



# SAIP Annual Report 2015 - 2016



South African Institute of  
**Physics**



## FOREWORD

This annual report covers the activities of the South African Institute of Physics for the period, July 2015 to July 2016. During the period under review, the SAIP continued to expand its impact, projects and footprint. The institute's membership increased from 550 to 2700 members. Several projects and various activities were held, which in turn promoted human capital development and strengthening of physics in South Africa. Projects highlights that support human capital development include, the South African Biophysics Initiative, Strategy on Improving Physics Training in South Africa, and the Teacher Development Project. The Teacher Development Project attracted a visit by his Royal Highness, Prince Edward, and the Earl of Wessex on 23rd May 2016.

The quest to increase the number of women and girls in physics in South Africa was vigorously pursued through implementation of various projects across South Africa. Attracting learners to study physics, was also a focus in 2015/16. Through outreach projects and public understanding of physics initiative, SAIP managed to reach over 10 000 learners and teachers.

The SAIP also initiated a project to increase physics visibility and impact in South Africa. By establishing a hub and a spoke model, the institute will have dedicated representatives at all physics departments and national facilities. Ultimately, the SAIP would like to develop this model into regional chapters. The Physics Comment Magazine, is a quarterly magazine of the institute, that has now started producing limited runs of printed copies.

Several conferences were organised under SAIP. The most recent was the 61st Annual SAIP conference, held at the University of Cape Town, that was attended by 550 delegates. Students are now able to publish their first academic papers in the SAIP annual conference proceedings, which are now in their 5th year running.

On the international scene, SAIP managed to bring the IUPAP International Conference on Computational Physics (CCP2016) to the African continent for the first time. Computational Physics is key to South Africa in view of issues such as Big Data, the Square Kilometre Array Project and Smart Cities concepts. The SAIP also co-organised the 1st African Light Source Conference and Workshop, which was held in France at the European Synchrotron Light Sources (ESRF). This conference and workshop produced a roadmap for Africa, to establish the African Light Source, since Africa is the only continent without a light source. The conference also proposed an African capacity building strategy, where a committee was nominated to steer this endeavour.

These various activities would not be possible without the valuable strategic and financial support received from the Department of Science and Technology (DST). Other notable partners that joined the SAIP to help realize its goals during the period under review, was the National Research Foundation for conferences support and the British High Commission through its Prosperity Grant, that supported our Teacher Development Project in 2015/16. Various other national and international stakeholders worked with the SAIP in various ways to promote physics in South Africa and the Institute deeply appreciates their support.

The SAIP is grateful to the people behind the scenes, who is steering these projects. The SAIP would like to thank the SAIP Council, the SAIP office staff, various SAIP project leaders and volunteers who contributed their valuable time and expertise in making our dreams come true.

Thank you

**Prof Azwinndini Muronga – President SAIP**



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# 1 INTRODUCTION & BACKGROUND

The South African Institute of Physics (SAIP) is a non-profit, voluntary and professional physics society that was established in 1955. It has a membership of over 2800, that is made up of professionals, researchers, academics, teachers, university students and learners.

**The SAIP Mission:** *"To be the Voice of Physics in South Africa"*

**The SAIP Main Objectives are:**

1. To promote the study and research in physics and related subjects and to encourage the applications thereof.
2. To further the exchange of knowledge among physicists by means of conferences and publications.
3. To uphold the status of and ensure a high standard of professional conduct among physicists.
4. To promote physics for socio economic development in South Africa.
5. To provide government with policy advice and act as a sounding board in Science and Technology.
6. To make a difference by offering a wide range of services and projects addressing various community and developmental needs in the physics community and related stakeholders.

The SAIP is one of the major institutes forming part of the scientific organisational infrastructure of the country.

The current medium to long term strategic focus of the South African Institute of Physics, is to improve physics education and training in South Africa. SAIP would like to address the leaky physics education pipeline, to improve education from school up to PhD level.

This strategy is central to the development of a knowledgeable economy, because physics education does not only sustain the physics profession, but it also contributes to Human Capital Development, since physics education and skills are at the core of all Science Engineering and Technology (SET) disciplines. Over and above this, physics contributes to the worlds overall socio-economic development, because the physics discoveries of today will become the cutting technologies of the future.

## 2 COUNCIL

The SAIP is governed by an elected council. Council is elected for a period of 2 years. The current council was elected into office in July 2015 and has served the first of its two-year term. The current members are:

COUNCIL MEMBER	PORTFOLIO
1. Prof Azwinndini Muronga (NMMU)	President & International Liaison
2. Prof Patrick Woudt (UCT)	President – Elect & (Risk & Audit, Astronomy)
3. Prof Andre Venter (NMMU)	Treasurer
4. Prof Makaiko Chithambo (RU)	Secretary
5. Prof Igle Gledhill (CSIR)	Past President
6. Prof Mmantsae Diale (UP)	Fundraising
7. Prof Jean Cleymans (UCT)	Awards
8. Prof Regina Maphanga (UL)	Marketing & Outreach
9. Prof Deena Naidoo (Wits)	Conferences
10. Dr Sam Ramaila (UJ)	Education
11. Dr John Habarulema (SANSa)	Divisions & Forums
12. Dr Malebo Tibane (UNISA)	Industrial Liaison Representative
13. Mr Brian Masara (SAIP)	Executive Officer

## 3 MEETINGS OF COUNCIL

Three meetings were held during the period under review:

- 30 October 2015 at SAAO (for UCT), Cape Town.
- 28 February 2016 including the IUPAP meeting in Pretoria.
- 4 July 2016 at UCT.

## 4 SAIP OFFICE

The SAIP office is located in Pretoria at the CSIR campus. It is headed by the Executive Officer, Mr Brian Masara.

Other Officers are:

- Ms Lizzy Sathekge - Secretary
- Ms Nndanganeni Mahani - Projects Officer
- Mr Juan Grey - IT Support

## 5 FINANCIAL STATEMENTS

The Audited Financial Statement for 2015/16 are attached in appendix 1.

## 6 DIVISIONS, FORUMS & WORKING GROUPS

The SAIP has 6 divisions, 2 forums and 1 working group. The annual activity reports for the divisions and forums are attached in appendix 2.

### 6.1 DIVISIONS OF SAIP

DIVISION	CHAIR
1. Condensed Matter	Prof Japie Engelbretch (NMMU)
2. Nuclear, Particle, and Radiation Physics	Dr Simon Mullins (iThemba Labs)
3. Photonics	Prof Erich Rohwer (US)
4. Astrophysics and Space Science	Dr Chris Engelbrecht (UJ) for Astrophysics), & Dr John Bosco Habarulema (SANSA)for (Space Science)
5. Education	Dr Sam Ramaila (UJ)
6. Theoretical Physics	Prof. Kristian Muller-Nedebock (US)

### 6.2 FORUMS OF SAIP

Applied Physics	Prof. Ernst van Dyk (NMMU)
Women in Physics in South Africa	Prof. Aletta Prinsloo (UJ)

### 6.3 WORKING GROUPS OF SAIP

SA Biophysics Initiative	Dr Tjaart Kruger (UP)
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## 7 MEMBERSHIP

The SAIP is a voluntary society and professional body for Physics in South Africa. SAIP is registered with the South African Qualifications Authority (SAQA) as the professional body for Physics for the purposes of the National Qualifications Framework (NQF) Act, Act 67 of 2008.

The current membership of SAIP is summarised below:

MEMBERSHIP CATEGORY	NUMBERS	MEMBERSHIP CATEGORY	NUMBERS
Ordinary Members	225	Fellow and Emeritus	33
Professional Physicists	149	Associate Members	22
Honorary Members	17	Student Members	230
Retired Members	7	E-members	2173
<b>TOTAL MEMBERS : 2856</b>			

### 7.1 E-MEMBERSHIP

One of the strategies the SAIP has implemented to popularise physics, attract more learners to study physics and to increase physics impact, is to offer free membership to science teachers and all learners. All physics or science teachers and learners who become SAIP e-members are given as much information as possible about the benefits of studying physics, its socio-economic impact and physics related career opportunities.

The free e-membership is also extended to all undergraduate students taking a course in physics. E-members of SAIP will receive all SAIP electronic communication, such as the Physics Comment magazine and adverts for scholarships, conferences and jobs. Follow and like the SAIP on facebook and attend the SAIP annual conference at student membership rates. Extending SAIP membership to a wider community means that more people will know about physics and its benefits, hence they will be attracted to studying physics, thus increasing the input of learners in the pipeline. The SAIP's target is to attract 6000 members by the end of 2017.

### 7.2 PROFESSIONAL PHYSICISTS

The fastest growing membership segments of the SAIP is the Professional Physicists Designation (Pr.Phys). This designation represents the highest standard of professionalism in the field of physics. Academic qualifications are only the beginning of a career in physics and its applications. The need for continuing professional development is widely recognised to be the mechanism by which professionals maintain their knowledge after the formal education process has been completed. Pr.Phys demonstrates a commitment to maintaining competence, continuing your professional development and abiding by an acceptable code of conduct.

#### Benefits to Physicist:

- The certification as a professional physicist is an important addition to a physicist's personal credentials.
- When competing for a job the designation will distinguish one from other applicants with similar qualifications but no professional designation.

#### Benefits for Employers:

- Supports the recruitment process. Many recruiters these days want to know if one has a professional designation.
- Can be used as a criterion for promotion, skills and salary bench marking.
- Demonstrates that someone who has this designation believes in professionalism, continuous skills development, belonging to a professional body and acceptable ethical standard.



## 8 PHYSICS EDUCATION PIPELINE

As already mentioned, the core strategic focus for SAIP, is to address the physics education pipeline. The figure below summarises some of the key science and technology fields. The success of these fields depends on a coherently well-crafted physics education strategy and for the pipeline to be nurtured.

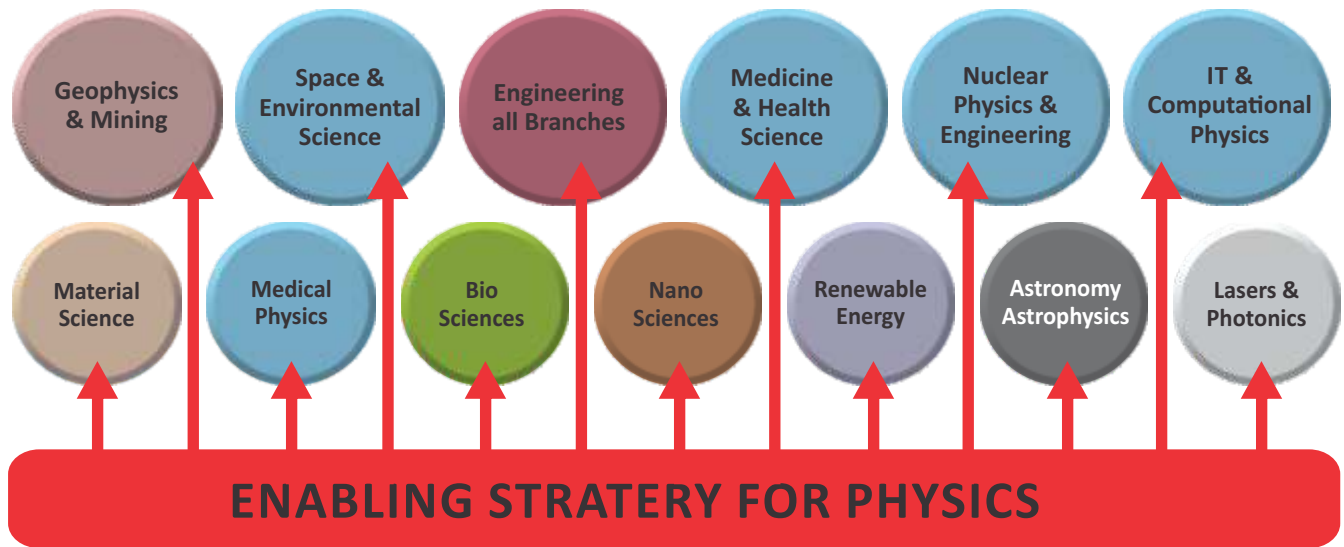


Figure 1 : Enabling Strategy for Physics Supporting SET

### 8.1 STRATEGY ON IMPROVING PHYSICS EDUCATION

The SAIP has now finalised a strategy on improving physics education in South Africa. The strategy aims to address the following key socio-economic issues in South Africa:

#### 8.1.1 Human capital to support key government strategies.

This strategy will ensure that South Africa produces physics graduates, benchmarked at an internationally competitive level. The acquisition of the required physics skills are commensurated with key government initiatives such as the National Development Plan (NDP) and the pursuit of the Strategic Integrated Projects (SIPs). More specifically, the following SIPs require a great deal of physicists; The Square Kilometre Array & MeerKAT, Green Energy and Electricity Generation.

#### 8.1.2 Transforming South Africa towards a knowledge-based economy.

As already mentioned above, the physics research and development of today will become the cutting edge-technologies of tomorrow. Some examples are the current robust growth in innovation areas such as nano-technology, biotechnology, advanced materials, micro-electronics and advanced medical diagnostic technologies. This goal can be achieved by investing earlier in physics research, education and training. Hence these strategies will serve as a guarantee for a future knowledge-based economy for the country.

#### 8.1.3 The need to increase PhD's five fold.

The Department of Science and Technology's ten year innovation plan states that the level of economic growth envisaged by our country, requires continual advances in technological innovation and the production of new knowledge. According to the ten year innovation plan, South Africa's PhD production in science, engineering and technology must increase five-fold. However, closer scrutiny reveals that the weakest link in the educational pipeline occurs at the transition from BSc level to Honors. Consequently, some of the honors graduates do not possess appropriate skills required to undertake post-graduate studies. This strategy would serve to address this critical challenge in order to improve PhD throughput.

#### 8.1.4 The need for more inclusivity in the SET sector.

In broad terms, the strategy aims to address the inherently skewed demographic picture as a characteristic feature associated with the SET sector. It is a known fact that there is acute shortage of young black South Africans and women taking physics at honors level. This leads to low enrolment figures at postgraduate level and beyond. The problem also manifests itself in the form of unsustainable utilization of available bursaries provided by funding agencies earmarked for South African nationals. In addition, the Green Paper on Post-School Education and Training advocates that "... blacks and women students continue to be under-represented in science, engineering and technology".



### 8.1.5 Attracting and retaining undergraduates in physics

The SAIP observed that the PhD production pipeline within physics has the greatest leak, and dropout at the undergraduate level. Few undergraduate physics students proceed to Hons and beyond. Secondly one finds that the number of black South African students compared to foreign students studying physics at post graduate level, decreases progressively from Hons to MSc to PhD. Hence the SAIP would like to address this area by focussing on attracting and keeping local undergraduates in physics. During the period under review the SAIP president visited various universities to promote and encourage undergraduates to stay and grow in physics.



*Figure 2 : President of SAIP Prof Azwinndini Muronga visiting universities to promote physics*

## 8.2 PHYSICS TEACHER DEVELOPMENT

One of the goals underpinning the physics education improvement strategy, is the enhancement of the professional competence of physical science teachers. In 2012 the SAIP started a project on physics teacher development. This project emanated from the fact that science or physics is the most dreaded subject by teachers, students and parents. However, for one to be trained in any SET discipline they must have passed science at high school. Our goal is to increase the number of students who can be trained in SET disciplines by increasing their pass rates at high school.

This project focuses on the development of skills of teachers in mathematics and physical sciences, thus contributing to better teaching skills. That in turn will lead to higher pass rates in students and will help to increase the number of students progressing to higher education. The benefit will be an increase of human capital in Science, Engineering and Technology (SET) skills, required for key government initiatives such as the Square Kilometre Array (SKA), National Development Plan (NDP) and the Strategic Integrated Projects (SIPs).

The project provides both in-service and pre-service training opportunities in order to holistically and adequately address teacher professional development needs. The project will achieve the following:

#### 1. Produce:

- A series of secondary physics educational support material for schools.
- Physics teaching methodology manual.
- Physics experiments and/or demonstration materials.
- Trainers or instructors on physics teacher development.
- Physics related career information.

#### 2. Historically disadvantaged schools will:

- Receive quality physics tuition.
- Access supplementary physics print, electronic and experimental resources.
- Perform laboratory investigations required by the national curriculum.
- Link classroom science to practical aspects in the SA economy.

#### 3. Teachers from historically disadvantaged schools, townships, rural and farm schools will:

- Receive training on teaching physics, hence improve their skills in delivering physical science.
- Develop improved competency and confidence, hence increase student pass rates and attract more students towards physics.
- Acquire laboratory skills.

#### 4. Increased teacher competency will result in higher pass rates. This will increase the amount of learners with a physics background who can be trained in various Science, Engineering and Technology disciplines.

The SAIP is currently engaging various stakeholders to plan expansions of the project to Limpopo and the Eastern Cape province. SAIP's goal is to have the Teacher Development Project presented in three provinces; Gauteng, Limpopo and Eastern Cape by end of 2017.



*Figure 3 : His Royal Highness, Prince Edward, the Earl of Wessex visiting the SAIP Teacher Development Project At UJ - SCC*

### **PROJECT MULTIPLIER EFFECT:**

This Teacher Development Project will have a multiplier effect through two areas:

**1. Train the trainers course:**

At the beginning of each year the project trains Physics Teacher Development Trainers. These trainers are empowered to train more teachers in physical science. As the project grows we target to train trainers for every science centre in the country so that they can train teachers in their respective regions.

**2. Teacher training:**

The projects goal is to train teachers on a working Friday afternoon and have a week workshop on holidays. We hope that students will now benefit more from teachers new found knowledge and enthusiasm. For example; 50 teachers trained with an average class size of 25, the multiplier effect is 1250 students of multiple grade levels. These students will enjoy and understand physical science better, and result in higher grades.

**8.2.1 Science teaching methodology workshop**

One of the lessons learned in this project was that in addition to improving teachers skills in physics and it's content, there is also a need to equip them with physics and science teaching methodology. As a result the SAIP has started developing a series of workshops on science teaching methodology.

A Science Teaching Methodology Workshop was held at the Soweto Campus of the University of Johannesburg from the 29th to the 31st of March 2016. The official opening ceremony featured dignitaries from the University of Johannesburg, British High Commission, Gauteng Department of Education, South African Institute of Physics, South African Agency for Science and Technology Advancement and Institute of Physics (UK). There were also representatives from several other organizations. Training was provided in the following areas: Mathematics, physical science, mathematical literacy and life sciences.



*Figure 4 : Delegates to the Physics Teaching Methodology Workshop*

### 8.2.2 SA Physics Teachers Association

In 2014, Dr Colleen Henning, HOD for Science at St John College in Johannesburg, and a member of the SAIP attended the American Association of Physics Teachers (AAPT) in the USA which provided the inspiration and verve to host a similar event in South Africa. It is crucially important to point out that Dr Colleen Henning in collaboration with Dr Horner from Siyavula skilfully organized two workshops in Johannesburg and Cape Town in 2014, with a total attendance of about 140 delegates per workshop.

The SAIP would like to support and nurture the above activity through establishing a similar group to AAPT for South Africa. One way this will be done is to invite the teachers to the SAIP annual conferences so that they can participate in the activities of the SAIP Physics Education group, and will be able to:

- Interact with academics working in physics education research.
- Share their experience.
- Learn from the physics research academics the best practice, latest research trends and concepts in teaching physics.
- In turn the university physics education researchers will be able to hear the challenges faced by the physics teachers and then research how best to address these.

The SAIP have therefore invited teachers to the SAIP2016 annual conference, to start the process and launch of the SA Physics Teachers Association (SAPTA) project, and its incubation under the wing of the SAIP Physics Education Division.

## 9 OUTREACH AND PUBLIC UNDERSTANDING OF PHYSICS

The SAIP is working tirelessly to attract and keep students in physics as well as make the public appreciate the role of physics through outreach and public understanding of physics to the public in general, learners, educators and university students.

### 9.1 INCREASING PHYSICS VISIBILITY IN SOUTH AFRICA

The SAIP's mission is, **"To be the Voice of Physics in South Africa"**.

Ideally the SAIP activities and projects must:

- Be visible and have a footprint in all regions of South Africa.
- Be accessible and inclusive to all potential targets and beneficiaries country wide.
- Impact and benefit as many South Africans as possible.

In order to increase the SAIP footprint, visibility, accessibility and impact, the SAIP is implementing a HUB and SPOKE model. The model will have departmental & institutional representatives who will work with the SAIP office to implement various physics developmental projects in their region and catchment areas.

The goal of this model is:

- To increase the SAIP footprint, visibility and impact through the appointment of regional or institutional "SAIP representatives". They will work closely with the SAIP Office in information, dissemination and implementing developmental projects.

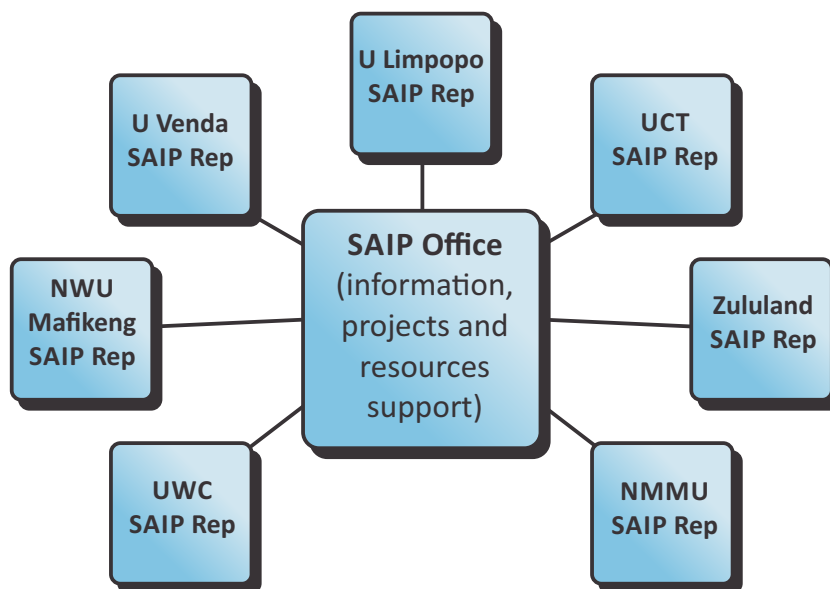


Figure 5 : The SAIP Hub & Spoke Model example

The nomination of departmental representatives is currently in process. So far the following institutions have nominated SAIP reps for the HUB & Spoke.

INSTITUTION	REPRESENTATIVE	EMAIL
UNISA	Dr Moloji Sabata	moloisj@unisa.ac.za
NWU - Mafikeng	Dr Kaitano Dzinavatonga	kaitano.dzinavatonga@nwu.ac.za
USDr	Mr Pieter Neethling	pietern@sun.ac.za
NWU	Prof Christo Venter	christo.Venter@nwu.ac.za
WSU	Mr Thembinkosi Dyeyi	tdyeyi@wsu.ac.za
UWC	Dr Mark Herbert	msherbert@uwc.ac.za
UCT - Physics	Dr Sahal Yacoob	sahal.yacoob@uct.ac.za
UL	Mr Netsianda Makonde	Makonde.Netsianda@ul.ac.za
UNIVEN	Dr Eric Maluta	Eric.Maluta@univen.ac.za
WITS	Prof Andreas Faltenbacher	Andreas.Faltenbacher@wits.ac.za
NMMU	Mr Mpathi Collin	MpathiCollin.Bacela@nmmu.ac.za
NMMU	Mr Nobom Hashe	Nobom.Hashe@nmmu.ac.za
UCT - Astronomy	Prof Patrick Woudt	pwoudt@ast.uct.ac.za
HartRAO	Marion West	marion@hartrao.ac.za

### ADVANTAGES OF SAIP, HUB & SPOKE:

1. It will be more effective than the SAIP office by travelling to organised events and running projects directly in different regions and institutions. Local "SAIP Reps" will have better knowledge of their respective communities e.g. schools in their catchment area and types of industries in their regions. They will also know which members in their institution are not SAIP members and will be able to help those members to join. They will also have stronger links with their science centres and relevant stakeholders such as DoBE and DHET.
2. More publicity will be gained because institutional "SAIP Reps" will have better access to their institution's public relations media and publicity office to publicise SAIP's projects and activities.
3. Institutional members who are not on the SAIP mailing list can access information about SAIP through internal communications with the "SAIP Reps" in their institution. This also solves the issue of blocked SAIP mass emails by institutions. SAIP information will also be posted on notice boards.
4. There will be an increased impact and higher visibility, because there will be dedicated "SAIP Reps" at major centres across the country. Now SAIP can simultaneously be represented and disseminating information country wide.
  - The SAIP can now have booths, exhibitions & activities across the country during National Science Week.
  - During a first year student's orientation week, all universities can be visited. Those students will be made aware of SAIP and can also become a member of SAIP. The careers in physics booklet can be distributed more effectively.
5. No more reinventing the wheel on similar projects. For example: Every department maybe developing outreach materials, career booklets and a model for teacher development. Our knowledge and expertise enables us to help and share information to others, which is already available at SAIP office.
6. Information flows in both directions, hence the whole community will be made aware of activities done by all regions. No more working in silos.
7. Lower cost of materials and designs. Since materials are development once and replicated for all regions, institutional reps can organise institutional specific events and workshops better and faster. With the help of the SAIP office, getting specialist speakers or creating WiPISA lunches, will be easier.

### 9.2 THE SAIP FACEBOOK PAGE

**Social Media:** The SAIP started initially on facebook and the page now has 580 people following it.



**LINK :** <https://www.facebook.com/South-African-Institute-of-Physics-1660099704207118/>

### 9.3 PHYSICS COMMENT MAGAZINE

Strengthening of the science and technology information infrastructure through physics information communication & dissemination is critical. The SAIP keeps the community informed through the Physics Comment Magazine. It contributes to the strengthening of the science and technology information infrastructure.

The aim of the Physics Comment Magazine is to disseminate news and recent developments in research and provoke discussion in the broad area of physics. The wide application of the field means that interests and submissions will be welcomed on a wide range of topics including, but not limited to, the following:

- Technology.
- International news.
- Recent research and innovations in physics.
- Advances relevant to physics.

The council would like to express their profound gratitude to the co-editors, Prof Thomas Konrad and Prof Dave Walker from UKZN Physics Department. They have covered great events in the physics community.

For example: The confirmation of gravitational waves and other major events happening in our country.

The magazine also provide a forum, to discuss key topical issues affecting physics, such as governments nuclear built programme. Historical issues of the magazine are available for download here:

LINK : <http://saip.org.za/index.php/news-and-events/physics-comment>

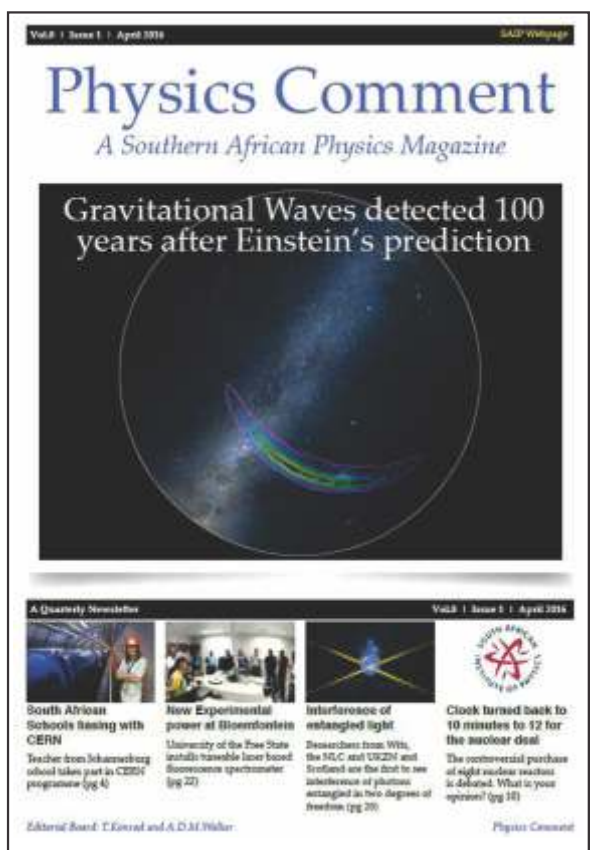


Figure 6 : Physics Comment Magazine



Figure 7: Outreach and Public Understanding of Physics Events

## 9.4 OUTREACH TO SCHOOLS

During the period under review the SAIP reached out to many rural schools promoting physics. The SAIP also reviewed its outreach and public understanding of physics strategy in order to address the following issues:

### 9.4.1 Development of appropriate outreach materials:

- To compile a list of materials required for outreach.
- To develop the materials that are needed for outreach such as pull-up banners and career booklets.
- Develop a standard SAIP PowerPoint presentation that can be used when doing outreach.
- To print the outreach career booklets and SAIP brochures.
- Collaborate with SAASTA on outreach materials.

### 9.4.2 Improve access to electronic print and career booklets:

SAIP will increase access to print and electronic physics outreach & promotional materials by distributing them through various channels such as:

- Science centres.
- Career guidance weeks.
- NGO working on promoting science.
- During our outreach events.
- Universities.
- Regional representatives around the country through HUB & SPOKE.
- We will also work more with government science agencies like SAASTA to source more SET career and information booklets.

### 9.4.3 Develop a Network of people that can help with physics outreach across SA

Through our HUB & SPOKE project, we want to develop a network of people or representatives in all provinces including university science departments. The representatives will help in outreach and recruitment of new members. We will supply them with materials such as pull-up banners, career booklets, SET information booklets and SAIP brochures.

### 9.4.4 Develop a SAIP public lecture series:

- SAIP will invite international or local prominent physicists to do public lectures. Our series of public lectures will bring the public face to face with world class physicists. They will talk about physics in a way that inspires, highlights its relevance to everyday life and encourages debate and discussion.
- Source funding to bring prominent speakers to South Africa
- Establish partnerships with science centres and other institutions where public lectures can be delivered

### 9.4.5 National Science Week (NSW)

- SAIP has previously participated in National Science Week events. We are looking forward to be part of the future NSW events which is run in all nine provinces simultaneously. We will have a booth and materials to give out to learners, educators and general public.

### 9.4.6 Improve university outreach:

- SAIP will target universities open week, orientation week and plan road shows to target undergraduate students, to recruit them into the institute as e-members.
- Setup a booth and distribute different materials such as SAIP membership forms, career booklets and pamphlets.
- Encourage students who are doing undergraduate to proceed with physics in their post graduate studies.
- Promote the careers in physics and bursary opportunities.
- We will target universities in Gauteng this year.

### 9.4.7 Visiting schools

- We will arrange school visits where we will target both learners and educators.

## 10 SA PHYSICS OLYMPIAD

The SAIP has launched the South African Physics Olympiad, SAPHO, with the aim of identifying young South Africans with abilities in physics, in the hope that these students will continue to study physics at tertiary institutions and universities within South Africa.

South African National Youth Science Olympiad was hosted by SAASTA and over a 100 students (learners) was selected from those who performed well in the physical science section, and invited to come and write the SAPHO paper. The paper consisted of 50 multiple and 5 alternative questions. The paper was slightly more difficult than the SANYSO physics section, and covered a wider range of topics. Entrance was free.

- The winner of the SA Physics Olympiad was, Mr L Geldenhuys from St John's College, JHB. He received a medal at the SAIP 2016 Conference Banquet.
- The 2016 Olympiad was held on the 1st of August 2016 and 145 learners from 47 schools participated.



**Figure 8 : Minister Angie Motshekga and the Deputy Minister of Basic Education, Mr Enver Surty, with top physical science achiever: Hamandishe Mathivha from Mbilwi Secondary School in Limpopo.**



**Figure 9 : Prof Muronga handing over the Silver Medallist SAPHO Certificate to Hamandishe Mathivha**



**Figure 10 : Handover the Gold and Bronze SAPHO Certificates at St Johns College**

## 11 WOMEN IN PHYSICS IN SOUTH AFRICA (WiPiSA)

As a means of addressing the under-representation of women in physics internationally, the Department of Science and Technology (DST) funded the South African Institute of Physics (SAIP) to start the Women in Physics in South Africa (WiPiSA) project. The following aims have been developed for WiPiSA, which embrace the international aims of Women in Physics, but are also unique to the South African situation, as identified in the pre-launch workshop:

- To stimulate an interest in physics amongst girls and women.
- To encourage girls and women to study physics.
- To encourage and support girls and women to work in physics-related careers.
- To assist in removing or overcoming obstacles and barriers for girls and women to study physics and work in physics related careers.

During the period under review WiPiSA was involved in a number of projects that promoted the above aims. These include:

### 11.1 WiPiSA LUNCHES

Physics departments were encouraged to host WiPiSA lunches for their physics students. A lecture was held from an invited guest, that was followed by a social gathering. A female academic or a senior student in the department normally led the project. This project aimed to give female physics students the confidence to continue with the subject, knowing that there are potential mentors and friends. A budget of R3000.00 was allocated to each department to help with arrangements.

This initiative was strongly supported during 2014 and 2016. However, during 2016 a similar invitation was not yet e-mailed to the SAIP members. The new committee need to evaluate the finances available and decide the focus of the committee for the next two years.

### 11.2 WiPiSA WEBSITE

Dr Carleschi took the initiative to improve the WiPiSA website. Dr Carleschi and Dr Prinsloo met with Mr Alistair Sinclair who was working on a contract basis for the Faculty of Science at the University of Johannesburg. He was in charge of maintaining their website. Mr Sinclair agreed to set up a new website for WiPiSA costing us R10000. Hopefully this will result in better communication between WiPiSA and the physics community in South Africa.

The website is complete and functional. All interested parties were requested to register on the site as soon as possible, and approximately 55 people have registered to date. This website will also be used to help with the setting up of a database of women working in physics in South Africa. The registered parties were invited to nominate and vote for the representatives in the WiPiSA leadership during May/June 2016.

### 11.3 CALL FOR PROPOSALS AND PROJECTS FUNDED DURING THE TERM OF THIS COMMITTEE

A call for projects was made during April 2015 for WiPiSA grants and twelve excellent proposals were received. The average score for each proposal was calculated by considering the average of the individual scores received from the following panel members – Carleschi, Prinsloo, Connell, Gledhill and Tibane. We proposed to fund only the first seven projects due to funding limitations.



## Funded proposals:

INSTITUTION	AMOUNT
ICTP+SA-CERN	R30 000.00
SANSA	R19 846.00
National Metrology Institute of SA (NMISA)	R26 950.00
University of Stellenbosch (SU)	R30 000.00
Osizweni Educational and Development Centre (OEDC)	R30 000.00
University of Cape Town (UCT)	R23 560.00
University of Limpopo (UL)	R30 000.00
<b>TOTAL : R190 356.00</b>	

Reports on WiPiSA projects and lunches are attached in Appendix 4

## 12 SOUTH AFRICAN BIOPHYSICS INITIATIVE

In 2009 the SAIP started the South African Biophysics Initiative. This is an important research and educational area because one of the grand challenges in the DST 10 year strategy is, ***"to strengthen the bio-economy such that over the next decade South Africa must become a world leader in biotechnology and the pharmaceuticals, based on the nation's indigenous resources and expanding knowledge base"***.

SAIP feels that physics can make a significant contribution to biotechnological development and contribute towards building bio-economy for the country. This can be done through improving the state of biophysics in South Africa and encouraging an interdisciplinary research and networking platform for life sciences and physical sciences.

### The SA Biophysics Working group was established to achieve the following:

- Craft strategies and initiatives that facilitate strengthening of Biophysics and interdisciplinary research in South Africa.
- Investigate the possibility of offering short Biophysics courses at various universities across South Africa through attracting biophysics specialists from abroad.
- Organise plenary speakers on Biophysics at the SAIP Annual conferences.
- Seek funding to support Biophysics related initiatives.
- Develop an awareness programme on opportunities in Biophysics e.g. lists of job opportunities, post graduate studies and relevance of Biophysics to economic development.
- Establish partnerships with bodies and organisations that will further the goals of this project.

Several milestones have been reached by the SA Biophysics working group. The annual activities of the working group are attached in appendix 5

## 13 RESEARCH HIGHLIGHTS FOR 2015 / 2016

During the period under review there have been several breakthroughs in the field of physics, some notable achievements include:

### 1. The Detection of Gravitational Waves by LIGO.

For the first time, scientists have observed ripples in the fabric of space-time called gravitational waves, arriving at the earth from a cataclysmic event in the distant universe. This confirms a major prediction of Albert Einstein's 1915 general theory of relativity and opens an unprecedented new window onto the cosmos.

### 2. Breakthrough for astronomers from UCT and the Southern African Large Telescope (SALT)

A team of astronomers has identified a rare star that exploded around 1,500 years ago. At the time, the star would have outshone all the stars of the Orion constellation, reaching a similar brightness to Jupiter in the night sky.

### 3. NASA's Juno space probe arrives at giant planet.

After an almost five-year journey to the solar system's largest planet, NASA's Juno spacecraft successfully entered Jupiter's orbit during the beginning of July 2016.

## 14 INTERNATIONAL LIAISON

The SAIP maintains African and International collaborations. International collaboration and partnerships are essential to the success of the innovation strategy. Examples of relations managed include: International bodies such as the International Union on Pure and Applied Physics (IUPAP), the International Council of Sciences (ICSU) and several Physical Societies such as the Institute of Physics UK, the American Physical Society, the Australian Institute of Physics, and the National Society of Black Physicists (NSBP) in America. Through these relationships, SAIP is part of the global scientific infrastructure. The global nature of science and technology, and of shared projects such as the SKA, SA-CERN and CTA, require these thriving relationships.

South Africa is currently represented on several commissions of the IUPAP as shown below:

1. Dr Rudzani Nemutudi	IUPAP Associate Secretary General
2. Prof Mmanstae Diale	Commission C13 – Physics for Development
3. Prof Deena Naidoo	Commission C14 – Physics Education
4. Prof Patrick Woudt	Commission C19 – Astrophysics
5. Prof Renier (Adri) Burger	Commission C4 – Astroparticle Physics
6. Prof Bryan Trevor Sewell	Commission C6 – Biological Physics
7. Dr Igle Gledhill	IUPAP Working Group 4 Women in Physics

## 15 CONFERENCES, SCHOOLS AND WORKSHOPS

The SAIP plays a pivotal role in the organisation of conferences, workshops and outreach projects at schools. SAIP's role will help promote the Human Capital Development in South Africa and in turn create a knowledge rich generation under students for the future. The SAIP Annual Conference is one of the worlds leading conferences, and provide a platform for those working in flagship projects to showcase and publish their work. Delegates can also share research results better and collaborate with ease. One can publish and review conference proceedings and also give students the opportunity to publish their first paper. The conference proceedings are now in their 6th year running. The most recent proceedings of the SAIP2015 conference can be downloaded here:

**LINK :** <http://events.saip.org.za/internalPage.py?pagelD=3&confId=53>

A few of the events hosted by SAIP are highlighted below:

### 15.1 SAIP 2016

The SAIP2016 annual conference was hosted by the University of Cape Town from 4 to 8 July 2016. The conference was attended by 520 delegates. The conference was officially opened by Dr Daniel Adams the Chief Director for Basic Sciences and Infrastructure within the Department of Science & Technology DST. There will be 8 plenary talks. One of the plenaries was on promoting women in physics to improve numbers of women in SET. The conference was preceded by two winter schools one in biophysics and the second in astrophysics.

### 15.2 INTERNATIONAL CONFERENCE ON COMPUTATIONAL PHYSICS CCP2016

The International Conference on Computational Physics was held at St Georges Conference Centre from 10 to 14 July 2016. The conference was attended by 100 delegates and was officially opened by the Director General of the Department of Science and Techxnology Dr Phil Mjwara.



**Figure 11 :** Delegates to the CCP2016 International Conference

The CCP is a series of conferences held annually under the auspices of the International Union of Pure and Applied Physics (IUPAP). The purpose of the conference series is to bring together computational scientists, leading academics, researchers and research scholars to exchange and share their experiences and research results about all aspects of Computational Physics.

The conference also provides a premier interdisciplinary and multi disciplinary forum for researchers, practitioners and educators to present and discuss the most recent innovations, trends, concerns, practical challenges and solutions adopted in the field of Computational Physics.

For more than 25 years since its establishment, this important conference had not come to Africa. In 2013 the South African Institute of Physics (SAIP), through the leadership of Prof Nithaya Chetty, successfully bid for this prestigious conference to be brought to Africa for the first time. Hence the 2016 International Conference on Computational Physics (CCP2016) was held in South Africa.

**Highlights of the event included the following:**

- Plenary talk by Prof Russ Taylor of SKA and Big Data.
- Plenary talk by Prof Phuti Ngoepe on Nanotechnology and Material Science Moelling at University of Limpopo.
- A banquet was hosted at Freedom park by the Tshwane mayor.
- An outreach event took place on Tuesday, 11 July at UJ Soweto Science Centre.
- The Commission on Computational Physics C20, Young Scientist winners for 2015 and 2016, gave plenary talks at the conference.

### 15.3 FIRST AFRICAN LIGHT SOURCE CONFERENCE AND WORKSHOP

The SAIP helped to organise and facilitate the First African Light Source International Conference, which was held in November 2015 at ESRF in Grenoble France. The event was attended by 98 Participants, 17 were from South Africa. This conference and workshop produced a roadmap for establishment of the African Light Source, since Africa is the only continent without a light source. The conference also proposed an African capacity building strategy and a steering committee was nominated to steer this endeavour.

Final report is available here:

**LINK :** [https://www.dropbox.com/s/mgr1bf3csusgh57/AFS-Final-Booklet.pdf?dl=0&utm\\_content=buffer2db77&utm\\_medium=social&utm\\_source=twitter.com&utm\\_campaign=buffer](https://www.dropbox.com/s/mgr1bf3csusgh57/AFS-Final-Booklet.pdf?dl=0&utm_content=buffer2db77&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer)



### 15.4 INTERNATIONAL CONFERENCE ON PHYSICS EDUCATION (ICPE) 2018

Prof Deena Naidoo has submitted a proposal to the IUPAP commission on physics education for Wits and SAIP to jointly host the ICPE 2018. We are still awaiting the response from IUPAP, but we are positive this conference will be coming to South Africa.

## 16 MULTI-AUTHOR PUBLICATIONS AND INCENTIVE SCHEME

One of the roles of SAIP as the voice of physics is to continuously scan the physics environment and to respond to challenges facing the physics community in South Africa through engaging relevant stakeholders. At the AGM on 11 July 2014, at the SAIP conference at the University of Johannesburg, a decision was taken to investigate the problem of low or zero government subsidy (DHET research productivity incentive scheme) for publications by medium and large collaborations. This is currently an ongoing activity for SAIP and they have now engaged stakeholders such as the NRF, DST, DHET and ASSAF.

The SAIP will continue its development of a position on this issue, together with partner institutions also working on this matter. In parallel with this, the SAIP will arrange meetings with institutional administrations, to highlight the problems associated with institutions optimizing their performance against the DHET PU metric, in respect of policies for individuals and disciplines or sub-disciplines which may be prejudice.

This process would be separated from an additional effort to develop practical proposals, formulating one or more practical alternative schemes and mechanisms. The separation of these two aspects takes consideration. The latter is surely a very complicated task.

## 17 #FEES-MUST-FALL

SAIP will engage the DoHET regarding the impact of #FeesMustFall on our discipline.



# 18 CONCLUSION

## HOW SAIP SUPPORTED GOVERNMENT STRATEGY IN 2015/16

The SAIP has carried out several projects that promoted and supported government strategy and development of a knowledge economy during 2015/2016. This is summarised below:

SAIP PROJECT 2015/16	CONTRIBUTION TO GOVERNMENT & INNOVATION STRATEGY
1. Physics communication	<ul style="list-style-type: none"> <li>Strengthening of the science and technology information infrastructure services.</li> </ul>
2. Physics partnerships and networks	<ul style="list-style-type: none"> <li>SAIP has contributed to networking and collaboration both domestically and internationally across all sectors of physics. International collaboration and partnerships will be essential to success for the innovation strategy.</li> </ul>
3. Conferences and schools support	<ul style="list-style-type: none"> <li>SAIP has contributed to physics Human Capital Development as students attend conferences and schools.</li> <li>The conferences also contribute to knowledge generation as delegates share research results and collaborate to solve problems.</li> </ul>
4. Strategy on physics training in South Africa	<ul style="list-style-type: none"> <li>This project will address the challenges of human capital in the NSI both qualitatively (rates of knowledge production) and quantitatively (number of PhDs produced).</li> <li>Better quality teaching will lead to better quality students hence increased PhD throughput.</li> </ul>
5. Public understanding of physics	<ul style="list-style-type: none"> <li>Building the SET human capital pipeline by attracting school learners into physics and making resources available to both learners and educators.</li> <li>SAIP will support the public understanding of and engagement with science such that members of public are important players in processes in shaping S&amp;T development.</li> </ul>
6. Physics teacher development	<ul style="list-style-type: none"> <li>Building the SET human capital pipeline by including disadvantaged communities in physics and making resources available to both learners and educators hence universities and colleges will have a greater pool of students from which SET student can be drawn.</li> <li>Contribute to societal transformation by expanding the numbers of scientists from previously disadvantaged communities.</li> </ul>
7. Physics graduates database	<ul style="list-style-type: none"> <li>Monitoring human capital pipeline that starts with post graduate students at one end, and delivers world-class scientists and researchers at the other.</li> <li>Managing Societal transformation by monitoring that we have adequate rations of scientists from previously disadvantaged communities and women taking part in physics.</li> <li>Monitoring quantity of PhD's production.</li> </ul>
8. SA Biophysics initiative	<ul style="list-style-type: none"> <li>Knowledge generation and exploitation in Biophysics.</li> <li>Stimulate multi disciplinary thinking and R&amp;D through physics working with other disciplines in biophysics.</li> <li>Physics contributing directly to Farmer-to-Pharma value chain to strengthen the bio-economy.</li> </ul>
9. Women in physics in South Africa	<ul style="list-style-type: none"> <li>Contribute to societal transformation by expanding the numbers of women and girls in science and technology.</li> </ul>

These annual financial statements were prepared by:

GJ de Beer  
Mazars Gauteng

These annual financial statements have been independently reviewed in compliance with the applicable requirements of the Companies Act 71 of 2008.

Issued 15 June 2016

## GENERAL INFORMATION

Country of incorporation and domicile	:	South Africa
Reviewer	:	Mazars Gauteng
Level of assurance	:	These annual financial statements have been independently reviewed in compliance with the applicable requirements of the Companies Act 71 of 2008.
Preparer	:	The annual financial statements were independently compiled by: GJ de Beer Mazars Gauteng
Issued	:	15 June 2016

## INDEX

The reports and statements set out below comprise the annual financial statements presented to the member:

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Independent Reviewer Report	20
Statement of Financial Position	21
Statement of Comprehensive Income	21
Statement of Changes in Equity	22
Accounting Policies	23
Notes to the Annual Financial Statements	24
The following supplementary information does not form part of the annual financial statements and is not reviewed:	
Trust Funds	25 - 27

# TREASURERS' RESPONSIBILITIES AND APPROVAL

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The treasurers are required by the Companies Act 7 1 of 2008, to maintain adequate accounting records and are responsible for the content and integrity of the annual financial statements and related financial information included in this report. It is their responsibility to ensure that the annual financial statements fairly present the state of affairs of the institute as at the end of the financial year and the results of its operations and cash flows for the period then ended, in conformity with the International Financial Reporting Standard for Small and Medium-sized Entities.

The annual financial statements are prepared in accordance with the International Financial Reporting Standard for Small and Medium-sized Entities and are based upon appropriate accounting policies consistently applied and supported by reasonable and prudent judgements and estimates.

The treasurers acknowledge that they are ultimately responsible for the system of internal financial control established by the institute and places considerable importance on maintaining a strong controlled environment. To enable the treasurers to meet these responsibilities, the treasurers sets standards for internal control aimed at reducing the risk of error or loss in a cost effective manner. The standards include the proper delegation of responsibilities within a clearly defined framework, effective accounting procedures and adequate segregation of duties to ensure an acceptable level of risk. These controls are monitored throughout the institute and all employees are required to maintain the highest ethical standards in ensuring the institutes business is conducted in a manner that in all reasonable circumstances is above reproach. The focus of risk management in the institute is on identifying, assessing, managing and monitoring all known forms of risk across the institute. While operating risk cannot be fully eliminated, the institute endeavours to minimise it by ensuring that appropriate infrastructure, controls, systems and ethical behaviour are applied and managed within predetermined procedures and constraints.

The treasurers are of the opinion, based on the information and explanations given by management, that the system of internal control provides reasonable assurance that the financial records may be relied on for the preparation of the annual financial statements. However, any system of internal financial control can provide only reasonable, and not absolute, assurance against material misstatement or loss.

The treasurers have reviewed the institute's cash flow forecast for the year to 31 March 2017 and, in the light of this review and the current financial position, they are satisfied that the institute has, or has access to, adequate resources to continue in operational existence for the foreseeable future.

The independent reviewer is responsible for independently reviewing and reporting on the institute's annual financial statements. The annual financial statements have been examined by the institutes independent reviewer and their report is presented on pages 4 to 5.

The annual financial statements set out on pages 6 to 10, which have been prepared on the going concern basis, were approved by the treasurers on 14 June 2016 and were signed behalf by:

## Approval of financial statements



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President : SAIP



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Honorary Treasurer : SAIP

## INDEPENDENT REVIEWER REPORT

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### To the trustee of South African Institute of Physics

We have reviewed the annual financial statements of South African Institute of Physics, set out on pages 6 to 10, which comprise the statement of financial position as at 31 March 2016 and the statement of comprehensive income and statement of changes in equity for the year then ended, and the notes, comprising a summary of significant accounting policies and other explanatory information.

### Treasurers' Responsibility for the Annual Financial Statements

The institute's treasurers are responsible for the preparation and fair presentation of these annual financial statements in accordance with International Financial Reporting Standard for Small and Medium-sized Entities and the requirements of the Companies Act 71 of 2008, and for such internal control as the treasurers determine necessary to enable the preparation of annual financial statements that are free from material misstatement, whether due to fraud or error.

### Independent Reviewer Responsibility

Our responsibility is to express a conclusion on the annual financial statements. We conducted our review in accordance with International Standards on Review Engagements (ISRE) 2400 (Revised), Engagements to Review Financial Statements. ISRE 2400 (Revised) requires us to conclude whether anything has come to our attention that causes us to believe that the annual financial statements, taken as a whole, are not prepared in all material respects in accordance with the applicable financial reporting framework. This Standard also requires us to comply with relevant ethical requirements.

A review of annual financial statements in accordance with ISRE 2400 (Revised) is a limited assurance engagement. The independent reviewer performs procedures, primarily consisting of making inquiries of management and others within the entity, as appropriate, and applying analytical procedures, and evaluates the evidence obtained. The procedures performed in a review are substantially less than those performed in an audit conducted in accordance with International Standards on Auditing. Accordingly, we do not express an audit opinion on these annual financial statements.

### Unqualified conclusion

Based on our review, nothing has come to our attention that causes us to believe that these annual financial statements do not present fairly, in all material respects the financial position of South African Institute of Physics as at 31 March 2016, and its financial performance and cash flows for the year then ended in accordance with the International Financial Reporting Standard for Small and Medium-sized Entities and the requirements of the Companies Act 71 of 2008.

### Other Matter

We draw your attention to the fact that supplementary information set out on pages 11 to 13 does not form part of the annual financial statements and is presented as additional information. We have not reviewed this information and accordingly do not express a conclusion thereon.



**Mazars Gauteng**  
**Partner: JJ Eloff**  
**15 June 2016**  
**Pretoria**



# STATEMENT OF FINANCIAL POSITION AS AT 31 MARCH 2016

FIGURES IN RAND	NOTES	2016	2015
<b>ASSETS</b>			
Current Assets			
Trade and other receivables	2	391,979	135,998
Cash and cash equivalents	3	3,303,194	4,559,673
		<b>3,695,173</b>	<b>4,695,671</b>
<b>Total Assets</b>		<b>3,695,173</b>	<b>4,695,671</b>
<b>EQUITY AND LIABILITIES</b>			
<b>Equity</b>			
Reserves		1,798,215	3,000,521
Retained income		1,875,964	1,546,609
		<b>3,674,179</b>	<b>4,547,130</b>
<b>LIABILITIES</b>			
<b>Current Liabilities</b>			
Trade and other payables	4	20,994	148,541
<b>Total Equity and Liabilities</b>		<b>3,695,173</b>	<b>4,695,671</b>

# STATEMENT OF COMPREHENSIVE INCOME

FIGURES IN RAND	NOTES	2016	2015
<b>Membership fees</b>	5	<b>336,131</b>	<b>146,855</b>
<b>OTHER INCOME</b>			
Interest received	6	204,294	215,396
Other income		15,746	2,391
Sponsorship and student prizes		58,126	-
		<b>278,166</b>	<b>217,787</b>
<b>OPERATING EXPENSES</b>			
Affiliation fees		800	715
Bad debts		-	711
Bank charges		8,597	8,273
Honoraria		30,803	29,330
Other expenses		26,739	31,308
Physics Olympiad		5,673	689
Prizes		99,500	38,500
Refunds		-	4,370
Reviewers' remuneration	8	19,745	20,797
Travel - local		93,085	38,322
		<b>284,942</b>	<b>173,015</b>
<b>Profit for the year</b>		<b>329,355</b>	<b>191,627</b>
Other comprehensive income		-	-
<b>Total comprehensive income for the year</b>		<b>329,355</b>	<b>191,627</b>

## STATEMENT OF CHANGES IN EQUITY

FIGURES IN RAND	OTHER NDR	RETAINED INCOME	TOTAL EQUITY
<b>Balance at 01 April 2014</b>	<b>3,134,622</b>	<b>1,354,982</b>	<b>4,489,604</b>
Profit for the year	-	191,627	191,627
Other comprehensive income	125,446	-	125,446
<b>Total comprehensive income for the year</b>	<b>125,446</b>	<b>191,627</b>	<b>317,073</b>
Net costs	(259,547)	-	(259,547)
<b>Total changes</b>	<b>(259,547)</b>	<b>-</b>	<b>(259,547)</b>
<b>Balance at 01 April 2015</b>	<b>3,000,521</b>	<b>1,546,609</b>	<b>4,547,130</b>
Profit for the year	-	329,355	329,355
Other comprehensive income	125,446	-	125,446
<b>Total comprehensive income for the year</b>	<b>125,446</b>	<b>329,355</b>	<b>454,801</b>
Net costs	(1,327,752)	-	(1,327,752)
<b>Total changes</b>	<b>(1,327,752)</b>	<b>-</b>	<b>(1,327,752)</b>
<b>Balance at 31 March 2016</b>	<b>1,798,215</b>	<b>1,875,964</b>	<b>3,674,179</b>

The amount of R125,446 in other non distributable reserves relates to contributions made to projects that was not allocated to projects prior to 1 April 2014. R0 was allocated in the current year. The remaining balance of R125,446 is yet to be allocated.



# ACCOUNTING POLICIES

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## 1. PRESENTATION OF ANNUAL FINANCIAL STATEMENTS

The annual financial statements have been prepared in accordance with the International Financial Reporting Standard for Small and Medium-sized Entities, the SAICA Financial Reporting Guides as issued by the Accounting Practice Committee, and the Companies Act 71 of 2008. The annual financial statements have been prepared on the historical cost basis, and incorporate the principal accounting policies set out below. They are presented in South African Rands.

These accounting policies are consistent with the previous period.

### 1.1. FINANCIAL INSTRUMENTS

#### Initial measurement

Financial instruments are initially measured at the transaction price (including transaction costs except in the initial measurement of financial assets and liabilities that are measured at fair value through profit or loss) unless the arrangement constitutes, in effect, a financing transaction in which case it is measured at the present value of the future payments discounted at a market rate of interest for a similar debt instrument.

#### Financial instruments at amortised cost

These include loans, trade receivables, trade payables. Those debt instruments which meet the criteria in section 11.8(b) of the standard, are subsequently measured at amortised cost using the effective interest method. Debt instruments which are classified as current assets or current liabilities are measured at the undiscounted amount of the cash expected to be received or paid, unless the arrangement effectively constitutes a financing transaction.

At each reporting date, the carrying amounts of assets held in this category are reviewed to determine whether there is any objective evidence of impairment. If there is objective evidence, the recoverable amount is estimated and compared with the carrying amount. If the estimated recoverable amount is lower, the carrying amount is reduced to its estimated recoverable amount, and an impairment loss is recognised immediately in profit or loss.

#### Financial instruments at cost

Equity instruments that are not publicly traded and whose fair value cannot otherwise be measured reliably are measured at cost less impairment.

#### De-recognition

Financial assets are derecognised when the rights to receive cash flows from the investments have expired or have been transferred and the entity has transferred substantially all risks and rewards of ownership. Financial liabilities are derecognised when they are extinguished, i.e. the contract is discharged, cancelled or expires.

### 1.2 TAX

The institute is exempt from taxation.

### 1.3 REVENUE

Revenue is measured at the fair value of the consideration received or receivable and represents the amounts receivable for goods and services provided in the normal course of business, excluding sales taxes and discounts. Interest is recognised, in profit or loss, using the effective interest method.

# NOTES TO THE ANNUAL FINANCIAL STATEMENTS

FIGURES IN RAND	2016	2015
<b>2. TRADE AND OTHER RECEIVABLES</b>		
Trade receivables	352,802	101,421
VAT	39,177	34,577
	<u>391,979</u>	<u>135,998</u>
<b>3. CASH AND CASH EQUIVALENTS</b>		
Cash and cash equivalents consist of:		
Cash on hand	868	539
Bank balances	744,231	749,905
Short-term deposits	2,558,095	3,809,228
	<u>3,303,194</u>	<u>4,559,673</u>
<b>4. TRADE AND OTHER PAYABLES</b>		
Other payables	<u>20,994</u>	<u>148,541</u>
<b>5. REVENUE</b>		
Membership fees	<u>336,131</u>	<u>146,855</u>
<b>6. INVESTMENT REVENUE</b>		
Bank	<u>204,294</u>	<u>215,396</u>
<b>7. TAXATION</b>		
No provision has been made for tax as the institute is exempt from taxation (PBO exemption number 930009759).		
<b>8. REVIEWERS' REMUNERATION</b>		
Fees	<u>19,745</u>	<u>20,797</u>

# TRUST FUNDS

FIGURES IN RAND	2016	2015
<b>1. AFRICAN LIGHT SOURCE 2015 CONFERENCE</b>		
Contributions	183,004	-
Costs	(355,329)	-
	<b>(172,325)</b>	-
<b>2. AIOM 2013 CONFERENCE</b>		
Opening balance	(166,311)	(166,311)
Transfer	166,311	-
	-	<b>(166,311)</b>
<b>3. ASTRO &amp; SPACE AWARDS</b>		
Opening balance	(19,000)	-
Contributions	19,000	-
Costs	-	(19,000)
	-	<b>(19,000)</b>
<b>4. BIOPHYSICS PROJECT</b>		
Opening balance	450,049	534,268
Costs	(76,430)	(84,219)
	<b>373,619</b>	<b>450,049</b>
<b>5. CCP 2016 CONFERENCE</b>		
Contributions	83,719	-
Costs	(469,857)	-
	<b>(386,138)</b>	-
<b>6. DPCMM</b>		
Opening balance	23,304	-
Contributions	18,563	23,304
Costs	(15,130)	-
	<b>26,737</b>	<b>23,304</b>
<b>7. Entrepreneurs Workshop</b>		
Opening balance	111,350	113,355
Costs	-	(2,005)
	<b>111,350</b>	<b>111,350</b>
<b>8. MARKETING &amp; OUTREACH</b>		
Opening balance	160,254	281,837
Contributions	-	59,579
Costs	(87,908)	(181,162)
	<b>72,346</b>	<b>160,254</b>
<b>9. PHOTONICS CONFERENCE</b>		
Opening balance	310,546	-
Contributions	184,623	387,325
Costs	(547,781)	(76,779)
	<b>(52,612)</b>	<b>310,546</b>

# TRUST FUNDS

FIGURES IN RAND	2016	2015
<b>10. PHYSICS 500</b>		
Opening balance	30,040	30,040
Transfer	(30,040)	-
	<u>-</u>	<u>30,040</u>
<b>11. PHYSICS GRADUATES DATABASE</b>		
Opening balance	106,638	106,638
Costs	(61,650)	-
	<u>44,988</u>	<u>106,638</u>
<b>12. SAIP OFFICE INVESTMENTS</b>		
Opening balance	338,622	338,622
Transfer	(338,622)	-
	<u>-</u>	<u>338,622</u>
<b>13. SAIP 2013 CONFERENCE</b>		
Opening balance	84,750	140,029
Contributions	-	31,261
Costs	-	(86,540)
Transfer	(84,750)	-
	<u>-</u>	<u>84,750</u>
<b>14. SAIP 2014</b>		
Opening balance	(108,008)	(7,370)
Contributions	22,700	1,815,721
Costs	-	(1,916,359)
	<u>(85,308)</u>	<u>(108,008)</u>
<b>15. SAIP 2015</b>		
Contributions	124,555	-
Costs	(90,180)	-
	<u>34,375</u>	<u>-</u>
<b>16. SAIP 2016</b>		
Costs	(218,996)	-
<b>17. SAIP CONFERENCE RESERVE FUND</b>		
Opening balance	228,381	228,381
<b>18. SAIP OFFICE DST GRANT</b>		
Opening balance	82,519	(77,605)
Contributions	1,312,500	1,148,939
Costs	(1,066,152)	(988,815)
	<u>328,867</u>	<u>82,519</u>
<b>19. SAPHO</b>		
Contributions	11,000	-
Costs	(8,734)	-
	<u>2,266</u>	<u>-</u>

# TRUST FUNDS

FIGURES IN RAND	2016	2015
<b>20. STUD ENT CHAPTER PROJECT</b>		
Opening balance	9,123	10,000
Costs	-	(877)
	<b>9,123</b>	<b>9,123</b>
<b>21. SAIP OFFICE PROJECT</b>		
Opening balance	495,272	495,272
Costs	(41,924)	-
Transfers	347,101	-
	<b>800,449</b>	<b>495,272</b>
<b>22. UNDERGRADUATE DEGREE PROJECT</b>		
Opening balance	238,905	291,978
Contributions	-	166,819
Costs	(50,346)	(219,892)
	<b>188,559</b>	<b>238,905</b>
<b>23. WIPISA</b>		
Opening balance	498,641	671,595
Contributions	30,000	676
Costs	(293,957)	(173,630)
	<b>234,684</b>	<b>498,641</b>
<b>24. TEACHER DEVELOPMENT PROJECT</b>		
Contributions	564,460	-
Costs	(432,055)	-
	<b>132,405</b>	-



**Appendix 1 :**

**AUDITED FINANCIAL STATEMENTS 2015/2016**

[http://saip.org.za/images/stories/documents/Annual\\_Reports/2015-16\\_Reports/SAIP\\_Audited\\_Fin\\_Statements\\_2016.pdf](http://saip.org.za/images/stories/documents/Annual_Reports/2015-16_Reports/SAIP_Audited_Fin_Statements_2016.pdf)

**Appendix 2 :**

**SAIP DIVISIONS AND FORUMS REPORTS**

<http://saip.org.za/index.php/news-and-events/other-events/378-saip-2016-annual-report>

**Appendix 3 :**

**OUTREACH & PUBLIC UNDERSTANDING OF PHYSICS**

[http://saip.org.za/images/stories/documents/Annual\\_Reports/2015-16\\_Reports/Outreach\\_Report.pdf](http://saip.org.za/images/stories/documents/Annual_Reports/2015-16_Reports/Outreach_Report.pdf)

**Appendix 4 :**

**WOMEN IN PHYSICS LUNCHEES**

[http://saip.org.za/images/stories/documents/Annual\\_Reports/2015-16\\_Reports/WIPiSA\\_lunches.pdf](http://saip.org.za/images/stories/documents/Annual_Reports/2015-16_Reports/WIPiSA_lunches.pdf)

**Appendix 5 :**

**Biophysics Initiative Report**

[http://saip.org.za/images/stories/documents/Annual\\_Reports/2015-16\\_Reports/BIOPHYSICS\\_REPORT\\_2016\\_June.pdf](http://saip.org.za/images/stories/documents/Annual_Reports/2015-16_Reports/BIOPHYSICS_REPORT_2016_June.pdf)



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