



The Abdus Salam  
International Centre for Theoretical Physics



**School on  
Physics, Technology and Applications  
of Accelerator Driven Systems (ADS)**

**19 - 30 November 2007**  
(Miramare - Trieste, Italy)

The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, in co-operation with the International Atomic Energy Agency (IAEA), Vienna, Austria, is organizing a School on Physics, Technology and Applications of Accelerator Driven Systems (ADS), to be held at ICTP, Trieste, from 19 to 30 November 2007.

Significant efforts to develop high-power accelerator driven systems (ADS) are under way in many countries including China, the European Union, India, Japan, Russia and the U.S.A. Such innovative nuclear systems comprise a sub-critical reactor in which the reaction chain is sustained by external neutrons from a spallation source. While promising intrinsic safety features, the ADS, apart from energy production, would be able to transmute long-lived radioactive waste into harmless or shorter-lived products. This would relax requirements for the waste disposal, which is a major concern in the current application of nuclear energy. Similar activities were implemented in 2001, 2003 and 2005.

The purpose of the School is to familiarize students with the status of the R&D activities in the areas of ADS for energy production and transmutation. A review of the ADS designs presently under consideration will be given. Participants will study the theoretical foundations of all the ADS design aspects (i.e. high-power accelerator, spallation target and sub-critical core) and identify the most problematic areas, as well as the limitations of the simulation methods presently used. Students will familiarize with the modern theoretical models used to predict nuclear reaction cross sections. They will study the principles of the evaluation methodology and become acquainted with the existing data libraries and the data processing and transport calculations. Based on the discussion of the impact of the present uncertainties on the performance of the ADS, the needs for data and methods development and validation work will be identified.

**PROGRAMME:**

The School will consist of lectures, computer demonstrations, tutorials and exercise sessions. Participants will also be invited to make short (15 minutes) presentations of their own research activity.

**PARTICIPATION**

Scientists and engineers from all countries that are members of the United Nations, UNESCO or IAEA may attend the activity. They should hold a university degree in nuclear physics, reactor physics, nuclear engineering, or related subjects. As the School will be conducted in English, participants must have an adequate working knowledge of this language. Although the main purpose of the Centre is to help researchers from developing countries, graduate students and post-doctoral scientists from developed countries would equally benefit from the School and are encouraged to apply.

As a rule, travel and subsistence expenses of the participants are borne by their home institutions. 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. Every effort should be made by candidates to secure support for their fare (or at least half-fare). Such support is available only to those attending the entire activity. There is no registration fee to be paid.

The **Application Form** is obtainable from the ICTP WWW server: <http://agenda.ictp.it/smr.php?1858> (which will be constantly up-dated) or from the activity Secretariat ([smr1858@ictp.it](mailto:smr1858@ictp.it)). This form should be completed, signed and returned before **20 May 2007 to:**

**School on Accelerator Driven Systems (smr.1858)**  
the Abdus Salam International Centre for Theoretical Physics  
Strada Costiera 11, I-34014 Trieste, Italy

or

**E-mail:** [smr1858@ictp.it](mailto:smr1858@ictp.it) (please send file attachments in one of the following formats:  
pdf (preferably), rtf zipped, or doc)  
(Recent photograph & signature of the candidate are compulsory)

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in co-operation with  
**International Atomic Energy Agency**

**DIRECTOR:**

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**LOCAL ORGANIZER:**

**Claudio TUNIZ**  
(ICTP, Trieste, Italy)

**ADS R&D TOPICS:**

**General Concept and System  
Studies**

**High-Power Proton Accelerators**

**Nuclear Data**

**Spallation Target**

**Sub-Critical Core  
(Physics and Design Aspects)**

**Fuel Development**

**Fuel Cycle Studies**

**Impact of Transmutation  
Scenarios on  
the High-Level Waste Repository**

**DEADLINE**  
**for requesting participation**

**20 MAY 2007**