

Session Program

6–10 Jul 2026



SAIP2026

Theoretical and Computational Physics

University of the Western Cape

Tuesday 7 July

09:30

Theoretical and Computational Physics: Session 1

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

09:30–09:50 **Distinguishing $1/2^+$ -BPS states using symmetric polynomials**

Speaker

Dr Garreth Kemp

09:50–10:10 **Configurational Temperature in the 3D XY Model**

Speaker

Kutloano Nkojoana

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

Speaker

Akash Singh

10:30

11:00

Theoretical and Computational Physics: Session 2

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

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

Speaker

Prof. Azwinndini Muronga

11:20–11:40

A Comprehensive Numerical Framework for Magnetised Shock Wave Dynamics in Extreme Environments

Speaker

Magdeline Mohlao

11:40–12:00

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

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

14:40

Theoretical and Computational Physics: Session 3

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

14:40–15:00 **Saved by the Bell**

Speaker

Geoff Beck

15:00–15:20

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

Speaker

Moritz Braun

15:20–15:40

Calculation of the Ground State Energy of the Hydrogen Molecular Ion H_2^+ using a basis set derived from a shifted and scaled wavelet scaling function as basis set

Speaker

Obiageli Ezenwachukwu

15:40–16:00

Solving the Helmholtz equation on hyperbolic spaces

Speaker

Anele Ncube

16:00

Wednesday 8 July

09:30

Theoretical and Computational Physics: Session 4

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

09:30–09:50

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

Speaker

Kingsley Onyebuchi Obodo

09:50–10:10

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

Speaker

Khanyisile Masemola

10:10–10:30

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

Speakers

Dr Tshegofatso Tshipi, Dr Ishmael Gopane

10:30

11:00

Theoretical and Computational Physics: Session 5

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

11:20–11:40

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

Speaker

Farelanani Makatu

11:40–12:00

Energy loss predicts no v_2 in small systems

Speaker

Ben Bert

12:00–12:20

Jet quenching in the smallest quark-gluon plasma droplet

Speaker

Coleridge Faraday

12:20–12:40

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

Speaker

Dario Van den Berg

12:40

14:50

Theoretical and Computational Physics: Session 6

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

14:50–15:10

Derivation of moments and cumulants for Open Quantum Brownian Motion

Speaker
Ayanda Zungu

15:10–15:30

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

Speaker
Mr Tal Leshem

15:30–15:50

Optimization of renewable energy using Flextool.

Speaker
Marandela Mulalo Valencia

15:50–16:10

Variational Monte Carlo and the Quantum Enhanced Metropolis-Hastings Algorithm

Speaker
Mishka Naicker

16:10

Thursday 9 July

09:30

Theoretical and Computational Physics: Session 7

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

09:30–09:50

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

Speaker

Bahati Mukeru

10:10–10:30

A pQCD Baseline for Parton and Hadron Production Spectra

Speaker

Jack Brand

10:30

11:00

Theoretical and Computational Physics: Session 8

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

11:00–11:20

Thermodynamics of Quantum Fields on a Finite Lattice

Speaker

Rens Roosenstein

11:20–11:40

High-pT Dihadron Correlations in Proton-Proton and Heavy-ion Collisions

Speaker

Tiaan van der Merwe

11:40–12:00

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

14:40

Theoretical and Computational Physics: Annual General Meeting

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

16:00

16:30

Theoretical and Computational Physics

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17:30

Friday 10 July

09:30

10:30

11:00

12:40

Theoretical and Computational Physics

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