

(BL226/2025-IST-ID)

Research Studentships for PhD students

Applications are open for 1 Research Studentship(s), within the framework of project/R&D institution EuPRAXIA PP - G.A. 10107977, 1801P.01238.1.01 IST-ID, under the following conditions:

Scientific Area: Plasma Physics, Lasers and Nuclear Fusion

Admission Requirements: *To be enrolled at a PhD, MSc degree; Experience with DLA research*

Workplan: Here, the idea is to use the unique regime of optimized direct laser acceleration in gas combined with a dense target at the end of acceleration. This way, the total charge of electrons can reach 100s of nC for kilojoule-class lasers with energies exceeding GeV, which results in well collimated beam with divergence in the order of tens of milirad. Another distinct feature of this approach is the ability to convert tens of percent of laser energy into energetic electrons, reaching up to 50 percent as shown in some simulations previously performed by the group members. This approach combines good properties of DLA: high charge and conversion efficiency with the possibility to reflect the intense laser light and reach strong-field QED regime. This is crucial for the generation secondary particles such as electron-positron pair showers, and may lower requirements for the energy and power of lasers in order to generate pair plasmas or flows. The candidate will explore this with particle-in-cell simulations and analytical theory, guiding&optimizing the planning of future experiments .

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; IST-ID Regulation of Scientific Research Fellowships, available on <https://ist-id.pt/recursos/documentos/recursos-humanos/bolseiros/#1690453819726-6707f7f2-ce04>

Workplace: The work will be developed at GoLP of IST, under the scientific supervision of Marija Vranic

Duration: The research fellowship(s) will have the duration of 6 months. It's expected to begin when all the bureaucracy is finished, and may be eventually renewed.

Monthly maintenance allowance: the amount of the monthly maintenance allowance is € 1309,64 being the payment method an option of the Fellow by Wire Transfer/Check.

Selection methods: The selection methods will be the following: *Curriculum evaluation*, with the respective weight of 100%

Composition of the selection Jury: Jorge Vieira, Marija Vranic, Thomas Grismayer

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, or an appeal to the Executive Board of IST-ID, within 15 working days counted from the respective notification.

Application deadline and formalization: The call is open from October 15 until October 21, 2025.

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); v) motivation letter;

Applications must be submitted to the email: claudia.romao@tecnico.ulisboa.pt