

Joint ICTP-IAEA School on FPGA-based SoC and its Applications for Nuclear and Related Instrumentation



30 November - 18 December 2020
Trieste, Italy

Further information:
<http://indico.ictp.it/event/9134/>
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The school will cover key aspects of fully-programmable Systems-On-Chip (SoC) technology and its applications to nuclear and related instrumentation. The aim is to familiarize participants with underlying software design tools and hardware platforms through tutorials and project examples in the field of nuclear applications.

Description:

Traditional FPGA devices have been utilized in many nuclear and related 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. In the last few years new programmable SoC emerged which integrate the software programmability of powerful processors with the hardware configurability of FPGAs.

In the first two weeks, participants will be familiarized with software automation tools and hardware setups based on SoC, through theoretical lectures, tutorials and assisted hands-on laboratory sessions. Programming at the block logic 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 and related applications. Candidates willing to propose open research projects are especially encouraged to apply.

Topics:

- System on Programmable Chip architecture and design methodologies
- Software Automation Tools
- Hardware/Software System Design
- FPGA and VHDL for Modeling and Logic Synthesis
- Embedded C Language Programming
- High level synthesis
- Real-time operating system
- Analog to digital and digital to analog conversions
- Real-time data acquisition, processing and transmission
- Digital pulse processing techniques
- Particle detectors
- Laboratory Sessions for Hands On Training and Experimentation

How to apply:

Online application:
<http://indico.ictp.it/event/9134/>

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.

Directors:

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F. Foulon, IAEA
A. Cicutin, ICTP
M.L. Crespo, ICTP

Local Organizer:

M.L. Crespo, ICTP

Speakers:

J. Dondo, University of San Luis, Argentina
N. Jovalekic, TTech Computertechnik AG, Austria
I. Konorov, TUM, Germany
S. Levorato, INFN, Italy
F. Rincon Calle, University of Castilla-La Mancha, Spain
H. Rongen, Jülich, Germany
P.B. Sabet, Sorbonne Université, France
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Deadline:

23 August 2020



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