Joint ICTP-IAEA School on FPGA-based SoC and its Applications to Nuclear and Scientific Instrumentation

ICTP

14 November - 2 December 2022
An ICTP - IAEA Hybrid Meeting
Trieste, Italy

Further information:
http://indico.ictp.it/event/9933/
smr3765@ictp.it

The school will cover key aspects of fully-programmable Systems-On-Chip (SoC) technology and its applications to scientific instrumentation. The aim is to familiarize participants with professional software design tools and hardware platforms through tutorials and project examples in the field of nuclear applications.

Traditional FPGA devices have been utilized in many nuclear instruments for the past few decades, allowing multiple and parallel processing of signals from radiation detectors and other sensors. These features make instruments more compact by reducing number of required processors and minimizing complexity of analog electronics for signal processing. Modern SoC integrate the software programmability of processors with the hardware configurability of FPGAs in a single chip.

In the first two weeks, participants will carry out hands-on activities with software automation tools and hardware setups. Programming at FPGA level as well as processor level will be performed and interfacing with a wide variety of modular platforms will be undertaken. In the third week, participants will do projects and build embedded instruments for nuclear applications. In addition, they will be introduced to an open-source SoC-FPGA firmware platform, providing a well-tested interface with the control computer.

Directors:

M.L. CRESPO, ICTP, Italy
K. KANAKI, IAEA, Austria
M. BOGOVAC, IAEA , Austria
A. CICUTTIN, ICTP, Italy

Local Organiser:

M.L. CRESPO, ICTP, Italy

Topics:

- Systems-on-Chip: Architecture and Design Methodology
- Hardware/Software Interface
- Design Automation Tools
- VHDL for FPGA Design, Modeling, and Logic Synthesis
- Embedded C Language Programming
- High Level Synthesis
- Real-time Data Acquisition, Processing, and Transmission
- Digital Pulse Processing Techniques
- FPGA for Acceleration of AI Algorithms
- Laboratory Sessions for Hands-On Training and Experimentation

How to apply:

Online application:
http://indico.ictp.it/event/9933/

Female scientists are encouraged to apply.

Grants:

A limited number of grants are available to support the attendance of selected participants, with priority given to participants from developing countries.
There is no registration fee.

Deadline:

18 September 2022

IYBSSD 2022
International Year of Basic Sciences for Sustainable Development

IAEA
International Atomic Energy Agency

ICTP The Abdus Salam **International Centre for Theoretical Physics**
www.ictp.it
Trieste, Italy

IAEA