

Scientific Studentships for Master or Integrated Master students

Applications are open for 1 Research Studentship, within the framework of FCT project *Material's Research with Radioactive Isotopes and Nuclear Techniques at ISOLDE-CERN (CERN/FIS-TEC/0003/2021 InvMat @ ISOLDE)*, financed by national funds through FCT/MCTES (PIDDAC), under the following conditions:

Scientific Area: Tecnologias Nucleares e Proteção Radiológica (Departamento de Engenharia e Ciências Nucleares)

Admission Requirements: *to be enrolled at a master degree, still without master degree, in a higher education institution.*

Workplan: Title: Implementation and tests of a new digital signal analysis algorithm with time and energy stamp for TDPAC

Aims: Implementing a digital data acquisition system for experiments with hyperfine interactions using the Perturbed Angular Correlations (TDPAC) technique, focused on studying materials with short half-life isotopes at ISOLDE-CERN. The goal is to develop software for controlling and analyzing signals digitized by the CAEN units UM3148_DT5730 and DT5725. Refinement of the algorithm for precise analysis of anode photomultiplier signals with sub-nanosecond time stamps, upgrading the recently developed PACIFIC2 software. Three types of scintillators, BaF₂, LaBr₃(Ce), and CeBr₃, will be tested in both off-line and real-time experiments using ¹¹¹mCd/Cd (48 min).

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 on <https://www.fct.pt/apoios/bolsas/docs/RegulamentoBolsasFCT2019.pdf> and <https://dre.pt/application/file/a/127230968>.

Workplace: The work will be carried out at the Center for Nuclear Sciences and Technologies (C2TN), Technological and Nuclear Campus, of the Instituto Superior Técnico of the University of Lisbon, and at the Institute of Advanced Materials Physics, Nanotechnology and Photonics (IFIMUP) of the University of Porto, with possible trips to ISOLDE-CERN, under the scientific guidance of Doctor João Guilherme Martins Correia (IST) and Doctor Armandina Maria Lima Lopes (UP).

Duration: The scholarship will last for 4 months, starting in August 2024. The scholarship contract may be extended for a single period of 1 month, if the work justifies it within the available budget.

Monthly maintenance allowance: According to the values for Research Fellowships awarded by FCT in Portugal (https://www.fct.pt/wp-content/uploads/2024/02/Tabela-de-Valores-SMM_atualizacao-2024.pdf), the amount of the monthly maintenance allowance is €990.98, being the payment method an option of the Fellow by Wire Transfer/Check. If so, the candidate will be entitled to a monthly voluntary social security supplement in the amount in effect during the scholarship period.

Selection methods: The selection methods will include curriculum assessment. However, if the jury has doubts, an individual interview may be conducted electronically. The final evaluation will be weighted 75% on curriculum assessment and 25% on the individual interview. Practical experience in relevant work areas will be valued, especially in Digital and Analog TDPAC, data acquisition with CAEN units UM3148_DT5730 or DT5725, data processing using PACIFIC2, and applications of TDPAC to solid-state experiments.



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Composition of the selection Jury: Doutor João Guilherme Martins Correia, Doutora Katharina Lorenz, Doutora Armandina Maria Lima Lopes (external UP)

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 June 26 until July 9, 2024.

It is mandatory to formalize applications with the submission of the following documents:

B1 Form – Fellowship application (<https://ist-id.pt/concursos/bolsas/>);

- i) *Curriculum Vitae*;
- ii) academic degree certificate, where applicable;
- iii) proof of enrollment at an academic degree course
- iv) motivation letter;

Applications must be submitted to the email: jgmcnet@ctn.tecnico.ulisboa.pt



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