Session Program

Jul 6 – 10, 2026

SAIP2026

Theoretical and Computational Physics

University of the Western Cape

Tue, July 7

9:30 AM

Theoretical and Computational Physics: Session 1

Session | **Location:** University of the Western Cape, Lecture Hall DL2 | **Convener:** Prof. Azwinndini Muronga

9:30 – 9:50 AM **Distinguishing $1/2$-BPS states using symmetric polynomials**

Speaker
Dr Garreth Kemp

9:50 – 10:10 AM **Configurational Temperature in the 3D XY Model**

Speaker
Kutloano Nkojoana

10:10 – 10:30 AM **Competing Condensates in Holographic QCD**

Speaker
Akash Singh

10:30 AM

11:00 AM

Theoretical and Computational Physics: Session 2

Session | **Location:** University of the Western Cape, Lecture Hall DL2 | **Convener:** Moritz Braun

11:00 – 11:20 AM **Complexity in Matter Under Extreme Conditions**

Speaker
Prof. Azwinndini Muronga

11:20 – 11:40 AM
A Comprehensive Numerical Framework for Magnetised Shock Wave Dynamics in Extreme Environments

Speaker
Magdeline Mohlao

11:40 AM – 12:00 PM
Entropy Generation in Steady MHD Nanofluid Couette Flow with Partial Slip and Convective Cooling: A Spectral Approach

Speaker
Serai Israel MOSALA

12:00 – 12:20 PM
Studying the Dependence of Particle Ratios of Hadronic Matter on Energy in Pb+Pb High Energy Heavy-Ion Collisions Using the Microscopic Model (UrQMD-3.4).

Speaker
Tendani Oliver Munyai

12:40 PM

2:40 PM

Theoretical and Computational Physics: Session 3

Session | **Location:** University of the Western Cape, Lecture Hall DL2 | **Convener:** Garreth Kemp

2:40 – 3:00 PM **Saved by the Bell**

Speaker
Geoff Beck

3:00 – 3:20 PM

Solution of the two dimensional Schrödinger equation using Basis functions derived from the 16/8 Daubechies Wavelet Scaling Function

Speaker
Moritz Braun

3:20 – 3:40 PM

Calculation of the Ground State Energy of the Hydrogen Molecular Ion H2+ using a basis set derived from a shifted and scaled wavelet scaling function as basis set

Speaker
Obiageli Ezenwachukwu

3:40 – 4:00 PM **Solving the Helmholtz equation on hyperbolic spaces**

Speaker
Anele Ncube

4:00 PM

Wed, July 8

9:30 AM

Theoretical and Computational Physics: Session 4

Session | **Location:** University of the Western Cape, Lecture Hall DL2 | **Convener:** Magdeline Seabi

9:30 – 9:50 AM

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

Speaker
Kingsley Onyebuchi Obodo

9:50 – 10:10 AM

Quantum Computing for Sodium-Ion Battery Modeling: A Comprehensive Technical Analysis

Speaker
Khanyisile Masemola

10:10 – 10:30 AM

Physics-Informed Neural Networks for two-Body Schrödinger Bound-State Eigenvalue Computation

Speakers
Dr Tshegofatso Tshipi, Dr Ishmael Gopane

10:30 AM

11:00 AM

Theoretical and Computational Physics: Session 5

Session | **Location:** University of the Western Cape, Lecture Hall DL2 | **Convener:** Tal Leshem

11:20 – 11:40 AM

Forward b-Hadrons as Probes of Azimuthal-Dependent Production in High-Energy Collisions

Speaker
Farelanani Makatu

11:40 AM – 12:00 PM **Energy loss predicts no v_2 in small systems**

Speaker
Ben Bert

12:00 – 12:20 PM **Jet quenching in the smallest quark-gluon plasma droplet**

Speaker
Coleridge Faraday

12:20 – 12:40 PM

All-Path-Length and Sub-Eikonal corrections to Momentum Broadening in the Opacity Expansion approach.

Speaker
Dario Van den Berg

12:40 PM

2:50 PM

Theoretical and Computational Physics: Session 6

Session | **Location:** University of the Western Cape, Lecture Hall DL2 | **Convener:** Bahati Mukeru

2:50 – 3:10 PM **Derivation of moments and cumulants for Open Quantum Brownian Motion**

Speaker
Ayanda Zungu

3:10 – 3:30 PM

Evaluation of the Asymptotic Iteration Method for Computing Quasinormal Modes of Diverse Black Hole Spacetimes.

Speaker
Mr Tal Leshem

3:30 – 3:50 PM **Optimazation of renewable energy using Flextool.**

Speaker
Marandela Mulalo Valencia

3:50 – 4:10 PM **Variational Monte Carlo and the Quantum Enhanced Metropolis-Hastings Algorithm**

Speaker
Mishka Naicker

4:10 PM

Thu, July 9

9:30 AM

Theoretical and Computational Physics: Session 7

Session | **Location:** University of the Western Cape, Lecture Hall DL2 | **Convener:** Dr Tshegofatso Tshipi

9:30 – 9:50 AM

Analysis of halo effect on elastic scattering cross section within the optical model formalism

Speaker
Bahati Mukeru

10:10 – 10:30 AM **A pQCD Baseline for Parton and Hadron Production Spectra**

Speaker
Jack Brand

10:30 AM

11:00 AM

Theoretical and Computational Physics: Session 8

Session | **Location:** University of the Western Cape, Lecture Hall DL2 | **Convener:** Garreth Kemp

11:00 – 11:20 AM **Thermodynamics of Quantum Fields on a Finite Lattice**

Speaker
Rens Roosenstein

11:20 – 11:40 AM **High-pT Dihadron Correlations in Proton-Proton and Heavy-ion Collisions**

Speaker
Tiaan van der Merwe

11:40 AM – 12:00 PM

Path-length dependence of parton energy loss in Pb-Pb, Ne-Ne and O-O collisions using JEWEL and Trajectum

Speaker
Martha Mashao

12:40 PM

2:40 PM

Theoretical and Computational Physics: Annual General Meeting

Session | **Location:** University of the Western Cape, Lecture Hall DL2 | **Convener:** Prof. Azwinndini Muronga

4:00 PM

4:30 PM

Theoretical and Computational Physics

Session | **Location:** University of the Western Cape, Lecture Hall DL2

5:30 PM

Fri, July 10

9:30 AM – 10:30 AM

Theoretical and Computational Physics

Session | **Location:** University of the Western Cape, Lecture Hall DL2

11:00 AM – 12:40 PM

Theoretical and Computational Physics

Session | **Location:** University of the Western Cape, Lecture Hall DL2