

The Scientific Program of ASP2021

Monday, July 19, 2021 - Friday, July 30, 2021



African School of Fundamental
Physics and Applications

Book of Abstracts

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The big & small picture: links between particle physics and cosmology

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Particle Matter Interactions

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Particle Matter Interactions

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Accelerators

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

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Light Sources and their Applications:

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Keynote Address: My Life In and Out of Physics

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ABSTRACT:

A reflection on the trajectory and surprising breadth of a life enabled by mathematical and theoretical physics.

Light Sources and their Applications:

Other:

Materials Physics & nanoscience:

Physics Education and Communication:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Particle Physics:

Nuclear Physics:

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Standard Model of Particle Physics

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Standard Model of Particle Physics

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

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Beyond the Standard Model of Particle Physics

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

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Accelerators

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Light Sources and their Applications:

Other:

Materials Physics & nanoscience:

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Renewable Energies & Energy Efficiency:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Particle Physics:

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Nuclear Physics

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Astrophysics

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Cosmology

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Physics Education and Communication:

Particle Physics:

Nuclear Physics:

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Astrophysics & Cosmology:

Light Sources and their Applications:

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Detectors

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

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Daily Discussion

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Materials Physics

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Medical Physics

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Physics Education and Communication:

Particle Physics:

Nuclear Physics:

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Heavy Ion Physics

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High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

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Particle Physics:

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Break

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High Performance Computing / Big Data

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

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Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

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Daily Discussion

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The Little Neutral One

Corresponding Author: mbishai@bnl.gov

An introduction to neutrino history and discoveries

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Flavor Physics

Corresponding Author: mario.campanelli@cern.ch

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

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Statistical Analysis

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Light Sources and their Applications:

Other:

Materials Physics & nanoscience:

Physics Education and Communication:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Particle Physics:

Nuclear Physics:

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Statistical Analysis

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Light Sources and their Applications:

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Materials Physics & nanoscience:

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Renewable Energies & Energy Efficiency:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Particle Physics:

Nuclear Physics:

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Daily Discussion

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Parallel Session 1: Accelerators

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Light Sources and their Applications:

Other:

Materials Physics & nanoscience:

Physics Education and Communication:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Particle Physics:

Nuclear Physics:

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Parallel session 2: Materials Physics

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel Session 1: Accelerators

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Light Sources and their Applications:

Other:

Materials Physics & nanoscience:

Physics Education and Communication:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Particle Physics:

Nuclear Physics:

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Parallel session 2: Materials Physics

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel Session 1: Detectors

Corresponding Author: sally.seidel@cern.ch

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel session 2: Understanding the main relations of galaxies**Corresponding Author:** mirjanap@essti.gov

Brief summary: This lecture will introduce us to an amazing and diverse world of galaxies and some of their main properties. We will see how different properties of galaxies can be related to specific galaxy types, and how different relations can help us in disentangling the picture of galaxy formation and evolution.

Other:**High Performance Computing:****Renewable Energies & Energy Efficiency:****Materials Physics & nanoscience:****Physics Education and Communication:****Particle Physics:****Nuclear Physics:****Accelerator, Radiation & Medical Applications:****Astrophysics & Cosmology:****Light Sources and their Applications:**

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Parallel Session 1: LHC Analysis - Event Reconstruction

Corresponding Author: mario.campanelli@cern.ch

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

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Light Sources and their Applications:

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Parallel session 2: An amazing world of active galaxies**Corresponding Author:** mirjanap@essti.gov

Brief summary: Active galaxies are some of the brightest sources in the Universe in almost all parts of the electromagnetic spectrum, and therefore, very important for studying how the Universe was in its early stages and how galaxies formed and evolved throughout cosmic time. They are characterised by very complex and particular physics, and their research has contributed in recent decades to important technological developments that nowadays have application in different fields such as medicine, agriculture, or communications. During this talk, we will go through the general properties of active galaxies, a standard model of active galactic nuclei (AGN), AGN types, the role of AGN in the current models of galaxy evolution, but also through the importance of AGN research.

Other:**High Performance Computing:****Renewable Energies & Energy Efficiency:****Materials Physics & nanoscience:****Physics Education and Communication:****Particle Physics:****Nuclear Physics:****Accelerator, Radiation & Medical Applications:****Astrophysics & Cosmology:****Light Sources and their Applications:**

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Daily Discussion

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Parallel Session 1: LHC Analyses - Event Triggers

Corresponding Author: mario.campanelli@cern.ch

(Chair : Ketevi Assamagan)

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Parallel Session 2: Astronomy for development in Africa

Corresponding Author: mirjanap@essti.gov

Brief summary: Africa has an amazing potential due to natural and human resources for scientific research in astronomy and space science. At the same time, the continent is still facing many difficulties, and many of its countries are now recognizing the importance of astronomy, space science, and satellite technologies for improving some of their main socio-economic and environmental challenges. The status of astronomy and space science in Africa changed significantly over the past years, and never before it was more possible to use astronomy for development as it is nowadays. This talk will summarise different activities carried out for education, science, and technological development, and show how through them we can fight poverty in the long term, and increase in future our possibilities of attaining the United Nations Sustainable Development Goals (SDGs) for the benefit of our all society.

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel Session 1: LHC Analyses - Particle Identification

Corresponding Author: sally.seidel@cern.ch

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel Session 2: Nanoscience

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(Chair : Anne Dabrowski)

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel Session 1: LHC Analyses - Background Estimation

Corresponding Author: mario.campanelli@cern.ch

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

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Light Sources and their Applications:

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Parallel session 2: Nanoscience

Corresponding Author: maaza@tlabs.ac.za

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel Session 1: LHC Analyses - Systematic Uncertainties

Corresponding Author: mario.campanelli@cern.ch

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel session 2: Physics Education

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Daily Discussion

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Parallel Session 1: Deep Learning

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Light Sources and their Applications:

Other:

Materials Physics & nanoscience:

Physics Education and Communication:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Particle Physics:

Nuclear Physics:

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Parallel session 2: Fluid & Plasma Physics

Corresponding Author: jefoster@umich.edu

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel Session 2: Optics & Photonics

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel Session1: Nuclear Physics

Corresponding Author: dalton@jlab.org

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel Session 1: Nuclear Physics

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel session 2: Atomic & Molecular Physics

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel Session 1: Physics Education

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Other:

High Performance Computing:

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Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

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Parallel Session 2: Atomic & Molecular Physics

Corresponding Author: o.abah@qub.ac.uk

Other:

High Performance Computing:

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Nuclear Physics:

Accelerator, Radiation & Medical Applications:

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Daily Discussion

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Plenary Session: Poster Presentations

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During this Poster session, the student will give a 10-minute presentation followed by 5 min of questions.

“Step, dip, and bell-shape traveling waves in a $(2 + 1)$ -chemotaxis model with traction and long-range diffusion”

By KUIPOU Domgno (Cameroon)

“Radiation Dose to the Closest Critical Organ during External Beam Radiotherapy of Head & Neck, Breast and Cervix at the University College Hospital, Ibadan, Nigeria”

By Adenuga Temitope (Nigeria)

“Theoretical Investigation of the Molecular Structure, Vibrational Spectra, Thermodynamic and non-linear Optical Properties of 4',5'-dibromo-2',7'-dinitro-fluorescein”

By Jean Baptiste Fankam Fankam (Cameroon)

“Analysis and monitoring of the performance of different solar photovoltaic technologies in an arid zone for the optimization of instantaneous production and the preservation of performance over time”

By Heyine Mohamed Saleck (Mauritania)

Other:

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Light Sources and their Applications:

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Parallel session 2: Quantum Information

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

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Parallel Session 2: Optics & Photonics

Corresponding Author: rim.cherif@supcom.tn

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Accelerator, Radiation & Medical Applications:

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Parallel session 2: Quantum Information

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Other:

High Performance Computing:

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Physics Education and Communication:

Particle Physics:

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Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel Session 1: Physics at underground facilities

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Parallel session 2: Earth Science

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(Chair : Anne Dabrowski)

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Parallel Session 1: Physics at underground facilities

Corresponding Author: fernando.ferroni@gssi.it

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Parallel session 2: Earth Science

Corresponding Author: bvon@sun.ac.za

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Daily Discussion

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Parallel Session 1: Medical Physics

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

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Light Sources and their Applications:

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Parallel session 2: Light Sources

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Parallel Session 1: Medical Physics

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with complementary comments by Marco Silari (CERN)

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Parallel Session 1: Biophysics

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Other:

High Performance Computing:

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Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel Session 2: Energy Applications & Energy Efficiency

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Physics Education and Communication:

Particle Physics:

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Parallel Session 1: Biophysics

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Parallel session 2: Energy Applications & Energy Efficiency

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Other:

High Performance Computing:

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Guest of Honor Address - Mohammed V University, Morocco

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Materials Physics & nanoscience:

Physics Education and Communication:

Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

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Guest of Honor Address - Cadi Ayyad University, Morocco

Light Sources and their Applications:

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Materials Physics & nanoscience:

Physics Education and Communication:

High Performance Computing:

Renewable Energies & Energy Efficiency:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Particle Physics:

Nuclear Physics:

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The African Strategy for Fundamental and Applied Physics (AS-FAP)

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Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

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ASP COVID-19 Analyses

Corresponding Author: somialo.azote@aims-senegal.org

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Particle Physics:

Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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ASP Brainstorming Session

Corresponding Author: anne.evelyn.dabrowski@cern.ch

Where or how can [physics / and a physicist make the biggest positive impact in your countries / communities

What are the most important problems or questions that physicist can contribute to solving in your country/ region etc

What are the biggest challenges for you for a career in physics

How this particular African School of Physics benefit your studies and or career - what are your expectations from the school

How can the Africa School of Physics evolve / adapt to better serve the needs of your country / region or stage in your career

Please add you feedback to this google document:

https://docs.google.com/document/d/1EtWrMunfsyTcDsCcBqiBWwlemp6Br_s0rPyFGbWukeY/edit?usp=sharing

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Nuclear Physics:

Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

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Radiation Measurements and Dosimetry

Corresponding Author: marco.silari@cern.ch

(Chair : Christine Darve)

Light Sources and their Applications:

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Materials Physics & nanoscience:

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High Performance Computing:

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Accelerator, Radiation & Medical Applications:

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Particle Physics:

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ASP User Experience with DataCamp

Corresponding Author: 201071570@student.uj.ac.za

(Chair : Farida Fassi)

Light Sources and their Applications:

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Materials Physics & nanoscience:

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High Performance Computing:

Renewable Energies & Energy Efficiency:

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African Young Physicists Forum

Corresponding Author: mounia.laassiri@gmail.com

Light Sources and their Applications:

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African Women in Physics Forum

Corresponding Author: mariechantal@aims.ac.za

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Parallel session 2: Light Sources

Corresponding Author: tdalmeida@semecity.com

Other:

High Performance Computing:

Renewable Energies & Energy Efficiency:

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Accelerator, Radiation & Medical Applications:

Astrophysics & Cosmology:

Light Sources and their Applications:

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Parallel Session 1: Gravitational Waves

Corresponding Author: eugenio.coccia@lngs.infn.it

(Chair : Ketevi Assamagan)

Other:

High Performance Computing:

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Parallel Session 2: Statistical Analysis

Corresponding Author: eilam.work@gmail.com

(Chair : Christine Darve)

Other:

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Parallel Session 1: Neutrinos in the 21st Century

Corresponding Author: mbishai@bnl.gov

A survey of neutrino oscillations and current and future experiments

Other:

High Performance Computing:

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Particle Physics:

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Parallel Session 2: Internet of Things

Corresponding Author: uli.raich@gmail.com

(Chair : Fernando Ferroni)

Other:

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Parallel Session 1: Flavor Physics

Corresponding Author: monica.pepe.altarelli@cern.ch

(Chair : Steve Muanza)

Light Sources and their Applications:

Other:

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Parallel Session 2: Internet of Things

Corresponding Author: uli.raich@gmail.com

(Chair : Christine Darve)

Other:

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Parallel Session 1: Neutron Sources as tools for innovation

Corresponding Author: christine.darve@cern.ch

(Chair : Christine Darve)

Other:

High Performance Computing:

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Physics Education and Communication:

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Parallel Session 2: Quantun Information

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Other:

High Performance Computing:

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Plenary Session: Neutron Sources—Thermal neutron detection at ESS

Corresponding Author: kalliopi.kanaki@cern.ch

(Chair : Christine Darve)

Other:

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Physics Education and Communication:

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Parallel Session 2: Heavy Ion Physics

Corresponding Author: zinhle@tlabs.ac.za

(Chair : Ketevi Assamagan)

Other:

High Performance Computing:

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The African School of Physics (ASP)

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Light Sources and their Applications:

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Renewable Energies & Energy Efficiency:

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Medical accelerators for radionuclide production and radiation therapy

Corresponding Author: marco.silari@cern.ch

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The International Association of Physics Students (IAPS)

Corresponding Authors: duarte.graca@iaps.info, ruhi.chitre@iaps.info

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POSTER CONTEST

Please submit your poster by Saturday, July 24,
by uploading it to this contribution:

The poster should present your PhD research, with emphasis on its potential to contribute to Africa's transformation.

Instructions:

- The title should be short and catchy.
- The file name shall be FirstLastNames_OneKeyword.pdf
- The format: .pdf of A0 or slides
- Add your short biography
- Acronyms should be spelled out only the first time they are cited.

You can also drop your poster at : <https://drive.google.com/drive/folders/1YSkQxj4HPMn5JH0h6tp1SFge8IgHYQDs?usp=sharing>

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Survey

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Certificates of participation and Concluding comments

Light Sources and their Applications:

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Materials Physics & nanoscience:

Physics Education and Communication:

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Renewable Energies & Energy Efficiency:

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