

4th Summer School on INtelligent signal processing for FrontIER Research and Industry



Monday 23 January 2017 - Friday 3 February 2017

Campus of USP in Sao Paulo

Scientific Programme

The School programme brief description:

The school focuses on the most advanced technologies in the fields of semiconductors, very deep submicron and 3D technologies, advanced packaging and interconnects, telecommunications, real-time signal processing, filtering and massive parallel computing. _These sophisticated signal-processing schemes are driven by the demands of the New Physics domains to be explored.

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The two-tier programme comprises lectures and lab works in a variety of cross-disciplinary example applications, drawn from the exploration of distant Universe, through Medical imaging of the human body, to exploration of the elementary particle world.

Experts from academia and industry share their insights on technical developments and present science overviews, alongside with hands-on lab sessions involving demonstrators and subject specific master-classes on science and technology.

The series of labs and classes with computer-based exercises serve as support and complementary training to the lectures. They will promote collaborative friendly exchanges between the students, lecturers and tutors.

The new and main focuses of this year-School

- **In Astrophysics:** the **Radio-Astronomy** _with *Llama* (radio-chemistry aspect) and *Bingo* projects in South America and their links with SKA; the **large new Telescopes**_ with the Giant Magellan Telescope (GMT) and the LSST project (new CCD's technology); several Telescopes are installed in South America and Astronomy with big telescopes is a tradition in South America.

- **In Medical Physics** the School will cover **new imaging modalities** including ultra sound elastography and magnetic resonances (Functional and Diffusion Magnetic Resonance). **Hands on Labs** _including some on small animal and **computer-based Labs on Imaging Techniques** _will complement the plenary lectures. This is one of the novelties of this School.

- **In Particle Physics**, besides some innovative aspects related to the upgrades of the LHC experiments for the High Luminosity, the School will present the **new Neutrino Physics experimental programme** _with the long baseline project, *DUNE*, to be installed in the USA, and the R&D facility on related instrumentation at CERN (WA105) and **the next frontier machine(s) for Particle Physics.**_ Related to this topic, introduction to acceleration techniques and what can be learnt from synchrotron light accelerators will be discussed.

- **The High Tech fields related to** advanced Microelectronics, semi-conductors, Telecom and an emphasis on High Performance Computing (HPC) will be presented. *For the first time the School will include an exhibition of some of the main International and local High Tech Companies during the whole School.*

High tech lectures and dedicated Labs will be organized as well as some overview talk(s) by high skilled engineers from Industry.

**** Posters****

As in the previous Schools, the attendants are requested to prepare posters that summarize their current work. The posters will be posted during the whole duration of the School. It will allow the attendants and Lecturers and Lab organizers as well as visitors an overview on the variety of topics on which attendants are involved as well as fruitful exchanges.

A 3 hours session will be dedicated on Friday February 3rd to the presentation of the posters by their authors. Awards are foreseen to be attributed to the best 3 posters.

During the whole school duration and linked to the Industrial Exhibition, Posters related to the experiments, projects and high tech developments as well as presenting the Laboratories and Industries that are participating to the School will be organized.

Laboratory parallel sessions

A main asset of this School is the large variety of Hands on Labs organized both by experts from the Host Institution and from abroad.

This year the School at USP will benefit from the contribution by high skilled experts from IAG, IF and IME Institutes as well as from the Politechnic School, the School of Medecine. Moreover contributions from other Brazilian renowned Institutes and Universities are expected as well. The Industrial world will participate to this very important part of the School.

Worldwide experts from Academics or research centers will contribute by organizing hands on or computing-aided Labs.

The programme of Lab sessions is available [enter link description
enter link description here.

Stay tuned! Stay tuned! Stay tuned! Stay tuned! Stay tuned!