Call for Applications
Resident Academic Full Time Posts in
The Department of Physics
Faculty of Science

Applications are invited for full-time Resident Academic Posts in the Department of Physics in the Faculty of Science of the University of Malta. The appointments will be on an indefinite basis, subject to a one-year probationary period, up to statutory retirement age.

Prospective candidates are required to demonstrate their area of specialization in one or more of the areas indicated below:

Electromagnetics;
Observational cosmology, and radio astronomy instrumentation;
Theoretical quantum optics, quantum condensed matter physics, and nanophysics and nanotechnology,

The appointees will be required to contribute to the teaching, research and other activities of the Department of Physics, and as may be required by the University.

Candidates must be in possession of a Ph.D. or equivalent research-based doctorate relevant to the subject matter of the Call and are expected to be actively involved in collaborative work with internationally-renowned researchers. Preference will be given to candidates having experience in the above-mentioned areas of study, experience in applying for research grants from funding bodies, and a proven track record of publications in internationally-recognised peer-reviewed academic journals and leading conferences in their respective fields. The appointees must have good communication skills, both oral and written, and a good command of the English Language is essential.

The Resident Academic Stream is composed of four grades, being Professor, Associate Professor, Senior Lecturer and Lecturer. Entry into the grade of Lecturer or above shall only be open to persons in possession of a Ph.D. or an equivalent research based doctorate within strict guidelines established by the University.

The annual salary for 2015 attached to the respective grades in the Resident Academic Stream is as follows:

Professor €39,758 plus an Academic Supplement of €27,693 and a Professorial Allowance of €2,164
Associate Professor €36,493 plus an Academic Supplement of €21,218 and a Professorial Allowance of €1,321
Senior Lecturer €33,037 plus an Academic Supplement of €15,179
Lecturer €27,194 with an annual increment of €641 to €29,117 and a plus an Academic Supplement of €12,486

The University of Malta will provide academic staff with financial resources through the Academic Resources Fund to support continuous professional development and to provide the tools and resources required by an academic to adequately fulfil the teaching and academic research commitments within the University.
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The University of Malta may also appoint promising and exceptional candidates into the grade of Assistant Lecturer, provided that they are committed to obtain the necessary qualifications to enter the Resident Academic Stream. Such candidates will either have achieved exceptional results at undergraduate level, be already in possession of a relevant Masters qualification, or would have been accepted for or already in the process of achieving their PhD from a reputable institution.

Assistant Lecturer with Masters €25,365 with an annual increment of €596 to €27,153 and an Academic Supplement of €4,426
Assistant Lecturer €23,604 with an annual increment of €531 to €25,197 and an Academic Supplement of €4,211

Applicants should submit their letter of application by e-mail to recruitment.hrmd@um.edu.mt together with a copy of their curriculum vitae, a scanned copy of their certificates and e-mails of three referees.

Applications should be received by Thursday, 19th November 2015.

Late applications will not be considered.

Further information may be obtained from the Office for Human Resources Management and Development, Administration Building, Room 214, or from the website: http://www.um.edu.mt/hrmd/vacancies.

Office of the University
Msida, 29th October 2015
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Further Information

**General Working Obligations:**

The conditions of work for a Resident Academic of the University of Malta, are set out in the ‘Collective Agreement for Academic Staff of the University of Malta’ and the ‘Manual of Conduct and Procedures’.

The commitment of a Resident Academic is based on a 40-hour week, with flexible times depending on established time-tables and distributed reasonably between teaching, academic research and other academic work (including academic administration and professional activity).

The official lecturing times of the University of Malta are Monday to Friday, between 08:00 and 20:00 hours and the successful candidate will be required to lecture at any time within the official teaching times during term-time. The appointments will be subject to a probationary period of one year and to the provisions of the Statutes, Regulations and Bye-Laws of the University of Malta which are now or which may hereafter be in force.

**The Department of Physics**

The Department of Physics is responsible for the design of various undergraduate (B.Sc.) and postgraduate courses (Masters, M.Phil. and Ph.D.). Such courses are designed to equip students with the necessary knowledge, experience and skills to pursue careers as scientists within industry, administration, education and research.

The current research areas in which the Department of Physics is involved include:

- Electromagnetics
- Astrophysics and radio astronomy
- Quantum optics and quantum information

Further expansion has entailed the need to recruit experts as follows.

Amongst the tasks which the appointees are expected to perform, there are:

- Participating in undergraduate and postgraduate teaching at the Department of Physics;
- Developing courses and teaching materials relevant to their specialisation and other areas within the Department’s curriculum, as the need arises;
- Assisting in tutorials and seminars, supervising practical work and placements, counselling on projects and other personally undertaken student enterprises;
- Supervising research students and postdoctoral scholars;
- Participating and eventually leading research projects in their respective fields of expertise;
- Managing research and technical staff;
- Writing research proposals;
- Assisting in the day-to-day running of research projects;
- Conducting research and publishing in peer-reviewed journals and reputable conferences, both individually and in collaboration with national and international partners;
- Continuous assessment of students, setting and marking of examination papers (including dissertations and theses) within established time-frames;
- Participating in the administration of academic affairs of the Department of Physics;
- Participating in Faculty and University activities and general administration through membership of boards and committees;
- Contributing to national development in their respective fields of expertise through cooperation with governmental and non-governmental institutions.
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**Electromagnetics:**

Research in this area started during 2001 with a national project to measure and model electromagnetic fields (EMF) emitted from mobile phone base stations. Since then, work has expanded into medical applications and antenna design, and a research group was established a few years ago – the Electromagnetics Research Group (EMRG). The Group is now involved in studies about monitoring, measurement and simulation of non-ionising electromagnetic fields in the environment, measurement of dielectric properties of biological tissues, exposure of humans to non-ionising EMF, occupational exposure, absorption of non-ionising EMF by humans, applications of EMF in medicine, antenna design, electromagnetic compatibility and electromagnetic immunity testing to pre-compliance. There is ongoing collaboration with local industry and national authorities in a number of projects. The EMRG also collaborates with other research groups in the design, simulation and testing of antennas and antenna arrays. Work in these and associated areas is envisaged to grow in scope and volume.

The Electromagnetics Laboratory, which was set up with European Regional Development Funds, offers state of the art experimental facilities for the conduct of this research. In particular, the EMRG has a world-class dielectric measurement system (based around a vector network analyser) capable of conducting accurate measurements on liquids and soft tissue with open-ended coaxial probes over the frequency range from 10 MHz to 68 GHz and at different temperatures. In addition, it is possible to extend this range up to 90 GHz in rectangular waveguides and to apply other measurement methodologies suitable for different material forms.

The other facilities include a 2.5 m x 2.5 m anechoic chamber, test and measurement equipment (laboratory-based and portable), including the most recent broadband and frequency selective EMF meters, field analysers, vector reflectometers, a near-field optic fibre-coupled E- and H-field measurement system, EMC/EMI test equipment, etc. In addition, the EMRG has access to field calculation and simulation software such as: CST, SEMCAD X (with a full set of human and animal computational phantoms), HFSS, Maxwell, Solidware, as well as access to a 7-Teraflop supercomputing cluster, a GPU cluster and an adjoining Ultra-Wideband laboratory.

The Department of Physics is seeking to attract suitable high calibre experts to augment the staff complement in the EMRG.

The ideal candidates would:
- Hold a PhD with a specialisation in the measurement of dielectric properties of biological tissues or other aspects of electromagnetics with specific focus on medical applications;
- Hold a Masters Degree and a Bachelors Degree at First or Second Class – Upper Division Honours in physics;
- Have a strong mathematical background;
- Have a proven track record of published research in electromagnetics, especially in dielectric spectroscopy of biological tissues, EMC/EMI, medical applications of EMF, antenna design and measurement;
- Be experienced in the use of electromagnetic field simulators (especially, CST, SEMCAD X, HFSS);
- Be able to work both independently and as members of a team;
- Have good computational skills;
- Have a good working knowledge of MATLAB;
- Have knowledge of UNIX and/or LINUX.

The appointees will also be required to teach other areas in undergraduate physics, participate in the running of laboratory courses, supervise final year BSc student projects as well as postgraduate research students, and participate in the academic administration of the Department and the Faculty, as well as to carry out other activities as may be required by the University.
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Observational cosmology, and radio astronomy instrumentation:

The activities of the Astrophysics, Astronomy and Cosmology Research Group (AACRG) at the Department of Physics have been growing rapidly and this group has recently established the Institute for Space Sciences and Astronomy (ISSA), a research institute set up within the Faculty of Science, in collaboration with the Faculties of Engineering and of Information and Communication Technology. Research has focussed on:

- Particle astrophysics and cosmology;
- Modified theories of gravity;
- Instrumentation and software for ground-based astronomical and Earth observation;
- Antenna and systems design for radio astronomy.

Apart from the Electromagnetics Laboratory, the AACRG has access to an Ultra Wideband Laboratory, a 5.3 m diameter parabolic antenna as part of a radio telescope system, a powerful GPU cluster and a supercomputing cluster.

In order to support the activities of the AACRG, the Department of Physics is now seeking to attract suitable high calibre experts with a strong background and a proven track record in these fields, particularly in observational cosmology, with a focus on high red-shift galaxies, and in the design of antennas, antenna arrays and detectors for radio astronomy.

The ideal candidates would:

- Hold a Ph.D. in a related area of observational cosmology, and instrument design for radio astronomy instruments, including antenna arrays and detectors;
- Have a strong mathematical background;
- Have experience in writing research proposals;
- Have a proven track record of research published in high-impact peer-reviewed journals and reputable international conferences, performed individually or in collaboration with internationally recognised researchers, in the subject area of the Call, and preferably covering fields of observational cosmology or instrumentation, including antennas, for radio instruments;
- Be able to work both independently and as members of a team;
- Have good computational skills;
- Have knowledge of UNIX and/or LINUX.

The appointees will be required to take pioneering roles in the introduction of observational astronomy and cosmology concepts, as well as radio astronomy to the Physics Department curriculum and to conduct research in these fields, in collaboration with the AACRG, of which they will form part, and to participate in ISSA activities and projects. They will also be required to teach other areas in undergraduate physics, participate in the running of laboratory courses, supervise final year BSc student projects as well as postgraduate research students, and participate in the academic administration of the Department and the Faculty, as well as to carry out other activities as may be required by the University.

Theoretical quantum optics, quantum condensed matter physics, and nanophysics and nanotechnology:

The Department of Physics has recently taken steps to establish a solid foundation for quantum physics at the University of Malta and is now embarking on a project aimed at expanding its activities in this and related areas. To this end, applications are being invited for resident academic full-time posts with the Department.
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The successful applicants would be required to design and deliver new third- and fourth-year courses in quantum condensed matter, quantum optics, quantum information, or nanophysics and nanotechnology, in addition to conducting research in these fields. In particular, they will be expected to take pioneering roles in the introduction or expansion of theoretical quantum optics and associated fields, such as quantum information, quantum thermodynamics, or quantum condensed matter theory; or of nanophysics and nanotechnology to the Department of Physics’ advanced curriculum and to conduct research in these fields. The work may, as the Department requires, include taking joint responsibility of a new optics laboratory being set up, and teaching other areas in undergraduate physics, participating in the running of laboratory courses, supervising final year BSc student projects as well as postgraduate research students, and participating in the academic administration of the Department and the Faculty, as well as carrying out other activities as may be required by the University.

The Department’s vacancies in these fields are intended to address the current lacunae in the Physics curriculum and research profile. Preference will be given to established scientists with a track record of published research that overlaps with the current theoretical work being conducted in quantum mechanics, quantum optics, and optomechanics at the Department of Physics. Expertise in aspects of quantum information will be considered an asset.

Other areas of interest and potential development for the Department include, but are not limited to: quantum fluids, including quantum correlations in strongly-correlated matter; spin chains and the nature of transport and state transfer in such systems; quantum information storage and routing; properties of quantum channels; and nano-devices, especially those based on graphene technology.

The ideal candidates for these posts would:
- Hold a Ph.D. in a related area of quantum mechanics and applications in quantum information, quantum condensed matter or nanophysics and technology;
- Have a strong mathematical background;
- Have experience in writing research proposals;
- Have a proven track record of research published in high-impact peer-reviewed journals and reputable international conferences, performed individually or in collaboration with internationally recognised researchers, in the subject area of the Call, and preferably covering the mentioned fields;
- Be able to work both independently and as members of a team;
- Have good computational skills.

**The Selection process requires:**

a. The scrutiny of qualifications and experience claimed and supported by testimonials and/or certificates (copies to be included with the application).

b. Short-listing of candidates.

c. An invitation to short-listed candidates to a Selection Board interview.

The selection process will follow the document “Guidelines for Members of Selection Boards in the Recruitment of Resident Academic Staff: (http://www.um.edu.mt/hrmd/services/recruitment).”

In accordance with the guidelines, members of the Selection Board will establish the following selection criteria for the selection process:

i) Relevant academic qualifications

ii) Relevant Academic / Work experience

iii) Aptitude and suitability; and

iv) Performance in interview

Office of the University  
Msida, 29th October 2015  
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