

70th ANNUAL CONFERENCE of the SOUTH AFRICAN INSTITUTE OF PHYSICS



events2.saip.org.za/event/2/



saip2026@saip.org.za



SAIP2026 CONFERENCE BOOK

SAIP2026 Theme

Physics in the Fourth Industrial Revolution: Towards a Sustainable and Inclusive Future

Physics lies at the heart of the technologies driving the Fourth Industrial Revolution and beyond, linking scientific innovation to sustainable development and meaningful social transformation. Through this theme, this year's SAIP conference aims to showcase advances in renewable energy, smart materials, artificial intelligence, and data driven innovation, highlighting how these tools can be harnessed to address real world challenges. With a strong emphasis on empowering future generations of scientists, the conference aligns with the UN's International Decade of Sciences for Sustainable Development and reflects UWC's commitment to inclusive, research led solutions for the public good.





OUR SPONSORS & EXHIBITORS

Thank you to our Sponsors and Exhibitors!

As we celebrate the monumental 70th Annual South African Institute of Physics (SAIP) Conference at the University of the Western Cape (UWC), we extend our deepest gratitude to our partners, sponsors and exhibitors.

A milestone this significant is never achieved alone. Your partnership, investment and commitment are the backbone of this year's event, enabling us to bring together the brightest minds in physics from across South Africa and the globe.

Our Partners



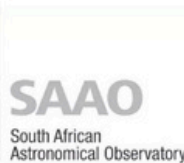
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INNOVATION in Nuclear Science and Technology for Societal Benefit

Radioactive decay is responsible for roughly 50% of the heat generated by our planet. The radioactive decay series depicts the process through which radioactive elements are spontaneously transformed into stable elements by emitting radiation in the form of particles and/or waves. The detection of the radiation emanating from these radioactive sources allows for the unravelling of the unique signature of the parent elements, like a fingerprint.

The need to drive sustainable development necessitates a balancing act between people, planet, and profit. This requires not only environmental impact studies in the planning of new mining or industrialization activities but also monitoring of the efficacy of remediation practices at sites with increased radiation levels. The prioritisation of profit over planet and people can negatively impact the health of animals and humans living around mining sites through habitat disruption, water contamination, air pollution, and poor management of radioactive waste. This destruction is even more severe in areas prone to artisanal mining operations.

NRF-iThemba LABS, a national research facility of the National Research Foundation (NRF), is known as the largest particle accelerator facility on the African continent. It has expertise in radiation detection and safety, data-analysis, and the utilisation of technology for the betterment of society. For example, it investigated the possible radiation pollution of the Olifants River in December 2013/January 2014 after spillage of polluted process water from the Bosveld Phosphates mine adjacent to the Kruger National Park.

NRF-iThemba LABS is ideally positioned to conduct impactful research in the area of radiation detection provided that the following challenges can be addressed, namely:

- Planning for remote data collection;
- Rough terrain and the elements;
- Access to the data in real-time for analysis and decision-making;
- The incorporation of location- and time-stamps in the data-sets; and
- Improvement of data collection methodologies and optimisation techniques through the use of AI and machine learning.

The PANGOLINS Project

The Portable African Neutron-Gamma Laboratory for Innovative Nuclear Science (PANGOLINS) project is the brainchild of Dr Pete Jones, a senior research scientist at NRF-iThemba LABS who was inspired by the pangolin, a mammal found in tropical Asia and Africa. PANGOLINS brings together expertise from engineering (mechanical, electronic, software), instrumentation science, drone pilots, and data analysts to drive innovation that creates a safer and better tomorrow.

The mobile radiation detection unit (MRDU), pioneered by NRF-iThemba LABS in 2022, allows a user to operate in the field and chart the location, strength and energy of gamma radiation. The system uses a sensitive scintillation detector integrated into a backpack and incorporates a fast 125 MHz digitiser for readout and a GPS enabled Raspberry Pi microprocessor system which allows *in situ* measurements of radiation, with collected data streamed to the cloud and analysed offline.

The PANGOLINS project utilises cuboid MacroPixel scintillators in a compact geometry, complete with silicon photomultiplier and integrated temperature sensor, and weighs less than 30g. An operational voltage of 30V is used (compared with 1 000V in standard detectors), and both fast and slow signals subsequently digitised to provide excellent energy and timing resolution. Three types of scintillator were studied, namely $\text{LaBr}_3(\text{Ce})$, SrI_2 , and $\text{Cs}_2\text{LiYCl}_6$ to provide varying spectroscopic levels of gamma ray sensitivity, with the latter providing sensitivity to neutrons. Ongoing parallel projects currently investigate the use of the latest photonic devices, silicon photomultipliers, and their integration into existing, or bespoke radiation detectors for new applications.

A lightweight power supply was designed using Li-ion cells for power and low power, ultra-quiescent current regulators. Prototype modules power the detector assemblies for six to eight hours and the cells can be readily recharged. The completed payload, with a total mass of 1.1kg, was deployed on a Tarot X8 octocopter un-crewed aerial vehicle with a flight time of approximately 20 minutes to facilitate access to rough terrains.

The PANGOLINS will be used for *in situ* measurements of naturally occurring or technologically enhanced radiation fields that are essential for investigation, monitoring, prospecting and future projecting.

Innovation, the process of finding new ways of doing, is key as the world turns to a more decarbonised future, and the impact of global climate change on food security is felt across the African continent. Access to reliable data sets to inform our decision-making will be crucial as we navigate among planet, societal benefit, and profit. NRF-iThemba LABS is committed to become the meeting place for scientists, engineers, and civil society as we look after our radioactive earth as the enabler of industrial and societal transformation.



science, technology
& innovation

Department:
Science, Technology and Innovation
REPUBLIC OF SOUTH AFRICA



National Research
Foundation

iThemba
LABS

Laboratory for Accelerator
Based Sciences



WELCOME MESSAGES

Message from the Vice-Chancellor and Rector, University of the Western Cape

Professor Robert J. Balfour

Welcome to the University of the Western Cape, and to the 70th Annual Conference of the South African Institute of Physics. Seven decades is a long time to sustain a scientific community, and the Institute has done so with care. This conference is the principal forum through which that community shares new work and strengthens the partnerships on which the discipline relies. It is a privilege for us to host it this year. UWC has sustained focus and investment in the sciences over the last two decades and the expertise developed over time, presents an opportunity through this event, to be shared and celebrated with SAIP.



More than 500 delegates will take part in the conference, with students making up the majority of participants. We do so in good company. Our Faculty of Natural Sciences, and the Department of Physics and Astronomy, have prepared the week alongside iThemba LABS, the South African National Space Agency and the Inter-University Institute for Data Intensive Astronomy. That partnership says something about how physics is done in this country, which is seldom alone and usually across institutions. This is in recognition of the needs, even within a discipline for expertise to develop relative to the individual institutions' strategies, but mindful of the value and worth of partnerships in strengthening Physics nationally.

The conference theme explores the place of physics in the Fourth Industrial Revolution, and how it can contribute to a future that is sustainable and inclusive. The programme engages that question directly. A day on physics and the just energy transition is complemented by work in data-intensive astronomy, drawing on MeerKAT, and in nuclear science. It is good to see the concerns of the laboratory brought into conversation with the concerns of society.

What I value most about this conference is the way it connects with audiences outside the discipline. Close to seven in ten of those attending are students, and the "Science in the Home" expo will take simple, low-cost experiments to learners, including children in under-resourced communities. It is an approach we recognise at UWC, where we try to measure our work by what it returns to the people we serve.

My thanks go to the South African Institute of Physics, the Local Organising Committee, and all the partners and volunteers whose work has made this week possible.

I wish you a productive conference and a memorable stay in Cape Town.

Message from the Dean of Natural Sciences, University of the Western Cape

Professor David Holgate

It is a great joy and privilege to welcome the delegates of the 70th Annual Conference of the South African Institute of Physics to the University of the Western Cape, and to the Faculty of Natural Sciences in particular.

It is always a pleasure to host visitors on our campus, and we do so with the anticipation of facilitating vibrant academic exchange, meaningful scholarly engagement, the building of a shared identity and the generation of relevant public impact.

The University of the Western Cape is particularly proud of its Department of Physics and Astronomy. The department holds together a range of strengths spanning astrophysics, data intensive astronomy, nuclear physics, materials science, nanotechnology and physics education. It is home to two A-rated researchers and two SARCHI chairs, and provides leadership in a number of spheres, including MeerKAT science, machine learning, continental nuclear science collaborations, nanoscience and the emerging opportunity offered by the Pan African Underground Laboratory (PAUL), to name a few. Its proud history of physics education research and outreach activity form the bedrock of a department that is scientifically strong, outward-looking, and deeply committed to relevance and impact. We hope that during your time at the conference you will absorb something of this legacy and atmosphere.



The South African Institute of Physics describes itself as the voice of physics in South Africa. May your time at UWC indeed give you voice. Through the sharing of high-level science, through thoughtful engagement and through renewed commitment to the societal contribution that physics can make. In science, we place considerable emphasis on the impact of our research. My own way of expressing this is that impact is quality, worked out in relationship. I hope that this will be true of your meeting: that the conference will be marked by the quality of the physics being shared together with a strengthening of relationships across the South African physics community. I trust that the voice of SAIP will be heard and will make an impact.

Have a wonderful time at UWC. May this be a memorable conference, and another significant coming together for the South African physics community.

Message from the Head of the Department of Physics and Astronomy, University of the Western Cape **Professor Sylvain Halindintwali**

It gives me great pleasure to welcome all delegates to the 70th Annual Conference of the South African Institute of Physics hosted by the Department of Physics and Astronomy, Faculty of Natural Sciences, University of the Western Cape. This conference is organized with active partnerships of iThemba LABS, the South African National Space Agency (SANSA) and the Inter-University Institute for Data Intensive Astronomy (IDIA).

The Department of Physics and Astronomy at UWC is a vibrant place for both learning and research. It is home to four research groups in the fields of Condensed Matter Physics, Nuclear Physics, Physics Education and Astrophysics and the office of Outreach and Development for the Inter-University Institute for Data Intensive Astronomy (IDIA).

The theme of this conference, “Physics in the Fourth Industrial Revolution: Towards a Sustainable and Inclusive Future” is intimately aligned with the recognition of this decade by the UN as the “International Decade of Sciences for Sustainable Development”. The conference will be attended by more than 540 delegates from academia, industry, education and government; it will showcase more than 530 presentations that include 8 Plenary talks, 3 winter schools and a 4-day concurrent Teacher Development programme. We are grateful to the pledged participation of invited plenary speakers for enriching the scientific programme, to Prof. Malik Maaza and UNISA for our conference bags, and to the exhibitors and sponsors for their support and engagement with the delegates.

We would like to thank the executive management of UWC, the dean of the Faculty of Natural Sciences and other institutional stakeholders for their unwavering support and encouragement. Finally, we thank the Chair of the LOC, Prof. Sally Macfarlane and her team for a dedicated commitment to the expert organization of the conference, Mr Brian Masara and other members of the SAIP office for the guidance and technical support provided, and our team of volunteers who selflessly dedicated their time and energy towards the success of this conference.

I wish all participants to the 70th SAIP conference an enriching experience with dynamic discussions, and an unparalleled platform where new networks and collaborations are built for the advancement of your respective academic careers.

And, please, take time to sightsee what the Mother City and surrounding municipalities have to offer.





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Department of Physics & Astronomy

The Department of Physics and Astronomy at the University of the Western Cape (UWC) offers a vibrant and dynamic environment for students passionate about exploring the fundamental aspects of the universe. Our department is committed to excellence in both teaching and research, providing students with the knowledge and skills necessary to excel in various scientific and technological fields.

Research Areas and Projects

Our department is actively engaged in several cutting-edge research areas:

- **Astronomy and Astrophysics:** We conduct multi-wavelength astrophysical research focusing on star formation, variable stars, and the evolution of galaxies and clusters. Our work exploits observations from ground and space-based telescopes, contributing to a deeper understanding of the cosmos.



An artist's impression of the SKAO mid frequency radio telescope array in South Africa (left) and SKAO low frequency radio telescope array in Australia (right) which will be used to study the universe (<https://www.skao.int/en/about-us/skao>).

- **Nuclear Physics:** Our nuclear physics research encompasses both fundamental studies and practical applications. We participate in international collaborations, such as experiments at CERN and TRIUMF, to investigate the properties of exotic nuclei. Additionally, we focus on applied nuclear physics projects relevant to the South African context, including cancer imaging and radiation studies in industrial areas. **For more information, see nuclear.uwc.ac.za.**



- **Physics Education:** The Physics Education Research group specializes in student learning. The research focuses on understanding students' experiences in learning undergraduate physics, including problem-solving approaches, metacognitive development, conceptions of science, and the use of simulations to improve physics learning. Our research is motivated by the need to widen access to undergraduate science studies and to improve the quality and throughput of our science graduates.



- **Nanotechnology and Materials Science:** Our research includes the development of photovoltaic materials for solar cells, inorganic direct methanol fuel cells, hydrogen separation membranes, and catalysts for hydrogen production. These projects aim to address energy challenges and contribute to sustainable technologies.

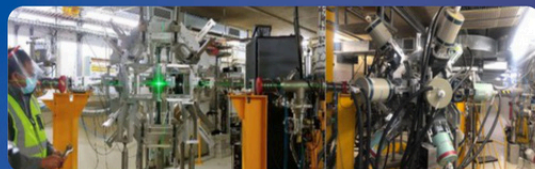


2-Dimensional Materials Growth Laboratory (Left). Optics Laboratory of the Nano-Micro Manufacturing Facility (NMMF), designed for steady-state UV/Visible and fluorescence spectroscopy (Right). The photovoltaic materials studied in our department can be used to convert sunlight directly into electricity.

- **Inter-University Institute for Data Intensive Astronomy (IDIA):** The overarching goal is to build the capacity and expertise in data-intensive research to enable global leadership on MeerKAT large survey science projects and large projects on other SKA pathfinder telescopes.

Notable Initiatives

- **GAMKA Project:** Led by UWC, the GAMKA project positions South Africa as a potential world leader in nuclear physics research. This initiative involves a consortium of South African universities and national facilities, enhancing our research capabilities and international standing.



- **The Square Kilometre Array Observatory (SKAO)** project aims to answer questions in astrophysics, from the formation of the first stars and galaxies to the nature of dark energy. South Africa plays a key role, hosting a major part of the SKAO infrastructure in the Karoo. UWC Astronomy also contributes significantly to observational and theoretical cosmology, investigating from the cosmic microwave background to galaxy formation—guided by Einstein's insight that "The most incomprehensible thing about the universe is that it is comprehensible." UWC is home to some of South Africa's leading scientific minds, including A-rated researchers Prof. Roy Maartens, Prof. Mario Santos, Prof. Romeel Davé, and Prof. Russ Taylor, all of whom are deeply involved in SKA-related cosmological research. With the analytical, computational, and problem-solving skills developed through a physics degree, UWC graduates are well-equipped for a variety of jobs.

Student Opportunities

At UWC, physics students engage in experiential learning that mirrors the work of professional physicists. This approach includes observing phenomena, identifying patterns, constructing and testing explanations, and employing multiple representations to reason about physical concepts. We encourage students to participate in our various research projects, providing hands-on experience and the opportunity to contribute to meaningful scientific advancements. Our department also hosts events like the "Tastes of Nuclear Physics," where students can discuss physics and engage with experts in an informal setting. In Astronomy, our students also participate in research and training programmes of the South African Radio Astronomy Observatory (SARAO).

We invite prospective students to join our department and embark on a journey of discovery and innovation in the fascinating world of physics and astronomy.

Minimum admission requirements

Level 4 (50 - 59%) in English (Home or First Additional Language),
Level 3 (40 - 49%) in another Language (Home or First Additional Language),
Level 5 (60 - 69%) in Mathematics, and Level 4 (50 - 59%) in Physical Sciences.

Department of Physics and Astronomy, University of the Western Cape,
Robert Sobukwe Road, Bellville, 7535, Phone: +27 (0)21 959 2327

Contact Information: For more information or to discuss potential opportunities, please contact us or scan the QR code for our departmental webpage.



Message from the President of the South African Institute of Physics

Professor Nnditshedzeni Eric Maluta



It is my distinct pleasure to welcome you to the 70th Annual Conference of the South African Institute of Physics (SAIP). This marks a remarkable milestone in our journey, a celebration of seven decades of commitment to the advancement of physics research, education, and scientific excellence across South Africa. We are thrilled to host the SAIP2026 conference at the Department of Physics at the University of Western Cape in Cape Town, taking place from 06 – 10 July 2026 on the university's campus. I want to extend a heartfelt welcome to all delegates, especially the students and participants attending this annual conference for the first time.

SAIP2026 Theme:

*Physics in the Fourth Industrial Revolution:
Towards a Sustainable and Inclusive Future*

This year's theme, "Physics in the Fourth Industrial Revolution: Towards a Sustainable and Inclusive Future," truly encapsulates the transformative role of physics in driving 4IR technologies such as artificial intelligence, data-intensive science, and renewable energy systems. Equally important, it highlights our commitment to ensuring that scientific advancements directly address national priorities, such as energy security, climate resilience, and industrial development, which are vital to our collective future.

The SAIP annual conference remains a cornerstone for our scientific community, and this year, we are delighted to host more than 540 delegates from academia, government, and industry. Our scientific programme is robust and engaging, featuring over 530 oral and poster presentations, seven inspiring plenary lectures, nine parallel sessions, and three specialized winter schools. Each of these elements is designed to foster intellectual exchange and stimulate innovative thinking among all participants.

In line with our strategic priorities, building strong partnerships remains a focal point for us. This year, we are especially excited to launch the inaugural "Physics in Industry Day" organised in partnership with SANPC, aimed at bridging the critical gap between academia and the energy sector. Additionally, the 3rd Southern Africa Physics Network (SAPhysNet) Forum will continue its essential work in strengthening regional research capacity and addressing shared development challenges across the SADC region.

I am particularly pleased to welcome our distinguished plenary speakers who are composed of distinguished experts from both national and international institutions, as well as the recipients of the 2026 SAIP Gold Medal and Physics Education Award. Our esteemed plenary speakers include Prof. EE van Dyk, Prof. E. Scullion, Prof. Jens Gundlach, Prof. Paul E. Garrett, Dr. Joyful Mdhuli and Dr. Charles Takalana, Prof. Vladimir Lobaskin, Prof. Natalia Litchinitser, and Prof. Lynndle Square. Their insights will undoubtedly enrich our discussions and inspire all attendees.

A key priority for SAIP remains the development of the next generation of scientists. It is encouraging that nearly 70% of registered participants are students pursuing Honours, MSc, and PhD levels. The conference continues to provide a vital platform for student engagement, professional development, networking, and scholarly dissemination. Beyond research, we are dedicated to making a significant societal impact through initiatives such as the "Science in the Home" outreach programme and the Teachers' Professional Development Programme, which include the relaunching of a national society for science teachers.

I warmly invite all SAIP members to attend the Annual General Meeting (AGM) on the final day of the conference, followed by an enjoyable Gala Dinner that evening.

In closing, I would like to express my sincere appreciation to the University of the Western Cape for their outstanding hospitality, particularly under the leadership of Professor Sally Macfarlane. I also extend my gratitude to our invaluable partners—iThemba LABS, SANSA, and IDIA—for their instrumental support in advancing research infrastructure and strengthening our national scientific ecosystem.

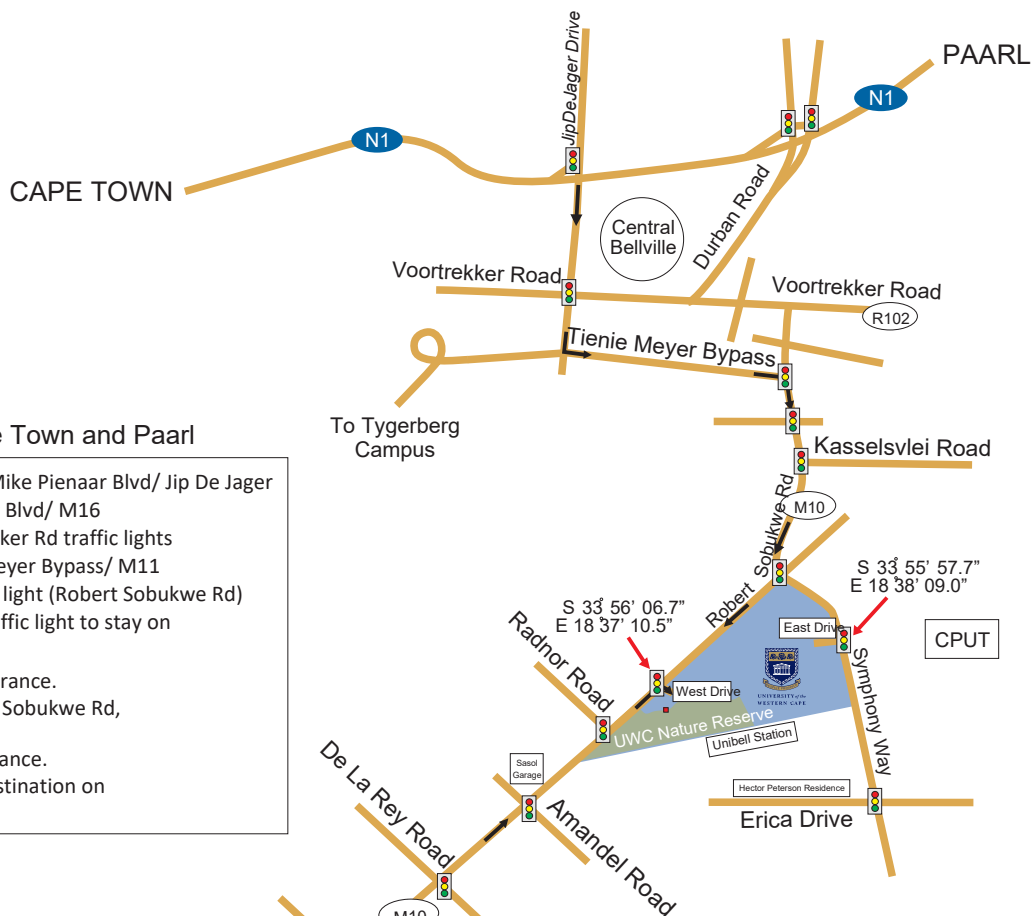
I wish you all a productive, engaging, and a highly successful conference! Enjoy and Enjoy.





GENERAL INFORMATION

Directions to UWC Bellville Campus



N1 highway from Cape Town and Paarl

- Take exit 20 for M16/ Mike Pienaar Blvd/ Jip De Jager
- Turn onto Mike Pienaar Blvd/ M16
- Continue over Voortrekker Rd traffic lights
- Turn left onto Tienie Meyer Bypass/ M11
- Turn right at 2nd traffic light (Robert Sobukwe Rd)
- Turn right at the 4th traffic light to stay on Robert Sobukwe Rd
- Option 1: West Link Entrance.
Turn right onto Robert Sobukwe Rd, destination on left.
- Option 2: East Link Entrance.
Cross 6th traffic light, destination on your right



Cape Town International airport, Cape Town and Somerset West (N2)

- Take Exit 16 for Airport Approach Rd towards Cape Town International Airport
- Stay on Borchards Quarry (M22) for Bellville
- Turn right at 2nd traffic light onto Robert Sobukwe Rd (M10)
- UWC West Link entrance on your right at 5th traffic light

Exiting Cape Town International airport:

- Stay in the left lane, onto Borchards Quarry (M22), then onto M10 as above

General Information

Weather in Cape Town

July in Cape Town falls in the middle of winter and is characterised by cool, crisp days with temperatures typically reaching 16°C to 18°C, while nights are chilly, with temperatures dropping to around 8°C to 11°C. It is one of the wettest months of the year, bringing a mix of bright, sunny days and periods of heavy rain.

Transport From Airport and Stations to the University

- EZ Shuttle: <https://www.ezshuttle.co.za/>
- E-hailing services e.g. Uber, Bolt. These services are permitted to enter the campus at any time.
- **Please note: Always use the official e-hailing apps to book your transport**

Access to the University

- All delegates who enter campus must have a valid ID, Passport or Driver's License.
- The UWC campus in Bellville primarily operates through two main vehicular entrances off Robert Sobukwe Road: the West Link Entrance (the main entry point next to the security boom gate) and the East Link Entrance.
- **All vehicles entering the UWC campus must have a current and valid vehicle license.** Vehicles that do not comply will not be permitted entry to the campus.

Safety

Please take care of your personal belongings on campus and don't leave bags, computers etc. unattended. When off-campus, ensure that your car doors are locked and windows are closed

Registration

The main Registration and Information Desk is located in the **Great Hall Main Entrance, Ground Level.**

The main times for registration are:

- Sunday, 05 July 2026 (for student accommodation delegates) from 14:00 - 17:00 in the Great Hall Main Entrance, Ground Level. Please notify us if you are arriving outside of this time.
- Monday, 06 July 2026 (for winter school delegates) from 07:00 - 09:00 in the Great Hall Main Entrance, Ground Level.
- Monday, 06 July 2026 (for all delegates) from 16:00 - 18:00 in the **Jakes Gerwal Hall Main Entrance area.**

Daily from Tuesday, 07 July 2026 to Friday, 10 July 2026 from 07:30 to 17h00 in the Great Hall Main Entrance, Ground Level.

Internet Facilities

Connect to Guest-Wi-Fi by selecting:

- **SSID/Login: 2026**
- **Password: 2026@uwc**

Alternatively, eduroam access is available.

Emergency Numbers:

During Conference hours:

Melody Williams: 082 773 2241

Emergency contact (after-conference hours):

24-hour Security at the CPS:

(021) 959 3777

General Information

Exhibition Area

Please support our eight exhibitors, who will be located in the Great Hall (Ground Level) throughout the conference. They may also be exhibiting temporarily in the Student Centre during the Welcome Reception (Monday, 6 July) and the Poster Sessions (Tuesday, 7 July, and Wednesday, 8 July).

Communication

Important conference updates will be announced via email, the SAIP2026 WhatsApp Channel, and after the plenary sessions. To join the Conference WhatsApp Channel, please [click this link](#). The channel will be used exclusively by the Local Organising Committee (LOC) for conference announcements; participants will not be able to post messages.

LOC, SAIP Support Staff and Volunteers

- Delegates: Name Badges printed on white paper
- Volunteers: Name Badges printed on yellow paper
- SAIP Support Staff and LOC: Name Badges printed on blue paper
- Exhibitors: Name Badges printed on pink paper

Name Badges

Please [wear your name tags at all times](#) to gain access to the university, registration area, tea/coffee breaks, lunches, poster sessions, lecture halls, and social functions. If you lose your name badge at any time, please report it to the Registration desk as soon as possible.

[You will need your name badge to get lunch.](#)

Lunches

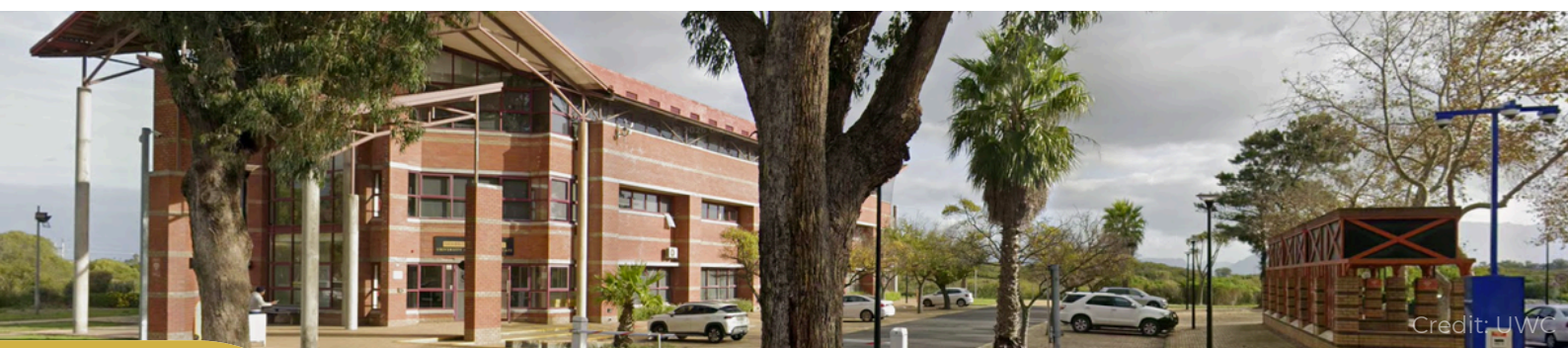
Lunch will be served in the Student Centre from **12:40 until 13h40** during the week of the conference. Delegates attending the WiPiSA Lunch on Wednesday 08 July will be served lunch in the ResLife Centre from 12:40 until 13h40. Delegates attending the Guided nature walk will get packed lunches on the tour.

Refreshments

During the conference, tea, coffee, biscuits, and savouries will be served daily before the morning plenaries (07:30) and during the morning tea break (10:30). An additional afternoon tea will be served on Thursday, 9 July, at 16:00. Refreshments will be available in both the Great Hall and the DL Buildings.

Meeting Point for Tour and Winter School Transport

Delegates attending tours (other than the historical tour) or Winter schools must meet at least 5 minutes before your departure time just outside the School of Government, as indicated on the campus map.

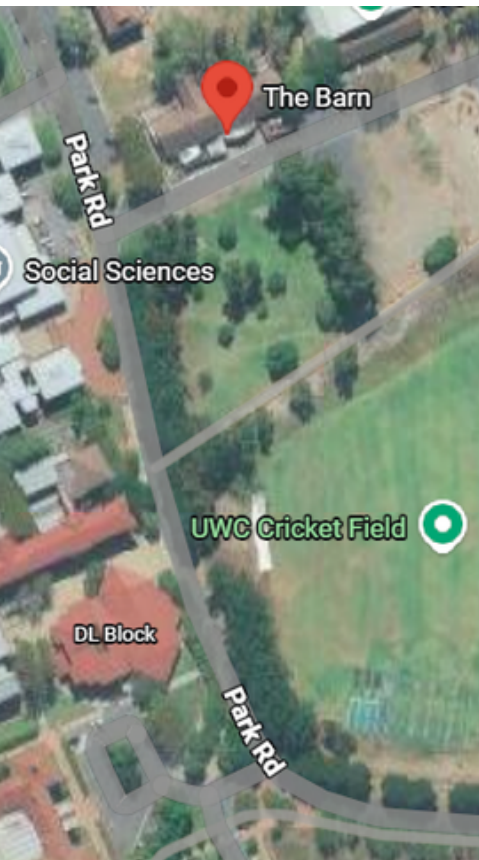


Credit: UWC

General Information

Conference Photograph

The Conference group photograph will be taken in front of the Jakes Gerwel Hall Entrance on Wednesday 08 July 2026 at 14h35 (after the afternoon plenary).



Shops and Banking Facilities at UWC

There are a selection of convenient small retail outlets and ATM facilities on campus. While UWC does not have a large shopping centre or full-service bank branches, there are several cafés, convenience stores, and ATMs available within easy walking distance of the conference venues.

Shops and Food Outlets

Most of the retail facilities are located in and around the Student Centre. This includes (but is not limited to):

- **VIB Bookshop** – Stationery, textbooks, UWC-branded merchandise, snacks, drinks, and other convenience items.
- **Campus Lifestyle Store** – Official UWC clothing and branded apparel.
- **Captain Dorego Coffee Shop** – Light meals, sandwiches, coffee, and takeaway food.
- **vida e caffè UWC** – Coffee, pastries, and light refreshments.
- **Nompumelelo Coffee Shop** – Hot meals, snacks, and beverages.
- **BrewDubs** – A UWC-operated coffee shop located near the Faculty of Education.
- **The Barn** – Offering a selection of hot meals, light meals, sandwiches, snacks, and beverages. Open throughout the conference for delegates wishing to purchase additional food or refreshments.

Banking Facilities

Several 24-hour ATMs are available for cash withdrawals and other standard ATM services:

- Absa ATM – Student Centre
- Nedbank ATM – Student Centre
- Standard Bank – Student Centre
- Absa ATM – ResLife Centre
- Nedbank ATM – ResLife Centre

These ATMs accept cards from most major South African banks. International Visa and Mastercard debit and credit cards can generally also be used, subject to your bank's policies and any applicable fees.

Nearby Shopping and Banking

If you require a supermarket, pharmacy, additional retail stores, or a full-service bank branch, several shopping centres are just a short drive from campus, including N1 City Mall, Tyger Valley Shopping Centre, and Sanlam Centre, all approximately 5–10 minutes away.

For most conference delegates, the on-campus cafés, convenience stores, and Student Centre ATMs provide everything needed during the conference.

Student Residence Accommodation Information

Rooms are single or shared occupancy with shared bathroom facilities in Unibell 1 or Unibell 2 Residence, and are provided with bedding; however, delegates need to bring their own towels, soap and toiletries.

Shuttle Transport

Shuttle transport will be provided between the student residences and the UWC campus at scheduled times from Saturday, 05 July to Saturday, 11 July. The journey is approximately a 5-minute drive.

Shuttle Times

Sunday, 5 July

- Departing School of Government: 14:00 - 17:00 (every 30 minutes, or as required)
- Departing Unibell 2, D-Block: 14:15 - 17:15 (every 30 minutes, or as required)

Monday, 6 July – Friday, 10 July

- Morning (departing Unibell 2, D-Block) at 06:30; 07:00; and 07:30
- Afternoon (departing School of Government):
 - Monday, 6 July: 17:00 - 22:00
 - Tuesday, 7 July: 17:00 - 18:30
 - Wednesday, 8 July: 17:00 - 22:00
 - Thursday, 9 July: 17:00 - 19:00
 - Friday, 10 July: 16:00 - 17:15
- Transport will also be provided directly back to the residences after the Gala Dinner on Friday evening.

Emergency Numbers:

During Conference hours:
Melody Williams: 082 773 2241

Emergency contact (after-conference hours):
24-hour Security at the CPS: (021) 959 3777

Registration and Arrival

Upon arrival at UWC, when you register, you will check in for both your accommodation and the conference.

- The registration desk will be open for delegates in student accommodation from 14:00 to 17:00 on Sunday, 5 July 2026, by the Great Hall (GH) entrance area on the Ground Floor.
- For delegates arriving on other days, please first report to the registration desk in the Great Hall, where you will then be escorted to your residence as soon as possible.
- If you arrive after 17:00, please go directly to UniBell 2 ([Google Map directions](#))
- Check-out time is 10:00 am on your day of departure.

Breakfast

Breakfast is included in your room rate and will be served in the kitchen area of Unibell 2, D-Block at the following times:

- Monday, 6 July: 6:00 am - 7:30 am
- Tues, 7 July - Sat, 11 July 2026: 6:30 am - 08:00 am

Astronomy Winter School students need to take the **06:30 shuttle** from UniBell, while Nuclear Physics and Solid State Physics Winter School students should take the **07:30 shuttle** (or earlier). Please collect your breakfast bag before your shuttle departs.

Evening Meals

For delegates in student accommodation who have booked evening meals, these will be served as takeaway packed meals in the Student Centre dining area from **17:30 - 18:30**.



SAIP2026 Organising Committee

Name	Portfolio(s)
Brian Masara	Executive Officer
Tebogo C. Mokhine	IT Officer
Will Horowitz	Conference Advisory Committee Chair
Agnes Mokwena	Administrator
Vukosi Mashele	Media Liaison Officer

Name	Portfolio(s)
Angela Adams	Logistics
Chris Arendse	Scientific Programme / Winter Schools
Delia Marshall	Teacher Engagement
Franscious Cummings	Sponsorships & Fundraising / Exhibitions / Posters
Israel Hlatwayo	Transport
Jade Abrahams	Logistics
Lindsay Donaldson	iThemba Labs
Lisa Hendriks	Logistics
Lumkile Msebi	Communications
Mario Rodrigues Dos Santos	Winter Schools
Mark Herbert	Teacher Engagement
Martin Snow	SANSA
Melody Williams	SAIP2026 Event Manager / UWC Liaison
Narusha Isaacs	Outreach / Volunteers
Reggie Madjoe	LOC Vice-chair / Venues
Sally Macfarlane	LOC Chair
Mornay Van Rooyen	Volunteers
Smarajit Triambak	iThemba Labs / Winter School
Sylvain Halindintwali	UWC / Institutional Oversight (HoD Physics & Astronomy)
Trevor Volkwyn	Logistics



PROGRAM & PLENARIES

Program Overview

Division Stream	Parallel Venue
Physics of Condensed Matter and Materials	Great Hall (GH) 1
Nuclear, Particle and Radiation Physics	Great Hall (GH) 2
Nuclear, Particle and Radiation Physics - 2	Great Hall (GH) 3

Division Stream	Parallel Venue
Photonics	DL Building 1
Theoretical and Computational Physics	DL Building 2
Applied Physics	DL Building 3

Division Stream	Parallel Venue
Space Science	C-Block 3
Astrophysics	C-Block 5
Physics for Development, Education and Outreach	C-Block 9

SESSION	DURATION / [mins]	TIMES	Monday 6 July				Tuesday 7 July		Wednesday 8 July		
Early Morning	60	07:30 - 08:30	SAIP Council Meeting (Rectors Dining Room)	Solid State Physics and Condensed Matter Physics Winter School (Great Hall 1)			Registration (GH main entrance)		Registration (GH main entrance)		
Morning Plenary	55	08:30 - 09:25					Plenary (Jakes Gerwel Hall)		Plenary (Jakes Gerwel Hall)		
Buffer	5	09:25 - 09:30									
Morning Session 1	60	09:30 - 10:30					Parallel Sessions		Parallel Sessions		
Morning Tea	30	10:30 - 11:00					Tea (GH / DL)		Tea (GH / DL)		
Morning Session 2	100	11:00 - 12:40					Parallel Sessions		Parallel Sessions		
Lunch	60	12:40 - 13:40		Nuclear Physics Winter School (iThemba LABS; Bus Pick-up: School of Government)		Guided Walk in Nature Reserve (Meeting Point: JH Entrance Steps)	Lunch (Student Centre)	WiPISA Lunch (ResLife Centre)	Lunch (Student Centre)		
Afternoon Plenary	55	13:40 - 14:35		Astronomy & Astrophysics Winter School (SAAO; Bus Pick-up: School of Government)	14:15 - 17:30 Tour to iThemba Labs (Bus Pick-up: School of Government)	15:00 - 17:30 Historical Tour of UWC Campus (Meeting Point: JH Entrance Steps)	Plenary (Jakes Gerwel Hall)		Plenary (Jakes Gerwel Hall)		
Buffer	5	14:35 - 14:40							14:35 - 14:45 Conference Photo (JG Hall Entrance)		
Afternoon Session 1	80	14:40 - 16:00					14:40 - 16:00 Parallel Sessions		14:50 - 16:10 Parallel Sessions		
Afternoon Tea	30	16:00 - 16:30									
Afternoon Session 2	60	16:30 - 17:30					16:10 - 17:10 Special invited talk: Prof Malik Maaza (Jakes Gerwel Hall)		16:20 - 17:40 Poster Session 2 (Student Centre)		
Buffer	30	17:30 - 18:00	Registration (JG Hall main entrance)								
Evening	...	18:00 - ...	18:00 - 20:30 Opening Ceremony (Jakes Gerwel Hall) 20:30 - 22:00 Welcome Reception (Student Centre)				17:20 - 18:40 Poster Session 1 (Student Centre)		17:40 - 18:40 Council Meeting with HoDs (Rectors Dining Room)	17:40 - 18:25 Brief Historical Tour of UWC (Meeting Point: JH Entrance Steps)	18:00 - 22:00 Science in the Home Public Outreach Event, incl. science show and stargazing. All delegates welcome. (JG Hall)

Program Overview

Division Stream	Parallel Venue
Physics of Condensed Matter and Materials	Great Hall (GH) 1
Nuclear, Particle and Radiation Physics	Great Hall (GH) 2
Nuclear, Particle and Radiation Physics - 2	Great Hall (GH) 3

Division Stream	Parallel Venue
Photonics	DL Building 1
Theoretical and Computational Physics	DL Building 2
Applied Physics	DL Building 3

Division Stream	Parallel Venue
Space Science	C-Block 3
Astrophysics	C-Block 5
Physics for Development, Education and Outreach	C-Block 9

SESSION	DURATION / [mins]	TIMES	Thursday 9 July			Friday 10 July		Saturday 11 July
Early Morning	60	07:30 - 08:30	Registration (GH main entrance)			Registration (GH main entrance)		
Morning Plenary	55	08:30 - 09:25	Plenary (Jakes Gerwel Hall)			Plenary (Jakes Gerwel Hall)		Science in the Home SAIP2026 Outreach Expo, incl. science show
Buffer	5	09:25 - 09:30						
Morning Session 1	60	09:30 - 10:30	Parallel Sessions	Physics in Industry Day: Physics and the Just Energy Transition (Hybrid event, venue tbd)	Parallel Sessions	Southern Africa Physics Network (SAPhysNet) Forum Day (venue tbd)	for learners and the public. All delegates welcome. (Jakes Gerwel Hall)	
Morning Tea	30	10:30 - 11:00	Tea (GH / DL)		Tea (GH / DL)			
Morning Session 2	100	11:00 - 12:40	Parallel Sessions		Parallel Sessions		08:30 - 11:30 SESSION 1	
Lunch	60	12:40 - 13:40	Guided Walk in Nature Reserve (Meeting Point: JH Entrance Steps)	Lunch (Student Centre)	12:40 - 13:30 Lunch (Student Centre)		11:30 - 13:30 Lunch (for expo volunteers and support staff)	
Afternoon Plenary	55	13:40 - 14:35	Plenary (Jakes Gerwel Hall)			13:30 - 14:25 Plenary (Jakes Gerwel Hall)		Science in the Home SAIP2026 Outreach Expo, incl. science show
Buffer	5	14:35 - 14:40						
Afternoon Session 1	80	14:40 - 16:00	14:40 - 16:00 Parallel Sessions			14:30 - 17:30 SAIP AGM (GH)		for learners and the public. All delegates welcome. (Jakes Gerwel Hall)
Afternoon Tea	30	16:00 - 16:30	16:00 - 16:30 Tea (GH / DL)					13:30 - 15:30 SESSION 2
Afternoon Session 2	60	16:30 - 17:30	16:30 - 17:30 Parallel Sessions					
Buffer	30	17:30 - 18:00						
Evening	...	18:00 - ...	17:40 - 18:40 Council Meeting with Division Chairs (Rectors Dining Room)	17:40 - 18:25 Brief Historical Tour of UWC (Meeting Point: JH Entrance Steps)	17:40 - 22:00 Tour to SAAO (Bus Pick-up: School of Government)	18:00 - 22:00 Gala Dinner & Prize Giving (GrandWest Casino Good Hope Suite)		
			18:40 - 21:45 Council dinner (by invite only)					

Campus Map



Information for Presenters

Oral Presentations

- Oral presentations will need to be presented from the provided Windows computer using PowerPoint (*.pptx), Open office (*.ods), or pdf files. Mac-users will have to provide their own HDMI adapters.
- Presentations should be started strictly on-time according to the scientific programme.
- Please ensure you know well ahead of time when your oral presentation is scheduled.
- Please arrive on time and report to the chair of the session. Inform the session chair if you are competing for a student prize.
- Parallel session speakers have a 15-minute timeslot for their presentation plus 5 minutes for questions or discussions. Please adhere to the schedule and keep within the allocated time.
- Plenary and invited guest speakers have 45-minutes for their presentation and an additional 10 minutes for questions or discussions.
- Please respect the timekeeping of the chair of the session.
- A laser pointer will be available in each venue.



Presentation Upload Instructions for Oral Presentations

- Log onto the SAIP2026 Indico page.
- On the menu on the left, click on “Contribution List”.
- A list of scheduled contributions will list on the right.
- Click on the title of the presentation that you wish to upload.
- Scroll to the bottom of the page where it says “Presentation Materials”.
- Click on the pencil icon on the right.
- A pop-up box appears. Click on “Upload Files”.
- Name your presentation file as follows:
[AbstractNumber]_[Firstname]_[Surname].pdf;
e.g “123_Isaac_Newton.pdf”
- Navigate to the file on your device and upload it.
- NB MAKE SURE YOU ACTIVATE THE “PROTECTED” ICON BY CLICK ON IT. It should turn blue when you click on it.
- Then click on “Upload” at the bottom of the page.
- The presentation will automatically upload to the directory corresponding to the presentation slot as scheduled in the oral programme.
- Should you have any problem uploading your presentation to Indico, please contact us as soon as possible at saip2026@saip.org.za
- Deadline to upload your presentation is the evening before your presentation day.

Information for Presenters

Poster Sessions

- Posters are to be exhibited in the Student Centre.
- Posters should be displayed on the allocated board. Poster boards will be numbered according to abstract numbers.

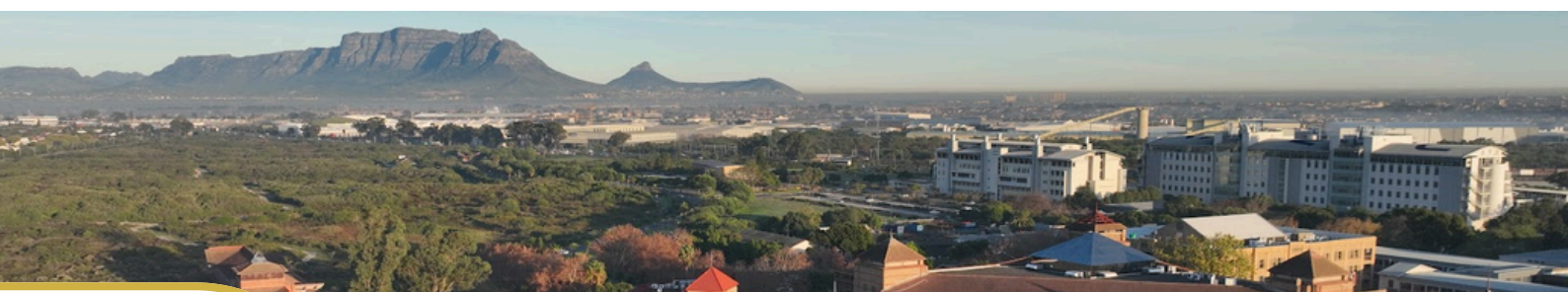
[Click here to view your poster board number allocation](#)

- Poster boards can accommodate A0 Portrait (841 mm wide by 1189 mm high) or A1 Landscape (841 mm wide by 594 mm high).
- Posters must be in English, and have a title, authors' names and affiliations at the top.
- The text should be at least 20 point (5 mm high).
- Posters must summarise the main points of the research, stimulate discussion, and should not just be a copy of the abstract or the written paper.
- Drawings, graphs, figures, charts and pictures must be labelled and large enough to be readable from a distance of 1.5m.
- Poster adhesive tape or prestik will be supplied for each poster board.
- Posters should not be advertisements or commercial publicity and have no reference to trade, company or product names (posters breaching this rule will be removed by the organisers).
- There are two poster sessions scheduled for Tuesday, 07 July 2026 (17:20 - 18:40) and Wednesday, 08 July 2026 (16:20 - 17:40) SAST.
- Posters for Poster Session 1 on Tuesday, 07 July 2026 should be mounted by 14:00 on Tuesday, 07 July 2026 and removed following the session.
- Posters for Poster Session 2 on Wednesday, 08 July 2026 should be mounted by 14:00 on Wednesday, 08 July 2026 and removed following the session.
- Presenters are requested to be present at their poster during the allocated session for discussion. Adjudication of posters entered for a student prize will be done during the assigned poster session only.



Invited Guest Speakers

LIVESTREAM LINK	SPEAKER	AFFILIATION	THEME	DATE	TIME	VENUE
LINK	A/Prof Vladimir Lobaskin	School of Physics, University College Dublin	Plenary: Condensed Matter	Jul 7, 2026	08:30 - 09:25	JG Hall
LINK	Prof Ernest van Dyk	Department of Physics, Nelson Mandela University	Plenary: Applied Physics	Jul 7, 2026	13:40 - 14:35	JG Hall
TBD	Prof Malik Maaza	UNESCO-UNISA-iThemba LABS NRF Africa Chair in Nanosciences & Nanotechnologies	Special Invited Talk	Jul 7, 2026	17:30 - 18:30	GH 1
LINK	A/Prof Lynndle Square	Centre for Space Research, North-West University	Plenary: WiPiSA	Jul 8, 2026	08:30 - 09:25	JG Hall
LINK	Prof Natalia Litchinitser	Fitzpatrick Institute of Photonics, Duke University	Plenary: Photonics	Jul 8, 2026	13:40 - 14:35	JG Hall
LINK	Professor Paul Garrett	University of Guelph; UWC	Plenary: Nuclear Physics	Jul 9, 2026	08:30 - 09:25	JG Hall
LINK	Prof Jens Gundlach	Department of Physics, University of Washington	SAIP2026 LOC Invited Plenary	Jul 9, 2026	13:40 - 14:35	JG Hall
LINK	Dr Charles Takalana and Dr Joyful Mdhuli	IAU Office of Astronomy for Development	Plenary: Physics Education and Development	Jul 10, 2026	08:30 - 09:25	JG Hall
LINK	Prof Eamon Scullion	Northumbria University	Plenary: Space Science	Jul 10, 2026	13:30 - 14:25	JG Hall



A/Prof Vladimir Lobaskin

School of Physics, University College Dublin

LIVESTREAM
LINK



Professor Vladimir Lobaskin is an Associate Professor in the School of Physics at University College Dublin (UCD), where he has served since 2008 and directs both the BSc programme in Theoretical Physics and the MSc programme in Applied Mathematics and Theoretical Physics. He obtained his Specialist Degree in Physics and Teaching from Chelyabinsk State University, a PhD in Physics from Urals State Technical University, and a Doctor of Science (Habilitation) in Physics from Chelyabinsk State University. Prior to joining UCD, he held research and teaching positions in Germany, Switzerland, Sweden, and Russia, including appointments at the Technical University of Munich, the Max Planck Institute for Polymer Research, Lund University, and the University of Fribourg.

His research spans soft matter physics, nanotechnology and nanosafety, collective phenomena, cell motility and tissue mechanics, materials modelling, and machine learning. Professor Lobaskin has coordinated and led numerous European and national research projects, including MembraneNanoPart, SmartNanoTox, NanoCommons, NanoSolveIT, and nanoPass. He serves on several international nanosafety and nanoinformatics committees and has supervised numerous postgraduate students. With 95 publications and an h-index of 31 (Scopus), his work has made significant contributions to the understanding of colloidal systems, bio–nano interactions, and predictive nanoinformatics.

Plenary: Condensed Matter; 07 July; 08:30 - 09:25; JG Hall

What the Cell Sees: Modelling the Bionano Interface

Bionano interactions sit at the heart of some of the most promising technologies of the coming decade, including targeted drug delivery, mRNA vaccines, biosensors, theranostic agents, and engineered interfaces for regenerative medicine. They are, at the same time, the key to understanding the toxicity of nanomaterials. In both roles, what matters is not the pristine nanomaterial but the dynamic corona of proteins and lipids that reshapes its surface on contact with a biological fluid and ultimately determines the fate of the particle and its. This corona governs how the particle is recognised by cell membranes and receptors, directing uptake, intracellular trafficking, and downstream biological response.

In this presentation I will show how computational materials models and nanoinformatics methods allow us to zoom into the bionano interface and identify the principal factors controlling corona formation and the behaviour of nanomaterials in biological media. The multiscale character of the problem demands a combination of physics-based simulation and data-driven models built on machine learning. I will argue that soft matter physics provides the mechanistic backbone that both next-generation nanotechnologies and regulatory science increasingly need.

Prof Ernest van Dyk

Department of Physics, Nelson Mandela University

Professor Ernest van Dyk is a leading physicist and photovoltaics expert at Nelson Mandela University in South Africa. With over three decades of academic and research experience, his work focuses on materials science, solar cell physics, and the advancement of photovoltaic (PV) technologies in South Africa. He holds a BSc in Physics and Applied Mathematics, BSc (Hons) and MSc in Physics, and a PhD in Semiconductor Physics—all from the University of Port Elizabeth.

Prof van Dyk has played a key role in advancing solar energy research and training in South Africa. His commitment to energy access and sustainability is evident through collaborations with industry, government, and international agencies. He has supervised or co-supervised 45 master's and PhD students, authored or co-authored 71 peer-reviewed journal articles, 95 conference proceedings, and authored or co-authored 299 conference presentations, while also contributing extensively to national and international capacity-building initiatives.



BiProf van Dyk is passionate about bridging the gap between cutting-edge research and real-world energy solutions. Through his work, he continues to foster a new generation of scientists and engineers dedicated to sustainable development and energy equity. He is also co-founder and CEO of the university spin-off company PVinsight (Pty) Ltd, an ISO 17025 accredited photovoltaic module testing laboratory and consulting company. He is also registered as a natural scientist (Pr.Sci.Nat.) with the South African Council for National Scientific Professions and as a Certified Physicist (CPhys) with the South African Institute of Physics.

Plenary: Applied Physics; 07 July; 13:40 - 14:35; JG Hall
***From Device Physics to Utility-Scale Systems:
The Remarkable Reach of Photovoltaics***

The global deployment of photovoltaic (PV) technology has accelerated dramatically over the past decade, establishing solar energy as one of the fastest-growing sources of electricity worldwide. South Africa has mirrored this trend, driven by both utility-scale developments and widespread adoption across the commercial, industrial and residential sectors. By early 2026, the country's cumulative installed PV capacity is estimated to exceed 10 GW, highlighting the increasingly important role of PV in ensuring energy security, economic development and the transition to a low-carbon energy future.

Understanding the fundamental physics of solar cells and PV modules remains essential for interpreting the performance of PV systems across all scales. The electronic and optical properties of semiconductor materials determine device efficiency, while module design, environmental exposure and operating conditions influence long-term performance, reliability and degradation. The physical principles that govern charge generation and transport in a solar cell also underpin the analysis of module failures, system losses and the energy yield of large-scale PV power plants.

This presentation traces a personal and scientific journey through the PV value chain, illustrating how knowledge developed at one scale shapes understanding at the next. Beginning with semiconductor crystal growth and materials characterisation of InGaAs and related compounds, the discussion progresses through solar-cell device physics, advanced characterisation techniques, module performance and reliability, and ultimately to the modelling, monitoring and analysis of multi-megawatt PV installations.

By connecting concepts across the scales, the presentation highlights the interdisciplinary nature of PV and demonstrates how a strong foundation in materials science and device physics enables meaningful contributions to the design, operation and optimisation of PV systems. The remarkable reach of PV lies not only in their global deployment, but also in the seamless integration of fundamental science, engineering innovation and societal impact that characterises this rapidly evolving field.

Prof Lynndle Square **Centre for Space Research, North-West University**

**LIVESTREAM
LINK**

Prof Lynndle Square is an Associate Professor in the Centre for Space Research at North-West University (NWU), South Africa. She holds a PhD in Computational Physics from the University of the Western Cape and conducts research in Computational Materials Physics, Space Materials, Polymer Nanocomposites, and Physics Education Innovation. Her work focuses on the modelling and development of advanced materials for space applications, including radiation-shielding materials for use in the harsh environments of low Earth orbit. She serves as Principal Investigator for Materials for Space Applications at NWU, Work Package Leader for Functional Materials for Space Applications within the National Institute for Theoretical and Computational Sciences (NITheCS), and Subject Group Leader for Physics at NWU.

Prof Square has established a strong record in both research and teaching, with more than ten peer-reviewed and conference publications, supervision of postgraduate students across honours, master's, and doctoral levels, and leadership of several research initiatives. In recognition of her contributions, she has received numerous awards, including the Innovation in Teaching and Learning Award (2024), the NRF Thuthuka Award (2022), the Research Merit Award (2022), and the Teaching Excellence Award (2020). Her work reflects a commitment to advancing both materials research and innovative approaches to physics education.



Plenary: WiPiSA; 08 July; 08:30 - 09:25; JG Hall

Physics Without Boundaries: Reimagining Physics Through Research, Education and Leadership in the Fourth Industrial Revolution

What does a physicist look like in the Fourth Industrial Revolution? While advances in computational modelling, artificial intelligence, advanced materials, sensing technologies, and data-driven discovery are transforming the discipline, the future of physics will be determined not only by technological innovation but also by our ability to connect research, education, industry, and society while building an inclusive and sustainable community of physicists.

This plenary explores how physics can transcend traditional disciplinary boundaries through examples drawn from computational materials research for Low Earth Orbit, physics education innovation, and industry-linked student projects investigating cricket ball dynamics and acoustic monitoring systems. Together, these illustrate how authentic, interdisciplinary experiences prepare students for the evolving landscape of the Fourth Industrial Revolution while demonstrating the versatility and societal relevance of physics.

Beyond research, the talk reflects on the importance of intentionally creating spaces where people can encounter physics, develop confidence and build professional networks. Through participation in Women in Physics in South Africa (WiPiSA) networking initiatives, contribution to the WiPiSA 20th Anniversary Roundtable, public engagement through radio discussions, and the development of the Meet a Physicist High Tea for female high school learners, I explore how conversations, mentorship, visibility and collaboration can broaden participation in physics and strengthen the discipline for future generations.

Rather than viewing research, teaching, outreach and leadership as separate responsibilities, I argue that they are interconnected components of a single ecosystem. Building a sustainable and inclusive future for physics requires not only scientific excellence, but also intentional mentorship, collaboration and the creation of opportunities for others to contribute. Ultimately, the physicist of the future will be defined not only by the knowledge they generate, but by the communities they cultivate and the pathways they create for those who follow.



Prof Natalia Litchinitser

School of Physics, University College Dublin

LIVESTREAM
LINK

Natalia M. Litchinitser is the Michael J. Fitzpatrick Distinguished Professor of Electrical and Computer Engineering, Professor of Physics, and Director of the Photonics Materials Program at the Fitzpatrick Institute of Photonics, Duke University. She holds a Ph.D. in Electrical Engineering from the Illinois Institute of Technology and is an internationally recognized leader in photonics, metamaterials, and optical physics. She began her work on metamaterials as a research scientist at the University of Michigan and joined the University at Buffalo faculty in 2008, where she became one of the leading experts in optical metamaterials.

Litchinitser's research spans structured light, metamaterials and metasurfaces, nonlinear optics, topological photonics, advanced imaging technologies, and machine-learning-enabled photonic device design. Her current work explores novel approaches to controlling light, including topological photonic devices, orbital angular momentum microlasers, supersymmetry-inspired optics, and imaging systems for neuroimaging and underwater applications. She is a Fellow of IEEE, Optica, APS, and SPIE.



Plenary: Photonics; 08 July; 13:40 - 14:35; JG Hall
Structured Light and Darkness in Nanophotonics

The rapid development of optical technologies, including optical manipulation and trapping, data processing, sensing and metrology, advanced imaging and microscopy, as well as classical and quantum communications, necessitates the exploration of new degrees of freedom for structuring light in space and time beyond conventional control of amplitude, phase, and polarization. Topological particle-like objects in structured optical fields have emerged as promising candidates for such degrees of freedom. In particular, these optical topologies offer new capabilities for communication, imaging, and sensing through atmospheric turbulence, where refractive index fluctuations distort phase, polarization, and field structure. In this talk, we discuss structured light and darkness, including optical beams with an orbital angular momentum, knotted singularities, and optical skyrmions, and demonstrate their generation, propagation, and interactions with matter in linear and nonlinear regimes. Using metasurfaces and metamaterials, we achieve subwavelength control of optical fields and topology imprinting at fundamental and harmonic frequencies, and introduce spatiotemporal approaches for structuring light jointly in space and time.

OPTICA

Prof Paul Garrett

Professor of Physics, University of Guelph

Extraordinary Professor, University of the Western Cape

LIVESTREAM
LINK



Prof Paul E. Garrett is a Professor of Physics at the University of Guelph and an Extraordinary Professor at the University of the Western Cape. He earned a B.Sc.Eng. in Engineering Physics from Queen's University, followed by M.Sc. and Ph.D. degrees from McMaster University. Over a career spanning academia, national laboratories, and international research institutions, he has held positions at the University of Fribourg, the University of Kentucky, Lawrence Livermore National Laboratory, and North Carolina State University. He has served as Professor at the University of Guelph since 2010 and chaired its Physics Department from 2015 to 2021.

An internationally recognized experimental nuclear physicist, Garrett's research focuses on nuclear structure, collective excitations, shape coexistence, and high-precision nuclear spectroscopy. His work has challenged long-standing models of nuclear collectivity and advanced understanding of vibrational and rotational behaviour in atomic nuclei. He has authored more than 200 refereed journal publications, supervised dozens of undergraduate and postgraduate researchers, and secured over Cdn\$5.9 million in research funding as principal investigator. His contributions have been recognized with numerous honours, including the 2023 Canadian Association of Physicists—TRIUMF Vogt Medal for outstanding contributions to subatomic physics. He has also played leading roles in the development of major nuclear physics instrumentation, including the DESCANT neutron detector array and the GRIFFIN spectrometer, while providing extensive service to the international nuclear physics community through advisory committees, funding review panels, and scientific leadership roles.

Plenary: Nuclear Physics; 09 July; 08:30 - 09:25; JG Hall

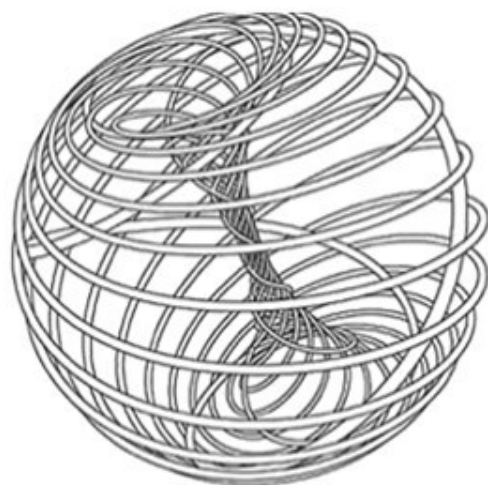
Advances in Nuclear Structure Physics

The past two decades have witnessed a resurgence in nuclear structure physics due to the advent of radioactive beam facilities around the world. In parallel, there have been tremendous strides in nuclear structure theory that are able to provide highly accurate predictions from first-principle approaches. New phenomena are being discovered and old paradigms challenged resulting in a much deeper understanding of the interplay of single-particle and collective excitations. In this presentation, I will give an overview of some of the new experimental facilities and their capabilities and examples of structural phenomena that have been revealed over the past two decades. I will also give examples of where nuclear structure impacts tests of fundamental symmetries and searches for physics beyond the Standard Model.

Prof Jens Gundlach**Department of Physics, University of Washington**
Breakthrough Prize Winner in Fundamental Physics, 2021

Jens Gundlach is a Professor of Physics at the University of Washington, internationally recognized for his pioneering contributions spanning fundamental gravity and biophysics. After earning his Ph.D. in experimental nuclear physics from the University of Washington in 1990, he became an integral part of the University's renowned gravity group, where he developed ultra-precise torsion balance experiments to test the equivalence principle and Newton's inverse-square law at short length scales. Notably, his 2000 measurement of the gravitational constant (G) remains the most precise value to date. His work on gravity led him to join the LISA and LIGO collaborations, and earned him a share of the prestigious 2021 Breakthrough Prize in Fundamental Physics.

Prof. Gundlach also expanded his research into biophysics, pioneering the world's first implementation of nanopore DNA sequencing using an engineered MspA protein pore—a technology that has been adopted by industry. Today, his lab develops single-molecule tools capable of studying enzyme motion along DNA with high spatio-temporal resolution, enabling enzymologists worldwide to analyze genomic enzymes and advance future drug discovery.

**BREAKTHROUGH
PRIZE**

SAIP2026 LOC Invited Plenary; 09 July; 13:40 - 14:35; JG Hall
Nanopore Single-Molecule Biophysics



My group has been at the nexus of developing nanopore sequencing of DNA and establishing nanopores as a new tool for single-molecule biophysics. Much of our work is based on the engineered protein nanopores through which we pull DNA. Here, I will show the stunning capabilities of using this nanopore technology to observe biology's molecular machines in real-time as these enzymes move along DNA or RNA. We easily achieve ten times better position and time resolution than optical tweezers, while simultaneously measuring the exact nucleotide sequence within the enzymes. I will show hereto unseen detail of the motion of helicases, DNA and RNA polymerases, reverse transcriptases, etc. Besides establishing decisive kinetic enzyme models, our method reveals many surprisingly properties of these enzymes.

Throughout the talk, I will highlight the power of physicists' approaches to interdisciplinary research and technology.

Dr Charles Takalana

Deputy Director, IAU Office of Astronomy for Development

Charles Mpho Takalana completed his undergraduate studies at the University of Johannesburg before pursuing postgraduate research in physics at the University of the Witwatersrand (Wits), where he was awarded a PhD in December 2020, specialising in Astronomy and Astrophysics. His doctoral research focused on data analysis techniques for differential observation of the low-frequency radio cosmological background, probing the physics of the Epoch of Reionization, the Dark Ages, and the Epoch of Recombination. He began his career as a Consultant Analyst at CorpActive before joining the South African Radio Astronomy Observatory (SARAO) at the Department of Science and Innovation (DSI) as an Astronomy Policy Researcher, supporting the implementation of the South African Multi-Wavelength Astronomy Strategy and contributing to building a vibrant astronomy community with the capacity to drive national and world-class astronomy projects.



Until 2021, he served as the founding Head of Secretariat of the African Astronomical Society (AfAS) and was also Vice Chair of the National Organising Committee for the 2024 IAU General Assembly in Cape Town, the first time the event was hosted on African soil. He is currently the Deputy Director of the International Astronomical Union Office of Astronomy for Development, a joint project of the International Astronomical Union and the National Research Foundation, supported by the Department of Science, Technology, and Innovation (DSTI). He also serves as an Extraordinary Lecturer at Stellenbosch University and continues to contribute to the development of continental astronomy as an Advisor to AfAS, while remaining involved in outreach and passionate about inspiring and sharing astronomy with young people. In 2025, he was recognised as one of South Africa's 100 Shining Stars by Inside Education for his contributions to science and technology.

Dr Joyful Mdhuli

IAU Office of Astronomy for Development

Dr. Joyful Mdhuli is a Postdoctoral Researcher at the International Astronomical Union's Office of Astronomy for Development (OAD), where she coordinates flagship projects that leverage astronomy to address global development challenges. She earned her PhD in Particle Physics from the University of the Witwatersrand, focusing on data from the ALICE experiment at CERN's Large Hadron Collider. In recognition of her doctoral work, Dr. Mdhuli was named one of the laureates for the 2025 Breakthrough Prize winners in Fundamental Physics, as part of the international ALICE Collaboration. Her research contributed to advancing our understanding of the early universe through the study of quark-gluon plasma.



She has broad experience in science communication, education, and policy engagement. Dr. Mdhuli is a member of the Organization for Women in Science for the Developing World (OWSD) and currently serves as the Executive Secretary of Women in Physics in South Africa (WiPiSA), promoting gender equity in science. She is the Director and member of the Executive Committee of the African Astronomical Society (AfAS). Her accolades include the 'Best Pitch Award' from the Black Women in Science (BWIS) Fellowship and participation in the 70th Lindau Nobel Laureate Meeting. She also contributes editorially to the African Physics Newsletter and the Communicating Astronomy with the Public Journal.

Plenary: Physics Education and Development; 10 July; 08:30 - 09:25; JG Hall

Astronomy for a Better World: Connecting Knowledge, Society, and Sustainable Development

Traditional development approaches are increasingly struggling to respond to the complexity and urgency of contemporary global challenges, including widening inequality, climate instability, and the demand for inclusive and sustainable growth. Many existing development frameworks remain siloed, with limited integration of science, technology, and innovation, constraining their overall impact.

At the same time, scientific disciplines such as astronomy are often perceived as primarily academic, focused on advancing fundamental knowledge with limited direct societal application. This perception obscures the significant role that science has played in driving technological innovation and human capital development. In particular, technologies originating from astronomical research have contributed to advancements in digital imaging, medical diagnostics, satellite communications, and large-scale data processing, demonstrating the far-reaching impact of science on modern society.

The International Astronomical Union Office of Astronomy for Development was established in 2011 to address this gap by leveraging astronomy, within the broader context of science, as a tool for sustainable development. Operating across more than 100 countries, the OAD has supported hundreds of projects that illustrate how science can contribute to education, scientific capacity building, technological innovation, cultural preservation, environmental awareness, and social cohesion.

This talk will present an overview of the OAD's strategic framework, flagship ecosystem, and global network model, highlighting its alignment with the United Nations Sustainable Development Goals. Through competitive Calls for Proposals and strategic partnerships, the OAD enables locally driven initiatives that apply science, particularly astronomy, to community-defined challenges, including STEM education, mental wellbeing, Indigenous knowledge systems, astrotourism, and science diplomacy.

Beyond programme implementation, the OAD's growing body of global practice has created important opportunities for research. Evidence generated through projects, partnerships, and regional networks is increasingly informing questions around impact evaluation, science engagement, capacity development, innovation ecosystems, and the role of scientific knowledge in society. This has contributed to the emergence of astronomy for development - and more broadly science for development - as a developing interdisciplinary research field that connects the physical sciences with development studies, policy, education, and social science methodologies.

By positioning science - and astronomy as a powerful exemplar - within the broader development landscape, this work demonstrates its potential as a cross-cutting, interdisciplinary tool capable of contributing meaningfully to sustainable and inclusive development.



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DEVELOPMENT

Prof Eamon Scullion Northumbria University

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Professor Eamon Scullion is a Professor of Mathematics at Northumbria University whose research spans solar physics, space science, and space technology development. He holds a PhD in Applied Mathematics from the University of Sheffield and Armagh Observatory, an MSc in Physics and Astronomy from the University of Glasgow, and a BSc in Physics and Applied Mathematics from Queen's University Belfast. His research has focused primarily on solar physics, where he is best known for the discovery of magnetic tornadoes in the lower solar atmosphere, published in the journal *Nature* in 2012. He has held research and academic positions at the University of Oslo, Trinity College Dublin, and Northumbria University, and is a Fellow of the Royal Astronomical Society, the Institute of Mathematics and its Applications, and the Higher Education Academy.

Alongside his scientific research, Scullion has led major space technology initiatives, including the UK Space Agency-funded ALIGN mission, which developed novel laser communications technology for CubeSats and secured £6 million in funding as Principal Investigator. This work contributed to the establishment of Northumbria's first Space Laboratory in 2022 and helped pave the way for the £50 million North-East Space Skills and Technology (NESST) Centre in partnership with Lockheed Martin UK and the UK Space Agency. He has supervised multiple doctoral students and postdoctoral researchers, served as Departmental Director for Equality, Diversity and Inclusion at Northumbria University, led the department's successful Athena Swan Bronze Award application, and has published 50 peer-reviewed papers with an H-index of 27.

Plenary: Space Science; 10 July; 13:30 - 14:25; JG Hall

The Sun in Focus: From Early Telescopes to High-Resolution Physics

From its earliest presence in southern African cosmology, where the Sun was revered in San and Nguni traditions as a life-giving and regulating force, to its formal study within the Royal Astronomical Society era of systematic observation, our understanding of the Sun has evolved through a remarkable fusion of culture, geography, and technology. This plenary traces the evolution of solar observation from early sunspot sketches to modern diffraction-limited imaging with the Swedish 1-m Solar Telescope and more recently with the Daniel K Inouye 4-m Solar Telescope. These advances have transformed the Sun from a distant luminous disk into a dynamic, multi-layered plasma system, where fine-scale magnetic structuring and energy transport processes are now resolved across multiple spectral domains. The talk highlights how increasing spatial, temporal, and spectral resolution, combined with global collaborations involving institutions such as the South African Astronomical Observatory, has deepened our understanding of the coupled photosphere–chromosphere–corona system and its role in space weather. By bridging heritage, international collaboration, and cutting-edge technology, we move closer to unlocking the fundamental plasma physics governing our nearest star.



SPECIAL EVENTS

Special Events

EVENT	DATE	TIME	VENUE	TARGET AUDIENCE
Opening Ceremony & Welcome Reception	Monday 06 July	18:00 - 22:00	JG Hall; Student Centre	Open to all conference delegates and invited guests
Special Invited Talk: Prof Malik Maaza	Tuesday 07 July	17:30 - 18:30	Great Hall, Lecture Venue 1	Open to all conference delegates, UWC staff and students
WiPiSA Lunch	Wednesday 08 July	12:40 - 13:40	ResLife Centre	Open to the public and all delegates
Science in the Home Public Event	Wednesday 08 July	18:00 - 22:00	JG Hall	Open to the public and all delegates
Side Event: Physics in Industry Day	Thursday 09 July	09:30 - 13:40	Venue TBD	Open to all conference delegate, UWC staff, & invited guests
Side Event: Southern Africa Physics Network (SAPhysNet) Forum Day	Friday 10 July	09:30 - 13:40	Venue TBD	Open to all conference delegate, UWC staff, & invited guests
Gala Dinner & Student Award Ceremony	Friday 10 July	18:00 - 22:30	Good Hope Suites, GrandWest Casino	Open to conference delegates & invited guests
Science in the Home Public and Learner Engagement Day	Saturday 11 July	Two Sessions: 08:30 - 11:30 & 13:30 - 16:30	JG Hall	Open to the public, school learners, educators, and all delegates

Program: Opening Ceremony & Welcome Reception

DATE: Monday, 06 July 2026

VENUE: Jakes Gerwel Hall, University of the Western Cape

TIME	ACTIVITY
18:00 - 18:30	Arrival
18:30 - 18:35	Introduction by Master of Ceremonies, Dr Gillian Arendse
18:35 - 18:45	Official Welcome Address on behalf of the host, UWC Deputy Vice-Chancellor: Academic, Prof Monwabisi Ralarala, <i>on behalf of UWC Rector and Vice-Chancellor, Prof Robert Balfour</i>
18:45 - 18:55	Official Welcome Address on behalf of the SAIP President of SAIP, Prof. Eric Maluta
18:55 - 19:00	Musical interlude: UWC Choir
19:00 - 19:10	Opening remarks Acting Deputy Vice-Chancellor: Research and Innovation, Prof Priscilla Baker
19:10- 19:20	Introductory remarks Dean of Natural Sciences, Prof David Holgate
19:20 - 19:25	Musical interlude: UWC Choir
19:25 - 19:30	Introduction of Guest of Honour
19:30 - 19:55	Official Keynote Address DSTI Director General, Dr Mlungisi Cele
19:55 - 20:00	Musical interlude: UWC Choir
20:00 - 20:10	Vote of Thanks; Announcements to Delegates: SAIP2026 LOC Chair, A/Prof Sally Macfarlane
20:10 - 22:00	Welcome Reception with finger snacks and refreshments: Student Centre



Credit: UWC

Prof Malik Maaza

UNESCO-UNISA-iThemba LABS NRF Africa Chair in Nanosciences & Nanotechnologies



Prof. M. Maaza is the current incumbent, in South Africa, of the UNESCO UNISA- ITLABSNRF Africa Chair in Nanosciences & Nanotechnologies. He is a joint staff of the University of South Africa and the National Research Foundation of South Africa. His h-index is about 114 and i10=623, with total citations above 42,000. He is a fellow of various Academies, including the European Academy of Arts & Sciences, the African Academy of Science as well as the National Academy of Science of India, the Islamic Academy of Sciences & the Royal Society of Chemistry-London. Prof. M. Maaza has been bestowed several awards & accolades including the Oppenheimer award, the Galileo-Galilei award by the International Commission for Optics (ICO), and the African Union Nkwame Nkrumah award for Excellence in Science & Technology & as well as the J. Vasconcelos award for education by the World Cultural Council-Hong Kong in addition to the recent International Khawarizmi award and the International Union for Pure & Applied Physics (IUPAP) award.

Special Invited Talk; 07 July; 17:30 - 18:30; Great Hall Lecture Venue 1
Room Temperature Quantum Mechanics Peculiarities in Nanoscale Systems & their potential technological applications towards SDGs

The intrinsic surface and interface properties of nanoscale systems are correlated to their surface to volume ratio, surface atomic coordination, electron and phonon confinement, and other factors. Such shape & size dependent features are established to give a birth to peculiar quantum mechanics responses. Among such, one could mention; (i) the Fermi Total reflection of cold neutron wave-packet & their trapping within the picosecond time regime, (ii) the Anderson Infrared light localization in semidisordered Carbon Nanotubes & lasing in semi-disordered nanomaterials, (iii) the size dependent bandgap tunability in Mott transition Semiconductor- Metallic phase transition systems, (iv) the relativistic Dirac "S" orbitals contraction & room temperature solid mercury, and last but not least (v) the enhanced thermal conductivity of nanofluids conceptualized by the Father of electromagnetism, James Clerk Maxwell.

This contribution reports on the theoretical & experimental observations of the above-mentioned unusual quantum mechanics governed peculiar phenomena. Likewise, their potential technological applications will be highlighted.



08 July 2027 | 12:40 - 13:40



LUNCH

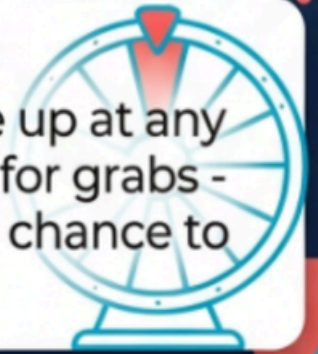


Activities

Spin the Wheel

Spot Prizes

Your name could come up at any moment. Prizes are up for grabs - stay to the end for your chance to win.



Two Truths & a Physics Lie

a Physics Lie

Share two real facts about your research or career - and one convincing lie. Can the audience catch you out?



Confession Board

Scan the QR code and share what you wish someone had told you earlier in your physics journey.

What's on

Your Plate

60 seconds. Tell the room what you are working on right now - in plain language. Who knows who you will meet?





70th ANNUAL CONFERENCE OF THE SOUTH AFRICAN INSTITUTE OF PHYSICS



UNIVERSITY of the WESTERN CAPE
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UNIVERSITEIT van WES-KAAPLAND



SCIENCE IN THE HOME

Discover science using
everyday household materials



WEDNESDAY
8 JULY 2026



18:00 – 22:00



JAKES GERWEL HALL
UNIVERSITY OF THE WESTERN CAPE



Interactive science
demonstrations for all ages.
Free and open to the public.

Includes a live science show and
stargazing with telescopes!



SATURDAY
11 JULY 2026



08:30 - 11:30 & 13:30 - 16:30



JAKES GERWEL HALL
UNIVERSITY OF THE WESTERN CAPE



Interactive science
demonstrations for all ages.
Free and open to the public.

Includes a live science show!

CLICK HERE TO
REGISTER

For more information contact us on : nnisaacs@uwc.ac.za



Register here



Side Event: Physics in Industry Day

Thursday 09 July; 09:30 - 13:40; Venue TBD

Open to all conference delegate, UWC staff, & invited guests

The SAIP2026 Physics in Industry Day is a flagship initiative designed to bridge the gap between academia and the energy sector, fostering meaningful collaboration to address South Africa's national development goals. Building on the recent Memorandum of Understanding (MoU) between the South African Institute of Physics (SAIP) and the South African National Petroleum Company (SANPC), this event brings together researchers, industry professionals, engineers, and policymakers under the theme "Physics for the Just Energy Transition." The symposium provides a dynamic platform to explore how physics can offer innovative solutions to critical energy challenges—ranging from petroleum and gas to renewable energy and hydrogen technologies—while creating new pathways for research, student development, and professional collaboration.

Open to all conference delegates, this focused industry-academia symposium aims to translate real-world operational challenges into physics-driven research questions. The programme will feature insights from industry leaders, interdisciplinary panel discussions, and the introduction of a SANPC–SAIP Physics Challenge Brief to guide future postgraduate research and innovation. By exposing physicists and students to industry workflows and career opportunities, the Physics in Industry Day serves as a vital catalyst for aligning scientific expertise with the requirements of the Just Energy Transition and fostering long-term, sustainable partnerships that support South Africa's energy security.

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

Friday 10 July; 09:30 - 13:40; Venue TBD

Open to all conference delegate, UWC staff, & invited guests

The Southern Africa Physics Network (SAPhysNet) is a collaborative initiative dedicated to strengthening human capital development and research capacity in physics across the SADC region. By serving as a unified platform, SAPhysNet advances the role of physics in addressing critical developmental challenges—such as energy, water management, and healthcare—while fostering stronger regional research and teaching partnerships. This year marks a momentous occasion for the network, as the SAPhysNet Forum Day at SAIP2026 will celebrate the official launch of the network, as well as highlight its co-hosting role for the upcoming IUPAP General Assembly and the International Conference on Physics (ICP2027).

The Forum Day will serve as a vital progress-update and report-back session for the network. The programme will feature an overview of the ongoing SAPhysNet strategy, including a presentation of regional survey results aimed at shaping a SADC-wide Physics Whitepaper, and provide a platform for stakeholders to contribute to the evolving SAPhysNet constitution. In addition to these strategic discussions, we are issuing a formal call for participation in several exciting initiatives, including the official SAPhysNet logo competition and the "Physics in My Village" photo competition. Open to all conference delegates, this forum is a key opportunity to participate in defining the future of collaborative physics research and education in Southern Africa.

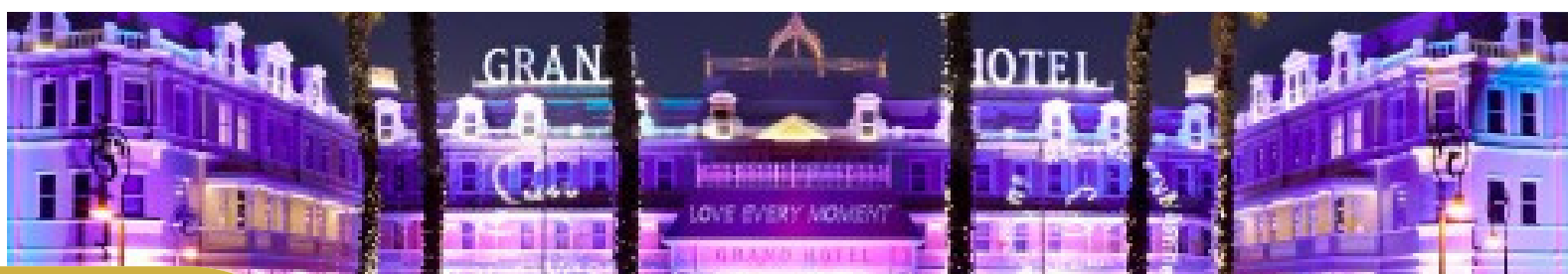
Program:

Gala Dinner & Student Awards Ceremony

DATE: Friday, 10 July 2026

VENUE: Good Hope Suites, GrandWest Casino

TIME	ACTIVITY
18:00 - 18:30	Arrival
18:30 - 18:35	Welcome UWC Physics and Astronomy HoD & LOC member, Prof Sylvain Halindintwali
18:35 - 18:40	Entertainment: Chad Saaimon
18:40 - 19:10	Starter is served
19:10 - 19:20	Remarks by SAIP President: Professor Eric Maluta
19:20 - 19:50	Awarding of Student Prizes Assoc. Professor Sally Macfarlane and Division Chairs
19:50 - 19:55	Entertainment: Chad Saaimon
19:55 - 20:00	GrandWest's "Feeling Lucky" Promotions
19:55 - 20:50	Dinner is served
20:50 - 21:00	Award and Acceptance: 2026 SAIP Education Award Professor Eric Maluta
21:00 - 21:10	Award and Acceptance: 2026 SAIP Gold Medal Award Professor Eric Maluta
21:10 - 21:20	Vote of Thanks & Conference Mace handover to the hosts of SAIP2027 SAIP2026 LOC Chair, Assoc. Professor Sally Macfarlane
21:20 - 21:25	Group photograph of all SAIP Presidents (Past & Present) in attendance
21:25 - 22:30	Dessert / Dancing with music by Chad Saaimon and our DJ





WINTER SCHOOLS

Winter School Program: Solid State Physics and Condensed Matter Physics

UWC Great Hall Lecture Venue 1

Sustainable Futures through Condensed Matter and Nanoscience

TIME	SESSION	PRESENTER(S)
08:30	Registration & Coffee	
09:00	Welcome and Opening Remarks <i>Opening remarks: Condensed Matter Physics as a Driver of Sustainable Innovation</i>	Prof. Christopher Arendse (Department of Physics & Astronomy, UWC)
09:15	Lecture 1 – Measurement <i>Precision for Sustainability: The Role of Metrology</i>	Dr. Clive Oliphant (National Metrology Institute of South Africa)
10:00	Lecture 2 – Battery Technologies <i>Next-Generation Batteries for Sustainable Energy Systems</i>	Prof. Natasha Ross (Department of Chemistry, UWC)
10:45	Coffee Break	
11:00	Lecture 3 – Hydrogen Economy <i>Hydrogen Economy and Sustainable Development</i>	Prof. Sivakumar Pasupathi (South African Institute for Advanced Materials Chemistry, UWC)
11:45	Lecture 4 – Top-down vs. Bottom-up <i>Advancing Materials through Chemical Vapour Deposition – From Theory to Practice</i>	Prof. Christopher Arendse (Department of Physics & Astronomy, UWC)
12:30	Lunch	
14:00	Lecture 5 – Computational Workshop <i>Structure Analysis using Least Squares Fitting - Performing Simple Rietveld Refinement</i>	Prof. Franscious Cummings (Electron Microscope Unit, Department of Physics & Astronomy, UWC)
15:30	Lecture 6 – Demonstration Chemical Vapour Deposition and Surface <i>Treatment of Perovskite Thin Films</i>	Dr. Siphelo Ngqoloda, Mr. James Mercuur, Dr. Siphesihle Magubane, Miss Natasha Peterson (Department of Physics & Astronomy, UWC)
17:00	Finish Workshop	

Winter School Program: Nuclear Physics

iThemba LABS Auditorium

Probing Atomic Nuclei: From Nuclear Structure to Stellar Nucleosynthesis

TIME	SESSION	PRESENTER(S)
09:00	Arrival and Registration With Coffee/Tea and Muffins	
09:30	Welcome from iThemba LABS and the SAIP LOC	
09:35	Session 1 <i>Accelerator Physics at iThemba LABS</i>	Dr Skye Segal (iThemba LABS)
10:35	Leg Stretch/Bathroom Break	
10:45	Session 2 <i>Introduction to Gamma Spectroscopy and AFRODITE</i>	Dr Daphney Bucher (University of Cape Town)
11:45	Coffee/Tea Break	
12:00	Session 3 <i>Physics with the K600 Magnetic Spectrometer</i>	Dr Wiggert Brümmer (iThemba LABS)
13:00	Lunch at the iThemba LABS Visitors Centre	
14:00	Session 4 <i>Applications of Nuclear Physics</i>	Dr Zina Ndabeni (iThemba LABS)
15:00	Leg Stretch/Bathroom Break/Tour Organisation	
15:15	iThemba LABS Tour - SSC Control Room - SPC2 - Biophysics - AFRODITE - K600 Magnetic Spectrometer - H-line at the Tandatron	CISE/SSC Lab/ATS
15:15	Depart for UWC	

Winter School Program: Astronomy/Astrophysics

South African Astronomical Observatory (SAAO) Auditorium
*Exploring the Universe with South Africa's
World-Class Observatories*

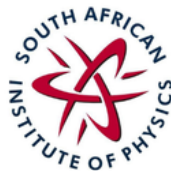
TIME	SESSION	PRESENTER(S)
08:50	Welcome	
09:00	Cosmology: the Physics of the Universe	Prof. Roy Maartens (UWC)
09:50	An introduction to Radio Interferometry, Things that go Boom and the Search for Extraterrestrial Intelligence	Prof. Oleg Smirnov (Rhodes and SARAO)
11:00	Tea Break	
11:30	The MeerKAT Radio Telescope: Behind the scenes	Dr. Kim McAlpine (SARAO Senior pipelines developer) Sarah Buchner (SARAO Science Operations Lead) Sibusiso Gumede (SARAO Head of Operations) Tyrone van Balla (SARAO Functional Manager: Data Processing & Pipelines)
12:20	SKA Observatory: Building the world's most advanced radio telescopes	Dr. Betsey Adams (SKA-Mid Lead Commissioning Scientist)
13:10	Lunch	
14:10	An overview of the South African Astronomical Observatory	Prof. Rosalind E. Skelton (SAAO Managing Director)
15:00	Tutorial: Machine Learning in Astrophysics	Dr. Verlon Etsebeth (UWC) Assoc. Prof. Michelle Lochner (UWC)
16:30	Depart for UWC	



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LABS
Laboratory for Accelerator
Based Sciences



SANSA
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SPACE AGENCY



70th ANNUAL CONFERENCE of the SOUTH AFRICAN INSTITUTE OF PHYSICS

6 - 10 JULY 2026
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