INTERNATIONAL OFFER – LEVEL: M1 – DURATION: 2 MONTHS
For M2 level, please check the openings for PhD positions

**Topic:** Laser spectroscopy of He in rf gas discharges (II)

**Scientific content**
Motivated and talented students are welcome to contribute to a new research project focused on high-field hyperpolarisation of $^3$He and, more specifically, to ongoing work on discharge-induced polarisation [A. Maul et al, Phys. Rev. A (2018) 98, 063405, *Nuclear hyperpolarization of $^3$He by magnetized plasmas*].

Work will aim at optical polarimetry on metastable He atoms in a radiofrequency gas discharge for time monitoring of $^3$He nuclear polarisation build-up and decay in the atomic ground state. Measurements will be performed in samples of pure $^3$He gas and of $^3$He-$^4$He gas mixtures.
Details are given on the page [http://www.lkb.upmc.fr/polarisedhelium/openings-op/](http://www.lkb.upmc.fr/polarisedhelium/openings-op/).

**Techniques/tools**
Experimental investigations at various magnetic field strengths (up to 0.1 T) in a resistive magnet will make use of complementary optical diagnoses, with visible and infrared lasers (light polarisation analysis, absorption and line shape measurements, pump-probe detection). The optical measurement setup is already assembled and a rf system for suitable gas excitation have been developed for prior internship work.

**Field(s):** Atomic physics, laser spectroscopy, rf gas discharges.

**Type of internship:** Experimental, instrumental, with data processing.

**Host institution**

**Place:** Laboratoire Kastler Brossel (site: ENS-Lhomond)

**Postal address:** 24 rue Lhomond, 75005 Paris

**Director of the host laboratory:** Antoine Heidmann

**Supervision and contact**

**Supervisor(s):** Geneviève Tastevin / Pierre-Jean Nacher

**Phone:** 01 4432 2025 / 3428

**E-mail:** tastevin@lkb.ens.fr / nacher@lkb.ens.fr