

PROPOSITION DE STAGE DE M1 POUR ETUDIANTS PHYSICIENS

2019 - 2020

INTERNSHIP 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 ^3He and, more specifically, to ongoing work on discharge-induced polarisation [A. Maul et al, Phys. Rev. A (2018) 98, 063405, [Nuclear hyperpolarization of \$^3\text{He}\$ by magnetized plasmas](#)].

Work will aim at optical polarimetry on metastable He atoms in a radiofrequency gas discharge for time monitoring of ^3He nuclear polarisation build-up and decay in the atomic ground state. Measurements will be performed in samples of pure ^3He gas and of ^3He - ^4He gas mixtures.

Details are given on the page <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

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