

Session Program

6–10 Jul 2026



SAIP2026

Applied Physics

University of the Western Cape

Tuesday 7 July

09:30

Applied Physics

Session | Location: University of the Western Cape, Lecture Hall DL3 | Convener: Alan Matthews

09:30–09:50

Toward Portable Gamma–Neutron Imaging: A Two-Stage Compton Camera for Environmental Monitoring

Speaker

Shanyn Hart

09:50–10:10

Operational Variability in Platinum Flotation Systems: Feed Complexity, Ultrafine Physics and Sustainability in South African Platinum Group Minerals Processing

Speaker

Mr Ndivhuwo Nthai

10:10–10:30

Seeing through biological tissues without distortions by harnessing topological light

Speaker

Kelsey Everts

10:30

11:00

Applied Physics

Session | Location: University of the Western Cape, Lecture Hall DL3 | Convener: Mandla Msimanga

11:00–11:20

Investigation of Co-synthesized Natural Dye Sensitizers using *Symphytum officinale* and *Bidens pilosa* in Dye-Sensitized Solar Cells

Speaker

Ronel Ronella Randela

11:20–11:40

Towards Physics-Informed Machine Learning for Water Quality Prediction: A Data Assessment Study in South Africa

Speaker

Precious Mabidi

11:40–12:00

Physics-Based Feasibility Assessment of a PV–Biogas Hybrid Mini-Grid for Energy–Agriculture Living Labs in Rural South Africa

Speakers

David Tinarwo, Mr Shandukani Muronga

12:00–12:20

GEANT4 Study on Suitability of Diamond-Coated LPG Sensors

Speakers

Abdool Sattar Cassim, Timothy Brooks

12:20–12:40

Germanium-doped Fiber Optic Sensors for High-Radiation Dosimetry

Speaker

Timothy Brooks

12:40

14:40

Applied Physics

Session | Location: University of the Western Cape, Lecture Hall DL3 | Convener: Lucas Erasmus

15:00–15:20

Single-shot measurement of Kerr Nonlinearities using Structured Light

Speaker

Wagner Tavares Buono

15:20–15:40

Dynamic State Constrained Calibration of Nonlinear Sensor Systems for Residual Limb Monitoring

Speaker

Chrispin Kabuya

15:40–16:00

Empirical Modelling and Evaluation of Hourly Global Solar Radiation on Horizontal and Inclined Surfaces

Speaker

Mabunda Hlayiseka

16:00

Wednesday 8 July

09:30

Applied Physics

Session | Location: University of the Western Cape, Lecture Hall DL3 | Convener: Ernest van Dyk

09:30–09:50

Improved Field Homogeneity in Finite-Length Sparse Permanent Magnet Arrays for Low-Field MRI

Speaker

David Roth

09:50–10:10

A Geant4 Study of FLASH Proton Therapy Mechanisms

Speaker

Marry Thekhwe

10:10–10:30

Geant4 modelling of the beam delivery of a Proteus ONE system for the UCT Proton Therapy Initiative

Speaker

Moses Gororo

10:30

11:00

Applied Physics

Session | Location: University of the Western Cape, Lecture Hall DL3 | Convener: Lucas Erasmus

11:00–11:20

Firmware and Software Implementation in TileCom for Integration to the ATLAS TileCal Phase II Upgrade

Speaker

Delron Dananai Muti

11:20–11:40

Electrical characterisation of aluminium-polyaniline Schottky diodes using a machine learning approach

Speaker

Hlulani Ndlovu

11:40–12:00

Design and Implementation of a Hardware Monitoring Framework for the Tile Demonstrator at Point 1

Speaker

Brenton Munhungewarwa

12:00–12:20

Inverse design of optical neural networks with qubit-based quantum computers

Speaker

Nikita Azevedo

12:20–12:40

DFT Study of Hydrogen Diffusion in Graphene-Reinforced NbMoTaW Alloy

Speaker

Damuleli Thivhafuni Edgar

12:40

14:50

Applied Physics

Session | Location: University of the Western Cape, Lecture Hall DL3 | Convener: Nicolas Thantsha

14:50–15:10

Optical and Electrical Properties of Polyaniline Thin Films for Schottky Diode Radiation Sensors

Speaker

Dr Washington Mhike

15:10–15:30

A test bench for Low-Cost Positron Emission Tomography

Speaker

Simon Carthew

15:30–15:50

Prompt gamma imaging of a clinical proton beam using Cd Zn Te Compton cameras with a kernel-weighted back projection imaging technique.

Speaker

Josiah De Klerk

15:50–16:10

Comparative Elemental Analysis of Organic and Inorganic fertilizers Using the Nuclear Analytical Techniques: PIXE and RBS.

Speaker

BUSISIWE PERTUNIA MBATHA

16:10

Thursday 9 July

09:30

Applied Physics

Session | Location: University of the Western Cape, Lecture Hall DL3 | Convener: Ernest van Dyk

09:30–09:50 Approximations to the bow shock pressure profile generated by a decelerating sphere

Speaker

Prof. Irvy (Igle) Gledhill

09:50–10:10 Simulation of a Low-Cost PET Scanner

Speaker

Ryan Atkin

10:30

11:00

Applied Physics

Session | Location: University of the Western Cape, Lecture Hall DL3 | Convener: Nicolas Thantsha

11:00–11:20 Radiation-Resistant Temperature Monitoring in High-Energy Physics Environments

Speaker

Timothy Brooks

11:20–11:40

Electrical characterisation of a 2D Schottky diode based on heterojunction polyaniline and graphene with Magnesium as contact.

Speaker

Dr Abraham Dimitri Kapim kenfack

11:40–12:00 EVINN: Extreme value-informed neural networks model for modeling extreme events

Speaker

Dr Makhamisa Senekane

12:00–12:20 Deploying physics-informed neural networks for anomaly detection in particle physics

Speaker

Dr Makhamisa Senekane

12:20–12:40

Ultra-Sensitive and Energy Efficient Low-ppb NO_x Gas Sensors Based on Pd-sensitized Co₃O₄/NiTiO₃ Heterojunctions

Speaker

Zamaswazi Tshabalala

12:40

14:40

Applied Physics

Session | Location: University of the Western Cape, Lecture Hall DL3 | Convener: Alan Matthews

14:40–15:00 Effect of Methane Concentration on Biogas Thermodynamics

Speakers

Mr Thando Khedzi, VHUTSHILO NEKHUBVI

15:00–15:20

Enhancing Biogas Yield from Cow Dung: A Comparative Study of Varying Fe_2O_3 Nanoparticle Concentrations

Speaker

Takalani Nethavhanani

15:20–15:40

Thermal signature analysis of photovoltaic module mismatch using infrared thermography

Speaker

TSHIMANGADZO SOPHIE MULAUDZI

15:40–16:00

Physics Principles Applied in Monitoring Photovoltaic Performance and Water Dynamics

Speaker

Livhuwani Masevhe

16:00

16:30

Applied Physics

Session | Location: University of the Western Cape, Lecture Hall DL3 | Convener: Alan Matthews

16:30–17:30

Applied Physics Division AGM

17:30

Friday 10 July

09:30

Applied Physics

Session | Location: University of the Western Cape, Lecture Hall DL3 | Convener: Alan Matthews

09:30–09:50

A Radiography Simulator for Design, Optimisation, Performance Evaluation, Experimental Planning, and Operator Training in Neutron and X-ray Imaging Systems

Speaker

Robert Bellarmin Nshimirimana

09:50–10:10

Use of Ultrasonic Atimisation Techniques to Manufacture and Recycle Metals to Powder Suitable for 3D Printing.

Speaker

Donald Mkhonto

10:10–10:30

Conversion of Pine Wood Residue for Enhanced Hydrogen Production via Catalytic Pyrolysis Process

Speaker

Mithayelanga Mazitshana

10:30

11:00

Applied Physics

Session | Location: University of the Western Cape, Lecture Hall DL3 | Convener: Alan Matthews

11:00–11:20

Numerical investigation and performance optimization of lead-free Cs_2TiCl_6 and $\text{CS}_2\text{AgBiBr}_6$ heterojunction solar cell using SCAP-1D

Speaker

Paulinah Fasanmi

11:20–11:40

Pressure-Driven Tuning of the Optoelectronic Properties of X_2AgSbF_6 ($\text{X} = \text{K}, \text{Rb}$) Double Perovskites: A First-Principles Study

Speaker

Mwende Mbilo

12:40