



# Advanced School on Scientific Software Development: Concepts and Tools

20 February - 2 March 2012

*Trieste, Italy*

The Abdus Salam International Centre for Theoretical Physics (ICTP, Trieste, Italy) is organizing an **Advanced Workshop on Scientific Software Development: Concepts and Tools**, to be held in Trieste from 20 February to 2 March 2012.

During the last decade, the standards of writing scientific software and numerical libraries have been steadily improving. This resulted in a large number of available packages for scientific computing in many different research areas.

Young researchers and PhD students are now able to perform cutting-edge research just using such publicly available software. However, young scientists often need to enhance some software components, to add some new features to the existing software packages, or to write completely new scientific code, re-using some of the existing elements, or completely from scratch. This usually seems as a difficult task to young researchers, and often the effort to produce high quality scientific software is overestimated.

Young scientists, not formally trained in software engineering techniques, are not aware of important tools and often do not use good software designing and programming practices, thus lowering considerably their efficiency in either using scientific software packages or performing scientific software development.

The School is organized to address this and eliminate/alleviate identified obstacles for young researchers to be more easily involved in the software development, with specific focus on developing countries.

The goal of this School is to fill the identified gap in the training related to the software development, and to provide young scientists with the basic skills necessary to efficiently write their own scientific codes, optimize, port and benchmark them properly, and to employ the right computational infrastructure effectively.

The School will be organized in two weeks. The first week will be dedicated to scientific software engineering concepts/tools, with the emphasis on topics such as: software life cycle, writing and managing scientific software, compiling, debugging, and re-using the code etc. Theoretical lectures will be combined with the practical exercises in computer laboratories where students will practice the concepts discussed during the lectures on their own scientific software project. The second week will be then entirely dedicated to complete personal and/or group projects.

Students will work actively on their own specific software and computational problems that should be attached to the application, according to a template downloadable from the web page of the School (see below for more details). A preliminary good knowledge of Linux OS is required.

## **PARTICIPATION**

Scientists and students from all countries, which are members of the United Nations, UNESCO or IAEA, may attend the School. 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 scientists from developed countries are also welcome to attend.

As a rule, travel and subsistence expenses of the participants should be borne by their home institutions. 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 to those attending the entire activity. There is no registration fee.

**HOW TO APPLY FOR PARTICIPATION:** The online application form can be accessed at the activity website: <http://agenda.ictp.it/smr.php?2330>. Once in the website, comprehensive instructions will guide you step-by-step, on how to fill out and submit online the application. During the registration process, applicants will be asked to **upload their own proposal for a short research project** to work on during the second week of the School. **Such a proposal should be prepared according to the template available on the web page of the activity.** Since selection of candidates will be done mainly on the basis of scientific relevance and excellence of research projects submitted, the quality and the feasibility of such projects are essential. Therefore, applications without research projects will not be considered.

**ACTIVITY SECRETARIAT:** E-mail: [smr2330@ictp.it](mailto:smr2330@ictp.it)

ICTP Home Page: <http://www.ictp.it/>

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## **DIRECTORS**

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## **DEADLINES**

for requesting participation:

- **15 November 2011**  
(if financial support  
and/or visa are needed)
- **10 January 2012**  
(if neither financial support  
nor visa are needed)

**Webpage:**

<http://agenda.ictp.it/smr.php?2330>