



## European Shock-Tube for High Enthalpy Research (ESTHER)

### Call for Expressions of Interest

#### **INTRODUCTION**

The [European Shock-Tube for High Enthalpy Research](#) (ESTHER) is a new, state-of-the-art shock-tube facility funded by the [European Space Agency](#) (ESA) and tailored for supporting new European planetary exploration efforts. ESTHER is a facility of the [Instituto de Plasmas e Fusão Nuclear](#) (IPFN), an Associate Laboratory of [Instituto Superior Técnico](#) (IST). A significant effort has been placed by the funding agency (ESA) on developing state-of-the-art diagnostics capable of exploiting the full potential of the facility. A key aspect is a requirement for high-speed spectroscopy measurements outside of the usual visible spectral range, with an emphasis on the VUV (150-300nm) and MWIR (2-5 micrometers) spectral regions. The budget for instrumentation roughly corresponds to half of the total budget allocated to the facility and includes already two spectrometer + streak camera setups.

**ESTHER is currently inviting expressions of interest (Eoi) for a research contract with an institution affiliated to IST.** The contract includes a career plan, with a probationary period of one year and a possible renewal up to 4 years, after which it is eligible for consideration of a tenure researcher position with IPFN/IST.

#### **PROFILE AND DESCRIPTION**

We are looking for highly qualified candidates, holding a PhD in Physics, Engineering Physics, or related scientific domains, who are able to propose, plan and execute a long-term research programme for diagnostics using the ESTHER facility. The candidate selected should develop autonomous work, leading a small team responsible for the development of measurement techniques for ESTHER, and preparing and submitting applications for additional funding to the relevant funding agencies (national, EU, ESA, etc...) with the support of graduate students under her/his supervision.

The contract includes: (i) taking charge of the management and upgrading of the diagnostics of the ESTHER shock tube; (ii) defining new optical diagnostics in the IR region and identifying further spectroscopy diagnostics for ESTHER beyond optical emission spectroscopy (e.g. broadband/laser absorption spectroscopy, optical and electron interferometry, laser diagnostics, etc...); (iii) participating in the test campaigns on ESTHER, defining and deploying a test plan for spectroscopy, and developing adequate postprocessing tools for the analysis of measurements; (iv) participating in the scientific exploitation of the result obtained, in collaboration with the team experts on numerical modelling of high-speed shock-waves nonequilibrium kinetics and radiation process.

#### **APPLICATIONS**

Applicants can submit their Eoi by sending

- motivation letter (max 1 page)
- curriculum vitae (max 5 pages)
- brief research statement (max 2 pages)
- contact (including email address) of three researchers or professionals who can be contacted to provide reference letters, attesting to the scientific and professional qualities of the possible candidate.

**Applications or questions must be submitted in electronic form, by June 30 2022 (message subject: "Eoi ESTHER") to**

**Dr. Mário Lino da Silva, PI ESTHER, [mlinodasilva@tecnico.ulisboa.pt](mailto:mlinodasilva@tecnico.ulisboa.pt)**

**Note:** Please note that this announcement is not a guarantee of an opening of a position. The expressions of interest received will contribute to the decision of IPFN/IST whether to open an official call for recruitment.