

**”MODERN METHODS IN COLLISION THEORY”**  
**”Applications in Nuclear Physics and in Few-Body Physics”**  
*Organizing committee: C. Beck, M. Dufour, R. Lazauskas, H. Molique*

December 5-9, 2011 - Institut Pluridisciplinaire Hubert Curien (IPHC)

*Sponsors: IN2P3, IPHC, Université de Strasbourg, Consortium de Physique Théorique de Strasbourg*

Dear Colleagues,

We are pleased to announce the First Theory School entitled ”MODERN METHODS IN COLLISION THEORY - Applications in Nuclear Physics and in Few-Body physics”, which will be held at the ”Institut Pluridisciplinaire Hubert Curien” (IPHC) in Strasbourg (France) on December 5-9, 2011.

This School pursues the tradition of the ”Nuclear Theory Workshops” organized by the IPHC theory group since 2001. It aims to provide to students doing theoretical or experimental work a solid background in different physical methods that have been quite successful over the last few years.

The specificity of the school is to mix academic lectures with computational/tutorial sessions. Indeed some of the lecturers have agreed to give not only introductory lectures on the physics principles, but also to make some computer codes available to the participants to train on during tutorial sessions. Seminars on open subjects related to these methods are also planned.

**This year the programme focuses on methods widely used in collision theory.**

• **The lecturers who have kindly agreed to participate are:**

Christian Beck, IPHC-Strasbourg, France  
Pierre Chau, CEA DAM/Île de France, France  
Pierre Descouvemont, PNTTPM-Brussels, Belgium  
Rimantas Lazauskas, IPHC-Strasbourg, France  
Peter Schuck, IPN-Orsay, France  
Natacha Timofeyuk, University of Surrey, UK

• **More specifically, the following topics will be covered:**

- 1) DWBA - Optical models (N. Timofeyuk).
- 2) The phenomenological and theoretical R-matrix Method (P. Descouvemont).
- 3) Introduction to few-body methods via the Faddeev formalism (R. Lazauskas).
- 4) Introduction to the Continuum Discretized Coupled Channel method (CDCC) (P. Chau Huu Tai - Theory).
- 5) Coupled-channel effects in nuclear reactions induced by heavy ions: an experimental approach (C. Beck).

Open Seminar (others will be added):

\*Alpha particle condensation in nuclear systems (Peter Schuck).

- The intended participants are PhD students, working in nuclear theory or doing experimental work and more generally students and researchers interested or working on quantum many-body problem methods.

- The School consists in a lecture part (morning) and assisted computer sessions (afternoon). All the participants will have access to a computer terminal throughout the course of the school. Due to the computational/tutorial nature of the school, we must limit the total number of participants to a maximum of 20. The language of the workshop will be English. The lecture part is open to everybody.

- **No fees are requested.** The participants should cover their own travelling and lodging expenses. However, **7 grants of 300 Euros will be allocated.** Since a selection may be necessary, we would ask for a collective response from each department or physics group putting their students in an order of priority for attending the workshop.

An important point is that the school is organized during the period of the "Marché de Noel" (Christmas Market) in Strasbourg. This very interesting social event has nevertheless the drawback to make the town very attractive. We recommend therefore to all the participants to prepare their Hotel accommodations well in advance. Please note that 15 rooms have been reserved for students of the school at the IPHC lodging facility (cost: around 35 Euros per night).

- To facilitate the organization, it is important for us to have the following information on potential participants as soon as possible:

Name:

Age:

Institute:

Year of PhD:

Thesis Supervisor:

- The Web site will be soon available (<http://indico.in2p3.fr/conferenceDisplay.py?confId=5194>)
- A more detailed programme will be sent out at a later stage once we get some idea on the number of applications. We would, therefore, appreciate an early reply but, in any case, not later than October 1, 2011.

With best wishes. Yours faithfully,

**Marianne Dufour (Workshop Chairwoman)**

- **Questions or Informations can be sent to [marianne.dufour@iphc.cnrs.fr](mailto:marianne.dufour@iphc.cnrs.fr) or [christian.beck@iphc.cnrs.fr](mailto:christian.beck@iphc.cnrs.fr)**

- **Closing date for applications: October 1, 2011.**