



# Advanced Regional Workshop in High Performance and Grid Computing: Towards Enabling e-Science in the Region

25 October - 9 November 2010  
Tehran, The Islamic Republic of Iran

The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, along with the Institute for Studies in Theoretical Physics and Mathematics (IPM), Tehran, The Islamic Republic of Iran, is jointly organizing the Advanced Regional Workshop in High Performance and Grid Computing: Towards Enabling e-Science in the Region, to be held at the **Institute for Studies in Theoretical Physics and Mathematics (IPM), Tehran, The Islamic Republic of Iran.**

The application of high performance computing (HPC) and Grid computing is having a major impact on many areas of physics, chemistry, biology, engineering, materials, environmental, and social sciences. These areas of science are rapidly becoming digital and need to deal with increasing amount of data and computing power. Medium to large scale numerical simulations are becoming an integral part for applications ranging from weather prediction to drug and materials design. The goal of this school is to fill this training gap and provide young scientists with the basic skills necessary to employ the right computational infrastructure effectively. On the other hand the advent of Grid technology into the region has opened up new horizons for the scientists of developing countries, with which most of them are unfamiliar. In particular e-science can have an important impact on activities of the scientists in the third world as it removes some of the barriers of working in the scientific community of less developed countries.

The following topics will be discussed:

Linux OS: overview and installation procedure – configuring a linux workstation for scientific computing - running scientific application on linux

Tools for scientific computing on Linux: Makefile - compilers - mathematical and high performance libraries - debuggers etc.

Profiling and optimization techniques for Linux platforms

Parallel approach to scientific computations: openMP and MPI tutorials

GRID approach to solve large scale computational problems

Parallel computation on GRID infrastructures

Software tools for managing large quantities of data

Using HPC/GRID resources: batch systems for cluster and grid computing

## PROGRAMME

The School will consist of theoretical lectures given in the morning, and laboratory sessions in the afternoon. The first week of the school will focus on the needs of beginner and intermediate level participants whereas the second will be dedicated to more advanced topics and giving researchers the opportunity to apply the techniques learned in the first week to their own projects. Previous background using the Linux Operating System is not mandatory. Participants should be prepared to work with software applications related to their own scientific interests during lab hours in the second week. Participants will be required to present their results on specific tasks assigned during the course.

A conference session at the end of the meeting will give opportunity to those participants who may wish to submit a paper.

## 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. As a rule, travel and subsistence expenses of the participants should be borne by the home institution. However, limited funds are available for some participants, who are working in the region and not more than 45 years of age. Such support is available only for those who attend the entire activity. There is no registration fee.

## HOW TO APPLY FOR PARTICIPATION

The application form can be accessed at the activity website <http://agenda.ictp.it/smr.php?2174>. Once in the website, comprehensive instructions will guide you step-by-step, on how to fill out and submit the application form.

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e-Lab, joint SISSA/DEMOCRITOS  
Laboratory for e-Science



IPM-Grid

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## DEADLINE

For requesting participation

**30 June 2010**