

Spécialité de Master « Optique, Matière, Plasmas »

Stage de recherche (4 mois minimum, à partir de début mars 2012)

Proposition de stage pour l'année 2011-2012 (ne pas dépasser 1 page)

Date de la proposition 28-10-2011:

Responsable du stage / internship supervisor:	
Nom / name: CIARDI	Prénom/ first name : Andrea
Tél : - 01 44322580	Fax :
Courriel / mail: Andrea.ciardi@obspm.fr	
Nom du Laboratoire / laboratory name: LERMA	
Code d'identification : UMR 8112	Organisme : Observatoire de Paris / Ecole Normale Supérieure / UPMC
Site Internet / web site: www.lerma.obspm.fr	
Adresse / address: Meudon et Paris	
Lieu du stage / internship place: Observatoire de Paris (MEUDON) et École Normale Supérieure (PARIS)	

Titre du stage / internship title: Laser produced plasmas in strong magnetic fields: basic applications and astrophysics.
Résumé / summary <p>The project focuses on the theoretical and numerical modelling of a series of experiments that are planned in March/April on the LULI laser facilities (Ecole Polytechnique). These experiments, the first of their kind, will study laser produced plasma plumes immersed in an ultra-strong magnetic field.</p> <p>The aim is to demonstrate the coupling of intense lasers with strong magnetic fields, to characterize the plasma conditions and dynamics, and to establish future research applications. These include studies of basic plasma physics, such as instabilities and particle acceleration, and applications to astrophysics, for example the study of ejection phenomena present in planetary nebulae and in protostars.</p> <p>The student is expected to get involved on a number of issues related to the modelling of the experiments. In particular, the physics of the development of temperature anisotropies, and the consequences on the stability and dynamics of the plasma.</p> <p>The approach will combine theoretical work with the development of an anisotropic thermal conduction numerical model to be included in an existing three-dimensional, magneto-hydrodynamic code. In addition, the student is expected to run and analyse large-scale numerical simulations, and to develop numerical analysis tools.</p> <p>Good programming skills will be necessary, as well as knowledge of LINUX, and languages such as FORTRAN and PYTHON.</p> <p>The project will be carried out in collaboration with Tommaso Vinci and Julien Fuchs at the Ecole Polytechnique, where the student is expected to spend some of his/her time.</p>

Ce stage pourra-t-il se prolonger en thèse ? Possibility of a PhD ? : OUI			
Si oui, financement de thèse envisagé/ financial support for the PhD: Ecole Doctorale			
Lasers et matière		Lumière, Matière : Mesures Extrêmes	
Optique de la science à la technologie		Plasmas : de l'espace au laboratoire	OUI

Fiche à transmettre (fichier pdf **obligatoirement**) sur le site <http://stages.master-omp.fr>

