

Program

Jul 6 – 10, 2026



SAIP2026

University of the Western Cape

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Mon, July 6

7:30 AM	Mon, July 6 7:30 AM – 5:30 PM SAIP Council Meeting Session Location: University of the Western Cape Description For SAIP Council Members
5:30 PM	
7:30 AM	Mon, July 6 7:30 AM – 5:30 PM Winter School: Astronomy/Astrophysics Session Location: South African Astronomical Observatory Description Sign-up Required. Limited Capacity.
5:30 PM	
7:30 AM	Mon, July 6 7:30 AM – 5:30 PM Winter School: Nuclei (and or Particle) Physics Session Location: iThemba Labs Description Sign-up Required. Limited Capacity.
5:30 PM	
7:30 AM	Mon, July 6 7:30 AM – 5:30 PM Winter School: Solid State Physics and Condensed Matter Session Location: University of the Western Cape Description Sign-up Required. Limited Capacity.
5:30 PM	
2:15 PM	Mon, July 6 2:15 – 5:30 PM Tour to iThemba LABS Session Location: iThemba LABS Description Sign-up Required. Limited Capacity.
5:30 PM	
3:00 PM	Mon, July 6 3:00 – 5:30 PM Historical Tour of UWC Campus Session Location: University of the Western Cape
5:30 PM	

5:30 PM

Mon, July 6

5:30 – 6:00 PM

Registration

Break | Location: University of the Western Cape, Jakes Gerwel Hall Entrance

6:00 PM

6:00 PM

Mon, July 6

6:00 – 10:00 PM

Welcome Reception & Opening Ceremony

Session | Location: University of the Western Cape

10:00 PM

Tue, July 7

7:30 AM	Tue, July 7	7:30 – 8:30 AM
8:30 AM	Registration Session Location: University of the Western Cape, Great Hall	
8:30 AM	Tue, July 7	8:30 – 9:25 AM
9:25 AM	Plenary: (Condensed Matter) Prof Vladimir Lobaskin, "What the Cell Sees: Modelling the Bionano Interface" Session Location: University of the Western Cape, Jakes Gerwel Hall	
	8:30 – 8:35 AM Buffer	
	8:30 – 9:25 AM What the Cell Sees: Modelling the Bionano Interface Speaker Prof. Vladimir Vladimir Lobaskin (School of Physics, University College Dublin)	
9:25 AM	Tue, July 7	9:25 – 9:30 AM
9:30 AM	Buffer Break Location: University of the Western Cape	
9:30 AM	Tue, July 7	9:30 – 10:30 AM
10:30 AM	Applied Physics Session Location: University of the Western Cape, Lecture Hall DL3 Convener: Alan Matthews	
	9:30 – 9:50 AM Toward Portable Gamma-Neutron Imaging: A Two-Stage Compton Camera for Environmental Monitoring Speaker Shanyin Hart (University of Cape Town and iThemba LABS)	
	9:50 – 10:10 AM Operational Variability in Platinum Flotation Systems: Feed Complexity, Ultrafine Physics and Sustainability in South African Platinum Group Minerals Processing Speaker Mr Ndivhuwo Nthai (University of Johannesburg)	
	10:10 – 10:30 AM Seeing through biological tissues without distortions by harnessing topological light Speaker Kelsey Everts (University of the Witwatersrand)	

9:30 AM

Tue, July 7

9:30 – 10:30 AM

Astrophysics & Space Science: Astrophysics Session 1

Session | Location: University of the Western Cape, Lecture Hall C5 | Convener: Geoff Beck (University of the Witwatersrand)

9:30 – 9:50 AM

Development of a GPU-Based Wideband Spectrometer for Radio Astronomy**Speaker**

André DeGoede (North West University)

9:50 – 10:10 AM

Future Plans for Global Optical Transient Detection Networks**Speaker**

David Buckley (SAAO/UCT)

10:10 – 10:30 AM

Design and Implementation of a Modular Telescope and Dome Control System (TelServer)**Speaker**

Dr Hendrik Jacobus van Heerden (University of the Free State)

10:30 AM

9:30 AM

Tue, July 7

9:30 – 10:30 AM

Astrophysics & Space Science: Space Science: Session 1

Session | Location: University of the Western Cape, Lecture Hall C3 | Convener: Ruhann Steyn (Centre for Space Research, North-West University)

9:30 – 9:50 AM

Occurrence of Ionospheric scintillation during the Ascending phase of solar cycle 25**Speaker**

Tshimangadzo M. Matamba (South African National Space Agency (SANSA))

9:50 – 10:10 AM

Large- and Medium-Scale Travelling Ionospheric Disturbances Observed across the African-European Sector during the 15-19 July 2012 Geomagnetic Storm**Speaker**

Golekamang Thaganyana (North-West University)

10:10 – 10:30 AM

Plasma bubble evolution during the Mother's Day 2024 geomagnetic storm**Speaker**

Prof. Zama Katamzi-Joseph

10:30 AM

9:30 AM

Tue, July 7

9:30 – 10:30 AM

Nuclear, Particle and Radiation Physics -1: Session 1

Session | Location: University of the Western Cape, Lecture Hall GH2 | Convener: Sifiso Ntshangase (University of Zululand)

9:30 – 9:50 AM

Modelling and validation of neutron detector response functions up to 140 MeV using Geant4**Speaker**

Mr Miles Kidson (University of Cape Town)

9:50 – 10:10 AM

Selective extraction of fast and epithermal neutron beams from a Nuclear Research Reactor energy spectrum using a filter response matrix approach

10:30 AM

Speaker

Deon Marais (South African Nuclear Energy Corporation (Necsa) SOC Limited)

10:10 – 10:30 AM

Application of ICP-MS for low background measurement**Speaker**

Ms Naomi Dikeledi Mokhine (North-West University (Mafikeng))

9:30 AM

Tue, July 7

9:30 – 10:30 AM

Nuclear, Particle and Radiation Physics -2: Session-1**Session** | **Location:** University of the Western Cape, Lecture Hall GH3 | **Convener:** Edward Nkadameng (University of Witwatersrand)

9:30 – 9:50 AM

Guided Weakly Supervised Machine Learning for Resonance Searches in Low-Energy Regions of Phase Space in the $\gamma\gamma + 1\tau$ channel at the Large Hadron Collider**Speaker**

Phodiso Maroeshe (School of Physics and Institute for Collider Particle Physics, University of the Witwatersrand, Johannesburg, Wits 2050, South Africa)

9:50 – 10:10 AM

Radiative Signature of New Scalar Boson Decays in the $m_{\ell\ell\gamma}$ Spectrum at the LHC**Speaker**

Dr Mukesh Kumar

10:10 – 10:30 AM

Probing Dark Photons in Top-Associated Production at the LHC**Speaker**

Thabo James Lepota (University of the Witwatersrand)

10:30 AM

9:30 AM

Tue, July 7

9:30 – 10:30 AM

Photonics: Quantum photonics**Session** | **Location:** University of the Western Cape, Lecture Hall DL1 | **Convener:** Angela Dudley

9:30 – 9:50 AM

Spatially multiplexed single-photon sources based on binary-tree multiplexers with optimized structure**Speaker**

Ms Noxolo Felicia Vilakazi (University of Pécs)

9:50 – 10:10 AM

Quantum surface plasmon resonance (SPR) for healing plants**Speaker**

Patrick Kinsey (University of Pretoria)

10:10 – 10:30 AM

Study of the polarization-based laser resonance ionization of Ytterbium-171 in a weak magnetic field**Speaker**

Adrian Crous (Stellenbosch University, Physics Department)

10:30 AM

9:30 AM

Tue, July 7

9:30 – 10:30 AM

Physics for Development, Education and Outreach

Session | **Location:** University of the Western Cape, Lecture Hall C9 | **Convener:** Bako Nyikun AUDU (University of the Western Cape)

9:30 – 9:50 AM

Grade 10 Learners' Conceptual Understanding of Electric Circuit Concepts using Physics Education Technology (PhET) Simulations

Speaker

Dr Phala Wesley Masoga (University of Limpopo)

9:50 – 10:10 AM

Understanding DC Circuits: Student Misconceptions and Implications for Teaching in South Africa

Speaker

Moreen Coetzee (Akademia)

10:10 – 10:30 AM

Learning from Kahoot

Speaker

Derek Fish (University of Zululand)

10:30 AM

9:30 AM

Tue, July 7

9:30 – 10:30 AM

Physics of Condensed Matter and Materials

Session | **Location:** University of the Western Cape, Lecture Hall GH1 | **Convener:** Prof. J.J. Terblans (UFS)

9:30 – 9:50 AM

Investigating the Use of Complex Mechanics in Copper-Cobalt extraction and environmental sustainability

Speaker

Dr Alain Daniel Shekomba (Mineral Processing and Technology Research Centre, Department of Metallurgy, School of Mining, Metallurgy and Chemical Engineering, Faculty of Engineering and the Built Environment, University of Johannesburg, Johannesburg, South Africa)

9:50 – 10:10 AM

Interfacial Energetics and Charge-driven Adsorption in Polyethersulfone (PES) Functionalized Polyaniline (PANI) Nanocomposites

Speaker

Nobathembu Faleni (Walter Sisulu University)

10:10 – 10:30 AM

Multifunctional Rare-Earth Doped Spinel Ferrites: From Structural, Magnetic Tuning, and Functional Application

Speaker

Nkanyiso Linda Ndlovu (Discipline of Physics, University of KwaZulu-Natal, Private Bag X54001, Durban 4000, South Africa)

10:30 AM

9:30 AM

Tue, July 7

9:30 – 10:30 AM

Theoretical and Computational Physics: Session 1

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

9:30 – 9:50 AM

Distinguishing $\$1/2\$$ -BPS states using symmetric polynomials

Speaker

Dr Garreth Kemp (University of Johannesburg)

9:50 – 10:10 AM

Configurational Temperature in the 3D XY Model**Speaker**

Kutloano Nkojoana (University of the Witwatersrand)

10:10 – 10:30 AM

Competing Condensates in Holographic QCD**Speaker**

Akash Singh (University of the Witwatersrand)

10:30 AM

10:30 AM

Tue, July 7

10:30 – 11:00 AM

Morning Tea**Break** | **Location:** University of the Western Cape, Great Hall / DL Building

11:00 AM

11:00 AM

Tue, July 7

11:00 AM – 12:40 PM

Applied Physics**Session** | **Location:** University of the Western Cape, Lecture Hall DL3 | **Convener:** Mandla Msimanga (TUT)

11:00 – 11:20 AM

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

Ronel Ronella Randela (University Of Venda)

11:20 – 11:40 AM

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

Precious Mabidi (University of Venda)

11:40 AM – 12:00 PM

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

David Tinarwo (University of Venda), Mr Shandukani Muronga (University of Venda)

12:00 – 12:20 PM

GEANT4 Study on Suitability of Diamond-Coated LPG Sensors**Speakers**

Abdool Sattar Cassim (University of Johannesburg), Timothy Brooks (University of Johannesburg)

12:20 – 12:40 PM

Germanium-doped Fiber Optic Sensors for High-Radiation Dosimetry**Speaker**

Timothy Brooks (University of Johannesburg)

12:40 PM

11:00 AM

Tue, July 7

11:00 AM – 12:40 PM

Astrophysics & Space Science: Astrophysics: Session 2

Session | Location: University of the Western Cape, Lecture Hall C5

11:00 – 11:20 AM **Curvature-Scalar Coupling as a Driver of Accelerated Expansion****Speaker**

Edmund Kyazze (North-West University)

11:20 – 11:40 AM **Early results of tests on the Simba-C simulation with varying initial conditions****Speaker**

Jaydon Durow

11:40 AM – 12:00 PM **Joint cosmological constraints on interacting vacuum energy models****Speaker**

Olebogeng Tlhapane (Centre for Space Research, North-West University)

12:00 – 12:20 PM **Kosmulator IDE: A Flexible MCMC Module for Interacting Dark Energy Models****Speaker**

Marcel van der Westhuizen (North-West University)

12:20 – 12:40 PM

The Stellar Mass–Spin Relation of Galaxies in Simba: The Role of Environment and Kinematic Morphology**Speaker**

Moorane Emily Makwela (student)

12:40 PM

11:00 AM

Tue, July 7

11:00 AM – 12:40 PM

Astrophysics & Space Science: Space Science: Session 2

Session | Location: University of the Western Cape, Lecture Hall C3 | Convener: Zama Katamzi-Joseph

11:00 – 11:20 AM **The May 2024 Superstorm: Global Insights into Thermosphere-Ionosphere Coupling****Speaker**

Mr Thato Maja (North-West University)

11:20 – 11:40 AM

Nighttime Medium-Scale Traveling Ionospheric Disturbances (MSTIDs) Over Sutherland (2018–2022): Occurrence and Relation to Sporadic-E Layers**Speaker**

phelokazi fodo

11:40 AM – 12:00 PM **Geomagnetically Induced Currents****Speaker**

Ms Sibahle Mbatha (University of KwaZulu-Natal (UKZN); South African National Space Agency (SANS))

12:00 – 12:20 PM **Ionospheric Response to Extreme Geomagnetic Storms****Speaker**

Mr Ishaan Bhatt (University of Michigan and South African National Space Agency)

12:40 PM

11:00 AM Tue, July 7

11:00 AM – 12:40 PM

Nuclear, Particle and Radiation Physics -1: Session 2

Session | Location: University of the Western Cape, Lecture Hall GH2 | Convener: Peane Maleka (NRF-iThemba LABS)

11:00 – 11:20 AM

SYSTEMATIC RADIOLOGICAL ASSESSMENT AND POPULATION RISK EVALUATION OF PRIMORDIAL RADIONUCLIDES IN SOILS OF TAMB UWAL, NIGERIA**Speaker**

Dr Yusuf Ahijjo Musa (Usmanu Danfodiyo University, Sokoto)

11:20 – 11:40 AM

XRF-derived major elements for nuclear forensic signatures in radiothermic carbonatites area using machine learning and multivariate modelling**Speaker**

Liteboho Ntsohi (University of the Witwatersrand)

11:40 AM – 12:00 PM

Aerial Radiometric Measurements at an old disused Phosphate Mine in the West Coast Fossil Park, South Africa**Speaker**

Masego Mothapo

12:00 – 12:20 PM

Rare Earth Element and Soil Contamination Assessments around Mrima Hills, Kenya Using ICP-MS**Speaker**

Ms Liteboho Ntsohi (University of the Witwatersrand)

12:20 – 12:40 PM

Electronic Properties of $\text{CH}_3\text{NH}_3\text{SnI}_3$: A Density Functional Theory Study Toward Lead-Free Perovskite Solar Cells**Speaker**

clarence Mabaso

12:40 PM

11:00 AM Tue, July 7

11:00 AM – 12:40 PM

Nuclear, Particle and Radiation Physics -2: Session-2

Session | Location: University of the Western Cape, Lecture Hall GH3 | Convener: Dr Arnab Laha (University of the Witwatersrand)

11:00 – 11:20 AM

Probing Axion-Like Particle Couplings to the Top Quark at the Future e^+p Collider**Speaker**

Karabo Mosala (University of the Witwatersrand)

11:20 – 11:40 AM

Probing charged Higgs in single anti-top production at the LHeC**Speaker**

Thapelo Gerry Leboho (University of Witwatersrand)

11:40 AM – 12:00 PM

Probing Anomalous Higgs Couplings in μ^+p Collisions**Speaker**

Edward Nkadameng (University of the Witwatersrand)

12:40 PM

12:00 – 12:20 PM

Probing the anomalous top quark couplings to the photon at future $\sqrt{s}$ colliders**Speaker**

Dr Mukesh Kumar

11:00 AM

Tue, July 7

11:00 AM – 12:40 PM

Photonics: Structured light & computational optics**Session** | **Location:** University of the Western Cape, Lecture Hall DL1 | **Convener:** Prof. Tjaart Krüger (University of Pretoria)

11:00 – 11:20 AM

Fractional optical skyrmions**Speaker**

Dr Ram Nandan Kumar (University of the Witwatersrand)

11:20 – 11:40 AM

Single-step shaping of space, time and polarization and the robustness of space-time vector beams in complex media**Speaker**

Kelsey Everts (University of the Witwatersrand)

11:40 AM – 12:00 PM

Nonlinear wave mixing: from optical elements to artificial neurons**Speaker**

Nikisha Baboolal (University of the Witwatersrand)

12:00 – 12:20 PM

Deep diffractive optical neural networks for classifying orthogonal and non-orthogonal modes of light**Speaker**

Nikita Azevedo

12:40 PM

11:00 AM

Tue, July 7

11:00 AM – 12:40 PM

Physics for Development, Education and Outreach**Session** | **Location:** University of the Western Cape, Lecture Hall C9 | **Convener:** Dr Happy Phage (Central University of Technology, Free State)

11:00 – 11:20 AM

Enhancing STEM Engagement and Throughput in Under-Resourced Context: A Constructivist-Inquiry Tutorial Intervention in the Cape Flats, South Africa**Speaker**

Bako Nyikun AUDU (University of the Western Cape)

11:20 – 11:40 AM

Barriers to Teachers' Engagement in Laboratory Experiments for Physical Sciences in Vhembe District, Limpopo, South Africa**Speaker**

Lufuno Takalani (University of Venda)

11:40 AM – 12:00 PM

Astronomy for Mental Health**Speaker**

Joyful Elma Mdhuli (IAU Office of Astronomy for Development)

12:00 – 12:20 PM

Over - Reliance on Simplified Physics Model: Students Explanation in Optics

Speaker

Ishiyaku Mbela Abubakar (University of Cape Town South Africa)

12:20 – 12:40 PM

The importance of laboratory assistance in the success of the undergraduate physics and chemistry modules**Speaker**

Buyisiwe Sondezi (University of Johannesburg)

12:40 PM

11:00 AM

Tue, July 7

11:00 AM – 12:40 PM

Physics of Condensed Matter and Materials

Session | Location: University of the Western Cape, Lecture Hall GH1 | Convener: Cebo Ndlangamandla (University of Zululand)

11:00 – 11:20 AM

Ni Substituted Mg–Ferrite Nanoparticles: Structure, Coating Effects, and Plant Growth Response**Speaker**

Mr Sifiso Nxumalo (School of Chemistry and Physics, University of KwaZulu-Natal, P/Bag X54001, Durban 4000, South Africa)

11:20 – 11:40 AM

Preparation and study on the spectral properties of garnet type $\text{Ca}_2\text{YZr}_2\text{Al}_3\text{O}_{12}:\text{Dy}^{3+}$ warm white-emitting phosphors**Speaker**

Ms Thandi Mazibuko (University of the Free State)

11:40 AM – 12:00 PM

Effects of Ag^+ ion induced defects on structural, morphological and optical properties of thin VO_2 films**Speaker**

Mr Matome Maloba (University of South Africa (UNISA))

12:00 – 12:20 PM

Cluster Expansion and First-Principles Study of Ti–V–Mn Alloys: Selection of $\text{Ti}_8\text{V}_8\text{Mn}_8$ for Hydrogen Storage Applications**Speaker**

Vukosi Chauke (University of Limpopo)

12:20 – 12:40 PM

Predicting Crystal Symmetry in Sodium-Ion Battery Materials Using Ensemble Machine Learning Models**Speaker**

Keletso Monareng (University of Limpopo)

12:40 PM

11:00 AM

Tue, July 7

11:00 AM – 12:40 PM

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 (Nelson Mandela University)

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 (Nelson Mandela University) 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 (Nelson Mandela University)	
12:40 PM		
12:40 PM	Tue, July 7	12:40 – 1:40 PM
	Guided Walk in UWC Nature Reserve (with Packed Lunch) Session Location: University of the Western Cape, Nature Reserve Description Sign-up Required. Limited Capacity.	
1:40 PM		
12:40 PM	Tue, July 7	12:40 – 1:40 PM
	Lunch Break Location: University of the Western Cape, Student Centre	
1:40 PM		
1:40 PM	Tue, July 7	1:40 – 2:35 PM
	Plenary: (Applied Physics) Prof Ernest van Dyk Session Location: University of the Western Cape, Jakes Gerwel Hall 1:40 – 2:35 PM Applied Physics Plenary - Prof EE van Dyk Speaker Ernest van Dyk	
2:35 PM		
2:35 PM	Tue, July 7	2:35 – 2:40 PM
	Buffer Break Location: University of the Western Cape	
2:40 PM		
2:40 PM	Tue, July 7	2:40 – 4:00 PM
	Applied Physics Session Location: University of the Western Cape, Lecture Hall DL3 Convener: Lucas Erasmus (UFS) 3:00 – 3:20 PM Single-shot measurement of Kerr Nonlinearities using Structured Light	

Speaker

Wagner Tavares Buono (University of the Witwatersrand)

3:20 – 3:40 PM

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

Chrispin Kabuya (iYunivesithi Walter Sisulu)

3:40 – 4:00 PM

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

Mabunda Hlayiseka (University Of Venda)

4:00 PM

2:40 PM

Tue, July 7

2:40 – 4:00 PM

Astrophysics & Space Science: Astrophysics: Session 3

Session | Location: University of the Western Cape, Lecture Hall C5

2:40 – 3:00 PM

MeerKAT HI reveals ram-pressure stripping in Abell 3408 galaxy cluster**Speaker**

Xola Ndaliso (University of the Witwatersrand)

3:00 – 3:20 PM

Probing diffuse HI in galaxies with kinematically guided stacking**Speaker**

Craig Smith (University of the Western Cape)

3:20 – 3:40 PM

Radio Properties of WISE-Selected AGN Populations in the MIGHTEE Survey**Speaker**

Mr Karabo Khosa (North-West university-Centre of Space Research)

3:40 – 4:00 PM

Neutral Hydrogen, HI, in the Shapley Supercluster Core: Environmental Effects on Gas Content and Galaxy Evolution**Speaker**

Lwandile Gwebushe (Rhodes University)

4:00 PM

2:40 PM

Tue, July 7

2:40 – 4:00 PM

Astrophysics & Space Science: Space Science: Session 3Session | Location: University of the Western Cape, Lecture Hall C3 | Convener:
Lerato Shikwambana (South African National Space Agency)

2:40 – 3:00 PM

Development of a Remote, Self-Sustaining Low-Cost GNSS RTK Base Station for CORS Applications**Speaker**

Mr Mbhasobhi Manglele (University of KwaZulu-Natal)

3:00 – 3:20 PM

Can Neutral Winds explain the TEC enhancement?**Speaker**

Mr ZOTHILE DLAMINI (University of KwaZulu Natal)

3:20 – 3:40 PM

Comparative study of Long-Term Variations of Mesospheric Wind Velocity and Tidal Amplitude using SANA HF Radar and WACCM-X data**Speaker**

SIYABONGA CHILIZA (UKZN, SA Airforce, SAIP, SACNASP)

4:00 PM

2:40 PM

Tue, July 7

2:40 – 4:00 PM

Nuclear, Particle and Radiation Physics -1: Session 3**Session** | **Location:** University of the Western Cape, Lecture Hall GH2 | **Convener:** Obed Shirinda (Sol Plaatje University)

2:40 – 3:00 PM

Search and analysis of the double hit events in the ^{242}Pu (γ , f) reaction**Speaker**

Thembi Hope Vilane (NWU-JINR)

3:00 – 3:20 PM

Measurement of angular correlations in γ – γ cascades using coincidence detection and Monte Carlo simulation**Speaker**

Mikayla Chaplin

3:20 – 3:40 PM

Status of the (γ , f) reactions research at the microtron in FLNR, JINR**Speaker**

P. Z. Ngcobo (University of Zululand)

3:40 – 4:00 PM

Optimisation of Hermetically sealed sample holders to study sensitive materials using powder XRD techniques**Speaker**

Tjatji Tjebane (Necsa)

4:00 PM

2:40 PM

Tue, July 7

2:40 – 4:00 PM

Nuclear, Particle and Radiation Physics -2: Session-3**Session** | **Location:** University of the Western Cape, Lecture Hall GH3 | **Convener:** Dr Mukesh Kumar

2:40 – 3:00 PM

Using Machine Learning Algorithms in the search for photons in the $H \rightarrow Z + \gamma D$ with the ATLAS detector at the LHC**Speaker**

Roja Rimer

3:00 – 3:20 PM

Search for emerging jets with the ATLAS experiment**Speaker**

Arnab Laha (University of the Witwatersrand)

3:20 – 3:40 PM

From petabytes to new physics: data compression at the Large Hadron Collider**Speaker**

Bralyne Vanessa Kamga Matoukam (University of The Witwatersrand)

4:00 PM

2:40 PM

Tue, July 7

2:40 – 4:00 PM

Photonics: Biophotonics & optical biosensing

Session | **Location:** University of the Western Cape, Lecture Hall DL1 | **Convener:** Christine Margarete Steenkamp (Stellenbosch University, Physics Department)

2:40 – 3:00 PM

Detection of HIV in Clinical Plasma Samples via a Custom-Built Surface Plasmon Resonance Using an Anti-gp120 Monoclonal Antibody

Speaker

Dr Masixole Yvonne Lugongolo (CSIR)

3:00 – 3:20 PM

SPR resonance angle shifts as a function of biomarker concentration

Speaker

sipho Chauke (Council for Scientific and Industrial research (CSIR))

3:40 – 4:00 PM

Photostability analysis of Aspirin tablets using Raman spectroscopy: A detection method for screening substandard and falsified medication.

Speaker

Dr Lebogang Thobakgale (CSIR Biophotonics Photonics Centre Council for Scientific and Industrial Research)

4:00 PM

2:40 PM

Tue, July 7

2:40 – 4:00 PM

Physics for Development, Education and Outreach

Session | **Location:** University of the Western Cape, Lecture Hall C9 | **Convener:** Mark Herbert (University of the Western Cape)

2:40 – 3:00 PM

BLUEshift Africa: Accelerating Towards the Future of Undergraduate Astronomy and Physics Education in Africa

Speakers

Linda Strubbe (Strubbe Educational Consulting), Tabitha Alango (University of South Africa)

3:00 – 3:20 PM

Probing how students explain multi-causal astronomical phenomena: a seasons case study

Speaker

Chad Leukes (University of Cape Town)

3:20 – 3:40 PM

The Language of Experimental Measurement in Physics.

Speaker

Nuraan Majiet (University of Cape Town)

3:40 – 4:00 PM

Using Smartphone Magnetometers in the (Remote) Undergraduate Physics Teaching Laboratory, a Design-Based Research Approach

Speaker

Mayhew Steyn (University of Cape Town)

4:00 PM

2:40 PM

Tue, July 7

2:40 – 4:00 PM

Physics of Condensed Matter and Materials

Session | Location: University of the Western Cape, Lecture Hall GH1 | Convener: Richard Harris (University of the Free State)

2:40 – 3:00 PM **Effect of Operating Temperature on Rare-Earth Doped Hematite Gas Sensors**

Speaker

NTOKOZO CEBEKHULU

3:00 – 3:20 PM **Synthesis of SrVO₃ thin films using pulsed laser deposition.**

Speaker

Edward Lee (University of the Free State)

3:20 – 3:40 PM

Thermal and Structural Analysis of Li₂MnO₃-Li_{0.69}MnO₂ Core-Shell Systems using Molecular Dynamics Simulations

Speaker

Precious Makhubela (Student)

3:40 – 4:00 PM

CuO/Fe₂O₃ p-n heterostructures with Ag-functionalization for improved p-xylene and toluene sensing performance

Speaker

Vuyani Sifunda (University of Limpopo)

4:00 PM

2:40 PM

Tue, July 7

2:40 – 4:00 PM

Theoretical and Computational Physics: Session 3

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

2:40 – 3:00 PM **Saved by the Bell**

Speaker

Geoff Beck (University of the Witwatersrand)

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 (UNISA)

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 (University of South Africa (UNISA))

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

Speaker

Anele Ncube (University of Johannesburg)

4:00 PM

4:00 PM	Tue, July 7	4:00 – 4:10 PM
4:10 PM	Buffer Break Location: University of the Western Cape	
4:10 PM	Tue, July 7	4:10 – 5:10 PM
5:10 PM	Special Invited Talk: Prof Malik Maaza Session Location: University of the Western Cape, Jakes Gerwel Hall	
5:10 PM	Tue, July 7	5:10 – 5:20 PM
5:20 PM	Buffer Break Location: University of the Western Cape	
5:20 PM	Tue, July 7	5:20 – 6:40 PM
Poster Session 1 Session Location: University of the Western Cape, Great Hall		
5:20 – 6:40 PM Enhanced Titanium Carbide MXene Structure with CuO Quantum Dots as Electrode for Advanced Supercapacitor Application Speaker RANTSOTLHE MPHO (University of Pretoria, Department of Physics)		
5:20 – 6:40 PM The chemistry of reverse impurity diffusion and food contamination during cooking in three-legged aluminum pots. Speaker Ms Mamly Serero (Mineral Processing and Technology Research Centre, Department of Metallurgy, School of Mining, Metallurgy and Chemical Engineering, Faculty of Engineering and The Built Environment, University of Johannesburg,)		
5:20 – 6:40 PM Influence of oil palm mesocarp fibre with plaster of Paris and its environmental impacts. Speaker Dr Armstrong Anonaba (Abia State University, Uturu)		
5:20 – 6:40 PM Silver Doped Zinc Oxide Nanoparticles for Enhanced Performance of P3HT:PCBM Photovoltaic Cells Speaker Mpilo Dlamini (North-West University)		
5:20 – 6:40 PM Concentration-dependent effects of caffeine on perovskite catalysts for electrocatalytic and photoelectrocatalytic hydrogen evolution reaction Speaker Dieketseng Glara Tsoetsi (Department of Physics, University of South Africa, Johannesburg, 1710, South Africa.)		

5:20 – 6:40 PM

Influence of TiO₂ Morphology on Electrocatalytic Hydrogen Evolution: A Comparative Study of Spherical and Mesoporous Structures**Speaker**

Japhtalinalah Lehutso (Department of Physics, CSET, University of South Africa, Johannesburg, 1710, South Africa)

5:20 – 6:40 PM

Thermoelectric properties of Tungsten diselenide (WSe₂), a density functional theory study**Speaker**

Dr Moshibudi Ramoshaba (UNIVERSITY OF LIMPOPO)

5:20 – 6:40 PM

Effect of substrate temperature on the structural, morphological, and optical properties of ZnO thin films deposited using the slot-die method**Speaker**

Fokotsa Molefe (North-West University)

5:20 – 6:40 PM

Thermal Annealing and Swift Heavy Ion Effects on the Structural Evolution of Ag- and He-Implanted SiC**Speaker**

Rifumo Chauke (University of Pretoria)

5:20 – 6:40 PM

The Effect of Helium Implantation on Selenium Migration and Microstructure Evaluation of Silicon Carbide Before and After Annealing at Temperature higher than 1000 °C.**Speaker**

Mr Sifiso Mthlane (PhysicsDepartment, University of Zululand, KwaDlangezwa, 3886, South Africa)

5:20 – 6:40 PM

Influence of the Alkaline Earth Ions (M = Ca²⁺ and Mg²⁺) on the Luminescence Properties of doped M-BaB₈O₁₃: Gd³⁺ Phosphor Materials.**Speaker**

Mr Sabelo Ndlela (University of Johannesburg)

5:20 – 6:40 PM

Temperature-Dependent Transport and Heat Capacity Behaviour of TiCl₃ Medium**Speaker**

Ms Andile Mazibuko (University of Limpopo)

5:20 – 6:40 PM

Synthesis of Sustainable Biomass-Derived Porous Biochars as Promising Electrode Materials for Supercapacitor Applications**Speaker**

Salahudeen Adamu Gene (Ibrahim Badamasi Babangida University, Lapai, Nigeria)

5:20 – 6:40 PM

LPG Sensing of p-type Spinel NiCo₂O₄ Bimetallic Oxide and Co₃O₄/NiCo₂O₄ or NiO/NiCo₂O₄ heterostructures**Speaker**

Boitumelo Tladi (University of Free State)

5:20 – 6:40 PM

Understanding the Electronic Structure and Topological States of Bi₂Se₃ Material: Effects of SOC, van der Waal Interactions, and Hybrid Functional Corrections

Speaker

Beauty Masolo (University of Pretoria)

5:20 – 6:40 PM

First-Principles Investigation of Zn Adatom Adsorption on MO_2 (110) Surfaces**Speaker**

Percy Ngobeni

5:20 – 6:40 PM

Rational Interface Engineering of 1D Earthworm-like Polypyrrole Anchored on 3D Hierarchical BiOI Marigold Flower-like Hybrid Platform for Advanced Energy Storage Applications**Speaker**

Yugesh Singh Thakur (Department of Physics, University of the Free State (UFS), Bloemfontein, ZA 9300, South Africa)

5:20 – 6:40 PM

CHARACTERIZATION OF LITHIUM LANTHANUM ZIRCONIUM OXIDE (LLZO) FOR STRUCTURE AND PHASE ANALYSIS IN X-RAY DIFFRACTION FOR LI-ION BATTERIES APPLICATION**Speaker**

Kyalo N Kiteme

5:20 – 6:40 PM

Synergistic improvement of Dy and Ag Co-loaded $\text{Co}_3\text{O}_4/\text{In}_2\text{O}_3$ p-n heterojunction for the detection of m-xylene and p-xylene vapour**Speaker**

Lindokuhle Mabizela (university of the free state)

5:20 – 6:40 PM

Schottky Barrier Modulation in Pd Sensitized $\text{Co}_3\text{O}_4/\text{NiTiO}_3$ Heterojunctions for Trace Level NO_x Gas Sensing**Speaker**

Zamaswazi Tshabalala (University of the Free State)

5:20 – 6:40 PM

Adsorption properties of GaN monolayer doped with Ru and Rh for CH_2O detection**Speaker**

Dr Malesela Walter Makgoba (University of Limpopo)

5:20 – 6:40 PM

Temporal shaping of supercontinuum pulses for improved axial resolution in optical coherence tomography**Speaker**

Eugene Fouche (Stellenbosch University)

5:20 – 6:40 PM

Molecular dynamics study of temperature effects on Au and Pb nano-materials**Speaker**

Malili Matshaba (CPhy Membership)

5:20 – 6:40 PM

Revealing quantum entanglement signatures with OAM states**Speaker**

Ms Pashlene Naidoo (University of Witswatersrand)

5:20 – 6:40 PM

Sputtering effect of CaF_2 on Si and graphite substrates**Speaker**

Dr Jean Jules Mboukam (Tshwane University of Technology)

5:20 – 6:40 PM

Structural, morphological, and optical properties of Pr³⁺-doped La₂ZnTiO₆ nanophosphors prepared via the sol-gel method**Speaker**

Delicacy Ntshalintshali (University of the Free State - Qwaqwa Campus)

5:20 – 6:40 PM

Computational simulation of noble metals (Pd, Ir, and Os) as surface catalysts in metal air batteries**Speaker**

bornwise mugwena (university of limpopo)

5:20 – 6:40 PM

Effect of Cu, Fe and Mn impurities on the bulk and surface structures of ZnS mineral**Speaker**

Thato Manyama (University of Limpopo)

5:20 – 6:40 PM

Effect of pH on the adsorption behavior of xanthate, dithiocarbamate and s-triazine collectors on palladoarsenide (100) surface: A DFT-D3 investigation**Speaker**

Dr Bradley Nemutudi (University of Limpopo)

5:20 – 6:40 PM

Performance Evaluation of Radiation-Induced Defects in Nanocrystalline Diamond Using Density Functional Theory**Speaker**

Mr Kelvin Matamela (University of Johannesburg)

5:20 – 6:40 PM

An Integrated Predictive Framework for Metastable Beta-Titanium Alloys in Orthopaedic Applications**Speaker**

Lerato Raganya

5:20 – 6:40 PM

Atomistic Simulation of Thermodynamic, Phase, and Melting Stability in Pyrite-Type Nanomaterials**Speaker**

Mofuti Mehlahe (University of Limpopo)

5:20 – 6:40 PM

A computational and experimental study on galena (100) surface and xanthate and dithiocarbamate collectors adsorptions**Speaker**

Cannimhambho Chewa

5:20 – 6:40 PM

Temperature Dependence Studies of Fe₁-XPtXAl Alloy**Speaker**

Christy Graced

5:20 – 6:40 PM

ZnGa₂O₄ microrods for optoelectronic applications: Linking structure and optical properties**Speaker**

Thabang Theka

5:20 – 6:40 PM

X-ray computed tomography analysis of porosity and cracks in laser-powder bed fusion of NiTi using deep-learning**Speaker**

Tebogo Ledwaba (Stellenbosch University)

5:20 – 6:40 PM

Hall Effect Insights into Charge Transport in Printed Silicon Nanoparticle Networks Prepared from High-Energy Milled Silicon**Speaker**

Mvuyisi Mbabane (Walter Sisulu University)

5:20 – 6:40 PM

IoT Systems for Air Quality Measurements: Low-Cost Sensor Networks Using LTE/4G and LoRa Communications**Speaker**

Mr Tshepang Pule (School of Physics and Institute for Collider Particle Physics, University of the Witwatersrand, Johannesburg, Wits 2050, South Africa)

5:20 – 6:40 PM

Electrical Characterisation and Quality Assurance of ATLAS TileCal LVPS Bricks Using a Single-Board Test Bench**Speaker**

Lungisani Phakathi (University of Witwatersrand)

5:20 – 6:40 PM

ELECTRICAL and STABILITY IN InP-BASED SOLAR CELLS VIA Ag NANOWIRE/PMMA and VO₂**Speaker**

Mr Caleb Hlebel (Tshwane University of Technology)

5:20 – 6:40 PM

Study of electronic and magnetic properties of double perovskites La₂NiRuO₆**Speaker**

Mr IRENEE BRICE MOUADJE MOUADJE (University of Johannesburg)

5:20 – 6:40 PM

Comprehensive Review of Hydrogen Storage Technologies for Green Energy Systems**Speaker**

Roy Mlambo (University of Venda)

5:20 – 6:40 PM

Development and Optimization of an Automated Gamma-Ray Spectrometry System Radionuclide Identification and Quantification**Speaker**

Vuako Maluleke (University of Venda, iThemba LABS)

5:20 – 6:40 PM

Detection of Wildfire Smoke Plumes using Machine Learning Systems**Speaker**

Mr Mbongeni Mncube (University of Kwazulu-Natal)

5:20 – 6:40 PM

Machine Learning-Based Prediction of Tool Wear and Remaining Useful Life Using Multisensor Data Fusion

Speaker
SAM MKHWEBANE

5:20 – 6:40 PM

Analysis of Inter-Fraction Setup Errors and Organ Motion Using Daily kV-CBCT in VMAT for Prostate Cancer

Speaker
Mr Kgomotso Lefenya (University of Witwatersrand - Wits)

5:20 – 6:40 PM

Fatigue-induced microstructural evolution of plasma-sprayed hydroxyapatite coatings in simulated body fluid

Speaker
Tshepo Ntsoane (The South African Nuclear Energy Corporation)

5:20 – 6:40 PM

Exploring structural configuration of monolayer tin disulfide

Speaker
Craig Bekeur (University of Pretoria)

5:20 – 6:40 PM

Influence of Mn and Co Doping on the Recrystallisation Behaviour of Nanospherical LiNiO_2 : An Atomistic Study

Speaker
Mamonamane Mphahlele (University of Limpopo)

5:20 – 6:40 PM

Determination of Energy Bandgap of ZnS Nanoparticles Using UV-Vis Data and Tauc Plot.

Speaker
Mr Keamogetswe Motiang (Northwest university)

5:20 – 6:40 PM

LPG sensing performance of ceria nanostructured materials prepared by the urea-assisted hydrothermal method

Speaker
Aaron Malape (University of the Free State)

5:20 – 6:40 PM

Effect of Fe, Cu, and Co Doping on Zn_2SnO_4 Photoanodes for Improved Dye Sensitized Solar Cells Performance

Speaker
Modjadji Rebecca Letsoalo (University of Witwatersrand)

5:20 – 6:40 PM

Exploring newly synthesized metal halide organic-inorganic hybrids for optoelectronic and photovoltaic properties

Speaker
Tondani Mahuluhulu (University of Johannesburg)

5:20 – 6:40 PM

A comparative analysis of SPR signals in BSA-induced non-specific binding

Speaker
sipho Chauke (Council for Scientific and Industrial research (CSIR))

5:20 – 6:40 PM

Defect-Engineered Cr_2O_3 -based sensor for Selective detection of LPG

Speaker

Ms RAMOKONE CHRISTINA MALINDISA (University of the Free State)

5:20 – 6:40 PM

Super-Diffusion as a Crash Precursor: Insights from Detector Track Reconstruction**Speaker**

Vuako Maluleke (University of Venda, iThemba LABS)

5:20 – 6:40 PM

Structural and Magnetic Properties of Nanostructured $\text{Cu}_x\text{Mn}_{1-x}\text{Fe}_2\text{O}_4$ ($0 \leq x \leq 0.8$) Synthesized via a Glycol-Thermal Route**Speaker**

Prince Phathizwe Majozi (UNIZULU)

5:20 – 6:40 PM

Effects of growth atmosphere and post-annealing temperature on $\text{Y}_2\text{SiO}_5:\text{Ce}^{3+}$ co-doped Nd^{3+} thin films prepared by pulsed laser deposition**Speaker**

Pulane Moleme (UFS)

5:20 – 6:40 PM

Development and Validation of Tile Pre-Processor Sub-Modules for the ATLAS Tile Calorimeter Phase-II Upgrade at the HL-LHC**Speaker**

Mpho Gololo (University of Johannesburg)

5:20 – 6:40 PM

From Biowaste to Energy: Eggshell Membrane-Derived Activated Carbon for Sustainable Solar Cell Applications**Speaker**

Ms Evonne Tshepiso Molekoa Tshepiso

5:20 – 6:40 PM

Structural, Optical, and Gas Sensing Characteristics of Rare Earth-Doped CuO/ZrO_2 Heterostructures for NO_2 Detection**Speaker**

Mr Lekgolo Maebana (University of free state)

5:20 – 6:40 PM

Turing instability and pattern formation in a confined reaction diffusion field**Speaker**

Edward Nkadameng (University of the Witwatersrand)

5:20 – 6:40 PM

DFT Study of Interface Properties Between RHEAs and Carbon Nanotubes (CNTs)**Speaker**

Mudimeli Vusani Mangalani (University Of Venda)

5:20 – 6:40 PM

Monitoring air quality in South Africa using smart indoor air quality systems.**Speaker**

Donald Ngobeni

5:20 – 6:40 PM

Optimization of Nitrogen in Transition Metal Oxynitrides for Fuel Cell Applications**Speaker**

Nicholas Onkoba (UNISA)

5:20 – 6:40 PM

Variability of palladium distribution in chromitite and pegmatoid layers at the Eastern limb of the Bushveld Igneous Complex and related value recovery processing challenges.

Speaker

Marcus Nkhumeleni (None)

5:20 – 6:40 PM

Influence of anatase, rutile, and anatase-rutile crystalline phases of TiO₂ on electrocatalytic hydrogen evolution reaction under acidic electrolyte.

Speaker

Qiniso Nkomo (UNISA)

5:20 – 6:40 PM

Synergistic properties and sensing performance of In₂O₃-based binary and ternary heterostructures for acetone detection

Speaker

Katlego Morulane (University of the Free State)

5:20 – 6:40 PM

Enhanced Gas Sensing Performance of MXene-Based Materials Through Structural and Optical Engineering

Speaker

BOIKETLO THAMAGA

5:20 – 6:40 PM

Thermodynamic, structural, mechanical and electronic effects of fluorine doping in LiNiO₂: A cluster expansion study

Speaker

Mmeshi Hiine (UL)

5:20 – 6:40 PM

DFT Study of Interface Stability in TiB₂-Reinforced NbMoTaW High-Entropy Alloy

Speaker

Tshifhiwa Ranwaha (University Of Venda)

5:20 – 6:40 PM

Structural Pore Network Modelling of Carbonate Rocks from 2D SEM Images

Speaker

Chidiebere Ekwomadu (north west university)

5:20 – 6:40 PM

Exploring Sodium-Doped Li₂MnO₃@Li_{0.69}MnO₂ Core-Shell Cathodes for Enhanced Structural Stability

Speaker

Mukhethwa Netshiovhani (University of Limpopo)

5:20 – 6:40 PM

DFT Investigation of Hydrogen Interaction in Refractory High-Entropy Alloys

Speaker

Motlatso Phooko (University of Venda)

5:20 – 6:40 PM

Enhanced biohydrogen production efficiency in dark fermentation: the role of nitrogen doped graphene oxide with sugarcane bagasse

Speaker

SAMWEL OPIYO (UNIVERSITY OF SOUTH AFRICA(UNISA))

5:20 – 6:40 PM

Modelling Rotational Dynamics in Fluorescence Correlation Spectroscopy under Polarised Excitation**Speaker**

Matthew Marlor (Stellenbosch University)

5:20 – 6:40 PM

First-Principles Investigation of Graphene/W-Doped VO₂ for Thermochromic Smart Windows**Speaker**

Lutendo Phuthu

5:20 – 6:40 PM

Ab initio Investigation of the Structural Stability and Mechanical Properties of Janus monolayer MSC (M=Zr, Hf, Ti) in the 1H Phase**Speakers**

Dr Edwin Mapasha, Owen Alfreds

5:20 – 6:40 PM

Probing the physical and optical properties doped cobalt oxide (Co₃O₄) nanoparticles with Molybdenum (Mo) for gas sensing applications in the agricultural sector**Speakers**

Mahlatse komape (UNIVERSITY OF LIMPOPO), Dr Thomas Malwela

5:20 – 6:40 PM

Integrated multimodal microscopy with Holographic Optical Tweezers**Speaker**

Le Roi Du Plessis (Stellenbosch University)

5:20 – 6:40 PM

Optimization of bismuth doped strontium borate for application in fibre optics**Speaker**

Caitlin van Wyk

5:20 – 6:40 PM

Comparative Proton EBS and Alpha-RBS Analysis of SiC co-implanted with Sr and H at Room Temperature, 350 °C, and Annealed at 1000 °C**Speaker**

Mr Khulekani Manqele (University of Zululand)

5:20 – 6:40 PM

Controlling randomness: Experimentally simulated scattering with digital holograms**Speaker**

Kelsey Everts (University of the Witwatersrand)

5:20 – 6:40 PM

Neutron Transmutation Doping (NTD) Process Optimization.**Speaker**

Tshepiso Thompson Rauwane (student)

5:20 – 6:40 PM

Study of Nuclear Reactions Induced by Weakly Bound Projectiles**Speaker**

Mr Happy Vilakazi (UNISA)

5:20 – 6:40 PM

Plasmonic effect on the photoluminescence of Eu ions doped CaF₂ nanomaterials**Speaker**

Mubarak Yagoub (University of Johannesburg)

5:20 – 6:40 PM

Atomistic insights into the temperature effects on the structural and dynamic properties of cobaltite (CoAsS): A molecular dynamics study**Speaker**

Segoarihle Ntobeng (University of Limpopo)

5:20 – 6:40 PM

X-ray–Based Characterization of Fossilized Bone and Wood: Insights from XRF and XRD**Speaker**

Fortune Nndwamato

5:20 – 6:40 PM

Activation of the p53 pathway in combination with photon irradiation for treatment of high grade brain tumour cells**Speaker**

Musa Maluleka (University of Venda)

5:20 – 6:40 PM

Diffuse reflectance of dip-coated films of barium sulphate in polystyrene**Speaker**

Mr Johannes Hermanus Spies (University of the Free State)

5:20 – 6:40 PM

Investigation of X-rays and Gamma ray Shielding Properties of Heavy Metal Oxide Glass Materials**Speaker**

Nosihle Msabala (University of Zululand)

5:20 – 6:40 PM

Spectroscopy and selective Ionisation of TbF₃ and LaF₃: Towards efficient isolation of Tb-149 and Ac-225 for medical applications.**Speaker**

Thakgalo Mangena (Mr Thakgalo Mangena, University of Stellenbosch Physics Department)

5:20 – 6:40 PM

Structural Properties of Gd₄Fe₂O₉ Intermetallic Compounds**Speaker**

Redrisse Djoumessi Fobasso (University of Johannesburg)

5:20 – 6:40 PM

Estimation of potential wind energy in Port Edward using the Weibull parameter method**Speaker**

Luleka Menzi (Unisa)

5:20 – 6:40 PM

Characterisation of Temperature-Sensitive FBG Sensors for Extreme Environments**Speakers**

Timothy Brooks (University of Johannesburg), Abdool Sattar Cassim (University of Johannesburg)

5:20 – 6:40 PM

Shaping light with a deformable mirror**Speaker**

Nikisha Baboolal (University of the Witwatersrand)

5:20 – 6:40 PM

Computational Fluid Dynamics and Validation of a Double-Roof Sawtooth Greenhouse**Speaker**

Mr Tshepiso Mogajana (University of Johannesburg)

5:20 – 6:40 PM

The study of ZnO nanostructures for gas sensing applications

Speaker

NHLAKANIPHO WISEMAN KHOZA (UNIVERSITY OF ZULULAND)

5:20 – 6:40 PM

Fabrication of Metal-Supported Zirconium-Based Bifunctional Heterogeneous Catalysts for Potential Application in Biofuel Production**Speaker**

Ms Abongile Gingqi (Student)

5:20 – 6:40 PM

Computational Fluid Dynamics Modelling of an Intensified Biomass Pyrolysis Reactor for Sustainable Hydrogen Production**Speaker**

Marisana Masha (Cape Peninsula University of Technology)

5:20 – 6:40 PM

Computational study of violarite (NiFe₂S₄) surface stabilities**Speaker**

Ms Nontobeko Nondumiso Zavala (University of Limpopo)

5:20 – 6:40 PM

Gas sensing properties of annealed and unannealed CoWO₄ for air quality monitoring**Speaker**

Thokozani Mpanza (University of Zululand)

5:20 – 6:40 PM

Structural and Optical Properties of R₂Ti₂O₇ (R = Dy and Sm) Pyrochlore Oxides.**Speaker**

Saheed Omotosho Yissah (University of Johannesburg)

5:20 – 6:40 PM

Enhancement of Luminescence and Thermal Sensitivity of YVO₄:Bi³⁺ Nanophosphors Facilitated by Ag/Pd Noble Metal Decoration**Speaker**

Lesole Ramolise (University of the Free State)

5:20 – 6:40 PM

The gas-sensing properties of n-type and p-type metal fluorides on volatile organic compounds (VOCs) for agricultural management applications.**Speaker**

DINEO MOLEBATSI (UNISA)

5:20 – 6:40 PM

Deep levels in as-grown and electron irradiated undoped n-GaAs grown by MOVPE using TEGa and TBAs**Speaker**

Ms ANDI ISNI PUJIRANA (NELSON MANDELA UNIVERSITY)

5:20 – 6:40 PM

A Novel Ti₃C₂T_x MXene–BiNiOCl Composite for Enhanced Electrochemical Performance in Supercapacitor Applications.**Speaker**

Mr Tsholo Talane (UNISA, TUT)

5:20 – 6:40 PM

Optimisation of Natural Radionuclide (Th, K and U) Measurements through Comparison of Field Gamma Spectrometry and ICP-MS Analysis

Speaker

Mr Thapelo Mafabatho

5:20 – 6:40 PM

Least-Squares Optimisation and GIS-Based Spatial Mapping of UAV-Derived Gamma-Ray Spectrometric Data for Naturally Occurring Radionuclides (^{40}K , ^{232}Th , ^{238}U) at Sparkle Bay**Speaker**

Modicai Samukelo Mndebele

5:20 – 6:40 PM

Analysis of Deep-Level Defects within a Commercial Silicon Bipolar Junction Transistor After Electron Irradiation**Speaker**

Mr Kaveer Nagessar (University of Pretoria)

5:20 – 6:40 PM

Computational and experimental investigation of pH effect on xanthate and dithiocarbamate collectors on pyrite minerals**Speaker**

Carol Tlhabolola (University of Limpopo)

5:20 – 6:40 PM

Ni-Doped $\text{Li}_{1+x}\text{M}_2\text{O}_4$ (M=Mn, Co) Nanoporous Materials for Lithium-ion Battery Cathodes**Speaker**

Beauty Shibiri (University of Limpopo)

5:20 – 6:40 PM

Symmetry Site Engineering in $\text{SrGd}_2\text{O}_4:\text{Dy}^{3+}$ Phosphors for Tunable and High-Quality White Light Emission**Speaker**

Dr sandeep eswaran panchu (university of the free state)

5:20 – 6:40 PM

Jet Response and Resolution Studies of the ATLAS TileCal Upgrade Geometry for HL-LHC Conditions**Speaker**

Edward Nkadameng (NRF-iThemba LABS)

5:20 – 6:40 PM

Characterizing Radiation Backgrounds for the PAUL Lab Site in the Huguenot Tunnel**Speaker**

Ntuthuzelo Nqeketo (University of the Western Cape)

5:20 – 6:40 PM

Exploring Birefringence Effects in Polarization-Based Quantitative Phase Imaging**Speaker**

Calvin Groenewald (Stellenbosch University)

5:20 – 6:40 PM

General Applications of High-Energy Physics Methods to Financial Systems and Distributed Sensor Networks**Speaker**

Mr Tshepang Pule (University of the Witwatersrand, Johannesburg, Wits 2050, South Africa)

6:40 PM

Wed, July 8

7:30 AM	Wed, July 8 7:30 – 8:30 AM
8:30 AM	Registration Session Location: University of the Western Cape, Great Hall
8:30 AM	Wed, July 8 8:30 – 9:25 AM
9:25 AM	Plenary: (WiPiSA) Prof Lynndle Square Session Location: University of the Western Cape, Jakes Gerwel Hall 8:30 – 9:25 AM Physics Without Boundaries: Reimagining Physics Through Research, Education and Leadership in the Fourth Industrial Revolution Speaker Prof. Lynndle Square (North West University)
9:25 AM	Wed, July 8 9:25 – 9:30 AM
9:30 AM	Buffer Break Location: University of the Western Cape
9:30 AM	Wed, July 8 9:30 – 10:30 AM
10:30 AM	Applied Physics Session Location: University of the Western Cape, Lecture Hall DL3 Convener: Ernest van Dyk (NMU) 9:30 – 9:50 AM Improved Field Homogeneity in Finite-Length Sparse Permanent Magnet Arrays for Low-Field MRI Speaker David Roth (MeASURe, Department of Physics, University of Cape Town) 9:50 – 10:10 AM A Geant4 Study of FLASH Proton Therapy Mechanisms Speaker Marry Thekhwe (University of Cape Town) 10:10 – 10:30 AM Geant4 modelling of the beam delivery of a Proteus ONE system for the UCT Proton Therapy Initiative Speaker Moses Gororo (University of Cape Town)

9:30 AM

Wed, July 8

9:30 – 10:30 AM

Astrophysics & Space Science: Astrophysics: Session 4

Session | Location: University of the Western Cape, Lecture Hall C5

9:30 – 9:50 AM

Bayesian component separation and power spectrum estimation for 21 cm intensity mapping data cubes**Speaker**

Dr Geoff Murphy (University of the Western Cape)

9:50 – 10:10 AM

Using Lunar Occultation with HERA to Estimate the 21-cm Signal from the Epoch of Reionization**Speaker**

Xola Sukwana (University of the Western Cape)

10:30 AM

9:30 AM

Wed, July 8

9:30 – 10:30 AM

Astrophysics & Space Science: Space Science: Session 4

Session | Location: University of the Western Cape, Lecture Hall C3 | Convener: John Bosco Habarulema (South African National Space Agency)

9:30 – 9:50 AM

Investigating the Impact of Auroral arcs on ionospheric electric fields, thermospheric Neutral Winds, and Joule Heating**Speaker**

Siyanda Hlathi (University of KwaZulu-Natal and SANSA)

9:50 – 10:10 AM

Modelling Earth's magnetic field over the South Atlantic Anomaly region using Swarm satellite and ground-based data**Speaker**

Mr Sanele Lionel Khanyile (South African National Space Agency and Rhodes University)

10:10 – 10:30 AM

Atmospheric Gravity Waves/Traveling Ionospheric Disturbances**Speaker**

Mr Hudson Mims (University of Michigan and South African National Space Agency)

10:30 AM

9:30 AM

Wed, July 8

9:30 – 10:30 AM

Nuclear, Particle and Radiation Physics -1: Session 1

Session | Location: University of the Western Cape, Lecture Hall GH2 | Convener: Livhuwani Masevhe (University of Johannesburg)

9:30 – 9:50 AM

Effects of Re and B on the low-energy photon shielding properties of Re₂MnBO₆ (Re = La, Sm, and Nd and B = Co and Ni)**Speaker**

Tinashe Dhlwayo (University of Johannesburg)

9:50 – 10:10 AM

PRODUCTION LU-177 BY REGENERATION OF THE YB TARGET FOR NUCLEAR MEDICINE AT THE RESEARCH REACTOR IRT-T

10:30 AM	Speaker Veronica Kgabisang Gouws (Tomsk Polytechnic University)
	10:10 – 10:30 AM Structural and Shielding Properties of $\text{Er}_2\text{Os}_2\text{O}_7$ Pyrochlore Material
	Speaker Prof. Buyisiwe Sondezi (University of Johannesburg)

9:30 AM **Wed, July 8**

9:30 – 10:30 AM

Nuclear, Particle and Radiation Physics -2: Session-4

Session | Location: University of the Western Cape, Lecture Hall GH3 | Convener: Dr Arnab Laha (University of the Witwatersrand)

9:50 – 10:10 AM

Enhancing sensitivity to tWZ production in the four-lepton channel with the ATLAS detector using machine learning

Speaker

Kevin Barends (University of Cape Town)

10:10 – 10:30 AM

3D Parameterised Reconstruction of the PAUL Underground Overburden from Cosmic Muons

Speaker

Nkosiphendule Njara

10:30 AM

9:30 AM **Wed, July 8**

9:30 – 10:30 AM

Photonics: Microscopy & imaging

Session | Location: University of the Western Cape, Lecture Hall DL1 | Convener: Saturnin Ombinda-Lemboumba (CSIR)

9:30 – 9:50 AM

Temporal shaping of supercontinuum pulses for improved axial resolution in optical coherence tomography

Speaker

Eugene Fouche (Stellenbosch University)

9:50 – 10:10 AM

Single-Shot Optical Quadrature Microscopy Integrated With Optical Tweezing for Live-Cell Quantitative Phase Imaging

Speaker

Calvin Groenewald (Stellenbosch University)

10:10 – 10:30 AM

Holographically shaped optical fields for manipulating complex biological specimens

Speaker

Le Roi Du Plessis (Stellenbosch University)

10:30 AM

9:30 AM

Wed, July 8

9:30 – 10:30 AM

Physics for Development, Education and Outreach: Masoga

Session | Location: University of the Western Cape, Lecture Hall C9 | Convener: Phala Wesley Masoga (University of Limpopo)

9:30 – 9:50 AM

Diagnostic Assessment of Conceptual Understanding in Direct Current Circuits Among Pre-Service and In-Service Teachers

Speaker

Mphiriseni Khwanda (University of Johannesburg)

9:50 – 10:10 AM

The influence of national science and innovation policy on science centre mandates; emerging pedagogical approaches to integrate indigenous knowledge systems and digital technologies.

Speaker

Dr FHULUFHELO NEMANGWELE (University of Venda)

10:10 – 10:30 AM

Academic Progression from Extended Curriculum to Mainstream Physics: Evidence from First-Year University Physics Modules

Speakers

Dr Lutendo Phuthu (University of Venda), Ms Marandela Mulalo (University of Venda), Mr Clarence Mabaso (University of Venda)

10:30 AM

9:30 AM

Wed, July 8

9:30 – 10:30 AM

Physics of Condensed Matter and Materials

Session | Location: University of the Western Cape, Lecture Hall GH1 | Convener: Cebo Ndlamandla (University of Zululand)

9:30 – 9:50 AM

Fabrication and Characterization of Gd-doped ZnO thin film- As a 365 nm-UV photodetector

Speaker

Dr Dr. Kumar Haunsbhavi (University of the Free State, Bloemfontein, South Africa)

9:50 – 10:10 AM

First principles study of the structural, electronic, and magnetic properties of the CeCuGe intermetallic compound

Speaker

Prof. Buyisiwe Sondezi (University of Johannesburg)

10:10 – 10:30 AM

Room temperature trace Acetone detection using $\text{W}_{18}\text{O}_{49}$ - WO_3 nanostructures

Speaker

Jodinio Lemena (University of the Free State)

10:30 AM

9:30 AM

Wed, July 8

9:30 – 10:30 AM

Theoretical and Computational Physics: Session 4

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

9:30 – 9:50 AM

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

Speaker

Kingsley Onyebuchi Obodo (University of KwaZulu-Natal, Pietermaritzburg)

9:50 – 10:10 AM

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

Khanyisile Masemola (University of the Witwatersrand)

10:10 – 10:30 AM

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

Dr Tshegofatso Tshipi (Sol Plaatje University), Dr Ishmael Gopane (Sol Plaatje University)

10:30 AM

10:30 AM

Wed, July 8

10:30 – 11:00 AM

Morning Tea**Break** | **Location:** University of the Western Cape, Great Hall / DL Building

11:00 AM

11:00 AM

Wed, July 8

11:00 AM – 12:40 PM

Applied Physics**Session** | **Location:** University of the Western Cape, Lecture Hall DL3 | **Convener:** Lucas Erasmus (UFS)

11:00 – 11:20 AM

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

Delron Dananai Muti (University of Johannesburg (ZA))

11:20 – 11:40 AM

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

Hlulani Ndlovu (Tshwane University Technology)

11:40 AM – 12:00 PM

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

Brenton Munhungewarwa (University of Johannesburg)

12:00 – 12:20 PM

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

Nikita Azevedo

12:20 – 12:40 PM

DFT Study of Hydrogen Diffusion in Graphene-Reinforced NbMoTaW Alloy**Speaker**

Damuleli Thivhafuni Edgar (University Of Venda)

12:40 PM

11:00 AM

Wed, July 8

11:00 AM – 12:40 PM

Astrophysics & Space Science: Astrophysics: Session 5

Session | Location: University of the Western Cape, Lecture Hall C5

11:00 – 11:20 AM

Identification and cleaning of contaminants for neutral hydrogen intensity mapping using machine learning**Speaker**

Mosima Masipa (University of the Western Cape)

11:20 – 11:40 AM

Scientific Discovery with Foundation Models**Speaker**

Michelle Lochner (University of the Western Cape)

11:40 AM – 12:00 PM

Anomaly detection in astronomical surveys using Astronomy**Speaker**

Verlon Etsebeth (University of the Western Cape)

12:00 – 12:20 PM

Detecting anomalous radio spectrograms with unsupervised and active learning**Speaker**

Hanwool Koo (University of the Western Cape)

12:20 – 12:40 PM

Self-supervised representations for automated astronomical discoveries**Speaker**

Koketso Mohale (University of Western Cape)

12:40 PM

11:00 AM

Wed, July 8

11:00 AM – 12:40 PM

Astrophysics & Space Science: Space Science: Session 5

Session | Location: University of the Western Cape, Lecture Hall C3 | Convener: DuToit Strauss (North-West University)

11:00 – 11:30 AM

Low latitude vertical drift modeling using satellite and ground-based magnetometer datasets**Speaker**

Prof. John Bosco Habarulema (South African National Space Agency)

11:30 – 11:50 AM

Characterisation of a Scintillator-based Detector for Radiation Monitoring in Low Earth Orbit**Speaker**

Ms Isabella Maria Goodwin (University of Cape Town)

11:50 AM – 12:00 PM

Break

12:00 – 12:20 PM

Linking Coronal Structures to L1 Solar Wind Disturbances over Three Solar Minima**Speaker**

Thembaletu Zulu

12:20 – 12:40 PM

An unsupervised deep learning approach to McIntosh sunspot classification

12:40 PM

Speaker

Bernard Swanepoel (School of Computer Science and Information Systems, North-West University)

11:00 AM

Wed, July 8

11:00 AM – 12:40 PM

Nuclear, Particle and Radiation Physics -1: Session 2**Session** | **Location:** University of the Western Cape, Lecture Hall GH2 | **Convener:** Prof. Steve Peterson (University of Cape Town)

11:00 – 11:20 AM

Assessing UAV Gamma-Ray Spectrometry for Soil Characterisation in Vineyards**Speaker**

Liam Delaney

11:20 – 11:40 AM

Experimental Test of the Generalized Brink-Axel Hypothesis and Thermodynamic Properties of ^{140}La **Speaker**

Ayabulela Tsewu

11:40 AM – 12:00 PM

Systematic investigation of density-independent and density-dependent nucleon–nucleon interactions in ^{16}O -fusion induced reactions**Speaker**

Gerald Maluleke (UNISA)

12:00 – 12:20 PM

Systematic Efficiency Characterisation of SiPM-Based Scintillator Trackers using Cosmic Muons**Speaker**

Mr Malefetsane Lenka (MSc Student)

12:20 – 12:40 PM

Investigating Gamow–Teller β -decays using pn-QRPA framework**Speaker**

Mr Odwa Tyuka (University of the Western Cape)

12:40 PM

11:00 AM

Wed, July 8

11:00 AM – 12:40 PM

Nuclear, Particle and Radiation Physics -2: Session-5**Session** | **Location:** University of the Western Cape, Lecture Hall GH3 | **Convener:** Phuti Rapheeha (University of the Witwatersrand)

11:00 – 11:20 AM

Monte Carlo Background Modelling and Signal Sensitivity Studies in the Diphoton Final State in Association with an electron with ATLAS Run-3 Data**Speaker**

Baballo-Victor Ndhlovu (University of the Witwatersrand)

11:20 – 11:40 AM

Background studies and Performance Evaluation of Tau Identification Working Points in the Diphoton–Hadronic Tau Final State with ATLAS Data in the mass range 130 – 200 GeV**Speaker**

Mr Vuyolwethu Happyboy Kakancu (School of Physics and Institute for Collider Particle Physics, University of the Witwatersrand, Johannesburg, Wits 2050, South Africa)

11:40 AM – 12:00 PM

Diphoton Scalar Resonance Search in the $\gamma\gamma + 1\mu$ Channel: Background Composition, Modelling, and Muon Working Point Optimisation with $\mathcal{L} = 164\text{~fb}^{-1}$ of ATLAS Data

Speaker

Kgothatso Ntumba (University of the Witwatersrand(ZA))

12:00 – 12:20 PM

Searches for Scalar Resonances in Diphoton Final States in Association with Multileptons at the Electroweak Scale in the ATLAS Detector at the LHC

Speaker

Njokweni Mbuyiswa (University of the Witwatersrand)

12:40 PM

11:00 AM

Wed, July 8

11:00 AM – 12:40 PM

Photonics: Microscopy, applied & fibres

Session | Location: University of the Western Cape, Lecture Hall DL1 | Convener: Gurthwin Bosman (Stellenbosch University)

11:00 – 11:20 AM

Two-Photon Light-Sheet Microscopy with Multi-View Deconvolution

Speaker

Jacques Buys (Stellenbosch University)

11:20 – 11:40 AM

Parameter study and optimization of real-time single-particle tracking

Speakers

Jessica Wells, Jessica Wells

11:40 AM – 12:00 PM

Interferometric Optical Fibre Based Non-destructive Evaluation of Concrete Compressive Strength

Speaker

Mr Sandisiwe Bangani (Nelson Mandela University)

12:00 – 12:20 PM

Simulation of a Self-Homodyne Subcarrier-Multiplexed Intermediate-Frequency-over-Fibre System for 5G Small Cell Fronthaul

Speaker

Lilian Mutia (Nelson Mandela University)

12:40 PM

11:00 AM

Wed, July 8

11:00 AM – 12:40 PM

Physics for Development, Education and Outreach

Session | Location: University of the Western Cape, Lecture Hall C9 | Convener: Derek Fish (University of Zululand)

11:00 – 11:20 AM

Problem-Based Learning approach for developing problem solving skills in electric circuits for Grade 12 learners.

Speaker

Dr Phala Wesley Masoga (University of Limpopo)

11:20 – 11:40 AM

Transforming Physics Learning through Structured Consultation Support in PHY111

Speaker

Dr Bako Nyikun Audu (University of the Western Cape)

11:40 AM – 12:00 PM

Special Relativity Battleship: Supporting Undergraduate Relativity Learning Through Game-Based Deployment and Educator Analytics**Speaker**

Prof. Lynndle Square (Unit for Data Science and Computing (UDSC), North-West University, South Africa)

12:00 – 12:20 PM

Whats in the Box? a tactile remote sensing approach to teaching wave physics and spatial reconstruction.**Speaker**

Ms Seaelo Nonky Ramohoebe (School of physical and chemical sciences, Faculty of Natural and agricultural sciences, North-West University, South Africa)

12:20 – 12:40 PM

A Structural Equation Modelling Analysis of the National Senior Certificate Pedagogical Gap and University Readiness in South Africa (2021–2025)**Speaker**

Ms Magdeline Seabi (Nelson Mandela University)

12:40 PM

11:00 AM

Wed, July 8

11:00 AM – 12:40 PM

Physics of Condensed Matter and MaterialsSession | Location: University of the Western Cape, Lecture Hall GH1 | Convener:
Motlalepula Rebecca Mhlongo (Sefako Makgatho Health Sciences University)

11:00 – 11:20 AM

Effect of the absorber layer thickness and defect density on the performance of KGeCl₃ perovskite solar cells**Speaker**

Ms Bridgette Kabekwa (Department of Physics, University of Limpopo, Private bag X 1106, Sovenga, 0727, Polokwane, South Africa)

11:20 – 11:40 AM

Investigation of Phonon Emission Modes in a Channel-Gated GaAs/AlGaAs Finger-Gate Electron Pump**Speaker**

Ethan Luyt (University of Cape Town)

11:40 AM – 12:00 PM

Microfabrication of gratings and spot-pattern arrays using proton beam writing for applications in advanced MEMS**Speaker**

Mr Kamogelo Mashiloane (iThemba LABS)

12:00 – 12:20 PM

Synthesis and characterization of Mo doped CeMgO₃ perovskite materials for potential supercapacitor applications.**Speaker**

Dolamo Eunice

12:20 – 12:40 PM

Augmenting the mechanical properties of LiTi₂(PO₄)₃ solid electrolyte through sulfur doping for better electrode-electrolyte contact**Speaker**

MOLATELO MATLEKE

12:40 PM

11:00 AM

Wed, July 8

11:00 AM – 12:40 PM

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 (University of the Witwatersrand)

11:40 AM – 12:00 PM

Energy loss predicts no v_2 in small systems**Speaker**

Ben Bert (University of Cape Town)

12:00 – 12:20 PM

Jet quenching in the smallest quark-gluon plasma droplet**Speaker**

Coleridge Faraday (University of Cape Town)

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 (University of the Witwatersrand)

12:40 PM

12:40 PM

Wed, July 8

12:40 – 1:40 PM

Lunch

Break | Location: University of the Western Cape, Student Centre

1:40 PM

12:40 PM

Wed, July 8

12:40 – 1:40 PM

Women in Physics in South Africa (WiPiSA) Lunch

Session | Location: University of the Western Cape

1:40 PM

1:40 PM

Wed, July 8

1:40 – 2:35 PM

Plenary: (Photonics) Prof Natalia Litchinitser

Session | Location: University of the Western Cape, Jakes Gerwel Hall

1:40 – 2:35 PM

Structured Light and Darkness in Nanophotonics**Speaker**

Prof. Natalia Litchinitser (Duke University)

2:35 PM

2:35 PM

Wed, July 8

2:35 – 2:45 PM

Conference Photo

Break | Location: University of the Western Cape, Jakes Gerwel Hall Entrance

2:45 PM

2:45 PM

Wed, July 8

2:45 – 2:50 PM

Buffer

Break | Location: University of the Western Cape

2:50 PM

2:50 PM

Wed, July 8

2:50 – 4:10 PM

Applied Physics

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

2:50 – 3:10 PM

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

Speaker

Dr Washington Mhike (Tshwane University of Technology)

3:10 – 3:30 PM

A test bench for Low-Cost Positron Emission Tomography

Speaker

Simon Carthew (University of Cape Town)

3:30 – 3:50 PM

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 (University of Cape Town)

3:50 – 4:10 PM

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

Speaker

BUSISIWE PERTUNIA MBATHA (University of Zululand)

4:10 PM

2:50 PM

Wed, July 8

2:50 – 4:10 PM

Astrophysics & Space Science: Astrophysics: Session 6

Session | Location: University of the Western Cape, Lecture Hall C5

4:10 PM

2:50 PM

Wed, July 8

2:50 – 4:10 PM

Astrophysics & Space Science: Space Science: Session 6

Session | Location: University of the Western Cape, Lecture Hall C3 | Convener: Ruhann Steyn (Centre for Space Research, North-West University)

2:50 – 3:10 PM

Simulating the field-line random walk process

Speaker

Johan Joubert (NWU)

3:10 – 3:30 PM

A Comparative Analysis of Stochastic Differential Equation Solvers for Modeling Galactic Cosmic Ray Modulation

Speaker
Sello Motsoane

3:30 – 3:50 PM **Solar modulation of cosmic ray antiprotons over the magnetic field reversal period**

Speaker
THABO MAHLATJI (NWU Student)

3:50 – 4:10 PM

Cosmic Ray Neutron Sensors for Soil Moisture Monitoring: Investigating Atmospheric Dynamics

Speaker
Aimee Dumont

4:10 PM

2:50 PM

Wed, July 8

2:50 – 4:10 PM

Nuclear, Particle and Radiation Physics -1: Session 3

Session | **Location:** University of the Western Cape, Lecture Hall GH2 | **Convener:** P. Z. Ngcobo (University of Zululand)

2:50 – 3:10 PM

Effect of Coating Thickness on Proton Radiation Sensitivity for Titanium-Oxide Coated Novel Fiber Optic Sensors

Speakers
Abdool Sattar Cassim (University of Johannesburg), Emmanuel Igumbor (University of Johannesburg), Samuel Temaugee (University of Johannesburg), Timothy Brooks (University of Johannesburg)

3:10 – 3:30 PM

Extracting Radioisotope Lifetimes from a 100 MeV Gamma Irradiation Experiment Using HPGe Spectroscopy

Speaker
Thendo Emmanuel Nemakhavhani (UNIVERSITY OF JOHANNESBURG)

3:30 – 3:50 PM

pnQRPA study to extract the axial-vector coupling strength from β -decay data

Speaker
Mr Sifiso Mngonyama (University of the Western Cape)

4:10 PM

2:50 PM

Wed, July 8

2:50 – 4:10 PM

Nuclear, Particle and Radiation Physics -2: Session-6

Session | **Location:** University of the Western Cape, Lecture Hall GH3 | **Convener:** Edward Nkadimeng (University of Witwatersrand)

2:50 – 3:10 PM

Searches for scalar resonances in the $\gamma\gamma + 0\ell 1\tau$ final state at $\sqrt{s} = 13.6$ TeV with ATLAS Run 3 data using background modelling, spurious signal testing, and DSCB signal parameterisation

Speaker
Thapelo Gerry Leboho (University of Witwatersrand)

3:10 – 3:30 PM

Searching for Diphoton Resonances in Association with Leptons in the Mass Range 130–200 GeV with the ATLAS Detector

Speaker
Phuti Rapheeha (University of the Witwatersrand)

3:30 – 3:50 PM

General Applications of High Energy Physics methods to financial systems,

4:10 PM

Speaker
Nkosiphendule Njara

2:50 PM

Wed, July 8

2:50 – 4:10 PM

Photonics: Photonics Division Meeting

Session | **Location:** University of the Western Cape, Lecture Hall DL1

2:50 – 3:10 PM **Tuning ITO nonlinearities towards telecom wavelengths**

Speaker
Wagner Tavares Buono (University of the Witwatersrand)

3:10 – 4:10 PM **Photonics Division Meeting**

4:10 PM

2:50 PM

Wed, July 8

2:50 – 4:10 PM

Physics for Development, Education and Outreach

Session | **Location:** University of the Western Cape, Lecture Hall C9 | **Convener:** Buyi Sondezi (University of Johannesburg)

2:50 – 3:10 PM

Developing Tutors while Supporting Students: Evaluating a Structured Consultation Programme in First-Year Physics

Speaker
Dr Bako Nyikun Audu (University of the Western Cape)

3:10 – 3:30 PM **Comparative Photoelectric Effect Experiment Using LEDs and Mercury Lamp Sources**

Speaker
Dr Hendrik Jacobus van Heerden (University of the Free State)

3:30 – 3:50 PM

INVESTIGATING TEACHERS' PERCEPTIONS OF THE DECLINE IN GRADE 9 LEARNERS' UPTAKE OF PHYSICAL SCIENCES IN THE FET PHASE

Speaker
Vuyolwethu Mavityo (UWC)

3:50 – 4:10 PM **Beyond Stargazing: Astrotourism as a Science-Based Tool for Development**

Speaker
Joyful Elma Mdhuli (IAU Office of Astronomy for Development)

4:10 PM

2:50 PM

Wed, July 8

2:50 – 4:10 PM

Physics of Condensed Matter and Materials

Session | **Location:** University of the Western Cape, Lecture Hall GH1 | **Convener:** Setumo Motloutung (Central University of Technology, Free State)

2:50 – 3:10 PM

The design of NiO-Co₃O₄ heterostructures loaded with Er and Pr rare earth ions for the detection of hazardous air pollutants.

Speaker
Joy Mothiba (University of Limpopo)

3:10 – 3:30 PM

Influence of Ca²⁺ ions doping on the structural and electron spin resonance properties of ZnFe₂O₄ nanoparticles**Speaker**

Mr sinegugu Shezi

3:30 – 3:50 PM

The VEC effect on the electronic and lattice dynamic stability of B₂ Ti₅₀Ru_{50-x}Nix: A supercell approach**Speaker**

Bongani Ngobe (MINTEK and Wits University)

3:50 – 4:10 PM

CH 4 detection capabilities of Co₃O₄ - ZnO nanofibers: synergistic effects of p-n junction**Speaker**

Ms Khanyisile Nkuna (Materials Physics Research Institute (MPRI), School of Physics, University of the Witwatersrand, Johannesburg 2000, South Africa)

4:10 PM

2:50 PM

Wed, July 8

2:50 – 4:10 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

Optimization 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 (University of KwaZulu-Natal)

4:10 PM

4:10 PM

Wed, July 8

4:10 – 4:20 PM

Buffer**Break** | **Location:** University of the Western Cape

4:20 PM

Poster Session 2

Session | Location: University of the Western Cape, Great Hall

4:20 – 5:40 PM

Structural and gas sensing properties of Co₃O₄ prepared by the Hydrothermal method.

Speaker

Prince Mkwae (University of Zululand)

4:20 – 5:40 PM

AIMD-MLFF study of bulk, surface and collector's adsorption on sperrylite (PtAs₂) mineral

Speaker

Ivyn Ndhlovu (University of Limpopo)

4:20 – 5:40 PM

Influence of A- and B-Site Cation Substitution on the Structural, Thermodynamic, and Magnetic Properties of Brownmillerite A₂B₂O₅ (A = Sm, Ce; B = Ni, Co) Nanoparticles

Speaker

Khethiwe Cele (Rare Earth-Based Oxides and Nano Group, Department of Physics, University of Johannesburg, Cnr Kingsway Avenue and University Road, Auckland Park 2006, South Africa)

4:20 – 5:40 PM

STRUCTURAL AND THERMOLUMINESCENCE PROPERTIES OF ZINC TITANATE (ZnTiO₃) NANOSTRUCTURES

Speaker

Nolufundo Sintwa (Student)

4:20 – 5:40 PM

Experimental and Computational Insights into Structure and Upconversion in Spinel Zn₂TiO₄:Er³⁺,Yb³⁺

Speaker

Sefako John Mofokeng (University of South Africa)

4:20 – 5:40 PM

Investigation of Ti₄Nb₂Pt₂ shape memory alloys from binary phase diagram

Speaker

Dr Mordecai Mashamaite (University of Limpopo)

4:20 – 5:40 PM

Rational Fabrication of p-n Co₃O₄ /Fe₂O₃ Heterojunction for Improved BTEX Gas Sensing

Speaker

Mr Suggest Baloyi (University of the Free State)

4:20 – 5:40 PM

Comparison study on the TeO₂-based materials developed using HNO₃ and H₂O₂ for gas sensing applications

Speaker

TUMI KEVIN MGAGA (UNIVERSITY OF THE FREE-STATE)

4:20 – 5:40 PM

Engineering of MoS₂-based sensor toward ppb-level H₂S detection.

Speaker

Ntsako Jason Mathebula (University of the Free State)

4:20 – 5:40 PM

Synergistic Charge Transport and Defect Chemistry in SrTiO₃/Ti₃C₂T_x MXene Composites for Low Temperature Toluene Sensing.**Speaker**

Nkosikhona Dlamini (University of the free state)

4:20 – 5:40 PM

Adsorption studies of dithiocarbamate collectors on the mooihoekite (402) surface**Speaker**

Kagiso Mashishi (University of Limpopo)

4:20 – 5:40 PM

The real-time detection of H₂S based on a CuO/CeO₂ sensor**Speaker**

Ms Karabo Lurcender Bridgette Masilela

4:20 – 5:40 PM

Implementing a Charm Equation of State in the QGP Hydrodynamic Simulation, Trajectum**Speaker**

Liam Harris (University of the Witwatersrand)

4:20 – 5:40 PM

Enhanced toluene detection using Ag-functionalized high surface area Cr₂O₃@SnO₂ core-shell heterostructure-based gas sensor**Speaker**

Kholofelo Mohloishane Seloane (University of the Free State, Physics Department)

4:20 – 5:40 PM

Near- Redundant Calibration of HIRAX Visibility Simulation Data.**Speaker**

Luyanda Khanyile (University of KwaZulu-Natal, Pursuing a Master's degree in Astrophysics.)

4:20 – 5:40 PM

Microscopic derivation of Open Quantum Brownian Motion for a particle in a potential with external periodic driving**Speaker**

Sindiswa Nhlapo

4:20 – 5:40 PM

CHEMICAL SURFACE PROPERTIES OF MN₃O₄ (001), (010) & (100) FACETS.**Speaker**

Edwine Matlou (University of Limpopo)

4:20 – 5:40 PM

Investigation of antiferromagnetic hematite bulk and surface properties using ab-initio method**Speaker**

Mariah Madie (University Of Limpopo)

4:20 – 5:40 PM

First-principles study on Tin-doped Li_{1.2}Mn_{0.8}O₂ cathode material for Lithium-ion batteries**Speaker**

RAMAABELE BRIDGET MOKGABUDI (UNIVERSITY OF LIMPOPO)

4:20 – 5:40 PM

Density Functional Theory Driven Numerical Analysis of High-Efficient CsGeBr₃ Perovskite Solar Cells

Speaker

Mr Kamogelo Sebolai (University of Johannesburg)

4:20 – 5:40 PM

Computational Study of Thermodynamic, Mechanical, and Electronic Properties of $\text{LiMn}_{1.5}\text{Ni}_{0.5}\text{O}_4$ Cathode Material**Speaker**

Ms Thandi Mulaudzi

4:20 – 5:40 PM

Electronics and structural properties of Indium Selenide**Speaker**

Mr Tsietsi Rex Mooka (University of Limpopo)

4:20 – 5:40 PM

DEVELOPMENT OF MACHINE LEARNING MODELS TO PREDICT PROPERTIES OF HALIDE PEROVSKITE MATERIALS**Speaker**

Ms Angela Mmaséfako Maboja (University of Limpopo)

4:20 – 5:40 PM

Ab initio study of thermodynamic, mechanical and vibrational properties of FePt-Cu alloys**Speaker**

Mr Mashilo Matlala (University of Limpopo)

4:20 – 5:40 PM

Enhancing V_2O_5 Nanostructures Properties Via Ag Doping for Gas Sensing Applications**Speaker**

Perseverence khosa

4:20 – 5:40 PM

Molecular Dynamics Insights into the Properties of Pyrite-Type RuS_2 : A Computational Study**Speaker**

Monyeseroba Immaculate (University of Limpopo)

4:20 – 5:40 PM

Investigation of Silver and Cesium Migration and Structural Evolution in 6H-SiC Following Helium, Silver and Cesium Implantation and High-Temperature Annealing**Speaker**

Nhlakanipho Mantengu (University of Zululand)

4:20 – 5:40 PM

Surface and electronic properties of $\text{LiTi}_2(\text{PO}_4)_3$ as solid-state electrolyte: A DFT study**Speaker**

Leago Heaven Pitsa

4:20 – 5:40 PM

Molecular dynamics simulations of TiO_2 nanomaterials as a future anode electrode material**Speaker**

Thamia Molefe (University of Limpopo)

4:20 – 5:40 PM

Synthesis, structural, and photoluminescent properties of green emitted Eu^{2+} doped SrAl_2O_4 phosphor**Speaker**

Lethabile Masiu (Lethabile Masiu)

4:20 – 5:40 PM

Enhancing Structural Stability and Lithium Mobility in Spinel Cathodes via Prelithiated Core–Shell Engineering**Speaker**

MOGAU KGASAGO (UNIVERSITY OF LIMPOPO)

4:20 – 5:40 PM

Transport of Single Electrons on Superfluid Helium**Speaker**

Friedrich Voelcker (University of Cape Town)

4:20 – 5:40 PM

The Heat Rate Kinetics on the Liquefied Gases During Sensing**Speaker**

Welcome Komana

4:20 – 5:40 PM

Phase Stability and Atomic Ordering in $\text{MnPt}_{1-x}\text{Ru}_x$ Alloys: A Cluster Expansion and First-Principles Investigation**Speaker**

Thabang Kombesi

4:20 – 5:40 PM

Synergetic Effect of Rare-Earth (Ce) Doped on Gas Sensing Properties of Cobalt Nickel Ferrites Nanoparticles.**Speaker**

Mr Victor Sokhela (Student@University of Johannesburg)

4:20 – 5:40 PM

Topology and Electrical Properties of Printed Silicon Nanoparticle Networks**Speaker**

Mr Siphumliso Mbidana (Walter Sisulu University)

4:20 – 5:40 PM

Surface and electrical properties of high energy milled silicon nanoparticles**Speaker**

Nangamso Ndzamela (iYuniversity Walter Sisulu)

4:20 – 5:40 PM

Effect of annealing temperature on structure, morphology, and optical properties of $\text{La}_{2/3}\text{TiO}_6$ **Speaker**

Asanda Lakaje (University of the Free State)

4:20 – 5:40 PM

Space-time light sculpturing by bound states in the continuum**Speaker**

Kelsey Everts (University of the Witwatersrand)

4:20 – 5:40 PM

Phase stability of Ga-Doped MnAl using a Cluster Expansion Approach**Speaker**

Mr Thabang Mokwena (University of Limpopo)

4:20 – 5:40 PM

Investigating the Implications of a Constant Density Profile in Stellar Convective Zones**Speaker**

Terry Mark Tukamusaba

4:20 – 5:40 PM

A Cosmological Framework with Variable Fundamental Constants

Speaker

Bekithemba Sibanda (National University of Science and Technology)

4:20 – 5:40 PM

Exoplanet Discoveries using Transit Method**Speaker**

Lungelo Chabaku (University of Zululand)

4:20 – 5:40 PM

Employing Empirical Mode Decomposition for Investigating Temporal Systematics in HERA observations**Speaker**

Mekuanint Kifle Hailemariam (University of the Western Cape)

4:20 – 5:40 PM

From One to Eight: Supersymmetry Restoration in Lattice 3D $\mathcal{N} = 4$ Super Yang-Mills**Speaker**

Dario Van den Berg (University of the Witwatersrand)

4:20 – 5:40 PM

Trends in Maximum and Minimum Temperatures in Vuwani: Insights from the Southern African Universities Radiometric Network**Speaker**

Muano Mbedzi (mutikimbedzi@gmail.com)

4:20 – 5:40 PM

Comprehensive Ab-Initio Study of Optoelectronic Properties of CsGeBr₃ using Quantum Espresso and WanTiBEXOS.**Speaker**

Mr Kamogelo Sebolai (University of Johannesburg)

4:20 – 5:40 PM

DFT screening of interfacial properties in Cbznap-SAMS for stable inverted perovskite solar cells.**Speaker**

Dr NEANI TSHILANDE (University of Venda)

4:20 – 5:40 PM

Geometric Modelling of Crab-like and Vela-like Pulsar Systems**Speaker**

Mr Trevor Nyambe (Centre for Space Research, North-West University, Private Bag X6001, Potchefstroom 2520, South Africa)

4:20 – 5:40 PM

Dopant-Concentration Dependence of Structural and Transport Properties in Ni/Co-Doped LiMn₂O₄ spinel from Molecular Dynamics Simulations**Speaker**

Mr Tharollo Malepe (University of Limpopo)

4:20 – 5:40 PM

Refractory High-Entropy Silicide-Boride Compounds V₁₀Si₆B and V₅Si₃B for High-Temperature Structural Applications**Speaker**

Ibrahim Ali

4:20 – 5:40 PM

Molecular Insights into Novel Collector Adsorption on Hydrated Spodumene and Feldspar Surfaces: An AIMD-MLFF Study

Speaker

Lesetja Matlabjane (UNIVERSITY OF LIMPOPO)

4:20 – 5:40 PM

First-Principles Study of a Novel ZrSC Janus Monolayer: Structural, Mechanical, Vibrational, and Electronic Properties**Speaker**

Edwin Mapasha (University of Pretoria)

4:20 – 5:40 PM

Thermoluminescence and kinetic parameters of ErTaO₄, synthesized by the solid-state reaction method**Speaker**

Dr Dumisani Mlotswa (Aspiring Physicist)

4:20 – 5:40 PM

Influence of Ta on the Magnetic and Mechanical Properties of Fe₅₀Co_{43.75}Pt_{6.25} Alloy**Speaker**

Dineo Maepa (University of Limpopo)

4:20 – 5:40 PM

Investigating the maslovite (PtBiTe) surface stability and adsorption of SDBAT and SBOTTAs collectors using standard DFT and AIMD-MLFF.**Speaker**

TSHEPO RONALDO MAAKA (UNIVERSITY OF LIMPOPO)

4:20 – 5:40 PM

Transport Properties Insights toward the Enhancement of Bulk LiTi₂(PO₄)₃ Solid-State Electrolyte Materials**Speaker**

Lisbon Maake (University of Limpopo)

4:20 – 5:40 PM

Pulse profiles of the RRAT J1819-1458**Speaker**

Kevin Rorke (University of South Africa)

4:20 – 5:40 PM

The effect of temperature on structural, and thermal properties of ZrTiVNbCr high entropy alloy**Speaker**

Ms Lebogang Motsomone (University of Limpopo)

4:20 – 5:40 PM

Synthesis and electron spin resonance study of Mg_xZn_{1-x}Al_{0.4}Fe_{1.6}O₄ nanocrystalline compounds**Speaker**

Nwabisa Mkhize

4:20 – 5:40 PM

A Simulation of Galactic Proton Spectrum Observed Over Solar Minimum Period of Solar Cycle 24**Speaker**

THATO MAJA

4:20 – 5:40 PM

Response of Topside Ionospheric Electron Density during Solar Flares**Speaker**

Kenny Monontsi (North-West University)

4:20 – 5:40 PM

Algorithm for detecting Radio Frequency Interference (RFI) in MeerKLASS Intensity mapping Data**Speaker**

Tamera Kassie (SARAO, UWC)

4:20 – 5:40 PM

Unravelling the adsorption behaviour of modified heterocyclic collectors on pyrite mineral surface**Speaker**

Prof. Peace Mkhonto (University of Limpopo)

4:20 – 5:40 PM

Enhancing the Thermodynamic Stability and Mechanical Properties of FCC Platinum through Vanadium and Chromium Alloying, for jewellery application: A DFT Study**Speaker**

Mr Mawisha Jan Mafifi (University of Pretoria)

4:20 – 5:40 PM

Effect of thermal annealing on the structural, optical and thermoluminescent properties of NaYF₄ nanoparticles**Speaker**

Prof. Pontsho Mbule (University of South Africa)

4:20 – 5:40 PM

Thermal Evolution of Structure and Morphology in Noble Metal-Doped TiO₂: A Comparative XRD and SEM Study of Au and Pt Stability and Phase Transformation Dynamics from 100 to 1100 °C**Speaker**

Olatunbosun Nubi (University of Limpopo)

4:20 – 5:40 PM

Probing the Overabundance of X-type Asteroids Among Small Near-Earth Asteroids**Speakers**

Thobekile Ngwane (Stellenbosch University and South African Astronomical Observatory), Christine Margarete Steenkamp (Stellenbosch University, Physics Department)

4:20 – 5:40 PM

Comparative gas sensing performance of LaFeO₃ and SmFeO₃ perovskite nanoparticles prepared by Hydrothermal Method .**Speaker**

Philani Kunene (University of Zululand)

4:20 – 5:40 PM

AUTOMATED FOURIER ANALYSIS WITH PYTHON**Speaker**

Sibongile Majola

4:20 – 5:40 PM

Effect of Shell Thickness on Interfacial Stability in Li₂MnO₃ Core–Shell Cathodes**Speaker**

Tshidi Mogashoa (University of Limpopo)

4:20 – 5:40 PM

Fabrication of Co₃O₄ Co-doped with NiZn for Selective LPG Gas Sensing**Speaker**

Mondli Ntshangase (University of Zululand)

4:20 – 5:40 PM

Hydrothermal fabrication and temperature-dependent magnetic properties of cobalt nanoferrite for high-frequency devices**Speaker**

Dr Amos Nhlapo (Sefako Makgatho Health Sciences University)

4:20 – 5:40 PM

Investigation of the redox characteristics of the Co_3O_4 (001) surface**Speaker**

Pabalelo Malatjie (University Of Limpopo)

4:20 – 5:40 PM

Thermoluminescence of ajoite**Speaker**

Dr Bereket Dalga Dana (Rhodes University)

4:20 – 5:40 PM

Volatile Organic Compound Sensor Based on 2D NiO-WS₂ Heterostructured Nanomaterials**Speaker**

Teboho Mokoena (University of the Free state)

4:20 – 5:40 PM

Solid-state synthesised Zn doped CdO nanoparticles for potential supercapacitor applications**Speaker**

Mpho Maswanganye (University of Limpopo)

4:20 – 5:40 PM

Fluorine-Doped Siligraphene (SiC_2): A Cluster Expansion and DFT Study of Stability, Electronic, and Mechanical Properties.**Speaker**

Samson Singo (University of Limpopo)

4:20 – 5:40 PM

Electron spin resonance study of Ce^{3+} and Dy^{3+} ions substituted cobalt and nickel nanoferrites : Low field microwave absorption**Speaker**

Anele Madlala (Iyuniyvesiti Walter Sisulu)

4:20 – 5:40 PM

Deep-Level Defects in Electron-Irradiated n-GaAs Investigated by Conventional, Laplace DLTS and Admittance Spectroscopy**Speaker**

Dr Assane Talla (Nelson Mandela University)

4:20 – 5:40 PM

First-principles study of adsorption mechanisms of CO_2 and CO on monolayer $\text{Nb}_2\text{Se}_2\text{C}$ TMCC as an efficient gas sensor**Speaker**

Dr Chewe Fwalo (University of South Africa)

4:20 – 5:40 PM

Structure, Electron Spin Resonance and Magnetic Properties of Cr-Co Nanoferrite for Biomedical Applications

Speaker

Metuel Dipuo Sethosa

4:20 – 5:40 PM

Investigating The Mechanical and Electronic Properties of Silver, Gold and Aluminium: First-Principle Study**Speaker**

Melokuhle Hadebe

4:20 – 5:40 PM

Quantization of radiation-induced defects in SnO₂ using positron lifetime components.**Speaker**

Ms Dineo Motjope (First author)

4:20 – 5:40 PM

The effect of Ni and Ru substitution on structural and mechanical properties of FCC Ir. A first-principles study**Speaker**

Mr Thabo Nhlakanipho Nhlenyama (University of Zululand)

4:20 – 5:40 PM

A study of Phase Stability and Atomic Ordering in Quenched Fe-Ga-Tb Magnetostrictive Alloys**Speaker**

Anelisiwe Gqumani (Nelson Mandela University)

4:20 – 5:40 PM

Composition-Dependent Electronic and Optical Properties of Ge-Doped CsSnI₃ from First-Principles Calculations**Speaker**

Dr Neelam Saghir (University of South Africa)

4:20 – 5:40 PM

Confronting the Universe's Accelerating Expansion: Insights from a Hybrid Scale Factor**Speaker**

Gorataamang Ann Gaedie (North-West University)

4:20 – 5:40 PM

Optimization of lead-free BaZrS₃-based perovskite solar cell for better performance using SCAP-1D**Speaker**

Dr Paulinah Fasanmi (University of Johannesburg)

4:20 – 5:40 PM

Extraction and Geospatial Analysis of Wind and Solar Power Infrastructure Using OpenStreetMap Data in African Countries**Speaker**

Mr Nhlamulo Khosa (Green Technology Confucius Institute, University of Venda)

4:20 – 5:40 PM

Thermal stability evaluation of hexagonal molybdenum diselenide**Speakers**

Mr Thapelo Lebopo (University of Limpopo), Prof. Thuto Mosuang (University of Limpopo)

4:20 – 5:40 PM

Automating Galaxy Classification with Unsupervised Machine Learning**Speaker**

Kirsten Elliott (University of Western Cape)

4:20 – 5:40 PM

Detection of the kinematic Sunyaev-Zeldovich signals using Pairwise momentum estimator.**Speaker**

Ms Ayanda Mnikathi

4:20 – 5:40 PM

Building a Public Database for Ground-Based Solar Observations at the North-West University**Speaker**

Ruhann Steyn (Centre for Space Research, North-West University)

4:20 – 5:40 PM

Assessment of the Impact of SAIP ECD Science Skills Accelerator Programme Training on ECD Practitioners' Confidence in Vhembe District, South Africa**Speaker**

Vhuhwavho Khomunala (University of Venda)

4:20 – 5:40 PM

Characterization and Analysis of Radio Sources Detected in MeerKAT Galaxy Proto-Cluster Fields**Speaker**

SEKHONA TOLE (university of the western cape)

4:20 – 5:40 PM

ANALYSING VARIABILITY IN BLUEBERRY GALAXIES IN SEARCH OF AGN ACTIVITY**Speaker**

Unathi Tshabalala

4:20 – 5:40 PM

Numerical Simulation Of The Astrospheres**Speaker**

Mr Solomzi Nobute (North west University center of space reseach)

4:20 – 5:40 PM

Field Calibration of Cosmic-Ray Neutron Sensors for Accurate Soil Moisture Monitoring**Speaker**

Aimee Dumont

4:20 – 5:40 PM

Elongated Radio Galaxies in MeerKAT Observations of Proto galaxy-clusters**Speaker**

Bevan Petersen (University of the Western Cape)

4:20 – 5:40 PM

Constraining Spider Pulsar Binary Plasma Properties Through Radio Eclipses**Speaker**

Thulo Letsele

4:20 – 5:40 PM

Measurment of the Dark Energy Spectroscopic Instru- ment (DESI) Galaxy cluster bulky velocity with kinematic Sunyaev- Zeldovich (kSZ) signals from Atacama Cosmology Telescope Polarime- ter (ACTPol) Data Release 4.**Speaker**

Mr Isaac Gwato Chitete

4:20 – 5:40 PM

Adsorption of Croconate Dye (CR1) on (210) Brookite TiO₂, Surface for Application in Dye-Sensitized Solar Cells (DSSCs)

Speaker
Nkosana Mkhathshwa

4:20 – 5:40 PM

Chemical trends in defect stability, electronic and magnetic properties of 3d TM-doped WSe₂

Speaker
Prof. Evans Benecha (University of South Africa)

4:20 – 5:40 PM **Exploring Long-term Ionospheric Total Electron Content over South Africa.**

Speaker
Modiri Mokaila (North West University)

4:20 – 5:40 PM

Trends, Performance Gaps, and Systemic Inequalities in Physical Sciences Education in South Africa (2008–2023)

Speaker
Nthangeni Rofhiwa (University Of Venda)

4:20 – 5:40 PM **Luminescent Enhancement of ZnO-SnO₂ Heterostructures Doped with Pr³⁺**

Speaker
Tahleho Mofokeng (University of The Free State)

4:20 – 5:40 PM

Preliminary Experimental and Computational Investigation of Vacuum-Induced Outgassing in Poly(2,5)-benzimidazole Nanocomposites for Low Earth Orbit Applications

Speaker
Ms Luwy Swanepoel (Centre for Space Research, North-West University, Potchefstroom Campus, Potchefstroom, 2531, South Africa)

4:20 – 5:40 PM **Effect of Zinc concentration on Zn_xFe_{2-4x}O₄ for detecting toxic and flammable gaseous**

Speaker
Vuyolwethu Mhlebi (University of Zululand)

4:20 – 5:40 PM

Experimental investigation of MoS₂, Ti₃C₂, and graphene-based composites for low Earth orbit applications

Speaker
Nico Snyman

4:20 – 5:40 PM **AUTOMATED FOURIER ANALYSIS WITH PYTHON**

Speaker
Sibongile Majola

5:40 PM

5:40 PM

Wed, July 8

5:40 – 6:25 PM

Brief Historical Tour of UWC Campus

Session | Location: University of the Western Cape

6:25 PM

5:40 PM

Wed, July 8

5:40 – 6:40 PM

Council Meeting with HoDs

6:40 PM
6:00 PM
10:00 PM

Session | Location: University of the Western Cape

Wed, July 8
6:00 – 10:00 PM

Science in the Home Public Outreach Event
Session | Location: University of the Western Cape, Jakes Gerwel Hall

Description

Including Science Show and physics demonstrations. Open to the Public.

Thu, July 9

7:30 AM	Thu, July 9	7:30 – 8:30 AM
8:30 AM	Registration: University of the Western Cape Session Location: University of the Western Cape, Great Hall	
8:30 AM	Thu, July 9	8:30 – 9:25 AM
9:25 AM	Plenary: (Nuclear Physics) Professor Paul Garrett Session Location: University of the Western Cape, Jakes Gerwel Hall	
	8:30 – 9:25 AM Advances in Nuclear Structure Physics Speaker Paul Garrett (University of Guelph)	
9:25 AM	Thu, July 9	9:25 – 9:30 AM
9:30 AM	Buffer Break Location: University of the Western Cape	
9:30 AM	Thu, July 9	9:30 – 10:30 AM
10:30 AM	Applied Physics Session Location: University of the Western Cape, Lecture Hall DL3 Convener: Ernest van Dyk	
	9:30 – 9:50 AM Approximations to the bow shock pressure profile generated by a decelerating sphere Speaker Prof. Irvy (Igle) Gledhill (U. Witwatersrand)	
	9:50 – 10:10 AM Simulation of a Low-Cost PET Scanner Speaker Ryan Atkin (University of Cape Town)	
9:30 AM	Thu, July 9	9:30 – 10:30 AM
	Astrophysics & Space Science: Astrophysics: Session 7 Session Location: University of the Western Cape, Lecture Hall C5	
	9:30 – 9:50 AM Searching for and modelling persistent radio sources associated with Fast Radio Bursts. Speaker Lebogang Mfulwane (Centre for Space Research, North-West University,)	
	9:50 – 10:10 AM Dark Matter Content of Gas-Rich Dwarf Galaxies Speaker OWEN BEUKES (NORTH WEST UNIVERSITY)	

10:30 AM

10:10 – 10:30 AM

Status of WIMP searches with MeerKAT**Speaker**

Geoff Beck (University of the Witwatersrand)

9:30 AM

Thu, July 9

9:30 – 10:30 AM

Astrophysics & Space Science: Space Science: Session 7**Session** | **Location:** University of the Western Cape, Lecture Hall C3 | **Convener:** Katlego Moloto

9:30 – 9:50 AM

Commissioning of the SA-DLITE interferometric radio telescope**Speaker**

DuToit Strauss (North-West University)

9:50 – 10:10 AM

Solar modulation of galactic deuterons related to PAMELA, AMS02 and Voyager 1 observations**Speaker**

Ms Innocentia Itumeleng Ramokgaba (1. School of Physical & Chemical Sciences, North-West University, Mmabatho, South Africa. 2. Centre of Space Research, North-west University, Potchefstroom, South Africa.)

10:10 – 10:30 AM

Onboard measurement of cosmic-ray exposure on South African domestic flights**Speakers**

Bosco Oryema (Centre for Space Research, North-West University, Potchefstroom, 2531, North West, South Africa), Joseph Omojola (North-West University)

10:30 AM

9:30 AM

Thu, July 9

9:30 – 10:30 AM

Nuclear, Particle and Radiation Physics -1: Session 1**Session** | **Location:** University of the Western Cape, Lecture Hall GH2 | **Convener:** Shanyin Hart (University of Cape Town and iThemba LABS)

9:30 – 9:50 AM

A possible bound state of the ^{21}C as a halo nucleus**Speaker**

Thando Timax Khedzi (University of South Africa)

9:50 – 10:10 AM

Testing the vibrational nature of ^{100}Ru .**Speaker**

Lwazikazi Maqungo (UWC)

10:10 – 10:30 AM

Role of Nuclear Density in Heavy-Ion Fusion Hindrance within the Double-Folding Framework**Speaker**

Dr Joshua Tolulope Majekodunmi (University Of South Africa)

10:30 AM

9:30 AM

Thu, July 9

9:30 – 10:30 AM

Nuclear, Particle and Radiation Physics -2: Session-7**Session** | **Location:** University of the Western Cape, Lecture Hall GH3 | **Convener:** Mpho Gololo (University of Johannesburg)

9:30 – 9:50 AM

Testbeam Analysis of HGTD Prototype Modules for the ATLAS Phase-II Upgrade

	Speaker Karabo Tau (University of the Witwatersrand (ZA))	
	9:50 – 10:10 AM Enhancing Forward Jet Reconstruction with HGTD Timing in the ATLAS Particle Flow Algorithm Speaker Thabo James Lepota (University of the Witwatersrand)	
10:30 AM	10:10 – 10:30 AM Air Quality Forecasting in South African Urban Areas Using LSTM Models and SACAQM Data to Capture Temporal Dynamics and Patterns Speaker Lehlohonolo Moloi (Student)	
9:30 AM	Thu, July 9	9:30 – 10:30 AM
10:30 AM	Photonics Session Location: University of the Western Cape, Lecture Hall DL1	
9:30 AM	Thu, July 9	9:30 – 10:30 AM
	Physics of Condensed Matter and Materials Session Location: University of the Western Cape, Lecture Hall GH1 Convener: Moise Bertin Tchoula Tchokonte (University of the Western Cape) 9:30 – 9:50 AM First-Principles Investigation of Structural, Mechanical, Thermodynamic and Electronic Properties of High-Entropy Alloys for High-Temperature Applications. Speaker Ramalebana Moeti 9:50 – 10:10 AM First principles study of the structural, electronic, magnetic, thermodynamic, and electrical transport properties of PrCuGe3, ternary intermetallic compound Speaker Dr Mubarak Yagoub (University of Johannesburg) 10:10 – 10:30 AM Lanthanide-Doped Ca5Mg4(VO4)6 Phosphors for NIR-to-Visible Latent Fingerprint Visualization Speaker Hope Ramolahloane (University of the Free State)	
10:30 AM		
9:30 AM	Thu, July 9	9:30 – 10:30 AM
10:30 AM	Side Event: Physics in Industry Day Session Location: University of the Western Cape	
9:30 AM	Thu, July 9	9:30 – 10:30 AM
	Theoretical and Computational Physics: Session 7	

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

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 (University of Cape Town)

10:30 AM

10:30 AM

Thu, July 9

10:30 – 11:00 AM

Morning Tea

Break | Location: University of the Western Cape, Great Hall / DL Building

11:00 AM

11:00 AM

Thu, July 9

11:00 AM – 12:40 PM

Applied Physics

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

11:00 – 11:20 AM

Radiation-Resistant Temperature Monitoring in High-Energy Physics Environments

Speaker

Timothy Brooks (University of Johannesburg)

11:20 – 11:40 AM

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

Speaker

Dr Abraham Dimitri Kapim kenfack (Tshwane University of Technology)

11:40 AM – 12:00 PM

EVINN: Extreme value-informed neural networks model for modeling extreme events

Speaker

Dr Makhamisa Senekane (University of Johannesburg)

12:00 – 12:20 PM

Deploying physics-informed neural networks for anomaly detection in particle physics

Speaker

Dr Makhamisa Senekane (University of Johannesburg)

12:20 – 12:40 PM

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

Speaker

Zamaswazi Tshabalala (University of the Free State)

12:40 PM

11:00 AM

Thu, July 9

11:00 AM – 12:40 PM

Astrophysics & Space Science: Astrophysics: Session 8

Session | Location: University of the Western Cape, Lecture Hall C5

11:00 – 11:20 AM

Three-dimensional MHD simulations of astrospheres and galactic cosmic ray transport.

Speaker

Christo Pretorius

11:20 – 11:40 AM

Optimizing Stellar Velocity Dispersion Measurements for Upcoming Spectroscopic Surveys

Speaker

Mr Johan Nel (Centre for Space Research (NWU))

11:40 AM – 12:00 PM

CATACLYSMIC VARIABLES IN THE MEERLICHT SOUTHERN ALLSKY SURVEY.

Speaker

Mkhatshwa Xolile (University Of Venda)

12:00 – 12:20 PM

Spectroscopic Study of Uncertain Boo Stars Using Southern African Large Telescope High Resolution Spectrograph.

Speaker

Magdeline Matobe (SAIP)

12:40 PM

11:00 AM

Thu, July 9

11:00 AM – 12:40 PM

Astrophysics & Space Science: Space Science: Session 8

Session | Location: University of the Western Cape, Lecture Hall C3 | Convener:
Ruhann Steyn (Centre for Space Research, North-West University)

11:00 – 11:20 AM

Using URANOS Simulations to Understand Biomass-Soil Moisture Interactions in Cosmic-Ray Neutron Sensing Applications

Speaker

Dr Katlego Moloto (North-West University)

11:20 – 11:30 AM

Break

11:30 AM – 12:00 PM

The manifestation of vorticity in the atmosphere of the Sun

Speaker

Prof. Eamon Scullion (University of Northumbria Newcastle upon Tyne (UK))

12:10 – 12:30 PM

A numerical investigation of a pulse propagating through the stratified solar atmosphere

Speaker

Calmay Lee (North-West University)

12:40 PM

11:00 AM

Thu, July 9

11:00 AM – 12:40 PM

Nuclear, Particle and Radiation Physics -1: Session 2

Session | Location: University of the Western Cape, Lecture Hall GH2 | Convener: Mohamed Kamil Mohamed (CPUT)

11:00 – 11:20 AM

Fabrication of thin-film targets for nuclear physics experiments at iThemba LABS and Daresbury Laboratory

Speaker

Mr Esmond Craig Vyfers (University of the Western Cape)

11:20 – 11:40 AM

Assessment of natural gamma radiation as a proxy for soil health indicators with application of spatial mapping for national security

Speaker

Anathi Cutha

11:40 AM – 12:00 PM

Electric Quadrupole Matrix Elements Supports Triaxial Rotation in Semimagic ^{60}Ni

Speaker

Andile Zulu (University of the Western Cape)

12:00 – 12:20 PM

UAV-Based Survey of the radionuclide isotopes on phosphate mining, South Africa

Speaker

Masego Mothapo

12:40 PM

11:00 AM

Thu, July 9

11:00 AM – 12:40 PM

Nuclear, Particle and Radiation Physics -2: Session-8

Session | Location: University of the Western Cape, Lecture Hall GH3 | Convener: Mpho Gololo (University of Johannesburg)

11:00 – 11:20 AM

Upgrade of the ATLAS Tile Calorimeter for HL-LHC Operation

Speaker

Edward Nkadameng (University of the Witwatersrand)

11:20 – 11:40 AM

Finger Low Voltage Power Supply Upgrade for the ATLAS Tile Calorimeter in South Africa

Speaker

Lungisani Phakathi (University of Witwatersrand)

11:40 AM – 12:00 PM

Thermal Stability Analysis of ATLAS TileCal Phase-II LVPS in Production Burn-in Testing

Speaker

Donald Ngobeni

12:00 – 12:20 PM

Response of gap and crack scintillators of the ATLAS Tile Calorimeter to muons from $\sqrt{s}$ to $\sqrt{s} = 13.6$ TeV events using Run 3 collision data

Speaker

Karabo Mosala (University of the Witwatersrand)

12:40 PM

11:00 AM

Thu, July 9

11:00 AM – 12:40 PM

Photonics

Session | Location: University of the Western Cape, Lecture Hall DL1

12:40 PM

11:00 AM

Thu, July 9

11:00 AM – 12:40 PM

Physics for Development, Education and Outreach

Session | Location: University of the Western Cape, Lecture Hall C9 | Convener: Chad Leukes (University of Cape Town)

11:00 – 11:20 AM

A Pedagogical framework for teaching Econophysics through contrasting Self-Organized Criticality in the Bak-Chen-Scheinkman-Woodford Model with Real Business Cycle Theory Through Rationality Debates**Speaker**

Mr Lehlohonolo Moloi (University of Witwatersrand)

11:20 – 11:40 AM

Developing Data Science Skills Through Collaborative Hackathons: A Case Study of Hack4dev's Data Science Hackathon Programme**Speaker**

Charles Takalana (IAU-OAD)

11:40 AM – 12:00 PM

The Practure – Physical events with live data in the Lecture Hall**Speaker**

Peter Horszowski (PERT)

12:40 PM

11:00 AM

Thu, July 9

11:00 AM – 12:40 PM

Physics of Condensed Matter and Materials

Session | Location: University of the Western Cape, Lecture Hall GH1 | Convener: Prof. Lynndle Square (North West University)

11:00 – 11:20 AM

Structural, magnetic and critical behavior properties of $\text{Ce}_2\text{Al}_3\text{Ge}_4$ **Speaker**

Ms Zandile Mpupa (university of the western cape)

11:20 – 11:40 AM

Optimized composition of the $\text{In}_2\text{O}_3\text{-Co}_3\text{O}_4\text{-ZnO}$ nanostructure loaded with Ru for ethanol detection**Speaker**

Katlego Morulane (University of the Free State)

11:40 AM – 12:00 PM

Influence of Nickel (Ni) on the structural and optical properties of LiZnBO_3 and on the photocatalytic degradation efficiency of LiZnBO_3 on potassium ethyl xanthate under UV-Vis irradiation.**Speaker**

Mr Emmanuel Diutlwetse Magasi (University of johannesburg)

12:00 – 12:20 PM

Optimization of Nitrogen in Transition Metal Oxynitrides for Fuel Cell Applications**Speaker**

Nicholas Onkoba (UNISA)

12:40 PM	12:20 – 12:40 PM The Synthesis and Characterization of ϵ-Fe₂O₃/SiO₂ Nanoparticles Speaker Aphile Chithwayo (Student)	
11:00 AM	Thu, July 9	11:00 AM – 12:40 PM
12:40 PM	Side Event: Physics in Industry Day Session Location: University of the Western Cape	
11:00 AM	Thu, July 9	11:00 AM – 12:40 PM
12:40 PM	Theoretical and Computational Physics: Session 8 Session Location: University of the Western Cape, Lecture Hall DL2 Convener: Garreth Kemp (University of Johannesburg) 11:00 – 11:20 AM Thermodynamics of Quantum Fields on a Finite Lattice Speaker Rens Roosenstein (University of Cape Town, University of Amsterdam) 11:20 – 11:40 AM High-pT Dihadron Correlations in Proton-Proton and Heavy-ion Collisions Speaker Tiaan van der Merwe (University of Cape Town) 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	Thu, July 9	12:40 – 1:40 PM
1:40 PM	Guided Walk in UWC Nature Reserve (with Packed Lunch) Session Location: University of the Western Cape, Nature Reserve Description Sign-up Required. Limited Capacity.	
12:40 PM	Thu, July 9	12:40 – 1:40 PM
1:40 PM	Lunch Break Location: University of the Western Cape, Student Centre	
1:40 PM	Thu, July 9	1:40 – 2:35 PM
2:35 PM	Plenary: (UWC Invited Plenary) Prof Jens Gundlach Session Location: University of the Western Cape, Jakes Gerwel Hall 1:40 – 2:35 PM JENS H. GUNDLACH	

2:35 PM

Thu, July 9

2:35 – 2:40 PM

Buffer

Break | Location: University of the Western Cape

2:40 PM

2:40 PM

Thu, July 9

2:40 – 4:00 PM

Applied Physics

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

2:40 – 3:00 PM

Effect of Methane Concentration on Biogas Thermodynamics

Speakers

Mr Thando Khedzi (University of Venda), VHUTSHILO NEKHUBVI (University of Venda)

3:00 – 3:20 PM

Enhancing Biogas Yield from Cow Dung: A Comparative Study of Varying Fe₂O₃ Nanoparticle Concentrations

Speaker

Takalani Nethavhanani (University of Venda)

3:20 – 3:40 PM

Thermal signature analysis of photovoltaic module mismatch using infrared thermography

Speaker

TSHIMANGADZO SOPHIE MULAUDZI (University of Venda)

3:40 – 4:00 PM

Physics Principles Applied in Monitoring Photovoltaic Performance and Water Dynamics

Speaker

Livhuwani Masevhe (University of Johannesburg)

4:00 PM

2:40 PM

Thu, July 9

2:40 – 4:00 PM

Astrophysics & Space Science: Astrophysics: Session 9

Session | Location: University of the Western Cape, Lecture Hall C5

4:00 PM

2:40 PM

Thu, July 9

2:40 – 4:00 PM

Astrophysics & Space Science: Space Science: Session 9

Session | Location: University of the Western Cape, Lecture Hall C3 | Convener: Zama Katamzi-Joseph

2:40 – 3:00 PM

Polar Coronal Hole Size Variations Across Multiple Solar Cycles

Speaker

JG Coertze (NWU)

3:00 – 3:20 PM

Detailed study of a solar flare: photospheric deformation and chromospheric/coronal connectivity

Speaker

Ruhann Steyn (Centre for Space Research, North-West University)

4:00 PM

2:40 PM	Thu, July 9	2:40 – 4:00 PM
4:00 PM	Nuclear, Particle and Radiation Physics -1: Session 3 Session Location: University of the Western Cape, Lecture Hall GH2 Convener: Edward Nkadameng (University of Witwatersrand)	
2:40 PM	Thu, July 9	2:40 – 4:00 PM
4:00 PM	Nuclear, Particle and Radiation Physics -2: Session-9 Division Meeting Session Location: University of the Western Cape, Lecture Hall GH3 Conveners: Sifiso Ntshangase (University of Zululand), Dr Mukesh Kumar	
2:40 PM	Thu, July 9	2:40 – 4:00 PM
4:00 PM	Photonics Session Location: University of the Western Cape, Lecture Hall DL1	
2:40 PM	Thu, July 9	2:40 – 4:00 PM
4:00 PM	Physics for Development, Education and Outreach Session Location: University of the Western Cape, Lecture Hall C9 Convener: Mayhew Steyn (University of Cape Town)	
	2:40 – 3:00 PM Evaluating the Impact of a Physical Science Teacher Development Programme in the Vhembe District, South Africa Speaker Tshifhiwa Ranwaha (University Of Venda)	
	3:00 – 3:20 PM UNDERSTANDING HIGH SCHOOL PHYSICAL SCIENCE IN THEIR PROFESSIONAL DEVELOPMENT TRAINING Speaker Dr Happy Phage (Central University of Technology, Free State)	
	3:20 – 3:40 PM Pre-service physics students' perception on their experiments in the laboratory Speaker Mr Odirile Mashalane (Central University of Technology, Free State)	
	3:40 – 4:00 PM A Pretest–Post-Test Analysis of PHET Simulations Enhanced with ChatGPT in Teaching Electricity Concepts Speaker Martin Tarisai Kudinha (CPUT)	

2:40 PM

Thu, July 9

2:40 – 4:00 PM

Physics of Condensed Matter and Materials

Session | Location: University of the Western Cape, Lecture Hall GH1 | Convener: Hasani Chauke

2:40 – 3:00 PM

Effect of CuO doping on the structural properties of CeO₂ nanofibers for selective detection of CH₄ and ppb-level NO gas

Speaker

MAPHIA GIFT PHOLOANA (UNIVESITY OF FREE STATE)

3:00 – 3:20 PM

Influence of sol-gel, combustion, and solid-state synthesis methods on the structural and photoluminescence properties of Zn₄B₆O₁₃ : xEu³⁺ phosphor materials for LEDs applications.

Speaker

Athenkosi Siyalo (University of the Western Cape)

3:20 – 3:40 PM

Non-linear Evolution of Wettability in ABPBI/CNT Composites Under UV–Ozone Exposure: A Machine Learning Approach

Speaker

Siaybulela Andile Nkosi (North-West University)

3:40 – 4:00 PM

Establishing a Reproducible CVD Platform for CsPbBr₃ Thin Films and Future Routes to Plasma- and Temperature-Driven Heterostructure Optimization

Speakers

Christopher Arendse (University of the Western Cape), James Mercuur (University of the Western Cape)

4:00 PM

2:40 PM

Thu, July 9

2:40 – 4:00 PM

Theoretical and Computational Physics: Annual General Meeting

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

4:00 PM

4:00 PM

Thu, July 9

4:00 – 4:30 PM

Afternoon Tea

Break | Location: University of the Western Cape, Great Hall / DL Building

4:30 PM

4:30 PM

Thu, July 9

4:30 – 5:30 PM

Applied Physics

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

4:30 – 5:30 PM

Applied Physics Division AGM

5:30 PM

4:30 PM

Thu, July 9

4:30 – 5:30 PM

Astrophysics & Space Science: Astrophysics and Space Science Division Meeting

Session | **Location:** University of the Western Cape, Lecture Hall C3 | **Conveners:**
 Geoff Beck (University of the Witwatersrand), Ruhann Steyn (Centre for Space Research, North-West University)

5:30 PM

4:30 PM

Thu, July 9

4:30 – 5:30 PM

Nuclear, Particle and Radiation Physics -1: Session 4

Session | **Location:** University of the Western Cape, Lecture Hall GH2 | **Convener:** Zina Ndabeni (NRF-iThemba LABS)

5:30 PM

4:30 PM

Thu, July 9

4:30 – 5:30 PM

Nuclear, Particle and Radiation Physics -2: Session-10

Session | **Location:** University of the Western Cape, Lecture Hall GH3

5:30 PM

4:30 PM

Thu, July 9

4:30 – 5:30 PM

Photonics

Session | **Location:** University of the Western Cape, Lecture Hall DL1

5:30 PM

4:30 PM

Thu, July 9

4:30 – 5:30 PM

Physics for Development, Education and Outreach

Session | **Location:** University of the Western Cape, Lecture Hall C9 | **Convener:** Mphiriseni Khwanda (University of Johannesburg)

4:30 – 4:50 PM

Investigating Physical Sciences Teachers' Perceptions and Problem-Solving Approaches in Vertical Projectile Motion**Speaker**

Mark Herbert (University of the Western Cape)

4:50 – 5:10 PM

To Evaluate the Alignment of Grade 10 Lesson Plans in Electricity and Magnetism written during COVID-19 with the South African CAPS curriculum Goals.**Speaker**

Ronald Engelbrecht (PostGrad Student)

5:10 – 5:30 PM

Investigating in-serves Teachers' Perceptions and Learning Gains through Modeling Instruction in DC Electric Circuits**Speaker**

Dr Mark Herbert (University of the Western Cape)

5:30 PM

4:30 PM

Thu, July 9

4:30 – 5:30 PM

Physics of Condensed Matter and Materials

Session | Location: University of the Western Cape, Lecture Hall GH1 | Convener: Kingsley Onyebuchi Obodo (University of KwaZulu-Natal, Pietermaritzburg)

4:30 – 4:50 PM

Atomistic Insights into Hydrogen Adsorption on TiAlCr-Based Alloys via DFT and HEAPs Calculations

Speaker

David Tshwane (Central University of Technology)

4:50 – 5:30 PM

Division AGM (Physics of Condensed Matter and Materials)

5:30 PM

4:30 PM

Thu, July 9

4:30 – 5:30 PM

Theoretical and Computational Physics

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

5:30 PM

5:40 PM

Thu, July 9

5:40 – 6:25 PM

Brief Historical Tour of UWC Campus

Session | Location: University of the Western Cape

6:25 PM

5:40 PM

Thu, July 9

5:40 – 6:40 PM

Council Meeting with Division Chairs

Session | Location: University of the Western Cape

5:40 – 6:10 PM

Buffer

6:40 PM

5:40 PM

Thu, July 9

5:40 – 9:40 PM

Tour to the South African Astronomical Observatory

Session | Location: South African Astronomical Observatory

Description

Sign-up Required. Limited Capacity.

9:40 PM

6:40 PM

Thu, July 9

6:40 – 9:40 PM

Council Dinner (by invite only)

Session | Location: External Venue

Description

By invite only

9:40 PM

Fri, July 10

7:30 AM	Fri, July 10 7:30 – 8:30 AM Registration Session Location: University of the Western Cape, Great Hall
8:30 AM	
8:30 AM	Fri, July 10 8:30 – 9:25 AM Plenary: (Physics Education and Development) Dr Charles Takalana and Dr Joyful Mdhluli, "Astronomy for a Better World: Connecting Knowledge, Society, and Sustainable Development" Session Location: University of the Western Cape, Jakes Gerwel Hall
9:25 AM	
9:25 AM	Fri, July 10 9:25 – 9:30 AM Buffer Break Location: University of the Western Cape
9:30 AM	
9:30 AM	Fri, July 10 9:30 – 10:30 AM Applied Physics Session Location: University of the Western Cape, Lecture Hall DL3 Convener: Alan Matthews 9:30 – 9:50 AM A Radiography Simulator for Design, Optimisation, Performance Evaluation, Experimental Planning, and Operator Training in Neutron and X-ray Imaging Systems Speaker Robert Bellarmin Nshimirimana (The South African Nuclear Energy Corporation) 9:50 – 10:10 AM Use of Ultrasonic Atimsation Techniques to Manufacture and Recycle Metals to Powder Suitable for 3D Printing. Speaker Donald Mkhonto (Mintek) 10:10 – 10:30 AM Conversion of Pine Wood Residue for Enhanced Hydrogen Production via Catalytic Pyrolysis Process Speaker Mithayelanga Mazitshana (Cput)
10:30 AM	
9:30 AM	Fri, July 10 9:30 – 10:30 AM Astrophysics & Space Science: Astrophysics: Session 10 Session Location: University of the Western Cape
10:30 AM	

9:30 AM

Fri, July 10

9:30 – 10:30 AM

Astrophysics & Space Science: Space Science: Session 10

Session | Location: University of the Western Cape, Lecture Hall C3

10:30 AM

9:30 AM

Fri, July 10

9:30 – 10:30 AM

Nuclear, Particle and Radiation Physics -1

Session | Location: University of the Western Cape, Lecture Hall GH2

10:30 AM

9:30 AM

Fri, July 10

9:30 – 10:30 AM

Nuclear, Particle and Radiation Physics -2: Session-11

Session | Location: University of the Western Cape

10:30 AM

9:30 AM

Fri, July 10

9:30 – 10:30 AM

Photonics

Session | Location: University of the Western Cape, Lecture Hall DL1

10:30 AM

9:30 AM

Fri, July 10

9:30 – 10:30 AM

Physics of Condensed Matter and Materials

Session | Location: University of the Western Cape, Lecture Hall GH1 | Convener: David Motaung (University of the Free State)

9:30 – 9:50 AM

Density Functional Theory Study of the Electronic Properties of Group V Dopants in 2D Monolayer SiC for High-Power Electronic Application

Speaker

Emmanuel Igumbor (University of Johannesburg)

9:50 – 10:10 AM

Mitigation of Helium-Induced Surface Damage in SiC Using Thin Carbon Layers

Speaker

Hesham Abdelbagi (University of Zululand)

10:10 – 10:30 AM

Evaluation of poly(2,5-benzimidazole) against vacuum ultraviolet radiation for space applications.

Speaker

Ernst Ellis (North-West University)

10:30 AM

9:30 AM

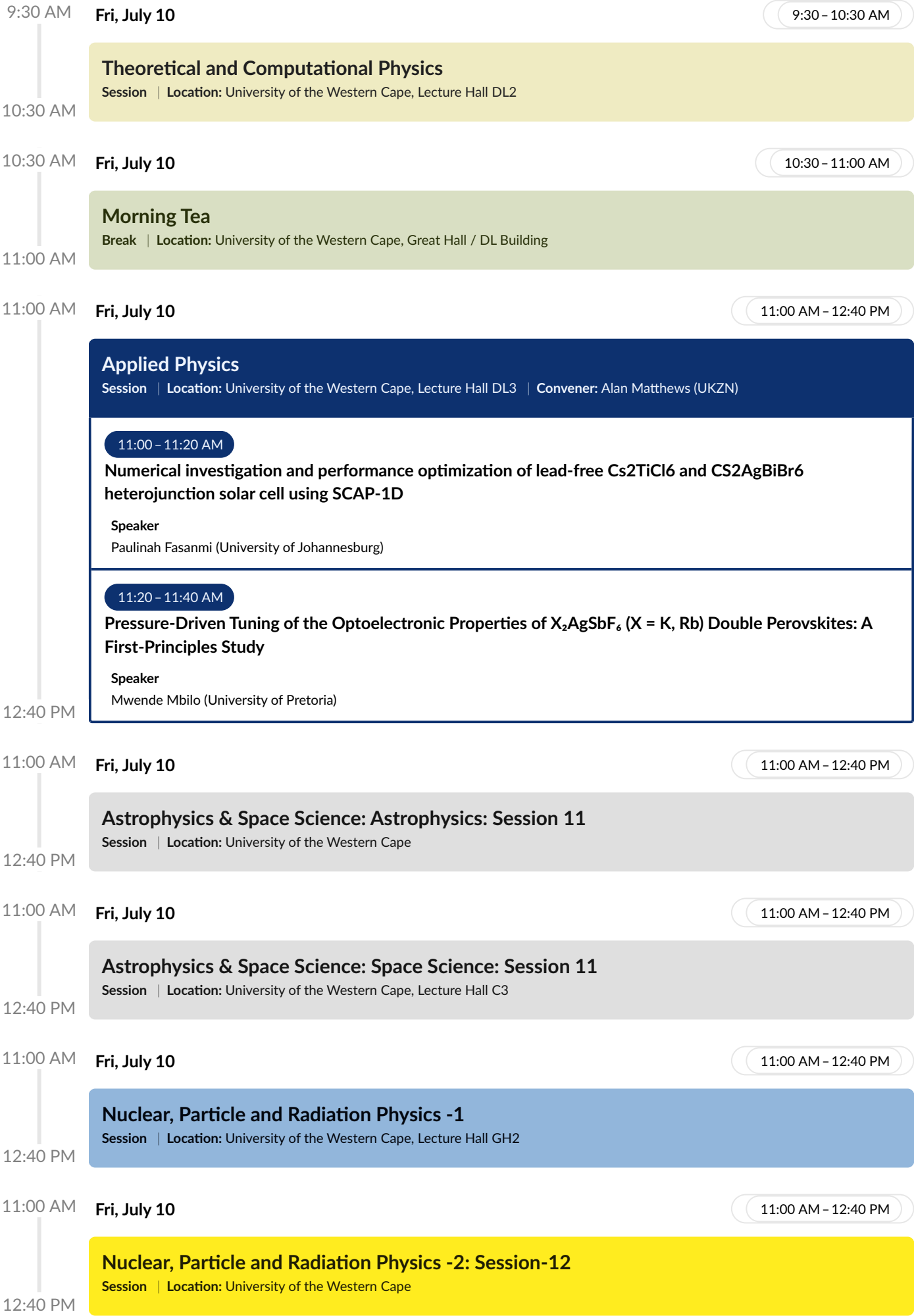
Fri, July 10

9:30 – 10:30 AM

Side Event: Southern Africa Physics Network (SAPhysNet) Forum Meeting

Session | Location: University of the Western Cape

10:30 AM



11:00 AM

Fri, July 10

11:00 AM – 12:40 PM

Photonics

Session | Location: University of the Western Cape, Lecture Hall DL1

12:40 PM

11:00 AM

Fri, July 10

11:00 AM – 12:40 PM

Physics of Condensed Matter and Materials

Session | Location: University of the Western Cape, Lecture Hall GH1 | Convener: Hendrik Swart (University of the Free State)

11:00 – 11:20 AM

Photoactive Hybrid Nanodevices for Neuromorphic Systems and Collective Coulomb Blockade Architectures

Speaker

Prof. Richard Harris (University of the Free State)

11:20 – 11:40 AM

Analysis of biomass-based GO for application in lithium-ion batteries for sustainable energy storage.

Speaker

Thokozane Mlotshwa (University of Limpopo)

11:40 AM – 12:00 PM

Tailoring SnO₂ Nanoparticles via pH-Controlled Hydrothermal Synthesis for Enhanced Gas Sensing Performance

Speakers

Mr Philani Mngomezulu (University of Zululand), Charles Thulani Thethwayo (University of Zululand)

12:00 – 12:20 PM

Theoretical Investigations of the phase stability and ductility of FeCo-Nb alloys

Speaker

Dr Ramogohlo Diale-Boshielo (Mintek)

12:20 – 12:40 PM

Swift Heavy Ion Irradiation as a Post-Fabrication Tool for Tuning Schottky Barrier Characteristics in PolyanilineGraphene Nanocomposite Diodes

Speaker

Dr Daniel Chilukusha (Mulungushi University)

12:40 PM

11:00 AM

Fri, July 10

11:00 AM – 12:40 PM

Side Event: Southern Africa Physics Network (SAPhysNet) Forum Meeting

Session | Location: University of the Western Cape

12:40 PM

11:00 AM

Fri, July 10

11:00 AM – 12:40 PM

Theoretical and Computational Physics

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

12:40 PM

