Mon, October 26

8:30 AM – 9:00 AM
Arrival and Registration
Break

9:00 AM – 9:15 AM
Opening
Session | **Convener:** Simiso Dube

9:15 AM – 9:25 AM
Internationalization through the eyes of the School of Science
Session | **Convener:** Nomvano Mketo

9:25 AM – 10:45 AM
Session 1
Session | **Convener:** Mantile Lekala

9:25 – 10:05 AM
[PLENARY TOPIC] Universality in few-body nuclear and atomic physics

Speaker
Tobias Frederico

10:05 – 10:25 AM
Chaos and magnetisation waves in arrays of superconductor– ferromagnet–superconductor φ_0 Josephson junctions

Speaker
Andre E. Botha

10:25 – 10:45 AM
Interplay of pairing localization and deformation in the newly observed ^{12}C cluster decay of proton-rich ^{116}Cs

Speaker
Joshua Tolulope Majekodunmi

10:45 AM – 11:05 AM
Coffee Break
Break

11:05 AM
Session 2
Session | **Convener:** Lauro Tomio

11:05 – 11:45 AM
[PLENARY TOPIC] The versatile Python tool uv and its application in Computational Physics

Speaker
Moritz Braun

11:45 AM – 12:05 PM
Up-conversion Luminescence of Er3+ doped TiO2 nanoparticles for Bio-imaging application

Speaker
Langutani Mathevula

12:05 – 12:45 PM

[PLENARY TOPIC] Nuclear Reaction Dynamics with Weakly Bound Nuclei: Recent Results and Experimental Opportunities at LAFNA

Speaker
Leandro Gasques

12:45 PM

12:45 PM

Lunch Break

Break

1:45 PM

1:45 PM

Session 3

Session | **Convener:** Malebo Tibane

1:45 – 2:15 PM **Model of compact star with ordinary and dark matter (online)**

Speaker
Pedro Mafa

2:15 – 2:45 PM **An overview of Efimov physics from three to two dimensions**

Speaker
Marcelo Takeshi Yamashita

2:45 – 3:15 PM

Accelerating the Clean Energy Transition through Data-Driven Computational Materials Design

Speaker
Kiprono Korir Kiptiemoi

3:15 – 3:45 PM

Shifting Landscape in Materials Modelling — Integrating First-Principles and Machine Learning for Accelerated Materials Discovery (online)

Speaker
Kingsley Onyebuchi Obodo

3:45 – 4:05 PM

Entering the 2nd decade of Gravitational Wave observations and implications for Multi-Messenger Astronomy

Speaker
Monos Naidoo

4:05 PM

6:00 PM

Welcome Reception

Break

8:00 PM

Tue, October 27

9:00 AM

Session 1

Session | **Convener:** Rosinah Modiba

9:00 – 9:40 AM **[PLENARY TOPIC] Irreversible thermodynamics in cosmology**

Speaker
Amos Soweto Kubeka

9:40 – 10:10 AM **Nuclear Astrophysics Opportunities with Halo/Cluster EFT**

Speaker
Renato Higa

10:10 – 10:30 AM
Towards resolving energy demand challenges in the age of AI driven economies for developing countries

Speaker
Cabangani Donga

10:30 AM

10:30 AM

Coffee Break

Break

10:50 AM

10:50 AM

Session 2

Session | **Convener:** Amos Soweto Kubeka

10:50 – 11:30 AM
[PLENARY TOPIC] Projectile-halo structural correction in the optical model description of weakly-bound nuclei

Speaker
Lauro Tomio

11:30 – 11:50 AM **Incorporating halo structure into the optical model formalism**

Speaker
Bahati Mukeru

11:50 AM – 12:10 PM
Inverse Problems in Finance: Recovering the Local Volatility surface using Neural Networks

Speaker
Hermann Azemtsa Donfack

12:10 PM

12:10 PM

Lunch Break + Posters

Break

1:10 PM

1:10 PM

Session 3

Session | **Convener:** Jeannie Rangel

1:10 – 1:50 PM

[PLENARY TOPIC] Can octupole vibrations on the fine structure of the ISGMR in 208Pb enrich its energy scales?

Speaker
Iyabo Usman

1:50 – 2:10 PM

Physics-Informed Neural Networks for Bound States, Uncertainties, and Jost Function Construction.

Speaker
Tshegofatso Tshipi

2:10 – 2:30 PM

Thermoluminescence investigation of dosimetric properties of a hydrothermally synthesized CuO compound for dosimetric applications

Speaker
ABEL MUTAMBU

2:30 PM

2:30 PM

Coffee Break

Break

2:50 PM

2:50 PM

Session 4

Session | **Convener:** Ntsako Jason Mathevula

2:50 – 3:10 PM **Thermoluminescence and phototransferred thermoluminescence of Zambian calcite**

Speaker
Fiindje Elago

3:10 – 3:30 PM

Electronic, and HER properties of graphene oxide and quaternary nitrogen doped graphene oxide: A DFT approach

Speaker
SAMWEL OPIYO

3:30 – 3:50 PM

N-doped graphene oxide-carbon nanotube@microalgae photothermal nanohybrid for efficient solar steam generation

Speaker
Kholiswa Yokwana

3:50 PM

3:50 PM

LABORATORIES TOUR

Break

4:45 PM

Wed, October 28

8:30 AM

Session 1

Session | **Convener:** Henok Gebretinsae

8:30 – 9:10 AM

[PLENARY TOPIC] Watching Efimov trimers form across the critical dimension: digital quantum simulation of few-boson unitarity

Speaker
Gastão Krein

9:10 – 9:30 AM **Thermal Responses of shifted Newing Function to Topological Defects**

Speaker
Uduakobong Okorie

9:30 – 9:50 AM **$FASnI_2Br$ as a solid-state materials platform for photovoltaic applications**

Speaker
Duke Oeba

9:50 AM

9:50 AM

Coffee Break

Break

10:10 AM

10:10 AM

Session 2

Session | **Convener:** Tshegofatso Tshipi

10:10 – 10:50 AM

[PLENARY TOPIC] Developing Radiation Protection Capacity in South Africa's NORM-Regulated Mining Industry Through Industry-Academic Collaboration

Speaker
Riaan van der Westhuizen

10:50 – 11:10 AM

Two Observables, One FRB Population, Self-Calibrating Electron Bias for Primordial Non-Gaussianity.

Speaker
Sim Dlamini

11:10 – 11:40 AM

From Breakup to Fusion: The Evolution of a CDCC-Based Description of Complete and Incomplete Fusion in Weakly Bound Nuclear Systems

Speaker
Jeannie Rangel Borges

11:40 AM

11:40 AM

Lunch Break

Break

12:40 PM

12:40 PM

Session 3

Session | **Convener:** Sim Dlamini

12:40 – 1:10 PM **Novelties in a dipolar Bose-Einstein condensate**

Speaker
Sadhan Adhikari

1:10 – 1:30 PM **Vortices and Quantum Turbulence in Bose-Einstein Condensates: Stirring and Merging**

Speaker
Sabari Subramaniyan

1:30 – 1:50 PM **Lorentz-invariant phase space for three-body mesonic decays of the hypertriton**

Speaker
Emile Meoto

1:50 – 2:10 PM **SiO2 interfacial layer for the improved photodiode properties of Silicon Schottky diodes.**

Speaker
Modisa Ntobeng

2:10 PM

2:10 PM

Coffee Break

Break

2:30 PM

2:30 PM

Session 4

Session | **Convener:** Duke Oeba

2:30 – 2:50 PM

Unravelling the Interfacial and Photovoltaic Properties of ZnTiO3-Based Solid-state Dye-Sensitized Solar Cells Using DFT and SCAPS-1D

Speaker
Ephantus Njeru

2:50 – 3:30 PM

[PLENARY TOPIC] Computational Design of Electrocatalysts for Hydrogen and Oxygen Evolution Reactions (online)

Speaker
Juarez L. F. Da Silva

3:30 – 3:50 PM **The Hopf algebra structure of Leigh-Strassler theories**

Speaker
Hector Dlamini

3:50 PM

Thu, October 29

8:30 AM

Session 1

Session | **Convener:** Tobias Frederico

8:30 – 8:50 AM

Phototransferred Thermoluminescence Properties of CaGa2O4:Pr3+ Prepared by Solution Combustion Method, Analytical methods and applications.

Speaker
CLEMENT SICHANGI

8:50 – 9:10 AM

Investigation of the thermoluminescence Properties of MgCO3.3H2O FOR Radiation Dosimetry

Speaker
Zerfie Marshet Mehabaw

9:10 – 9:30 AM

Stochastic Partitions and Cluster Statistics: Mathematical Methods Across High-Energy and Few-Body Physics

Speaker
Yannick Mvondo-She

9:30 – 9:50 AM

Photocatalytic Hydrogen Evolution of Gallium Oxyhydroxide Synthesized from Varying Precursor (Gallium Nitrate) Concentrations

Speaker
Tabitha Alango

9:50 AM

9:50 AM

Closure

Session | **Conveners:** Bahati Mukeru, Marcelo Takeshi Yamashita

10:10 AM

10:10 AM

Coffee Break

Break

10:40 AM

10:40 AM

Excursion

Break

5:00 PM