

# Over View of South African Institute of Physics

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# SAIP Background

Established on 7 July  
in 1955 as a learned  
society in physics

SAIP is the National  
Adhering body to  
IUPAP, IUPAB, IAU

Transformed to both  
learned society and  
professional body  
registered with SAQA

## Learned Society

- Make knowledge available, both formally and informally,
- Publication of journal papers and hosting conferences,
- Offering a sense of identity and prestige to those academics invited to be members of the learned society,
- Promote the study and application of physics

## Professional Body

- Recognising merit by assigning professional designations (**CPhys, CPhysTech**)
- Ensuring Continuous Professional Development (**CPD**)
- May be mandated by the government to regulate the profession (**Critical Skills Visa Letters**)
- Safeguard the interest of the public through codes of good ethical conduct

## SAIP BACKGROUND

### **Mission:**

To be the Voice of Physics in South Africa

### **Overall Aim:**

Advancing Physics, Transforming South Africa!

**Value Proposition:** To enhance physics education and research, cultivate an inclusive community of future physicists in South Africa, and harness the power of physics to effectively address social and economic challenges while achieving Sustainable Development Goals (SDGs).



South African Institute of  
**PHYSICS**  
THE VOICE OF PHYSICS IN SOUTH AFRICA

# Strategic Focus



**Physics contributes to addressing socio-economic challenges and Sustainable Development Goals (SDGs) for South Africa**

**Physics Education  
& Training**

**Physics Research  
& Innovation**

**Nurturing and Developing  
Professional Physicists**

**Transformation, Inclusivity  
Gender & Diversity**

**Improving physics education and research, developing  
and nurturing an inclusive next generation of physicists**

**Advancing Physics, Transforming South Africa!**

## SAIP Goals

1. To promote the study, research and application of physics and related subjects
2. To further the exchange of knowledge among physicists by means of conferences and publications
3. To ensure a high ethical standard of professional conduct among physicists
4. To provide Government with policy advice in Science and Technology
5. To offer a wide range of services addressing developmental needs in society for example
  - addressing science education pipeline challenges
  - the shortage of women in physics
  - to unlock the potential of physics education and research in South Africa through sustainable capacity building empowering physicists to address socio-economic challenges

## Competitive Advantage of Working with SAIP

A major strength of the SAIP is that it provides a channel for the various science stakeholders and government departments to interact with the Physics community in an organised way.

Due to its large footprint, the SAIP has membership in all research and academic institutions across South Africa plus in some schools and private sector.

We also have international members and partners.

Hence, the SAIP can leverage the skills of the physics community in organising and facilitating conversations and catalysing interactions and developmental programmes in physics, astronomy, and their related sub-disciplines.

# SAIP Structure

## Elected Council Provides Leadership

## SAIP Office implements day to day activities

## Divisions

1. Astrophysics and Space Science
2. Physics Education
3. Photonics
4. Nuclear, Particle and Radiation Physics
5. Physics of Condensed Matter & Materials
6. Theoretical and Computational Physics
7. Applied Physics

## Forums

1. Biophysics Working Group
2. Women in Physics in SA (WiPiSA)
3. Student Forum

## SAIP supporting Physics for Development?

According to IUPAP, Physics for Development involves activities aimed at

- Helping in appropriate ways the improvement of the conditions of physics and physicists in developing countries
- Supporting and promoting the contribution of physics to socio-economic development (Sustainable Development Goals)
- Distributing relevant information on opportunities for Physics Development



# Physics Development

## 1. Physics Reviews

- Shaping the Future of Physics in SA
- Review of Physics training leading to the BSc Benchmark Statement

## 2. Innovation & technology transfer (Entrepreneurship for Physicists & Physics in Industry Day)

## 3. South African Biophysics Initiative

## 4. Government policy inputs (connections with DSI and NRF)

## 5. Women in Physics in South Africa (WiPiSA)

## 6. Conferences & proceedings

# Physics Development

7. Nominate physicists for awards (Gold Medal, Silver jubilee, many more in pipeline)
8. Outreach and public Understanding of Physics e.g. Physics in our everyday life documentary series  
<https://youtu.be/BqNcTTGJNIM>
6. South African Physics Olympiad
7. Teacher Development Workshops
  - a) Essential Skills for Matric Resources  
<https://www.saip.org.za/essential-skills/>

# Physics Development

## 8. Regional & International Cooperation

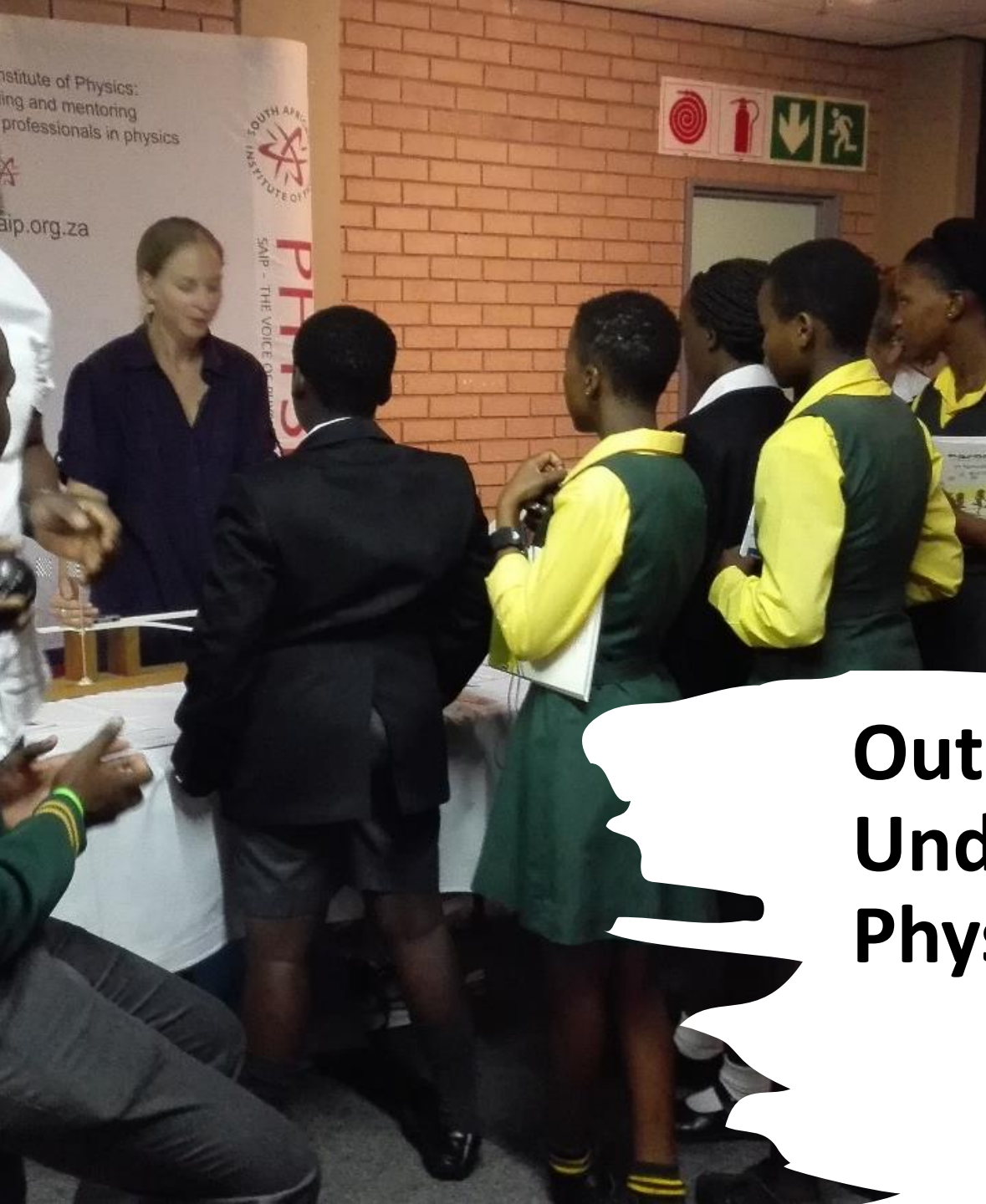
- a) IUPAP, IAU, IUPAB
- b) African School of Physics Secretariat
- c) African Light Source Secretariat
- d) Southern Africa Physics Network initiation
- e) Africa- UK Physics Partnership Programme

# Conferences- Human Capital Development



2023  
CONFERENCE HOST  
UNIVERSITY OF ZULULAND

THE 67TH ANNUAL CONFERENCE OF THE  
SOUTH AFRICAN INSTITUTE OF PHYSICS (SAIP)  
DEPARTMENT OF PHYSICS, UNIVERSITY OF ZULULAND, KWARANA, 9600



## Outreach & Public Understanding of Physics

# Promoting Women & Girls in Physics (WiPiSA)



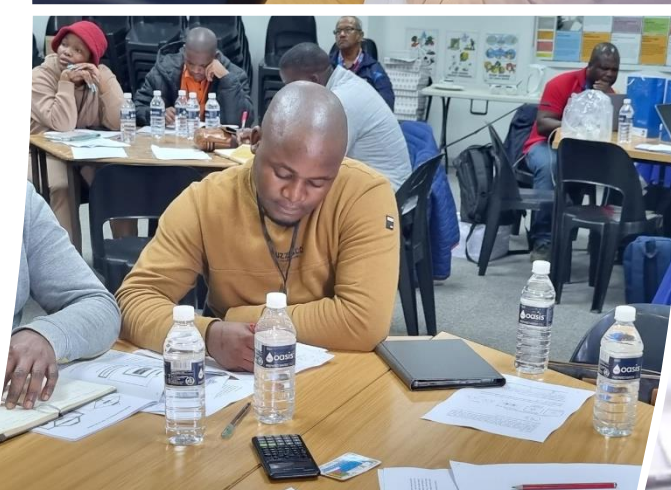
# Physics Teacher Development

**Focusing on problem  
solving, practicals, skills  
lacking from Matric  
Diagnostics report; NOT  
THEORY**

**Attracting girls in Physics**

**Virtual Experiments**

**Careers in physics**



# Distributing Essential Skills for Matric Information







# South African Physics Olympiad (SAPhO)

# SAIP New Initiatives

## Expanding Teacher Development and Public Understanding of Physics

<b>Government Service Delivery Area</b>	<b>DSI Impact Area</b>	<b>New Initiatives Under Development ( Volunteers invited to Contribute)</b>
<p><b>People Development and Demographic Change</b></p> <p>Basic Education Skills &amp; Development</p> <p>Improve the quality of life and well-being of residents in the districts through, among others, improving access to quality educational and training opportunities</p>	<p><b>Grand Challenge 2 Education and skills for the future –</b></p> <p>Addressing 4IR, Digital Divide, Artificial Intelligence &amp; Automation</p> <p>Access to basic services and infrastructure</p>	<p><b>1) Science Skills Accelerator programme for ECD practitioners/Teachers</b></p> <p>(James et al 2019 research in SA shows ECD teachers skip and avoid teaching science even though it is included in ECD curriculum statement)</p>

# SAIP New Initiatives

**Physics in My Village - Physics for Development & Citizen Science**

## Solar Water Pumping



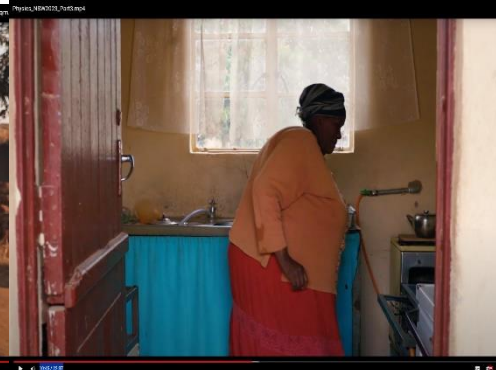
## Micro-Biogas Digester



# SAIP New Initiatives

## Physics in My Village - Physics for Development & Citizen Science

Government Service Delivery Area	DSI Impact Area	Proposed Initiatives (Volunteers invited to Contribute)
<b>Energy, Environment Waste Management</b>	<b>Grand Challenge 1: Climate Change &amp; Sustainability</b>  Societal problems, challenges,	<ol style="list-style-type: none"> <li>1) PV Solar Energy: panel sizing, installation, and maintenance</li> <li>2) PV panels performance of different materials solar &amp; radiation tracking</li> <li>3) Local Community Weather Stations &amp; Local Climate Modelling using Internet of Things</li> <li>4) Air Quality Monitoring using low-cost sensors using Internet of Things</li> <li>5) PhD &amp; MSc Students working on Renewable Energy/ Astronomy / Indigenous Knowledge Nano Materials Extraction / Geophysics of communities etc. working with communities</li> </ol>



## Membership Categories – Personal Application

- E-membership
- Student Membership
- Associate Member
- Ordinary Member
- Certified Physicists (CPhys)
- Certified Physical Science Technologist (CPhysTech)
- Institutional Member

## Admitted through merit nominations

- Honorary member
- Fellow member

# Membership Benefits

## Individual Level

1. Members receive member-rates at conferences of the SAIP.
2. Members receive news of jobs, conferences, bursaries, scholarships, etc.
3. Belong to a community of practice for physicists.
4. Continuous professional development by participating in SAIP conferences, schools and developmental activities.

# Membership Benefits

## Individual Level

5. Use SAIP infrastructure – SAIP Indico conference management system, conference support services, SAIP offices
  - e.g., bid for international conferences of IUPAP & IAU
6. Advertise openings for jobs, graduate students and conference through the SAIP mailing list, website and social media platforms.

# Membership Benefits

## National Level

1. SAIP provides a channel for the various government departments and science stakeholders to interact with the Physics community in an organised way.
2. Make impact as a professional group and one voice:
  - Shaping the Future of Physics in South Africa which resulted in a number of programmes (2005)
  - Review of Physics Education Training in South Africa (2008-2010)
  - Multiple authored and large collaborations papers subsidy issue with DHET (2015 – to present)
  - NITheP transition to NITheCS
  - bursary matters, etc.



# SAIP Activities Highlights

- <https://www.youtube.com/watch?v=VZg4-3LMJSY>

# Contact Details

website: [www.saip.org.za](http://www.saip.org.za)

facebook: <https://www.facebook.com/SAIPZA>

LinkedIn:

<https://www.linkedin.com/company/southafricaninstituteofphysicsaip/>

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# THANK YOU!