

Research Studentships (for students of a course that does not award an academic degree or PhD students)

Applications are open for 1 (one) Research Studentship, within the framework of project *Mergers of compact objects in modified gravity*, with the reference number 2022.08368.PTDC, financed by national funds through FCT/MCTES (PIDDAC), under the following conditions:

Scientific Area: Physics

Admission Requirements:

a) to hold a master degree and be enrolled in a course that does not award an academic degree and it is integrated in the educational project of a higher education institution, performed in association or cooperation with one or several R&D units;

b) not to exceed with this contract, including the possible renovations, an accumulated period of two years in this type of studentship, continuously or with interruptions.

or

a) To be enrolled at a PhD.

Workplan: Development of research activities in the context of project “Mergers of compact objects in modified gravity”, 2022.08368.PTDC, with the financial support of Fundação para a Ciência e a Tecnologia. The goal is to study the fusion of black holes and other astrophysical compact objects, both in General Relativity and in modified gravity theories, and obtain a corresponding visualization of the evolution of the event horizon. The main technique to be employed will be light ray tracing, valid in the extreme mass ratio regime in which the black hole is infinitely larger than its partner in the merging binary.

Legislation and Regulations: Statute of Scientific Research Fellow, approved by Law nr. 40/2004, of August 18, as worded by Decree-Law nr. 123/2019, of August 28; FCT Regulation for Research Studentships and Fellowships, available at <https://www.fct.pt/apoios/bolsas/docs/RegulamentoBolsasFCT2019.pdf> and <https://dre.pt/application/file/a/127230968>.

Workplace: The work will be developed at Centro de Astrofísica e Gravitação of Instituto Superior Técnico, under the scientific supervision of Professor Jorge Varelas da Rocha.

Duration: The research fellowship(s) will have the duration of 6 months. It is expected to begin in February of 2024, and may be eventually renewed up to the maximum of 11 months.

Monthly maintenance allowance: According to the values for Research Fellowships awarded by FCT in Portugal (https://www.fct.pt/wp-content/uploads/2023/02/Tabela-de-Valores-SMM_2023.pdf), the amount of the monthly maintenance allowance is €1199.64, being the payment method an option of the Fellow by Wire Transfer/Check. This is supplemented with the monthly amount of “seguro social voluntário” and the tabulated monthly amount covering personal accidents.

Selection methods: The selection methods will be the following:

1. Curriculum Evaluation, expressed on a scale from 0 to 20 and counting towards the Final Evaluation with a weight of 80%, focusing on the relevance, quality and timeliness of the scientific output of the last three years and of the applied research activities developed in the last three years. This method takes into account the following components:

- Scientific output (15 points). Quality and quantity of the scientific output in the area in which the call is open (books, articles in scientific journals, oral communications in conferences) as indicated by the number and type

of publications, and by their assessment from the scientific community (expressed in the quality and impact of the journals and publishers, and in the citations from other authors);

- Involvement in the scientific community and participation in scientific teams (5 points). Capacity of involvement and impact in the scientific community, as indicated by: awards, prizes or other distinctions and their impact; integration/participation in scientific projects in the area in which the call is open; participation in the organization of scientific conferences; and invited oral communications. For the evaluation of the quality of the scientific projects in which the candidate was involved, the total funding obtained should be specified (competitive funding from public sources, either national or international, or financing from companies/private sector), and the degree of competitiveness of the call under which the project proposal was granted, as well as its evaluation, should also be taken into account.

The points obtained in the Curriculum Evaluation are expressed on a numerical scale from 0 to 20, considering as the minimum subdivision a hundredth of a point. The jury deliberates through a nominal vote based on the evaluation criteria, without the possibility of abstentions. The classification of each candidate is obtained by averaging the scores of each member of the jury.

After the Curriculum Evaluation, the candidates obtaining an average grade larger than or equal to 15 points will be approved for the second evaluation stage. The candidates obtaining a grade lower than 15 points will be excluded from this call.

2. Individual Interview, also expressed on a numerical scale from 0 to 20 and counting towards the Final Evaluation with a weight of 20%. This evaluation method is dedicated to the clarification of aspects related to the results of the previous research developed by the candidate and it takes into account the candidate's scientific knowledge and his/her capacity of communicating, as well as his/her answers to the questions asked by the jury, and their prospects for the development of the project for which they are applying.

The Individual Interview will have a duration of 30 minutes at most, to be held remotely. These sessions will take place on a date and time to be previously arranged with each candidate approved for this stage of the evaluation, within 10 working days after the deadline of the application.

The jury deliberates through justified nominal vote and abstentions are not permitted. The classification of each candidate is obtained by averaging the scores of the jury members.

Ordering of the candidates: Each candidate's final score is obtained through a weighted average, with a weighting factor of 80% being assigned to the Curriculum Evaluation score and a weighting factor of 20% to the Individual Interview score.

Composition of the selection Jury:

- Doctor Vitor Manuel dos Santos Cardoso, Full Professor at Instituto Superior Técnico, Universidade de Lisboa;
- Doctor Jorge Miguel Cruz Pereira Varelas da Rocha, Assistant Professor at ISCTE-Instituto Universitário de Lisboa.
- Doctor Filipe Alexandre Pedra Aguiar de Moura, Invited Assistant Professor at ISCTE-Instituto Universitário de Lisboa;

Announcement/ notification of the results: The final evaluation results will be communicated to all applicants by email.

Deadlines and procedures of complaint and appeal. A complaint may be lodged from the final decision within 15 working days, or an appeal to the Executive Board of IST-ID within 30 working days, both counted from the respective notification

Application deadline and formalization: The call is open from January 24 until February 6, 2024.

It is mandatory to formalize applications with the submission of the following documents: i) B1 Form – Fellowship application (<https://ist-id.pt/concursos/bolsas/>); ii) *Curriculum Vitae*; iii) academic degree certificate, where applicable; iv) proof of enrollment at an academic degree course (PhD) or at a course that does not award an academic degree; v) motivation letter; vi) declaration on honour that the applicant does not exceed with this contract an accumulated period of two years in this type of studentship, continuously or with interruptions.

Applications must be submitted to the email: jorge.v.rocha@tecnico.ulisboa.pt