

# Postdoctoral position in experimental, laser-driven laboratory astrophysics at LULI (Ecole Polytechnique, France)

## Context

The context is the one of the ERC Advanced project “GENESIS”, outlined in Ref. [1], which involves activities both in high-energy density and relativistic plasmas. The project aims at advancing our knowledge on nuclear reaction cross-sections that are at play in nucleosynthesis reactions in extreme astrophysical phenomena, using next-generation high-power lasers, like the “Apollon” laser facility [2].

## Objectives

The project thus will involve performing experiments using astrophysically-scaled plasmas [3,4,5] and develop high-density particle beams based on lasers [2,6] in order to study the underlying mechanisms at play in nucleosynthesis-prone environments. The candidate will thus take the responsibility of designing, fielding, executing and analysing the experiments. The responsibility will also involve teaming up with the PhD students involved in the project, the external collaborators working on the project, as well as interacting with the other post-doctoral associates working with advanced numerical simulations in order to analyse hand-in-hand the results.

## Practical aspects

The position is to be filled as soon as possible, with a contract duration of two years (the exact dates can be negotiated). The research work will be mainly carried out at LULI (Ecole polytechnique, near Paris, France), using in-house laser facilities (LULI2000, and Apollon) with as well as stays abroad for experiments at users’ facilities. The salary will depend on education and years of experience. A PhD in experimental plasma physics, nuclear physics or a related field is required. Candidates should send their applications electronically, including a CV, a publication list and a statement of research interests, and provide contact information for references. Note that access to LULI is restricted to certain nationalities. Review of applications begins immediately. Applications will be considered until the position is filled.

**Contact** J. Fuchs, LULI (France), [Julien.fuchs@polytechnique.edu](mailto:Julien.fuchs@polytechnique.edu)

[1] Chen+, *Matter Radiat. Extrem.* 4, 054402 (2019) DOI: [10.1063/1.5081666](https://doi.org/10.1063/1.5081666).

[2] Burdonov+, *Matter Radiat. Extrem* 6, 064402 (2021); DOI: [10.1063/5.0065138](https://doi.org/10.1063/5.0065138)

[3] Yao+, *Nat. Phys.* 17, 1177 (2021); DOI: [10.1038/s41567-021-01325-w](https://doi.org/10.1038/s41567-021-01325-w)

[4] Burdonov+, *A&A* 648, A81 (2021); DOI: [10.1051/0004-6361/202040036](https://doi.org/10.1051/0004-6361/202040036)

[5] Revet+, *Nat. Comm.* 12, 762 (2021); DOI: [10.1038/s41467-021-20917](https://doi.org/10.1038/s41467-021-20917)

[6] Martinez+, *Matter Radiat. Extrem* 7, 024401 (2022); DOI: [10.1063/5.0060582](https://doi.org/10.1063/5.0060582)