School on spectral methods : Application to General Relativity and Field Theory

14-18 November 2005,
Centre International d'Ateliers Scientifiques,
Meudon Observatory, France

`http://www.lorene.obspm.fr/school/`

Spectral methods encompass a large class of numerical techniques that have long proven their great ability to solve partial differential equations. If those methods have extensively been used since the 70's in fluid dynamics, they have been introduced in the 90's in the field of General Relativity by the Meudon group and are employed by other groups since then. They have yielded to a lot of scientific advances, like the computation of rapidly rotating neutron stars or binary black holes, for example. More recently, a new direction of research has been investigated with the application of spectral techniques to Gauge Field Theory. The first preliminary results look promising.

What ?

We propose to shear our experience on spectral methods with the community by organizing a one week school on this subject. Equal time will be spent on theoretical courses and applications to simple physical problems of General Relativity or Gauge Field Theory. Our goal is that, at the end of the week, all participants are able to set up, by themselves, spectral methods solvers to deal with the physical problems they are interested in.

For whom ?

Even if this school is not going to be strictly restricted to students and postdocs, we hope that they will constitute the main core of the audience and they will be granted the priority, should the maximum number of participants (around 20) be reached.

Although the applications and examples will deal with problems in the framework of either General Relativity or Gauge Field Theory, participants working in other fields (MHD for example), could also benefit from this school

and should not restrain from applying.

The various examples will be implemented with the LORENE library written in C++ and so the participants should be, at least, familiar with the syntax of C++. However, in order to attract the largest possible audience, short notes on C++ will be prepared beforehand for anyone not yet familiar with this language.

For more details on LORENE, please see the website :
`http://www.lorene.obspm.fr`

Where and when ?

The school is scheduled for the week from 14 to 18 November, 2005. It will take place in the CIAS (Centre International d'Ateliers Scientifiques) in Meudon Observatory near Paris. CIAS provides rooms fully equiped with computers to enable the participants (with a maximum of 20 persons) to put into practice the numerical methods they will learn.

Need financial support ?

There are some limited funds to support travel and/or accomodation for young researchers. Those interested are encouraged to detail and motivate their needs when registering. Funding for participants is available at all academic levels, though recent PhD's, graduate students, and researchers in the early stages of their career are especially encouraged to apply.

Interested ?

Please contact : `philippe.grandclement@obspm.fr`

Web page: `http://www.lorene.obspm.fr/school/`