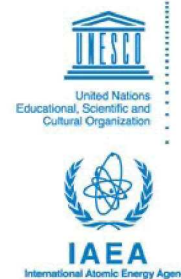




The Abdus Salam  
International Centre for Theoretical Physics



## ICTP Latin-American Basic Course on FPGA Design for Scientific Instrumentation

15 March – 2 April 2010

Mar del Plata – Argentina

The Abdus Salam International Centre for Theoretical Physics (ICTP, Italy) along with the School of Engineering of the National University of Mar del Plata (FI-UNMDP, Argentina), Center of Applied Technologies and Nuclear Development (CEADEN, Cuba), Cuban ministry of information and communication (MIC), and CAECE University (UCAECE, Argentina) will organize the above mentioned course, to be held at UCAECE, Mar Del Plata, Argentina, from 15 March to 2 April 2010. Experienced tutors will guide and assist participants during the laboratory sessions. The course will count on prestigious lecturers from Universities, Industry and Research Institutions.

### SUMMARY AND PURPOSE

This Course is mainly intended as a training activity in Microelectronics, to introduce physicists, engineers and computer scientists from Latino-American countries to the State-of-the-Art design methodologies of Field Programmable Gate Arrays (FPGA) using a Hardware Description Language (VHDL), as a cost effective solution for experimental research and high education. Particular emphasis will be placed on applications in scientific instrumentation. The purpose of the workshop is to train experimental scientists, teachers and engineers to the most advanced FPGA design methodologies and to promote research and human capacity development in designing microelectronic systems and devices. It is also expected to stimulate a collaborative Latino American community for the production of software and other FPGA related intellectual property which will enhance the availability of public domain technical resources especially for research and education in developing countries. This basic course will provide training in the latest FPGA design methodologies based on hardware description languages and logic synthesis. It will also be offered a broad view of modern integrated circuits and VLSI design. This course offers a unique opportunity to get into the FPGA world from basic to complex aspects through its intensive program, from step-by-step tutorials to implementation of fairly complex projects.

#### Some of the topics to be covered will include:

- **FPGA:** Technologies, Architectures, Design Methodology and Design Flow, Debugging Techniques
- **VHDL:** Modeling and Simulation, VHDL for Synthesis
- **Digital System Design:** combinational and sequential circuits. Digital Arithmetic
- **Digital Signal Processing:** Fourier Theory, Sampling Theory, Digital filters
- **Reuse methodology for System-on-a-Chip Designs**
- **Introduction to CMOS technology and VLSI design**
- **Reconfigurable Virtual Instrumentation based on FPGA**
- **Hands-on Laboratory Exercises:** VHDL Modeling, Simulation and FPGA Design
- **Actel:** Mixed signal analog-digital FPGA design

### PARTICIPATION

Scientists, technologists, teachers and students from Latino American countries may attend the Course. As the Course will be conducted in Spanish and English, participants must have a good working knowledge of these languages. A basic knowledge of digital electronics is also required.

As a rule, travel and subsistence expenses of the participants are borne by the home institution. However, limited funds are available for some participants from, and working in, developing countries, to be selected by the organizers. Such financial support is available only for those who attend the entire activity. Every effort should be made by candidates to secure support for their fare (or at least half fare) from their home country. **There is no registration fee to attend the Course.**

### HOW TO APPLY FOR PARTICIPATION

The application form can be accessed at the activity website <http://agenda.ictp.it/smr.php?2177>. Once in the website, comprehensive instructions will guide you step-by-step, on how to fill out and submit the application form.

**ACTIVITY SECRETARIAT:** Telephone: +39-040-22409911      Telefax: +39-040-22407911  
E-mail: [smr2177@ictp.it](mailto:smr2177@ictp.it)  
ICTP Home Page: <http://www.ictp.it/>      MLAB Home Page: <http://www.ictp.it/pages/research/mlab.html>



Facultad de Ingenieria  
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UNIVERSIDAD NACIONAL  
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*FI-UNMDP, Argentina*

### ICTP Local Organizer

**Maria Liz Crespo**  
*ICTP, Italy*

**DEADLINE**  
**for submitting application**  
**form**

**15 December 2009**