

CALL FOR AWARDING RESEARCH FELLOWSHIPS WITHIN PROJECT GRANTS AND R&D INSTITUTIONS

1 (one) Research Fellowship (BI) for a PhD student

1 Research Fellowship(s) (BI) is(are) open at the **FCiências.ID – Associação para a Investigação e Desenvolvimento de Ciências**, for the project/R&D institution “Machine Learning Approaches for Cluster Cosmology from Euclid (ML_CLUSTER)/Instituto de Astrofísica e Ciências do Espaço/(ML_CLUSTER)/Instituto de Astrofísica e Ciências do Espaço (IA)”, “EXPL/FIS-AST/1368/2021”, funded by the Fundação para a Ciência e a Tecnologia, I.P./MCTES through national funds (PIDDAC) under the programme Call for Exploratory Research Projects (PeX) in All Scientific Domains, under the following conditions:

1. **Scientific Area:** Cosmology
2. **Requirements for admission:** Candidates must hold a Master’s degree. Only candidates with relevant experience in programming languages and with a previous record of publications in computer science will be considered.
3. **Additional optional skills and qualifications:** Preference will be given to candidates with demonstrated previous experience in software development using R and Python, and Artificial Intelligence algorithms in the context of Astrophysics and Cosmology. The candidate must also have previous knowledge and experience in N-body simulation methods and their application in cosmological large scale structure simulations.
4. **Contracting requirements:** Presentation of the academic qualifications and/or diplomas. Enrolment in PhD Program.
5. **Work plan:** The fellowship holder is expected to work on the development, implementation, and deployment of a novel methodology to study the signature of gravitational waves in non-homogeneous cosmologies and to perform highly efficient emulation of complex N-body simulations, including baryonic gas and dark matter, using machine learning. After developing the methodology and implementing the relevant computational codes, the candidate is expected to use the developed methods to study realistic scenarios of upcoming space and ground-based observatories such as the Euclid and LISA space missions and the LSST/Rubin and Advanced LIGO ground-based observatories. Finally, the candidate is expected to derive and interpret results for homogeneous (Friedmann-Lemaître-Robertson-Walker) and inhomogeneous (Lemaître-Tolman-Bondi) cosmological models.
6. **Legislation framework:** Research Fellowship Holder Statute, in accordance with Law 40/2004, of 18 August, in its current version and the FCT Regulation for Research Studentships and Fellowships, in its current version (Reg. 950/2019 published in DR on 16th December: <https://dre.pt/application/file/a/127230968>, or at the FCT website: <https://www.fct.pt/apoios/bolsas/regulamento.phtml.pt>), and FCiências.ID Fellowship Regulation, as approved on 12th May 2020 (available at [Regulamento de Bolsas de Investigação Científica da FCiências.ID](https://www.fciencias.id/regulamento-de-bolsas-de-investigacao-cientifica-da-fciencias.id)).
7. **Place of work:** The work will be developed at the Institute of Astrophysics and Space Sciences (IA) at the Faculty of Sciences of the University of Lisbon (FCUL), Lisbon, Portugal under the scientific supervision of Professor António da Silva.
8. **Fellowship duration:** This position is initially opened for 6 months due to start in January 2023. The fellowship contract may be potentially renewed for until the end of the project, in accordance with the provisions of Regulation of Research Fellowships from the Foundation for Science and Technology, I.P.

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9. **Monthly allowance:** The fellowship amounts to € 1144,64, according to [table values](#) of the fellowships awarded directly by the FCT, IP. The fellowship holder will have a personal accident insurance and can ensure the right to social security through adherence to the voluntary social insurance scheme, if not covered by any other social protection scheme, pursuant to *Código dos Regimes Contributivos do Sistema Previdencial de Segurança Social*. The fellowship will be paid monthly by bank transfer.

10. **Evaluation and selection process:** Candidates will be assessed by the quality of their CV (45%); adequacy of the CV and the candidate profile to the work plan (45%); and motivation letter, with a brief description of the candidate's experience and motivation (10%). Applicants whose application is scored with a final classification of less than 50 points are not eligible for granting a fellowship.

11. **Selection Committee:** António da Silva (president of the jury); Alberto Krone-Martins and Nelson Nunes (members); José Pedro Mimoso and Ismael Tereno (alternates members).

12. **Publication/notification of results:** All the candidates will be notified by e-mail, sent by the call holder, with the selection meeting minutes enclosed.

13. **Deadlines:** This call for applications is open from 05/12/2022 to 19/12/2022 .

14. **Application:** Applications should be sent via e-mail to ajosilva@fc.ul.pt, by attaching the following documents:

- a. Curriculum vitae - CV may be provided in PDF or through the [CIÊNCIAVITAE](#) system;
- b. Certificate of completion of previous degree;
- c. Motivation letter.

15. **Time limits for the appeal procedure:** In case of negative decision, the candidates have 10 business days, after the date of announcement of the results of the candidates evaluation, to pronounce their disagreement in accordance with the *Código do Procedimento Administrativo*. Appeals against the final decision may be submitted to the Administration Board of FCiências.ID (fciencias.id@fciencias-id.pt) within 15 business days after the notification date

Note 1: The documents that prove the entitlement of the academic qualifications and diplomas, or the proof of registration in the academic degree or diploma requested on the call, can be dismissed during the application period and replaced by a declaration on their honour from the applicant. Their delivery is mandatory for the fellowship contractualization.

Note 2: Please note that - higher education degrees and diplomas awarded by foreign higher education institutions need to be recognized by a Portuguese higher education institution, pursuant to the [Decree-Law nr. 66/2018](#) (August 16) and the [Ministerial Order nr. 33/2019](#) (January 25). The presentation of the recognition certificate is mandatory for contract signature. More information can be obtained at: <https://www.dges.gov.pt/en/pagina/degree-and-diploma-recognition>.