Call for applications for PhD position in the laboratory of excellence, labex Plas@Par

Title of the postdoc project: Comparative study of auroral processes of Saturn and Jupiter sampled in situ by the Cassini and JUNO missions

Project description (Context and objectives of the project, eventually with 2-3 references)

This project aims at investigating comparatively the auroral processes of giant magnetospheres thanks to the coming in situ (radio, plasma, magnetic field) and remote (radio, UV) unique measurements to be acquired by the Cassini and JUNO missions from within the auroral regions of Saturn and Jupiter in 2016-2017 [1,2]. The objective, twofold, is (i) to identify the radiation mechanism responsible for the intense auroral radio emissions produced by these planets [3] – the Cyclotron Maser Instability (CMI) identified at Earth is suspected to similarly apply to all magnetized (exo)planets– and to characterize the plasma conditions in which it operates and how the radiated waves propagate in the surrounding plasma environment from their source region, and (ii) to identify the acceleration processes and associated field-aligned currents driving auroral emissions (at radio wavelengths in the magnetosphere, at optical wavelengths in the atmosphere) in order to build a model of auroral microphysics for each planet.

These universal questions of plasma physics, still a major issue at Earth, are among the mains objectives of Cassini (F-ring and proximal orbits) and JUNO missions, whose temporal coincidence in 2016-2017 offers a unique frame for comparative planetology.

The applicant will primarily work on low frequency radio observations routinely acquired by Cassini and JUNO to analyze auroral radio emissions (statistical analysis, modeling with the ExPRES code etc.) with a multi-spectral multi-instrumental approach involving the combined analysis of auroral emissions remotely observed at other wavelengths and plasma measurements (particles, magnetic field) collected in situ.


Requirements for the candidate: Basic knowledge in physics (electromagnetism) and possibly in plasma physics, in radioastronomy and in the IDL language.

Location and starting date: the PhD will start on 1st Oct. 2015 at LESIA-Observatoire de Paris, 5 Place Jules Janssen, 92290 Meudon, France.

Applications with CV, copies of degree diplomas and grades, two reference letters, and copies of any previous research-related work statement of motivation. Application deadline is May 31st 2015.

The application should be sent preferably by e-mail to: laurent.lamy@obspm.fr