



Finding 21st Century solutions

22 January 2014

Leading physicists and engineers from South Africa and around the world will converge on Wits University next week to workshop one of the biggest challenges all scientists face this century. *How to deal with big data output?*

More than 100 researchers in fields such as physics, astronomy, geosciences, anthropology, photonics, applied mathematics, electrical engineering and information technology - as well as graduate students and representatives from industry - will attend the [2014 High-performance Signal and Data Processing workshop](#) hosted by the Wits School of Physics.

Workshop details:

Date: Monday to Friday (27 - 31 January 2014)

Venue: Wits Professional Development HUB, 92 Empire Road, Braamfontein

Keynote speakers include:

Dr Thomas Auf der Heyde, Deputy Director-General (Human Capital and Knowledge Systems) at the Department of Science and Technology (DST);

Dr Daniel Adams, Chief Director: Emerging Areas and Infrastructure, Department of Science and Technology (DST);

Professor Justin Jonas, MærKAT Associate Director of Science and Engineering;

Dr Peter Jenni, one of the 'founding fathers' and former spokesperson of the ATLAS experiment at the CERN Large Hadron Collider in Switzerland that discovered the Higgs boson in 2012;

Emeritus Professor Jean Cleymans, from the University of Cape Town and Chairman of the SA-CERN consortium;

Go to <http://indico.tlabs.ac.za/conferenceOtherViews.py?view=standard&confid=48> for the full programme.

About the workshop:

The workshop is jointly funded by SKA Africa and the University of the Witwatersrand and is hosted in collaboration with the University of Cape Town, the National Research Foundation/iThemba Labs, Stellenbosch University and SA-CERN.

Workshop Co-chair, Professor Bruce Mellado from the [High Energy Physics Group \(HEP\)](#) in the School of Physics at Wits University, says it has become a necessity for scientists in many fields to master the techniques of high-throughput signal and data processing.

"Science is becoming more complex and detailed. The amount of data now available and used to describe an object is growing very fast. This does not only apply to big sciences like CERN - where the SA-CERN team works - and the Square Kilometre Array (SKA) project, but to most modern sciences. It is now of strategic importance for the development and advancement of scientific research in South Africa that we develop our own electronics and computing architecture designs - to develop and build our own, affordable, supercomputers," Mellado says.

One of the key drivers in this development is the synergy between sciences. Mellado, also a member of the SA-CERN team, says CERN has a strong background in signal and data processing and has been dealing with these big data questions for the past 20 years. "Synergy between the SA-CERN community and other science communities, in particular the SKA, is essential to establish a strong base in signal and data processing in South Africa. SA-CERN is already assisting the SKA to liaise in areas of interest where CERN is leading innovation," Mellado adds.

The workshop is themed [Challenges in Astro- and Particle Physics and Radio Astronomy Instrumentation](#), but the development of high-throughput computers, also known as supercomputers, will also have a revolutionary impact on data processing in all fields of science, such as medical sciences, palaeosciences and engineering.

"Engineering underpins much of the instrumentation being assembled by our colleagues in science, and we are very pleased with the range of engineering topics that we have assembled for the workshop," notes co-chair, Professor Michael Inggs, University of Cape Town. "We are confident that the exposure of the technology from the particle physics and radio astronomy projects at one venue will inspire collaboration."

The workshop includes plenary sessions for in-depth presentations and knowledge sharing between delegates will be in lecture format, as well as a classroom environment for hands-on hardware training. General overviews and in-depth presentations will be given.

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