

CALL FOR APPLICATIONS FOR THE AWARD OF RESEARCH FELLOWSHIPS
Regulation on Research Fellowships pursuant to Italian Law no. 240/2010
Politecnico di Bari, issued by Rectoral Decree no. 252 of 05/07/2016

Rectoral Decree no. 103/2022

Purpose

Applications are invited for the selection running for the award of:

-n. 1 professional grant research fellowship, for the execution of research activities within the project entitled: *“Numerical and analytical methods in fluid mechanics of the diffusion of pollutants in seas”*, according to the annexed Activity Programme:

“We aim to analyze by specific mathematical methods (numerical and analytical) the relationships between some partial differential equations and conservation laws arising in fluid mechanics and some numerical results in related experimental studies. We intend to study the weak formulation and the well posedness of some problems in the framework of Engineering (mainly in Hydraulic Engineering). We aim to prove the existence, regularity, asymptotic stability and decay of local or global weak (eventually strong) solutions for classes of equations, which describe the interaction, the motion and the evolution of a finite number of rigid (or solid) bodies within both incompressible and compressible viscous fluids in bounded or unbounded domains of the plane R^2 or the space R^3 , jets in obstructed fluids and waves propagation. Numerical simulations with DNS and SPH codes will also be used.”. The call for applications for the research fellowship issued pursuant to the University Regulation issued by Rectoral Decree (D.R.) no. 252/2016.

The activities shall be carried out under the supervision of a tutor, Project Supervisor Prof. Michele Mossa in a non-subordinate relationship with no set working hours.

The main place of work will be: LIC - Department of Civil, Environmental, Territory, Construction and Chemistry Engineering of the Politecnico di Bari, VIA ORABONA,4 , BARI, ITALY.

-n. 1 professional grant research fellowship, for the execution of research activities within the project entitled: *“Investigation of Parity-Time symmetry devices for high performance integrated optical sensing”*, according to the annexed Activity Programme:

“The research proposal that the research fellow will develop over the course of a year concerns the study and theoretical/experimental investigation of integrated photonic architectures based on coupled resonant microcavities with Parity-Time and anti-Parity-Time (PT) symmetry configurations. The activity will concern simulation and design of waveguides and coupled ring resonators based on materials of group IV, in particular on Silicon-on-Insulator (SOI) and Germanium-on-Silicon (GOS) platforms, and operating in near and mid infrared range. Indeed, the PT and anti-PT architectures will induce an increase of the “sensitivity” of different sensors, so allowing to reach high resolutions for particle and gas sensing, up to now inaccessible using micro- and nanometer-sized structures. The integration of these devices in the mid-infrared will allow the realization of sensors with superior performance compared to competing solutions. Subsequently, the designed devices can be manufactured and characterized at the Optoelectronics Research Centre of University of Southampton”.

The call for applications for the research fellowship issued pursuant to the University Regulation issued by Rectoral Decree (D.R.) no. 252/2016.

The activities shall be carried out under the supervision of a tutor, Project Supervisor Prof. Vittorio Passaro in a non-subordinate relationship with no set working hours.

The main place of work will be: Department of Electrical and Information Engineering of the Politecnico di Bari, VIA ORABONA,4 , BARI, ITALY.

-n. 1 professional grant research fellowship, for the execution of research activities within the project entitled: *“Development of optimal management strategies of dc microgrid for electric vehicles integration in steady-state and dynamic conditions”*, according to the annexed Activity Programme:

“The researcher's activity will be aimed at the development and the implementation of optimal control strategies of DC microgrids in steady-state (day-ahead) and dynamic conditions (approaching real time). The main reference is the modular infrastructure built at the port of Bari which includes: a photovoltaic system installed on a shelter for parking; bidirectional charging stations (V2G) for fast and superfast electric vehicles; energy storage; DC bus to integrate the components; a bidirectional DC / AC converter for interfacing with the distribution network. The

infrastructure, together with the development of appropriate models, will give to the researcher the possibility: • to characterize the behaviour of devices by proper mathematical models; • to set up electric vehicle management strategies through smart charging for the design of controllable load profiles; • to test energy management procedures and the new ultra-fast charging technology; • to perform measurements and data collection to verify the performance of the implementation of control and management strategies”.

The call for applications for the research fellowship issued pursuant to the University Regulation issued by Rectoral Decree (D.R.) no. 252/2016.

The activities shall be carried out under the supervision of a tutor, Project Supervisor Prof. Maria Dicorato in a non-subordinate relationship with no set working hours.

The main place of work will be: Department of Electrical and Information Engineering of the Politecnico di Bari, VIA ORABONA,4 , BARI, ITALY.

-n. 1 professional grant research fellowship, for the execution of research activities within the project entitled: “Development of innovative methods for in vivo measurement of the absorbed dose in radiotherapy with bnct technique (boron neutron capture therapy)”, according to the annexed Activity Programme:

“We intend to study an innovative method to evaluate in vivo the spatial distribution of the dose imparted in BNCT-type treatments using techniques based on "Compton Camera" algorithms and on new 3D solid-state CdZnTe (CZT) sensors for the determination of energy and the trajectory of the gamma rays emitted during the treatment. For this purpose, it is necessary to characterize some sensor prototypes using mixed $n + \gamma$ radiation fields of relevance for BNCT applications, to simulate the imaging performance of the sensor with the "Compton Camera" method and to test the imaging capabilities of the system both at the nuclear reactor LENA at University of Pavia, and with an experimental BNCT beam at the University of Birmingham on tissue-equivalent phantoms”.

The call for applications for the research fellowship issued pursuant to the University Regulation issued by Rectoral Decree (D.R.) no. 252/2016.

The activities shall be carried out under the supervision of a tutor, Project Supervisor Prof. Giuseppe Iaselli in a non-subordinate relationship with no set working hours.

The main place of work will be: Department of physics of the Politecnico di Bari, VIA ORABONA,4 , BARI, ITALY

Requirements for candidacy

The selection is open to candidates in possession of the following qualification:

Research title	Access requirements
<i>Numerical and analytical methods in fluid mechanics of the diffusion of pollutants in seas</i>	Degree in Civil Engineering, Environmental Engineering, Physics, Mathematics Language English
<i>Investigation of Parity-Time symmetry devices for high performance integrated optical sensing</i>	Degree in Electronic Engineering or Medical Systems Engineering or Physics Language English
<i>Development of optimal management strategies of dc microgrid for electric vehicles integration in steady-state and dynamic conditions</i>	Degree in Electrical Engineering or Electrotechnical Engineering, Mechanical Engineering, Management Engineering Language English
<i>Development of innovative methods for in vivo measurement of the absorbed dose in radiotherapy with bnct technique (boron neutron capture therapy)</i>	Degree in Physics or Engineering Language English

Candidates must possess the admission requirements on the deadline for submission of applications laid down in this call.

The selection is not open to any persons who are related by blood or by marriage up to the fourth degree, to a professor working in the department or structure for which the call is issued, or to the Rector, Director General or a member of the Board of Governors of the University.

The selection is also not open to anyone who has held research fellowship contracts with any institution, pursuant to Italian Law no. 240/2010, for a period which, summed to the foreseen duration of this contract, exceeds a total of 6 years, excluding any period in which the contract coincided with a PhD without scholarship, for the maximum limit of the legal duration of the PhD programme.

Furthermore the selection is not open to anyone who has had research fellowship or fixed-term researcher contracts at the Politecnico di Bari or any other state-funded, private-funded or distance-learning Italian university pursuant to articles 22 and 24 of Italian Law 240/2010, or with any other body listed in paragraph 1 of Art. 22 of Italian Law 240/2010 for a period which, summed to the foreseen duration of this contract, exceeds a total of 12 years, even if not consecutive. For the purposes of the duration of the above-described periods, in compliance with the laws in force any periods of maternity or sick leave shall not be calculated.

Application

The application for selection, bearing the title indicated in the call for proposal for the Research Fellowship, drawn up according to the annexed model A, shall be delivered not later than **02/03/2022**.

Any applications received beyond the deadline will not be accepted.

The application may be presented:

- Sending by e-mail PEC at: politecnico.di.bari@legalmail.it not later than **02/03/2022**.

The structure shall assume no liability for the non-delivery of correspondence which is not the result of errors made by its own staff.

In the application the candidates must, under their own responsibility, indicate:

- surname and name;
 - date and place of birth;
 - nationality;
 - residence and chosen address for correspondence for the purposes of this selection;
 - that they do not have a criminal record and are not involved in any current criminal proceedings (or if so, state which);
 - that they possess the qualification of..... in, obtained from..... on (date)..... (indicate the qualifications required as stated in article 2 of the call for applications
- or
- that they possess an academic qualification obtained abroad, which is deemed equivalent.

The candidates in possession of a qualification obtained abroad must annex to their applications a translation into Italian of their foreign qualification, accompanied by a sworn statement that it is a faithful translation of the original certificate.

The foreign qualification may be declared admissible by the Evaluation Board, solely for the purposes of admission to the selection procedure.

In case of award, the winning candidates having obtained their qualification in a country outside of the European Union, must provide the Structure, in the same manner as laid down for the presentation of applications, the official translation with a declaration of value of the foreign qualification issued by the competent diplomatic representation or Italian consulate in their home country, in accordance with the applicable laws.

Candidates must enclose the following with their applications:

- Thesis;
- Their scientific and professional curriculum vitae;
- Research proposal;
- Colour copy of ID document;
- Annex C;

Certificates of all qualifications to be assessed according to art. 3 of this call for applications. Academic and professional qualifications issued by Italian public administrations must be self-certified or submitted in an unstamped photocopy, as provided for in art. 15 of Italian law no. 183/2011, by way of a simple declaration of certification pursuant to articles 46 and 47 of Italian Presidential Decree (DPR) 445/2000.

Candidates are admitted to the selection procedure with reserve.

At any time, even after participation in any tests, the Administration may, with justification, exclude them from the selection procedure. The concerned candidate will be notified of such exclusion.

Fee to be paid for research fellowships applications

Candidates are required to pay the fee of 25,82 Euro in order to apply for call for research fellowships through PagoPA, that is the payment system for Italian public administrations. In case of non-payment of this fee, application will not be accepted.

Candidates have to make the payment within 3 natural and consecutive days from the receipt of payment notice by Politecnico's di Bari email in which payment instructions are reported.

Only candidates resident abroad, that are unable to pay such fee with PagoPa after receiving the payment notice, are allowed to pay it by bank transfer, whose bank details are the following: Politecnico di Bari - via G. Amendola, 126/B - 70126 Bari, IT59X0306904067100000300001 BIC: BCITITMM - reason: "Candidatura AdR title _____ - D.R. n. ___ dated ___".

Only these candidates have to make the payment within 3 natural and consecutive days from the receipt of payment notice by Politecnico's di Bari email and are required to send copy of bank transfer to gorgia.todarello@poliba.it together with "Self-declaration affidavit on being unable to pay the fee for the application to the competition procedure with PAGOPA" Form D attached to this announcement, duly filled and signed.

Comparative assessment of the candidates and the Evaluation Board

The candidates will be assessed comparatively by a Commission appointed by a Rectoral Decree, and formed by three professors of Politecnico di Bari.

The selection procedure focuses on the examination of the selection criteria laid down in advance by the Commission, the candidates' scientific-professional curriculum and the scientific work and publications resulting from the documents enclosed with the application as well as an interview, aiming to verify the suitability of the candidate for carrying out the research programme.

During the interview, the Commission will also verify the candidates' knowledge of the foreign language(s) required in the announcement on relevant sectoral topics.

The oral exam may be held also by using Skype. These applicants have to prove their identity to Commission by showing the colour ID document already attached in the application. Candidates will also have to produce, together with the documentation pursuant to art. 3, Annex C duly filled.

Notice about date and location where the oral examination will be published on the online register praetorian (Albo pretorio) of the Politecnico of Bari.

To be admitted for interview, the candidates must show a valid ID document.

At the end of the selection procedure, the Board will draw up a list of candidates with relative scores, and the final ranking of the selection will be published on Politecnico's online register praetorian by a Rectoral Decree.

If two candidates receive the same scores, preference will be given to the younger candidate.

The successful candidate has to send to Politecnico di Bari, within 15 days starting from the day after of final ranking publication the following documents:

- a) declaration of acceptance of the research fellowship, by filling up the form available on [www.poliba.it/Ricerca/Assegni di Ricerca](http://www.poliba.it/Ricerca/Assegni%20di%20Ricerca);
- b) photocopy of ID documents
- c) photocopy of Italian fiscal code (if available).

Duration and amount of the contract

The contract has a duration of 12 months and may be renewed and/or extended in the terms laid down in the University Regulation concerning research fellowships, as issued by D.R. no. 252/2016.

The gross amount of the research fellowship contract is € 19.367,00 (professional) per annum. The amount is exempt of withholding tax and includes all statutory social security charges the Research Fellow is subject to.

The amount will be paid in deferred monthly payments.

Non-accumulation, incompatibility, leave

1. The position of research fellow is incompatible with the following positions:

- a) fixed-term and full-time staff employed by the bodies listed in art. 22 para. 1 of Italian Law no. 240/2010;
- b) persons employed by any private bodies, on a fixed term, permanent or part-time basis; For staff of any Public Administration other than those listed in letter a) refer to the provisions of point 2 below;
- c) persons with fixed-term research contracts with any university;
- d) adjunct professors with official teaching responsibilities in degree programmes or specialisation schools in any university;
- e) persons enrolled in any first, second or single cycle degree programmes, PhD programmes with scholarships or specialisation school. Self-funded research contracts are compatible with enrolments in non-medical specialisation schools, for which no study grant or contract is foreseen or master's degree only where authorised in advance by the structure Director, and having sought the opinion of the tutor.
- f) persons awarded research fellowships at any other body.

2. Employees of public administrations other than those listed in point a) with a fixed-term, permanent or part-time contract shall take unpaid leave of absence for the whole period of the research contract.

3. Freelance professional activities are compatible with the research fellowship contract where authorised in advance by scientific responsible and having verified that the activities in addition to the research fellowship do not prejudice the regular execution of the contract.

4. The accumulation of the research fellowship contract with study grants awarded for any purpose is not permitted, with the exception of those granted by national or foreign institutions for the purposes of integrating the research activities with study periods abroad.

5. The above requirements must be possessed from the moment of entry into force of the contract. The winning candidate shall sign a specific affidavit undertaking to notify the department of any variations in the declared situations as soon as they occur.

Reference norms

For any matters not laid down in this call for applications, refer to the “Politecnico di Bari Regulation for the awarding of grants for cooperation in research activities” by Rectoral Decree no. 252 dated 05.07.2016 and other statutory regulations in force.

The personal data provided by the candidates in their applications, pursuant to articles 7 and 13 of Italian Legislative Decree no. 196 of 30.06.03, shall be processed for the purposes of managing the selection procedure and the contract.

This call for applications will be published on the Politecnico di Bari Portal, on the MIUR website.

Date 31/1/2022

The Rector
Prof. Francesco Cupertino

