ÉCOLE DE PHYSIQUE
des HOUCHES

Université Joseph Fourier
GRENOBLE

The future of plasma astrophysics

Combining experiments, observations, simulations and theory

A two-weeks advanced winter school
February 25th - March 8th, 2013, Les Houches, France

http://userpages.irap.omp.eu/~frincon/houches/

Plasma astrophysics aims at understanding the multiscale dynamics and thermal evolution of many astrophysical systems ranging from our local solar environment to clusters of galaxies. The next decades hold exciting promises for many in that field, as unprecedented combinations of modern experimental, observational, numerical and theoretical approaches should make it possible for decisive breakthroughs on long-standing plasma physics problems to be achieved, with far-reaching consequences for our understanding of the Universe.

The primary objective of this school will be to prepare this future by offering the current generation of PhD students, postdocs and researchers in various subfields of astrophysics an exhaustive series of lectures and reviews by leading scientists on most theoretical, experimental, numerical and observational aspects of plasma astrophysics. The school will also provide a unique opportunity to discuss future experiments and models that will help to quantitatively address key questions in the field.

Invited lecturers and main scientific topics

Plasmas in the Universe

- Steve Cowley (CCFE Culham)
- Katia Ferrière (IRAP Toulouse)
- Martin Lemoine (IAP Paris)
- Matthew Kunz (Princeton U.)
- Philippe Zarka (LESIA Paris)
- Viggo Hansteen (U. Oslo)
- Milan Maksimovic (LESIA Paris)

Theoretical, numerical, experimental methods

- Gérard Belmont (LPP Paris)
- Thierry Passot (Lagrange Nice)
- Francesco Califano (U. Pisa)
- Carlo Cossu (IMFT Toulouse)
- Nicolas Plihon (ENS Lyon)

Plasma instabilities in astrophysics

- Dmitri Uzdensky (UC Boulder)
- Geoffroy Lesur (IPAG Grenoble)
- Pierre-Louis Sulem (Lagrange Nice)
- Paul Drake (U. Michigan)
- Andrea Ciardi (UPMC Paris)
- Henning Soltwisch (U. Bochum)

Dynamos

- Steve Tobias (U. Leeds)
- Jean-François Pinton (ENS Lyon)
- Cary Forest (U. Wisconsin)
- Ralf-Jürgen Dettmar (U. Bochum)
- Jean-François Donati (IRAP Toulouse)

Reconnection

- Nuno Loureiro (IST Lisbon)
- Hantao Ji (PPPL Princeton)
- Rainer Grauer (U. Bochum)

Turbulence

- Stanislav Boldyrev (U. Wisconsin)
- Holger Homann (Lagrange Nice)
- Alexander Schekochihin (U. Oxford)
- Frank Jenko (IPP Garching)
- Fouad Sahraoui (LPP Paris)
- Troy Carter (UCLA)

Shocks, radiative processes and particle acceleration

- Ellen Zweibel (U. Wisconsin)
- Renaud Belmont (IRAP Toulouse)
- Reinhard Schlickeiser (U. Bochum)
- Luis Silva (IST Lisbon)
- Karl Krushelnick (U. Michigan)
- Jean-Pierre Chièze (CEA Saclay)

Organizing Committee

- François Rincon (IRAP Toulouse)
- Thierry Passot (Laboratoire Lagrange Nice)
- Cary Forest (University of Wisconsin)
- Rainer Grauer (University of Bochum)

FOR 1048 Ruhr-Universität Bochum

Center for Magnetic Self Organization

Les Houches is a village located in Chamonix valley, in the French Alps. Established in 1951, the Physics School is situated at 1150 m above sea level in natural surroundings, with breathtaking views on the Mont-Blanc mountain range.

***Les Houches Physics School is affiliated with Université Joseph Fourier Grenoble I (UJF)**. The school is a joint interuniversity facility of UJF and Grenoble-INP, and is supported by the UJF, the Centre National de la Recherche Scientifique (CNRS) and the Direction des Sciences de la Matière du Commissariat à l'Energie Atomique (CEA/DSM). Ecole de Physique des Houches, Côte des Chavants, F-74310 Les Houches, France. http://houches.ujf-grenoble.fr*