

## ASHKBIZ DANEHKAR

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### QUALIFICATIONS

*Doctor of Philosophy*, Physics (expected)  
Macquarie University, Sydney, Australia September 2013  
Research Topic: “Stellar evolution of double-degenerate central stars of planetary nebulae and type Ia supernova progenitors.”

*Master of Science (Distinction)*, Plasma Physics  
Queen’s University Belfast, Belfast, UK December 2009  
Research Project: “Propagation of electron-acoustic excitations in the presence of suprathermal background electrons - linear and nonlinear effects.”

*Master of Science (Merit)*, Computational Engineering  
University of Rostock, Rostock, Germany September 2007

### WORK EXPERIENCE

*PhD Research* April 2010 - Present  
Department of Physics, Macquarie University, Sydney, Australia

- Conduct research to model the photoionization of double-degenerate central stars of planetary nebulae.
- Support from the Macquarie University Research Excellence Scholarship (MQRES) Scheme.

*Master’s Research* October 2008 - December 2009  
Centre for Plasma Physics, Queen’s University Belfast, Belfast, UK

- Conducted research to model electron-acoustic excitations in the presence of suprathermal background electrons.
- Simulated nonlinear dispersion of laser pulses propagating through Kerr media.
- Perform optical emission spectroscopy of non-thermal atmospheric pressure plasmas.
- Courses: Introductory, Experimental, and Theoretical Plasma Physics, Laser Produced Plasmas, and Low Temperature Plasmas.
- Support from the Department for Employment and Learning (DEL) Northern Ireland.

*Early-Stage Research* February - October 2008  
Faculty of Physics, University of Craiova, Craiova, Romania

- Conducted research to investigate BRST couplings between a background field (BF) model and dual formulation of linearized gravity in five dimensions.
- Courses: General Relativity, Constrained Dynamics, Quantized Gauge Field, BRST Symmetry and its Applications.
- Support from the European Union Contract MRTN-CT-2004-005104.

Master's Work

September 2007

Faculty of Computer Science and Electrical Engineering, University of Rostock, Rostock, Germany

- Developed microcontroller based measurement system to record neuromuscular signals in clinical and anaesthesia practice.
- Developed numerical simulation and computational modeling analysis of physical phenomena, e.g. magnetic coil, rotating electric machine, and microwave antenna.
- Courses: Applied Mathematics, Computational Method, Software Concepts, Visualization, Control Technology, and Integrated Circuit Design.

### FELLOWSHIPS, AWARDS, & GRANTS

International Astronomical Union (IAU) Travel Grant for IAUS 281 (€1,400)	2011
IAU Travel Grant for IAUS 282 (€600)	2011
IAU Travel Grant for IAUS 283 (€530)	2011
Max-Planck Institute for Extraterrestrial Physics Scholarship for ICPDP6 (€1,460)	2011
Macquarie University Safety Net Grant (PI: O. De Marco) (\$8,000)	2011
International Macquarie University Research Excellence Scholarship (iMQRES) (\$180,000)	2010-2013
Department for Employment and Learning (DEL) Northern Ireland Studentship (£23,930)	2008-2009
Marie Curie Travel Grants (€2,150)	2008
Marie Curie Training Grants (Conference & Workshop) (€1,400)	2008
Marie Curie Fellowship for Early Stage Training (€12,600)	2008

### PROFESSIONAL MEMBERSHIP

Member of the Australian Institute of Physics (AIP)	2011-present
Student Member of the Astronomical Society of Australia (ASA)	2011-present
Full Member of the Sigma Xi Scientific Research Society ( $\Sigma X$ )	2011-present
Associate Member of the Institute of Physics (IOP-UK)	2010-2012
Member of the Society of Physics Students - Sigma Pi Sigma (SPS)	2010-2012

### CONFERENCES AND SCHOOLS

- Macquarie University Centre for Astronomy, Astrophysics and Astrophotonics - 1st Annual Workshop: Phases of Late Stage Stellar Evolution, Sydney, Australia, 5-7 Dec 2011.
- International Astronomical Union Symposium 283, Planetary Nebulae: an Eye to the Future. Puerto de la Cruz, Tenerife, Spain, 25-29 July 2011.
- International Astronomical Union Symposium 282, From Interacting Binaries to Exoplanets: Essential Modeling Tools, Tatranska Lomnica, Slovakia, 18-22 July 2011.
- International Astronomical Union Symposium 281, Binary Paths to the Explosions of type Ia Supernovae, Padova, Italy, 4-8 July 2011.
- 6th International Conference on the Physics of Dusty Plasmas, Garmisch-Partenkirchen, Germany, 16-20 May 2011.
- The 3<sup>rd</sup> National Conference on Theoretical Physics, Buşteni, Romania, 10-13 June 2008.
- The 6<sup>th</sup> International School and Workshop on Quantum Field Theory and Hamiltonian Systems, Călimăneşti, Romania, 6-11 May 2008.

## OBSERVING TIME

- **MSSSO ANU-2.3m Telescope**, WiFeS Spectrograph, “Kinematic study of planetary nebulae with potential double-degenerate nuclei” (2012A)

## PUBLICATIONS

### a. Refereed Journals

1. “Electron-acoustic solitary waves in the presence of a superthermal electron component”  
A. Danehkar, N. S. Saini, M. A. Hellberg, and I. Kourakis  
*Physics of Plasmas*, Volume: **18**, Issue: 7(2011) pp. 072902/1-10.
2. “On the significance of the Weyl curvature in a relativistic cosmological model”  
A. Danehkar  
*Modern Physics Letters A*, Volume: **24**, Issue: 38(2009) pp. 3113-3127.
3. “Consistent interactions of dual linearized gravity in  $D = 5$ : couplings with a topological BF model”  
C. Bizdadea, E. M. Cioroianu, A. Danehkar, M. Iordache, S. O. Saliu, and S. C. Sararu  
*European Physical Journal C*, Volume: **63**, Issue: 3(2009) pp. 491-519.

### b. Conference Proceedings (refereed)

1. “Photoionization modeling of the Galactic planetary nebulae Abell 39 and NGC 7027”  
A. Danehkar, D. J. Frew, Q. A. Parker, and O. De Marco  
*Proceedings of the International Astronomical Union Symposium 283* (2011), *submitted*.
2. “Photoionization models of the Eskimo nebula: evidence for a binary central star?”  
A. Danehkar, D. J. Frew, Q. A. Parker, and O. De Marco  
*Proceedings of the International Astronomical Union Symposium 282* (2011), *submitted*.
3. “A search for Type Ia supernova progenitors: the central stars of the planetary nebulae NGC 2392 and NGC 6026”  
A. Danehkar, D. J. Frew, and O. De Marco, and Q. A. Parker  
*Proceedings of the International Astronomical Union Symposium 281* (2011), *submitted*.
4. “Large-amplitude electron-acoustic solitary waves in a dusty plasma with superthermal electrons”  
N. S. Saini, A. Danehkar, M. A. Hellberg, and I. Kourakis  
*AIP Conference Proceedings*, Volume: **1397**, Issue: 1(2011) pp. 357-358.
5. “Electron beam–plasma interaction in a dusty plasma with excess suprathermal electrons”  
A. Danehkar, N. S. Saini, M. A. Hellberg, and I. Kourakis  
*AIP Conference Proceedings*, Volume: **1397**, Issue: 1(2011) pp. 305-306.
6. “Effect of superthermality on nonlinear electrostatic modes in plasmas”  
S. Sultana, A. Danehkar, N. S. Saini, M. A. Hellberg, and I. Kourakis  
*Europhysics Conference Abstracts*, Volume: **34A** (2010) P2.410.
7. “BF Models in Dual Formulations of Linearized Gravity”  
C. Bizdadea, E. M. Cioroianu, A. Danehkar, M. Iordache, S. O. Saliu, and S. C. Sararu  
*AIP Conference Proceedings*, Volume: **1131**, Issue: 1(2009) pp. 29-35.