwell and developing the related astrophysics curriculum and related undergraduate projects in conjunction with colleague Dr Justin Donnelly.

Dr Walsh is regular adjunct faculty at the University of Houston (UH) at the Texas Eye Research Centre where he works on joint research collaboration with Professor Jan Bergmanson on the effects of ultraviolet radiation on the human eye. This work involves making ground based spectral measurements of Solar Ultraviolet Radiation at ground level.

TEAM MEMBER 10

13. NAME

Title Dr.	Forename(s) Patrick	Surname Moriarty
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14. POSITION HELD

Senior Lecturer

15. DEPARTMENT/INSTITUTION OF TEAM MEMBER 10

FULL ADDRESS School of Science Galway-Mayo Institute of Technology Dublin Road Galway	
CONTACT TELEPHONE NO. 091-742383	FAX NO. 091-758412
E-MAIL pat.moriarty@gmit.ie	

Dr. Patrick Moriarty, Galway-Mayo Institute of Technology

<u>Qualifications</u>	1970	B.Sc. in Experimental Physics, National University of Ireland (University College Dublin). First class honours. First place.
	1974	Ph.D. in Experimental Physics, National University of Ireland (University College Dublin)
<u>Positions held</u>	1972	Pre-doctoral Visitor, Université Libre de Bruxelles
	1973-1979	Assistant Lecturer in Physics & Instrumentation, Galway-Mayo Institute of Technology (GMIT)
	1976	Demonstrator, Faculty of Technology, Open University
	1979-1986	Lecturer in Physics & Instrumentation, GMIT
	1986-2001	Lecturer II in Physics & Instrumentation, GMIT
	2001 -	Senior Lecturer in Physics & Instrumentation, GMIT
	1973	Visiting Lecturer, University of Warsaw
	1996 -	Annual Visiting Scientist, Harvard-Smithsonian Center for Astrophysics
	1998	Visiting Scientist, Purdue University, Indiana
	2003	Visiting Scientist, Institute for Cosmic Ray Research, University of Tokyo
	2004 -	Non-fee consultant, Fred Lawrence Whipple Observatory
		Deputy chair, VERITAS Collaboration Blazar Science Group.
		Member of the Astronomical Science Group of Ireland.
		Referee, Astroparticle Physics.
<u>Publications</u>		43 refereed journal publications, 54 papers in conference proceedings
<u>Degree students</u>		In the region of 15 per year, BSc (Hons) in Physics & Instrumentation
<u>Post-Grads</u>		1 per year (research MSc) in High-Energy Astrophysics

TEAM MEMBER 11

7. NAME

Title: Dr	Forename(s): Raymond F.	Surname: Butler
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8. POSITION HELD

Lecturer

9. DEPARTMENT/INSTITUTION OF TEAM MEMBER 11

FULL ADDRESS: Department of Experimental Physics, NUI Galway, Galway, Ireland.	
CONTACT TELEPHONE NO.: +353-91-524411 ext 3788	FAX NO.:
E-MAIL: ray.butler@nuigalway.ie	

Education

- **1999**, Ph. D., Dept. of Experimental Physics, NUI, Galway, Ireland. Title: “*High-resolution imaging and crowded-field photometry of the stellar populations in the cores of the Globular Clusters M15 and M4*”.
- **1992**, B. E. (Elec. Eng.), University College Cork, Ireland. Grade: 2.1 Honours.

Honours, Awards & Fellowships; Professional Affiliations & Distinctions

- **2001**, *Enterprise Ireland Postdoctoral Fellowship* for research at NUI, Galway.
- **2000**, *FP5 Marie Curie Postdoctoral Fellowship* (Cat. R) for research at NUI, Galway.
- **1997**, *FP4 Marie Curie Postdoctoral Fellowship* (Cat. 30) for research at the University of Edinburgh, U.K.
- **1992**, *UCG Postgraduate Fellowship* for Ph. D. studies at NUI, Galway.
- **1988**, *UCC Entrance Scholarship* for B.E. studies at University College, Cork.
 - **Peer-reviewer** for: *A&A*, *AJ*. **National Committee Member** of *IoP Ireland*. **Member** of: *IAU*, *SPIE*, *MCFA*.

Work Experience

- **Sep. 2004 –**: Permanent Lecturer in Physics & Astronomy, Physics Dept., NUI, Galway.
- **Oct. 2001 – Sep. 2004**: Contract Lecturer in Physics & Astronomy, Physics Dept., NUI, Galway.
- **Apr. – Oct. 2001**: Marie Curie Postdoctoral Fellow, Scientific Computing Group, I.T. Dept., NUI, Galway.
- **Nov. 1999 – Apr. 2001**: Postdoctoral Researcher, Scientific Computing Group, I.T. Dept., NUI, Galway.
- **Nov. 1997 – Nov. 1999**: Marie Curie Postdoctoral Fellow (TMR Category 30), Mathematical Astronomy Group, Dept. of Mathematics & Statistics, University of Edinburgh, U.K.
- **Nov. 1996 – Feb. 1997**: TRACS Visiting Researcher, Edinburgh Parallel Computing Centre, U.K.
- **Mar. 1996**: Guest Researcher, Rutherford Appleton Laboratory, Oxfordshire, U.K.
- **1992 – 1997**: Part-time Research Assistant (in parallel with PhD), Physics Dept., NUI, Galway.
- **1992 – 1996**: Part-time Lecturer in Astronomy, NUI, Galway and Galway-Mayo Institute of Technology.

Postgraduate Supervision

- **Sep. 2006 –**: *MSc supervisor* of Mr. Leon Harding.
- **Apr. 2006 –**: *MSc supervisor* of Mr. John Chambers (research component of *European MSc in Astronomy*).
- **Oct. 2004 –**: *Ph.D. supervisor* of Ms. Caoilfhionn Lane. Funding: 2004 1st-round IRCSET scholarship.
- **Oct. 2004 –**: *Ph.D. supervisor* of Mr. Brendan Sheehan. Funding: 2004 1st-round IRCSET scholarship.
- **Oct. 2002 –**: *Ph.D. supervisor* of Mr. Kieran Forde. Funding: 2002 1st-round IRCSET scholarship.

Research Grants & Research Facility Access

Year (Duration)	Source [P.I. or Co-I]	Value	Title
2005 (1 year)	NUIG - SFI Overhead Scheme [P.I.]	€10,000	I.T. & Lab equipment for R.F. Butler's research group
2004 (2 years)	NUIG Millenium Fund [P.I.]	€ 5,000	Test runs with an L3-CCD Camera system
2004 (3 years)	IRCSET Postgraduate scholarship [PhD Supervisor of awardee C. Lane]	€ 57,150	Development and use of an image processing and analysis Pipeline for Extra-solar Planet detection
2004 (3 years)	IRCSET Postgraduate scholarship [PhD Supervisor of awardee B. Sheehan]	€ 57,150	Development and use of an L3-CCD image sharpening Camera for Extra-solar Planet detection
2003 (1 year)	PPARC [Co-I, with D. Peat]	GB£ 4,000	Custom Filters - CN/CH spectrophotometry
2002 (3 years)	IRCSET Postgraduate scholarship [PhD Supervisor of awardee K. Forde]	€ 57,150	The Origin of Carbon and Nitrogen abundance variations in Globular Clusters
2002 (1 year)	ASTROVIRTEL research support [Co-I, with A. Golden & A. Shearer]	€ 5,000	Long Term Optical Variability of Catalogued Ultra Cool Dwarfs with ASTROVIRTEL
2002 (1 year)	NUIG Millenium Fund [P.I.]	€ 2,540	The Origin of Carbon and Nitrogen abundances on Earth
2001 (4 years)	EC COST Action [Joint P.I., with A. Shearer & A. Golden]	~€ 3,000 each	COST 283: Computational and Information Infrastructure in the Astronomical DataGrid
2001 [<i>declined, for lectureship</i>]	Enterprise Ireland Postdoctoral Fellowship [P.I.]	IR£ 55,000	A targeted search for Extrasolar Planets in Globular Clusters
2001 (3 years)	Enterprise Ireland Basic Research Grant [Co-I, with A. Golden & A. Shearer]	IR£ 110,000	Understanding the coupling of Pulsars to their surrounding Nebulae
2000 (1 year)	EC Marie Curie (Cat. R) Postdoctoral Fellowship [P.I.]	€ 51,444	Development of advanced Deconvolution techniques for Astronomical and Medical Imaging
1997 (2 years)	EC Marie Curie (Cat. 30) Postdoctoral Fellowship [P.I.]	GB£ 65,016	Globular Cluster dynamics explored by parallelised codes for Image Restoration and Crowded-field Photometry
1996 (3 months)	TRACS Research Training [P.I.]	GB£ 3,000	Parallelisation of codes for Image Restoration and Crowded-field Photometry

- *Awarded* observing time as P.I. on 7 occasions [5 in 2004-6], on 2.5m (La Palma) and 1.5m (Italy) telescopes.
- *Led* observing runs on 5 occasions, to 6m (Russia), 4.2m (La Palma), and 1.5m (Italy) telescopes.

Refereed Journal Publications (selection of five most significant)

1. O'Tuairisg S., **Butler R.**, Shearer A., Redfern R., Butler D., Penny A., 2003, "*TRIFFID observations of the cores of the three globular clusters M15, M92 and NGC 6712*", Monthly Notices of Royal Astronomical Society, **345**, 960
2. **Butler R. F.**, Golden A., Shearer A., 2002, "*Detection of new Optical Counterpart candidates to PSR B1951+32 with HST/WFPC2*", Astronomy & Astrophysics, **395**, 845
3. Golden A., **Butler R. F.**, Shearer A., 2001, "*A search for the optical counterpart to PSR B1821-24 in M28*", Astronomy & Astrophysics, **371**, 198
4. **Butler R. F.**, Shearer A., Redfern R. M., Colhoun M., O'Kane P., Penny A. J., Morris P. W., Griffiths W. K., Cullum M., 1998, "*TRIFFID Photometry of Globular Cluster Cores. I. Photometric Techniques and Variable Stars in M15*", Monthly Notices of the Royal Astronomical Society, **296**, 379
5. Shearer A., **Butler R.**, Redfern R. M., Cullum M., Danks A., 1996, "*A Search for the Optical Counterpart of the triple pulsar system PSR B1620-26 in M4*", Astrophysical Journal, **473**, L115

TEAM MEMBER 12

10. NAME

Title: Dr	Forename(s): Michael	Surname: Redfern
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11. POSITION HELD

Personal Professor

12. DEPARTMENT/INSTITUTION OF TEAM MEMBER 12

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BRIEF CURRICULUM VITAE of Professor Michael Redfern

Ph.D.	1968
University of Bristol: Research Associate	1968-1981
University College Galway: Statutory Lecturer	1981-1997
NUI-Galway: Personal Professor	1997-present

Number of publications to date 68

Selected Publications

"Measuring the absolute height and profile of the mesospheric sodium layer using a continuous wave laser", Butler, D. J.; Davies, R. I.; Redfern, R. M.; Ageorges, N.; Fews, H., *A&A*, 403, 775-785, 2003

"Enhanced Optical Emission During Crab Giant Radio Pulses", Shearer, A.; Stappers, B.; Connor, P. O'; Strom, A. Golden R.; Redfern, M.; Ryan, O, *Science*, 301, 493-495, 2003

"Photon counting camera for high resolution astronomy" & "High speed imaging photon-counting system" Ryan, O., Redfern, M., Shearer, A., 2006 SPIE.6276E..16R and 2006 SPIE.6276E..14R

"Shadow Bands Observed During the Total Solar Eclipse of 4 December 2002, by High-Resolution Imaging" Gladysz, S., Redfern, M., Jones, B. *Journal of Atmospheric and Solar-Terrestrial Physics*, Volume 67, Issue 10, p. 899-906, 2005

"Towards integrated single photon counting arrays", J. C. Jackson, D. Phelan, A. P. Morrison, M. Redfern and A. Mathewson, *Optical Engineering*, 42 #1, 112-118, 2003

Number of Research Grants to Date: 22

Value of Grants to date: €>1.6M€

Selected Grants

Enterprise Ireland RIF Programme

"NucleoFluor- Development of a fluorescent analyser for the rapid detection of infectious pathogens" 2 years €187,185

Enterprise Ireland Basic Research Programme

"Development of the Next Generation TRIFFID Camera for Astronomy & Biophysics" 2 years £85,000

EU Training & Mobility of Researchers Programme "Laser Guidestars for 10m-Class Telescopes" 3 years £150,000

HEA Funding (PRTLII) Round 3

"Grid enabled computational physics of natural phenomena: Atmospheric modelling" 3 years €110,000

HEA Funding (PRTLII) Round 3 "Virtual archive of incised stone monuments"

3 years €160,000

SFI Research Frontiers Programme 2005

"An Ultra High Speed Stokes Polarimeter for Astronomy" 3 years €195,000

Number of graduate students supervised to date

Masters 13; Ph.D. 19; Postdocs 9

TEAM MEMBER 13

13. NAME

Title: Dr	Forename(s): Matthew Peter	Surname: Redman
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14. POSITION HELD

Lecturer

15. DEPARTMENT/INSTITUTION OF TEAM MEMBER 13

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MATTHEW PETER REDMAN

PERSONAL DETAILS

Work Address	Age: 33	Home Address
Dept of Experimental Physics	Born: 24 th September 1972	12 Sheerwater House,
National University of Ireland Galway, Galway, Ireland	Status: Single, no dependants	Dominick Street Lower, Galway, Ireland
Telephone: +353-91493357	Email: matt.redman@nuigalway.ie	Telephone: +353-860882662

EMPLOYMENT AND EDUCATION

2004–present	NUI Galway, Lecturer (above the bar)
2003–2004	Dublin Institute for Advanced Studies, IRCSET Fellow
2000–2003	University College London, Postdoctoral Research Associate
1997–2000	University of Manchester, Postdoctoral Research Associate
1994–1997	University of Manchester; PhD, awarded October 1997
1991–1994	University of Durham; B.Sc. in Physics with 1 st Class Honours

GRANTS AND POSTGRADUATES

SFI RFP 2006	Postdoctoral researcher funded	145K
Host for IRCSET Postgraduate scholarships	3 awards obtained in last two years, one accepted	
Robert Loughnane	IRCSET postgraduate fellow since October 2005	
Patrick Carolan	NUI Galway Science Faculty since October 2005	

TEACHING

NUI Galway 2003-2006:	4 th year AT402 Interstellar Medium and Plasma Physics
	4 th year EP407 Solid State Physics
	3 rd year AT302 Stellar Astronomy
	3 rd year EP355 Computational Physics
Royal Holloway 2002-2003:	2 nd year PH2910 Stellar Astrophysics
King's College London 2001-2003:	2 nd year CP2621 Astrophysics

ADMINISTRATION

Astronomical Sciences Group of Ireland	Secretary since October 2005
Cosmograd IDL workshop	Local organiser, held April 2005
Astronomical Sciences Group of Ireland meeting	Local organiser, held April 2005
James Clark Maxwell Telescope Advisory Panel	Member 2002-2003

PUBLICATIONS

38 Refereed journal papers published, in press or submitted; 16 as lead author
20 Conference proceedings contributions; 9 as lead author

TEAM MEMBER 14

16. NAME

Title	Forename(s)	Surname
Dr.	Creidhe	O'Sullivan

17. POSITION HELD

Lecturer, Department of Experimental Physics, NUIM
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18. DEPARTMENT/INSTITUTION OF TEAM MEMBER 14

FULL ADDRESS	
Department of Experimental Physics, National University of Ireland, Maynooth, Co.Kildare, Ireland.	
CONTACT TELEPHONE NO. (01) 7083953	FAX NO. (01) 7083313
E-MAIL creidhe.osullivan@may.ie	

CV for Creidhe O'Sullivan

Education

- University College Dublin (1988-92) B.Sc. in Exp. Physics (1992) First Class Hons. Entrance Scholar in German, 2nd Year Scholar in Exp. Physics and Chemistry, 3rd Year Scholar in Exp. Physics, Chemistry and Mathematics. 4th Year Scholar in Exp. Physics, Winner of Thomas E. Nevin Medal and Bursary for 1st place in the final examination.
- Cambridge University (Cavendish Laboratory) (1992-95) PhD in Physics, '*Observations of Anisotropies in the Cosmic Microwave Background Radiation at 15 GHz*'. (Awarded 1996.) Awarded Isaac Newton Studentship, Robert Gardiner Memorial Scholarship.

Academic Career/Awards/Committees

- Studentships: Particle Physics and Astronomy Research Council Studentship (UK, 1992-95), Summer Studentships at the Royal Greenwich observatory (SERC, UK, 1991) & Armagh Observatory (DENI, UK, 1990).
- National Microelectronics Research Centre, UCC (10/95 – 09/96): Research Scientist working on CMOS-compatible micromachined infrared bolometers.
- Physics Department, NUI, Galway (10/96 – 09/98): EU Presidency Post-Doc Fellowship (high-speed optical observations of isolated neutron stars), & EU TMR programme "*Laser guide star adaptive optics for 8-m class telescopes*".
- Physics Department, NUI, Maynooth Contract Lecturer (10/98 – 09/00) Lecturer (10/00 – present), member of the Far-infrared and Submillimetre Space Astrophysics group working on a number of on-going international research programmes into the development of space- and ground-based astronomical receivers.
- Member, RIA Nat'l Committee for the Physical Sciences (2004-). Member, Committee of the Inst. of Physics in Ireland. Member, RIA National Committee for Astronomy and Space Research (2001-05). Sec. & Treas. of Astronomical Science Group of Ireland (2003-05).

Current Grant Funding

- SFI Research Frontiers Programme "*Multifrequency Polarisation Observations of the Cosmic Microwave Background*", 06/06-05/09, (PI)
- Enterprise Ireland Basic Research Grant Qualification of the HFI Instrument on the PLANCK Surveyor - ESA project in observational cosmology, 10/03–09/06, (Co-I)
- SFI Investigator Award The development of an integrated quasi-optical and electromagnetic numerical simulator for the CAD and analysis of novel THz systems, 01/03–12/06, (Co-I)

Teaching & Publications

- *Undergraduate*: 4th Year Course Coordinator, supervising undergraduate projects and lecturing a range of courses to all years. Current courses: Introductory Astronomy & Earth Science, Nuclear & Particle Physics, Computational Physics, Observational Cosmology.
- *Postgraduate*: Supervised 2 MSc students ('02, '05) and have 3 PhD students (submissions due this year) & 1 MSc student. I gave a lecture course on 'Collection, Handling and Detection of Radiation' as part of the European M.Sc. in Astronomy, Portugal, 1998.
- 19 peer-reviewed journal articles, 30 conference proceedings & 5 others.

TEAM MEMBER 15

16. NAME

Title: Dr	Forename(s): J. Anthony	Surname: Murphy
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17. POSITION HELD

Head of Department of Experimental Physics
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18. DEPARTMENT/INSTITUTION OF TEAM MEMBER 15

FULL ADDRESS: Department of Experimental Physics, NUI Maynooth, Maynooth, Co. Kildare, Ireland.	
CONTACT TELEPHONE NO.: +353-1-7083641	FAX NO.: +353 1 7083313
E-MAIL: Anthony.murphy@nuim.ie	

CURRICULUM VITAE OF J. A. MURPHY

Prof. John A. Murphy.(CPhys, FInstP),(Mem IEEE),(F.R.A.S.)

Present Post: Head of Department of Experimental Physics,
National University of Ireland, Maynooth, Co. Kildare. Ireland

Degrees: B.Sc.(1st Class Hons) in Experimental Physics 1977 – NUI (UCC)
M.Sc. in Experimental Physics 1979 – NUI (UCC)
M.S. in Physics, 1981 – California Institute of Technology (GPA: A)
Ph.D. in Physics 1986 – University of Cambridge (Cavendish Laboratory)

Posts Held: 1985-87: Post-doc Research Associate at Cavendish Laboratory, Cambridge.
1988-95: Lecturer in Experimental Physics at PSC Maynooth (NUI).
1995-2002: Senior Lecturer in Experimental Physics at Maynooth
**2002: appointed Professor of Experimental Physics and Head of Department,
NUI Maynooth.**

Sabbatical leave at Stanford University (Mar/April & August/Sept 2001)
Elected **Fellow of the Institute of Physics** (CPhys FInstP), July 2002 (Member 1988).

Awards & Achievements: 1st in Experimental Physics B.Sc, UCC College Entrance Scholarship, Science Undergraduate College Scholarships (1,2,3 year), UCC Postgraduate College Scholarship, Pfizer Travelling Studentship, Trinity College Cambridge Fees Bursary, Lundgrun Fund grant.

Research Profile Summary Leader of terahertz optics research group of 19 researchers at NUIM specializing in far-IR space optics and technology consisting of: 4 academic staff; 3 research staff; 12 graduate students, currently with 2 IRCSET Embark awards and 2 past awards graduated. The total value of research grants to NUIM is over 2.0 million Euro.

Co-investigator status on three large instrument projects in long-wave astronomical optics:

- (1) The HFI instrument for PLANCK satellite with the University of Cardiff and the Institut d'Astrophysique Spatiale, Paris.
- (2) The HIFI heterodyne instrument for the Herschel Space Observatory with the Space Research Organisation of the Netherlands, SRON, Groningen.
- (3) The QUAD Telescope with the Stanford University, Caltech, JPL (Pasadena) and the University of Cardiff (related to this application).

Publication Record: 45 refereed journal publications (with 695 citations). Total conference papers: 80.

Current Grant Funding (PI on all grants listed):

Science Foundation Ireland Investigator Award – Principle Investigator - Jan 2003- Dec 2006 Level of Funding: €786,000. Project Title: "The development of an integrated quasi-optical and electromagnetic numerical simulator for the computer aided design and analysis of novel terahertz systems."

Enterprise Ireland Basic Research Grant Scheme – Principle Researcher -Oct. 2003- Sept. 2006 - €157,100 "Qualification the HFI instrument on the PLANCK surveyor, an ESA deep space project in observational cosmology."

PRODEX Fund award (European Space Agency) – Principle Investigator - Jan 2006 – Dec 08 Level of Funding: €280,000 Project Title: "Optical design and qualification of HIFI instrument for the Herschel Space Observatory".

Total number of students supervised: PhD (total): 9 of whom 5 are current and 4 have graduated.
MSc (total): 11 all of whom have graduated

TEAM MEMBER 16

19. NAME

Title	Forename(s)	Surname
Professor	Philip	Dufton

20. POSITION HELD

Professor of Physics and Director of the Astrophysics Research Centre at Queen's University

21. DEPARTMENT/INSTITUTION OF TEAM MEMBER 3

FULL ADDRESS Department of Physics and Astronomy Queen's University of Belfast Belfast BT7 1NN Northern Ireland	
CONTACT TELEPHONE NO. +442890973552	FAX NO. +442890973110
E-MAIL p.dufton@qub.ac.uk	

CURRICULUM VITAE — P.L. DUFTON

Date of Birth: 22 July 1947
Nationality: British

Place of Birth: Southport, England
Marital Status: Single

Academic Qualifications

October 1965 - July 1968: Undergraduate Student at University of Cambridge

Subjects for BA Degree

1966: Physics, Chemistry, Mathematics First class pass
1967: Physics, Chemistry, Mathematics First class pass
1968: Physics First class pass (Honours)
1971: Awarded MA degree

Awards

Open Scholarship to St. Catharine's College 1965-67, renewed 1967-68
College Book Prizes 1966, 1967, 1968

October 1968 - July 1971: Research Student at the Cambridge Observatories

Thesis title: 'Some spectroscopic studies of early-type stars'

Ph.D degree awarded in July 1972

Awards

Senior Scholarship to St. Catharine's College 1968-72

Employment History:

October 1971 - September 1972 Junior Librarian St. Catharine's College
Research Assistant at the Cambridge Observatories

September 1972 - October 1973: Adjunktvikar (Research Fellow) at the Ole Roemer
Observatory, University of Aarhus, Denmark

October 1973 - April 1975: Research Fellow, Department of Pure & Applied Physics,
QUB

May 1975 - December 1980: Senior Computer Programmer, Department of Applied
Mathematics & Theoretical Physics, QUB

January 1981 - September 1986: Lecturer, Department of Pure & Applied Physics, QUB

October 1986 - September 1991: Reader, Department of Pure & Applied Physics, QUB

October 1991 - date: Professor, School of Mathematics & Physics, QUB
(Leave of absence during 1998-1999 academic year)

October 2004 - date: Director of the Astrophysics Research Centre, QUB

Publications/Grants/Supervision:

1. I have over 200 publications in refereed astronomical journals.
2. I am currently a joint holder of grants totaling more than £1.4 million.
3. I have supervised more than 20 PhD students, all of whom have been successful

TEAM MEMBER 17

22. NAME

Title	Forename(s)	Surname
Dr	Peter	Gallagher

23. POSITION HELD

Lecturer in Astrophysics

24. DEPARTMENT/INSTITUTION OF TEAM MEMBER 3

FULL ADDRESS	
Astrophysics Research Group, School of Physics, Trinity College Dublin, Dublin 2, Ireland.	
CONTACT TELEPHONE NO. +353 (0)1 896 1300	FAX NO. +353 (0)1 761 1759
E-MAIL peter.gallagher@tcd.ie	

Dr. Peter T. Gallagher

Experience

- January 2006 – Present *Lecturer in Astrophysics*
Trinity College Dublin, Ireland
- September 2004 - December 2005 *Lecturer in Space Science*
University College Dublin, Ireland
- October 2001 - Present *Senior Space Scientist*
NASA Goddard Space Flight Center, Maryland, USA
- October 1999 - October 2001 *Postdoctoral Research Fellow*
Big Bear Solar Observatory, California, USA

Education

- Ph.D. in Astrophysics, Queen's University Belfast, (1999).
- M.Sc., Optics and Image Processing, Queen's University Belfast, (1996).
- B.Sc. (HONS), Experimental Physics, University College Dublin, (1995).

Professional Memberships

- Member of the American Astronomical Society/Solar Physics Division.
- Fellow of the Royal Astronomical Society (FRAS).
- Member of the Institute of Physics (AMInstP).
- Member of the American Geophysical Union.
- Member of the Irish Research Scientists' Association.

Collaborative Memberships

- Member of European Space Agency Space Weather Working Team.
- Member of European COST Action 724 on Space Weather.
- Co-Investigator for SWAP instrument onboard ESA PROBA2 satellite.
- Member of NASA RHESSI satellite team.
- Member of ESA/NASA SOHO satellite team.

Professional Services

- National Coordinator for Ireland for International Heliophysical Year 2007.
- Referee for "Astrophysical Journal", "Astronomy and Astrophysics", "Solar Physics", "Planetary and Space Science", and "Advances in Space Science".
- Regular Panel Reviewer for NASA and PPARC grants.
- Scientific Organizer for many international conferences, workshops, and special sessions, including Chair for Solar Image Processing Workshop II and III.

Selected Publications (from 37 Refereed and 25 Contributed)

- Young, C.A., Gallagher, P.T., *Multiscale feature identification of coronal mass ejections*, *Astrophysical Journal*, *submitted*
- Gallagher, P.T., Lawrence, G.R., Dennis, B.R., *Rapid acceleration of a coronal mass ejection and implications for propagation*, *Astrophysical Journal*, 588, L53, 2003
- Gallagher, P.T., Dennis, B.R., Kruker, S., Schwartz, R.A., Tolbert, A.K., *RHESSI and TRACE imaging of the 21 April 2002 X1.5 flare*, *Solar Physics*, 210, 341, 2002

TEAM MEMBER 18

19. NAME

Title: Dr	Forename(s): Peter	Surname: Duffy
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20. POSITION HELD

Lecturer

21. DEPARTMENT/INSTITUTION OF TEAM MEMBER 3

FULL ADDRESS: UCD School of Mathematical Sciences, University College Dublin, Dublin, Ireland.	
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Curriculum Vitae

Dr Peter Duffy

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e-mail Peter.Duffy@ucd.ie
Telephone 00 353 1 7162565

Biographical Summary

2002 – present Senior Lecturer, UCD
1996 – 2002 College Lecturer, UCD (Appointment date 1st October 1996)
1991 – 1996 Staff Scientist, MPI for Nuclear Physics, Heidelberg, Germany
1990 – 1991 Commercial Aeronautics Research, Captec, Dublin
1986 – 1990 PhD (awarded 1990) at Trinity College Dublin and DIAS
1982 – 1986 B.A. (Mod.) in Theoretical Physics, TCD; Foundation Schol. 1984.

Publications

- Authored and co-authored 47 peer-reviewed publications in international journals; e.g. The Astrophysical Journal (Letter), The Astrophysical Journal, Journal of Physics G, Monthly Notices of the Royal Astronomical Society, Astronomy and Astrophysics.

Current Research Group

- Three postdoctoral fellows; Dr Frank Rieger, Dr Stephen O’Sullivan, Dr Joni Tammi
- Four PhD students; Mr Paul Dempsey, Mr Brian Reville, Mr Alex Byrne, Ms Fazeleh Khajenabi

Research Funding

- PRTL Cycle 3, 2002, *Grid Enabled Computational Physics of Natural Phenomena (COSMOGRID)*; 1.8 Million Euro to UCD; Co-recipient for funding of 200-node cluster; Primary recipient of funding for 1 postdoctoral fellow, 1 postgraduate student, travel and equipment costs.
- President’s Research Fellowship, UCD, 2006; 46,000 Euro
- SFI Research Frontiers Programme 2006; 129,832 Euro
- Royal Irish Academy/Royal Society Exchange Scheme; 10,500 Euro
- Research Centre St John’s College, Oxford University 200,000 Sterling (in collaboration with Dr K. Blundell, Prof J. Binney FRS, Prof K. Burnett FRS)
- Marie-Curie 5th Framework Postdoctoral Grant, 2003, 105,000 Euro (Primary Recipient)
- *Previous funding* : Joint Enterprise Ireland/British Council Exchange Grant; EU research network on AstroPlasmaPhysics, President’s Research Award UCD; UCD in-house schemes, Enterprise Ireland International Collaboration; EURATOM grants for fusion related research.

Teaching and Learning

- Co-Director of Theoretical Physics UCD; Member of BSc Programme Board UCD
- Developed and taught 8 new courses during UCD career

TEAM MEMBER 19

25. NAME

Title	Forename(s)	Surname
Dr.	Lorraine	Hanlon

26. POSITION HELD

Senior Lecturer

27. DEPARTMENT/INSTITUTION OF TEAM MEMBER 1

FULL ADDRESS	
UCD School of Physics Science Centre (North) UCD Dublin Belfield Dublin 4	
CONTACT TELEPHONE NO. (01) 716-2214 / (01) 716-2210	FAX NO. (01) 283-7275
E-MAIL Lorraine.Hanlon@ucd.ie	

CURRICULUM VITAE OF DR. LORRAINE HANLON

School of Physics, Science Centre North, University College Dublin, Dublin 4, Ireland.

Email: lorraine.hanlon@ucd.ie

Tel: +353-1-7162214

Fax: +353-1-2837275

POSITIONS:

Senior lecturer (UCD): March 2005 to date.

Visiting scholar: Department of Radiation Oncology, University of Washington, Seattle: August 2004-August 2005.

Lecturer (UCD): September 1996 to February 2005.

European Union (EU) 'Returned researcher' Postdoctoral fellow (UCD): 1995 – 1996.

EU Human Capital & Mobility Fellow, Astrophysics Division, European Space Agency Research Centre (ESTEC), The Netherlands: 1994 – 1995.

ESA Research Fellow, Astrophysics Division, ESTEC, The Netherlands: 1991 – 1994.

Research scientist (UCD): 1987 – 1989.

PhD thesis (National University of Ireland, UCD): 'Studies of cosmic gamma-ray bursts observed by the COMPTEL instrument' (1995).

SAMPLE OF RESEARCH ACTIVITIES AS PRINCIPAL INVESTIGATOR:

- 'A Robotic Telescope for Detection of Gamma-Ray Burst (GRB) Afterglows and Extrasolar Planets' (2002-2006, IRCSET).
- 'Studies of GRBs observed by the INTEGRAL satellite' (2002-2007) approved programme in response to 4 announcements of opportunity from ESA.
- 'Observations of far-infrared radiation from GRBs using ESA's Infrared Space Observatory' (1997-1998).
- Observing time on the 4m William Herschel Telescope on La Palma to study host galaxies of GRBs in the near-infrared (1997).
- 3 joint ESA-NASA proposals to obtain and analyse GRB spectra taken by instruments aboard NASA's *Compton* Gamma-Ray Observatory satellite (1994 - 1996).
- Rapid searches for radio counterparts to gamma-ray bursts with the Westerbork Synthesis Radio Telescope in the Netherlands (1993 - 1995).

PUBLICATIONS:

Co-author of more than 50 refereed and 50 conference papers.

GRADUATE SUPERVISION:

2 PhD (1 Marie Curie fellow, 1 at University of Liverpool) and 2 MSc (1 in 2nd level teaching, 1 unknown) graduates supervised to completion as sole supervisor.

3 PhD (1 in Intel, 1 in Neils Bohr Institute, 1 in Sun Microsystems) graduates supervised to completion as co-supervisor.

2 PhD students currently as sole supervisor.

2 PhD students currently as co-supervisor.

UNDERGRADUATE TEACHING:

Co-course director of new 'Physics with Astronomy & Space Science' degree programme.

Introduction to Astronomy & Space Science – 1st year, 2005 to date.

Physics Applied to Health Care - 1st year Diploma of Nursing Studies, 1996-2000.