



## Workshop on Nuclear Reaction Data for Advanced Reactor Technologies

3 - 14 May 2010

Miramare, Trieste, Italy

The Abdus Salam International Centre for Theoretical Physics (ICTP), together with the International Atomic Energy Agency (IAEA), is organizing a Workshop on Nuclear Reaction Data for Advanced Reactor Technologies, with focus on the modern approaches to the measurements, calculations, evaluations and processing of the data and their uncertainties for reactor calculations. The use of these data in the calculation of parameters and their uncertainties for advanced reactor systems will be presented. The Workshop will be held at ICTP, Trieste, Italy, from 3 to 14 May 2010.

The purpose of the Workshop is to provide training and information exchange for nuclear and reactor physicists working in the field of nuclear data measurements, calculations, evaluations and applications for advanced reactor and closed fuel cycle technologies. The lectures will include the presentation of basic principles of nuclear data measurements with data reduction techniques and estimation of experimental data uncertainties. The basic nuclear reaction models derived from common principles and EMPIRE and TALYS model codes used in cross section calculations will be presented. Modern approaches to the data and uncertainty evaluation based on Monte Carlo and generalized least-squares methods will be reviewed. The evaluated data formats and data preparation for reactor calculations including the treatment of covariances will be discussed. The models, codes and results of calculations for different advanced reactor and fuel cycle parameters and their uncertainties and the use of these results for the planning of nuclear data measurements and evaluation will be presented.

Participants will learn the basic principles and techniques used in measurements, treatment and presentation of the data, which will provide the complete information needed for data evaluators. Participants will be trained in the use of codes for nuclear reaction cross section calculations and in the evaluation of uncertainties. Participants will practise in Web data retrievals and data processing and preparation for reactor calculations. Participants will learn modern approaches to the estimation of the uncertainties of the calculated advanced reactor and fuel cycle parameters and optimization of their design. An overview of the long-term projects for the development of innovative nuclear reactors with closed fuel cycle will be presented.

### MAIN TOPICS

- neutron cross section measurements, data reduction and uncertainty estimation
- nuclear reaction theory, nuclear models and codes for cross section calculations
- cross section evaluations using non-model and model fits of experimental data
- nuclear data libraries, data retrieval and processing
- reactor calculations with calculated parameter uncertainty estimation
- strategies for advanced reactor and closed fuel cycle technologies

### PARTICIPATION

Scientists and students from all countries, which are members of the United Nations, UNESCO or IAEA may attend the Workshop. As it will be conducted in English, participants should have an adequate working knowledge of this language. Although the main purpose of the Centre is to help research workers from developing countries, through a programme of training activities within a framework of international cooperation, a limited number of students and post-doctoral scientists from developed countries are also welcome to attend.

As a rule, travel and subsistence expenses of the participants should be borne by the home institution. Every effort should be made by candidates to secure support for their fare (or at least half-fare). However, limited funds are available for some participants, who are nationals of, and working in, a developing country, and who are not more than 45 years old. Such support is available only for those who attend the entire course. There is no registration fee.

### HOW TO APPLY FOR PARTICIPATION

The on-line application form can be accessed via the ICTP activity agenda page at:

<http://agenda.ictp.it/smr.php?2141>

Once in the website, comprehensive instructions will guide you step-by-step, on how to fill out and submit the application form. Kindly send all file attachments in Word or PDF format.

**Deadline for receipt of applications is 31 January 2010.**

### CONTACT INFORMATION

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### LOCAL ORGANIZER

**C. TUNIZ**  
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### INVITED LECTURERS

*To be announced  
on the web page*

### APPLICATION DEADLINE

**31 January 2010**