

Laser-driven ion acceleration for fundamental and applied nuclear physics

The Centre d'Etudes Nucléaires de Bordeaux Gradignan (France) (CENBG) and the Energie Matériaux Télécommunications Research Centre of the Institut National de Recherche Scientifique (INRS) located in Varennes in Quebec, Canada, have a common opening for a three year PhD position in joint supervision in the field of laser plasma ion acceleration starting from October 2017. Within the three years, the candidate will spend about 18 months in each institution and will carry out his research in the frame of a co-tutelle (dual PhD) agreement between the University of Bordeaux and the University of Quebec. He/She will be registered in both partner institutions. The research work will result in the production of a single dissertation that is common to both institutions.

The Nuclear Excitation by Lasers (ENL) Physics Group at CENBG is strongly involved in the development of ion beams and nuclear-atomic-plasma physics experiments at high power laser facilities. This research program will mainly focus in the next years on the production of high fluxes of laser based ion beams at high repetition rate with APOLLON in France and ELI-NP in Romania. Such laser based ion beams are awaited both for fundamental and applied nuclear physics research.

The iPAT-LAB (innovative Particle Acceleration Technologies – Lasers – Applications – Beamlines) group at INRS explores innovative particle acceleration technologies and applications with a particular emphasis on material science, medicine, cultural heritage, energy and astrophysics. The novel applications are based on the acceleration of particles using high-intensity lasers, which is a recent growing field of interest since about a decade. The group is involved in several collaborations and carries out experiments either in-house on the ALLS 200 TW laser or on other high-power laser facilities.

The applicant will be strongly involved in the ion acceleration multidisciplinary studies in which the two groups are involved. She/He will carry out experiments linked to laser-plasma acceleration, develop instrumentation technics in the field of experimental nuclear and plasma physics (and applications), and perform data analysis. He will also perform numerical simulations of laser plasma acceleration and its detectors using available codes in order to guide the experimental efforts and to analyse the data.

Applicants should send electronically a motivation letter, a CV with contact details of at least two referees that can support the application to Dr Fazia Hannachi, hannachi@cenbg.in2p3.fr.

Any questions regarding the position should also be directed to hannachi@cenbg.in2p3.fr.