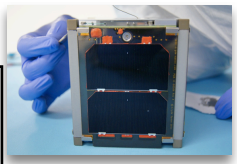
Vol 6, Issue 1, March 2014 Webpage Email

Physics Comment

A Southern African Physics Magazine

A Quarterly Newsletter Issue No 1- Autumn 2014



First SA Nano-Satellite with 10.5 m antenna to study radio wave diffraction by space plasma. Page14

Editorial board: T. Konrad and A.D.M. Walker

Contents

Editor‘s Note

Many of us are working with deadlines in what seems an ever accelerating pace. Also we at *Physics Comment* can tell a tale or two about this. As Niklas Luhmann, a famous German sociologist, observed in an article, already in 1971, files titled “urgent” and “very urgent” populate our desks. On the other hand, deadlines help to finalise tasks, and can even further collaboration and inspire new creative solutions. I recently experienced this with a contribution for *Physics Comment*, which it was worth while to wait for.

As announced on the cover, in the March issue of PC we report on a pulsar that might have been hit by a billion tonne asteroid, the findings are based on HartRAO data from Hartebeesthoek near Johannesburg (p. 12). Mrs Catherine Webster from SANSA informs us about the new exciting projects of the South African Space Agency (p. 14). This year’s host of the annual SAIP conference, the Physics Department of the University of Johannesburg, presents itself and the conference on page 18. An article addressing the urgent question of what we can expect from past and future SAIP conference proceedings can be found on page 7.

Meanwhile an international team of radio-astronomers has measured a specific part of the cosmic microwave background radiation at the South Pole and claimed recently to have detected traces of a primordial gravitational wave caused by inflationary expansion of the universe a split second after the big bang. If confirmed, this first direct evidence of a gravitational wave may radically change the way we think about the universe. In this respect, I found it very interesting to read an account of cosmic inflation given by one of its founding fathers - Russian Physicist Andrei Linde - who says that there might even exist many regions in the universe governed by different physical laws. A dream for a physicist! Or a nightmare? I hope we hear more and can report in future issues of PC.

With best wishes
Prof. Thomas Konrad

Caption of picture on cover page: Artist’s impression of an asteroid being vaporised (JPL-Caltech/NASA)

Physics Comment is a journal published by the South African Institute of Physics (SAIP) and appears quarterly . The vision of the SAIP is to be the voice of Physics in South Africa.

News from South Africa

The Untold Stories in the History of Physics in South Africa

by Dr Igle Gledhill – SAIP President

The publication of the book "Physics in South Africa", edited by PR de Kock and H Moraal, prompts the opening of a new phase in gathering the archives of physics in South Africa.

To quote the Introduction:

"When does the history of physics begin? Which of the different histories should be told? Did all potential contributors have a full opportunity to participate?"

"Particularly in southern Africa, one can rightfully imagine that the story begins over two million years ago... However, the chronicling of this period, potentially rich in evidence of knowledge generation and innovation, is still ongoing, and will be revealed in due course by other disciplines which are expert in deciphering the records that remain of this important heritage."

"The interval from 1830 to 1994 spans a variety of political contexts in which science was carried out. During that time, many aspiring physicists were discouraged, and many practicing physicists were lost to the field or to the country. In many cases, records of these life stories have not survived. Therefore, while no history can claim to be complete, this particular one leaves out the acknowledgement of many thinkers, and many thoughts. Indeed, there are many such untold stories, and these may be of exclusions, difficulties, campaigns for broader participation and transformation, and the successes in managing to continue to participate under difficult conditions. It is hoped that this account may encourage some of the untold stories to be heard and recorded."

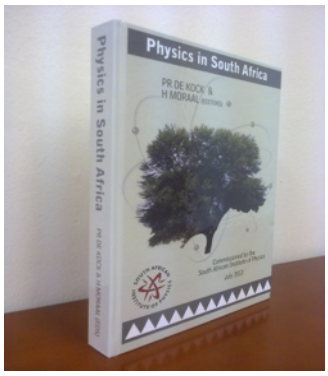
The full Introduction of the book can be found here.

In addition, therefore, to the material that has been gathered through the Departments and Institutions by the unflagging efforts of the Editors, there are many stories that have not yet been told, and we invite members of the physics community to record them now, using this web interface.

To contribute, please email us.

Alternatively visit the SAIP website http://www.saip.org.za/index.php/history-of-physics-book

Purchase the book Physics in South Africa



Order from SAIP Office

The book is currently available from the SAIP Office in Pretoria in hard copy and currently priced as

a) Hard covered Copy R500 per copy

b) Soft covered Copy R250 per copy

Courier and postage fees is for the customer's account

To order your copy please Email or Phone +27 12 841 2655/2627

Nanoscience brought to Secondary Schools

by Bongani S. Thabethe, CSIR, Pretoria. Interview conducted by T. Konrad (Editor).

The CSIR Public Understanding of Nanoscience and its Benefits (PUNiB) programme together with Hulisani Educational Resources Centre (HERC) organized a science engagement in Driekop Madifahlane at Phafane Secondary schools. The sole purpose of this event was to promote public understanding of science, teach students in the rural areas about

different science disciplines and encourage them to take science in their careers. It is through these efforts that we see the interest the learners show in science and that science can be made fun.

Caption: Students at the science show colourful chemistry

Different companies such as *CSIR, MINTEK, SAASTA, Edutrade, Osizweni Education and Development Centre, Department of Water Affairs, Moipone Academy, Limpopo Education Department* and the *University of Limpopo attended the event.* The different companies explained their operations and advised the students how science fits in their operations.

Students learning science through interactive exhibits.

PC: *Bongani, were experiments shown to the students?*

B.S.T.: Yes students got to learn about different experiments.

PC: *For example?*

B.S.T.: Boyle's law, Ohm's law, Newton's s laws and chemistry practicals

PC: *How was Nanoscience introduced to the students?*

B.S.T.: We introduce Nanoscience to the students by first unpacking what nanoscience is and then transfer the information gained from nanoscience into nanotechnology followed by different processes when producing different nanostructures in the labs and employing different characterization techniques.

PC: *What aspects of physics (or science) are the companies interested in?*

B.S.T.: They want the students to have studied one or more of the following subjects: Nanotechnology, Physics of mining, Aeronautics, Electrodynamics and Newtonian Mechanics.

PC: *What do the companies want from their future scientific employees and what career possibilities can they offer?*

B.S.T.: The companies are encouraging the students to do better in maths and science, advice them to organise field trips to visit, learn more about the companies' operations and apply for the careers or graduate programmes they have in place to train them to become better scientists.

PC: *How was the event received by the students?*

B.S.T.: The students welcomed the event with open hands, they were really excited to have companies visiting their school for the first time, this gave them the opportunity to interact with scientists who

> *Students at exhibition stands of CSIR and MINTEK.*

are specialists in different disciplines

2014 De Beers Gold Medal Nominations

Dear SAIP Member

You are invited to submit nominations for the De Beers Gold Medal for 2014.

Nominations must reach the SAIP secretary at secretary@saip.org.za before the closing date on Friday 16 May 2014 at 23h59.

Please take note of the following regarding the nominations as outlined in the Bylaws of the SAIP:

- The award is made for outstanding achievements in any of the following facets of any branch of Physics: research, education, technology and industrial development. As the highest standards are applied, the award is intended to be the greatest distinction that is conferred in South Africa for achievements in Physics.
- The award or, in exceptional cases, two awards or no award shall be conferred every second year. The award cannot be divided and only one award shall be made to any one person.
- All members shall be invited to nominate physicists for the award. The submission shall consist of a full Curriculum Vitae of the nominee, accompanied by a substantial motivation that must describe the fields of activity in Physics in which the nominee has excelled, what his/her actual contributions are and the standards by which these contributions have been measured. Nominees must have been normally resident in South Africa up to the closing date set by the Council for the receipt of nominations. Only work done by a South African citizen or South African resident shall be considered for this award. The work must have been done in South Africa or during a temporary visit abroad.

Please also note that previously unsuccessful nominees for the De Beers Gold Medal may be re-nominated. Contact me if you have any further queries.

Yours sincerely,

Dr. M. Tibane

Honorary Secretary SAIP

Free SAIP Membership for 3rd Year and Honours Physics Students

by Brian Masara (SAIP Office)

The SAIP Council passed a resolution to extend free membership all 3rd Year Physics students and all Honours Physics Students. In order for 3rd year and honours students to be given free SAIP membership they must do the following.

- Approach their supervisor or physics head of department and ask them to send a request to SAIP
- The HoDs / Supervisors can choose to make their students free SAIP members
- The supervisor or HOD can send an email with the students' names and email address to SAIP on info@saip.org.za
- The 3rd year and honours students will have the following benefits
- Receive all SAIP electronic communication such as the Physics
- Comment magazine and adverts for scholarships, conferences and jobs.
- Attend the SAIP annual conference as student membership rates

This subscription will be valid for 1 year from January to December only hence for honours students they can ask their supervisor/HoD to renew it every year in January.Physics in South Africa

Join SAIP Membership

By Brian Masara (SAIP office, Pretoria)

Physics is a basic science that is a basis for all science and technology disciplines. This results in physics graduates working in every sector imaginable. Therefore SAIP caters for a wide range of industries and economic sectors.

SAIP membership includes any physicists who graduated with at least physics related degree working in either; industry, commerce, government, academia, research, theoretical physics, experimental physics, and uses physics skills and thought processes in their job/career.

Why Professional Membership is Important

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. By becoming a member of a professional society one demonstrates their commitment to maintaining competence in their field through continuing your professional development from activities such as conferences, schools and workshops and abiding by an acceptable code of conduct. Membership of a professional society is an important addition to a physicist's personal credentials for example when competing for a job membership of professional society will distinguish one from other applicants with similar qualifications but no professional affiliation.

What members say about SAIP membership

Dr Igle Gledhill - It's useful to have a profess-ional home that is not an employer or an alma mater. I came back from four years in the USA and switched fields at the same time. Funnily enough, SAIP is home – the banquet is a hoot, the conferences keep me up to date, the Institute is serious about science in South Africa and gets things done, and my colleagues keep me on my toes.

Dr Daniel Moeketsi - SAIP provide a platform to showcase physics research progress and direction in the country and expose students to many career opportunities both in public and private sector. I encourage postgraduate students to subscribe for SAIP membership and actively participate in the organisation's annual activities.

Membership benefits

I. Stay informed - News flashes and alerts to are sent directly to your email. A quarterly magazine, Physics Comment, will keep you briefed on physics news, government policy and jobs in industry and academia.

II. Specialist Groups and Networking - Through the various activities of SAIP, networks have been established with the African and International Physics communities, to benefit all our members. You'll make important new contacts and forge lifelong professional relationships by getting involved in a specialist group.

III. Save Money - You'll receive discounted rates for SIAP conferences, and have the benefit of paying affiliate membership fees for IOP membership.

IV. Employment opportunity information - Job advertisements will be displayed on our new website and mailed to members from time to time.

V. Access to current information on sources of funding grants and scholarships - Exclusive service provided to our members via a direct email system.

VI. Scientific meetings - The annual conferences and workshops provide learning opportunities for different specialisation areas and varying degrees of experience.

VII. Especially for the global physics community - You'll have the opportunity to be partake in events organised by the SAIP for the Physics community in South Africa as well as Africa: developmental workshops, schools and conferences.

VIII. Additional resources - Your membership privileges also include information and guidance when applying for and acquiring visas to study, participate in scientific meeting and research opportunities in South Africa and abroad. There is also an exclusive member-only area on our website.

IX. Career guidance and resources- Career assistance is provided to all members to find their career path in industry or academia.

X. Opportunities to win awards for excellence - SAIP recognises contributions to physics in SA by awarding two different medals and various student prizes at the annual conference.

XI. Teaching and Learning Resources for schools - As part of our growing outreach programme we provide teachers and learners with the tools and opportunities to allow and motivate more learners to follow careers with physics as a background.

JOIN SAIP TODAY CLICK THE LINK BELOW FOR MORE INFORMATION ON HOW TO APPLY

http://www.saip.org.za/index.php/members/membership-info

SA Physics Graduates Database

By Brian Masara (SAIP office, Pretoria)

If you have a degree in physics and you are currently working, studying or unemployed and resident in South Africa, or have studied physics in South Africa we kindly request you to sign up and give us your personal statistics. We need you! The statistics we collect, with your help, will be used to influence legislation, decision-making and all matters related to physics funding required for training more physicists.

Read more details here on confidentiality and great benefits of signing up and updating your details

To register click here .For enquiries contact SAIP Office at info@saip.org.za

The SAIP Annual Conference Proceedings

by Ilsa Basson, Roelf Botha, Simon Connell, Igle Gledhill and Brian Masara

Proceedings are an important recent addition to the SAIP Annual Conference. The commitment to a sustainable high quality Proceedings develops the scholarly standing of the Annual Conference and provides a valuable archival record of the presentations. It also further develops the capacity building aspect of the Conference, since a contribution to the Proceedings is an important early scholarly output for many students. Furthermore, the expectation of a scholarly output is becoming an important consideration for many SAIP members. In some cases, this imperative has an additional financial motivation, related to the current Incentive Scheme of the Department of Higher Education and Training (DHET) which is an important part of the government funding to tertiary institutions. The first Proceedings, for the 2011 Conference, were very successful; and the commitment remains to make this difficult task work well. Here is the current status of the subsequent Proceedings.

Editorial Committee

The Editorial Committee (EC) of the SAIP Annual Conference Proceedings consists of members from the Local Organising Committee (LOC), the SAIP Council, and the SAIP Executive Office (EO). Typically, the LOC establishes, from within its members, a dedicated Editorial Committee Chair as well as several other Assistant Editors. Continuity between years (where the conference is at a different venue with a different LOC) is provided by the ex officio membership of the SAIP Council representative for the SAIP Proceedings (currently Prof Ilsa Basson). In addition, the Executive Officer of the SAIP is also an ex officio member of the Editorial Board (currently Mr Brian Masara). The Editorial Committee is responsible for the quality and sustainability of the SAIP Annual Conference Proceedings.

Establishment of the Database of Reviewers

As with any professional journal, the SAIP Annual Conference Proceedings has a database of Reviewers, cross-referenced to competency areas.

Candidates for this database are sourced from four separate sources.

1. The Head of Department of all University Physics Departments have submitted lists compiled in consultation with their staff.
2. Nominations are made by the Chairs of the Divisions and Forums.
3. The authors have made suggestions in respect of South African experts in their field; these suggestions may be used at the discretion of the Editorial Committee.
4. Where necessary, the Editorial Committee has also nominated reviewers, from within South Africa and occasionally from other countries.

Reviewing Template

A new template for Reviewers has been drafted to ensure that standards are as uniform as possible across fields.

Status: 2012 and 2013

At the last count, for the 2012 Proceedings, there are 18 papers where the Review is complete and the paper is accepted, about 100 papers where only one of the two necessary Reviewers has responded and about 20 where

there has not yet been any Reviewer response. Using the database of Reviewers, a new campaign to complete the process for these papers commenced during February 2014.

The review of the 2013 Proceedings is under way. An initial layout Review is complete. The assignment of Content Reviewers has been nearly completed, and these papers have been communicated to the reviewers. The 2013 Proceedings have been partly integrated into the new reviewing model of the SAIP Indico Conference Management system.

Following discussions with the DHET, the SAIP has been informed that both the 2012 and the 2013 Proceedings are eligible for recognition following an application by the authors' Research Administration on the usual "per article" basis. It is expected that these proceedings will be available in time for submission for the 2014 calendar year.

Recognition of the Proceedings

The SAIP Council has designed the SAIP Annual Conference Proceedings to develop a sustained record of quality and the capacity to be produced timeously each year. Following discussions with the DHET, the SAIP has been informed that it can expect the SAIP Annual Conference Proceedings to be granted the status of a recognised set of proceedings if a track record of five years of successful recognition is obtained on the basis of the "per article" recognition mentioned above.

Reviewer Responsibilities

The success of the SAIP Annual Conference Proceedings is not fully determined by the committees, procedures and infrastructure that have been established. The success is, in fact, crucially dependent on the participation of qualified scientists as reviewers. It is correct to say that most of the problems experienced to date have their origin in delays in review; and the Editorial Committees are joined by the SAIP Council and structures in calling for responsible participation from the community in this worthwhile initiative.

Please see the accompanying article by the SAIP Council President, Igle Gledhill, which addresses this point. The scheme, as a whole, is founded on the willing participation of authors and reviewers, but a useful ICT system has been put in place to ensure continuity across the years and assist the committees in keeping track of papers.

SAIP Annual Conference Proceedings gets a Hi-Tech boost

The SAIP Server was upgraded earlier this year, and among many upgrades and new services, there is an important upgrade to the Indico Conference Management system. This now includes a Paper Reviewing Module. The SAIP Indico Paper Reviewing System will allow detailed monitoring of all stages of each authors paper(s) through the reviewing process. This is very visible to the Paper Review Managers, the Referees, and the Content Reviewers. They and the authors will have secure access to the relevant aspects of the system and will also receive system generated mails as progress is captured. The EC in particular will be able to intervene if necessary to expedite any contributed paper where there is a problem.

A more detailed description of the workflow within Indico can be found at the end of this article.

Commitment from SAIP 2014 Editorial Committee

The 2014 SAIP Annual Proceedings EC has committed itself to finalise the publication of the proceedings within the same year as the Conference itself. Reviewers have been contacted. To volunteer, please send an

email to saip2014review@saip.org.za. Further development of the Reviewers Database is already in place. In addition, this will be the first occasion where the SAIP Proceedings Reviewing Module of the Indico Conference Management System will have been available at a very early stage in the conference organization. Mechanisms to monitor the progression of the papers and follow up rapidly have been established.

Concerns of the Community

There is some concern in the community that the 2014 Proceedings could be prejudiced by non-appearance of the 2012 and 2013 Proceedings. The DHET has confirmed that these issues are decoupled. Articles from each proceeding can be submitted for recognition independently of the other in its own right.

The next steps

The publishing process depends not only on good ICT systems but on the willingness of physicists to get it working smoothly. Comment and feedback is welcomed please email comments to info@saip.org.za, for attention of the SAIP President. Please participate. We look forward to seeing you at UJ in July!

Condensed overview of the review process using Indico

This new system is best understood by considering the roles involved and reviewing process workflow as adapted to the SAIP Conference. Figure 1 below indicates the various roles, beginning with the Paper Review Managers, headed by the Chair of the Editorial Committee (EC). They assign referees on a per track basis. The track Referees perform the allocation of the Content Reviewers to each paper based on the SAIP Annual Conference Proceedings Reviewer Database. The additional team members within the Paper Review Managers are sourced from capacity within the EC. The Referees are sourced from the EC as well as Division

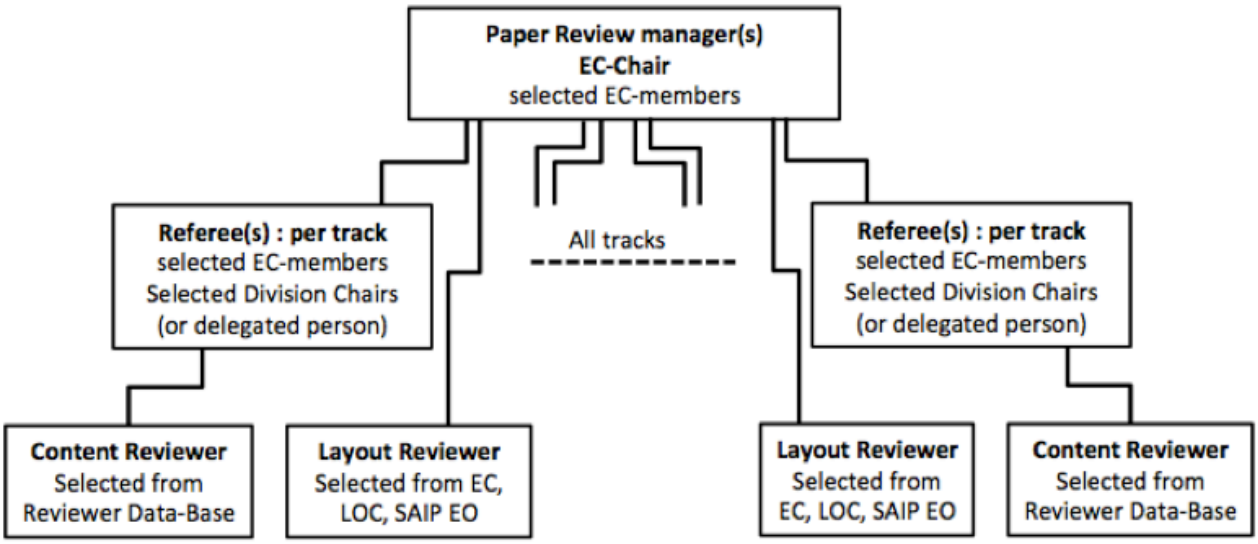


Figure 1. *Roles in the SAIP Indico Paper Reviewing System*

The workflow to configure the Indico Conference Management System for each year will begin as soon as a host for a particular Annual Conference is identified and a Local Organising Committee is established. However, by the time the registration is opened, the various roles as discussed above will already be established. Once a registered delegate wishing to contribute a paper has submitted an abstract and this is accepted, the Indico Conference Management System will allow a paper submission from this delegate, up until the deadline for the closure of the paper submissions. From this point the workflow proceeds as in Figure 2.

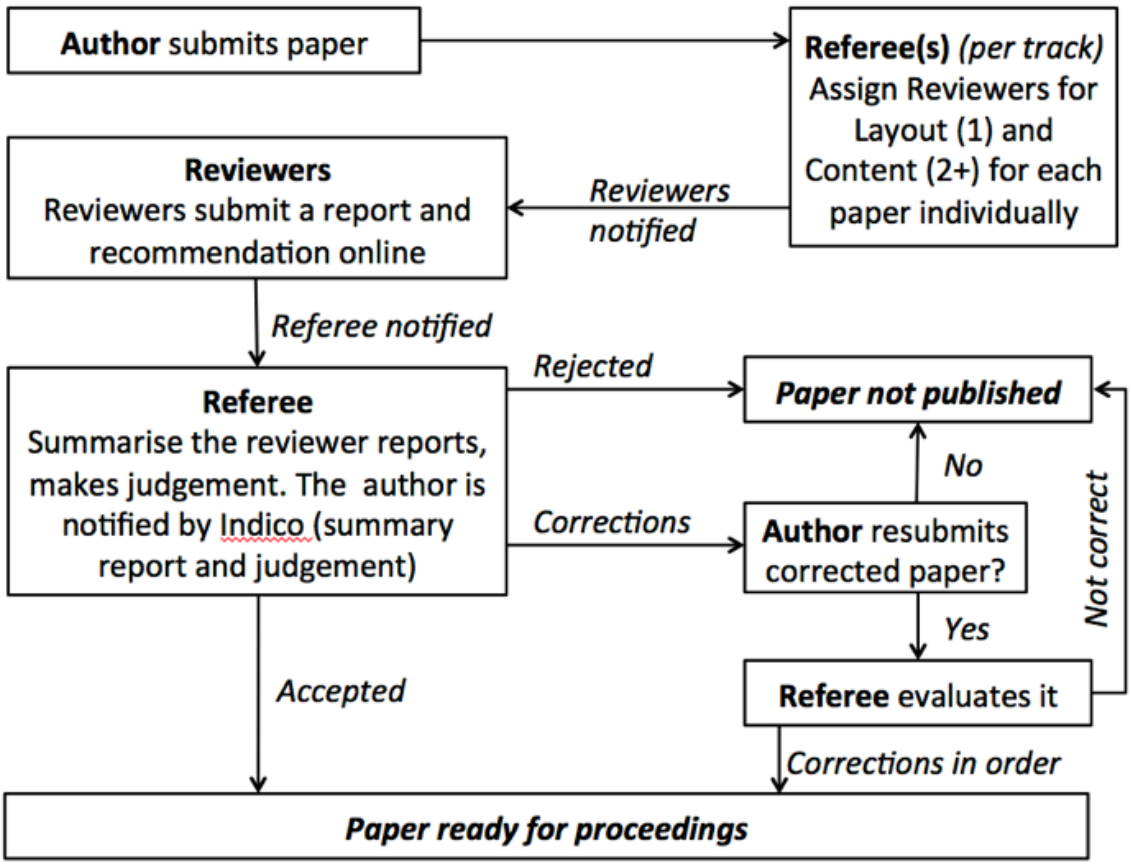


Figure 2. *Workflow in the SAIP Indico Paper Reviewing System*

More details can be found under the 'Paper Reviewing Guides' section on the SAIP Indico system at:

http://events.saip.org.za/help.py

Review or Perish!

by Dr Igle Gledhill (CSIR), SAIP President

Isn't it interesting that in science we are encouraged so vigorously to submit and publish papers, but the motivation for becoming a reviewer is lukewarm, if it exists at all? Within a community of physicists –say a national one – the reviewers are the experienced professionals, with their PhDs behind them, whose sage advice is sought by editors and publishers. The number of reviewers must be smaller than the total size of the publishing community, when students are taken into account. Each paper requires two positive reviews. The reviewers, therefore, must review at a rate that is higher than double the rate of publication, especially if there is a burgeoning, healthy student population.

Universities and institutes rarely reward their staff for excelling at review. (I'm not at all sure that corporate forms of reward really drive progress in science; let's let that point go for the moment.) They do, however, often put a price on each paper that makes the Department of Higher Education and Training standards. Well-intentioned rewards often drive behaviour in mysterious ways; the publication system involves submission, review and publication of papers, but only two of these really receive official attention, time and funding.

The 2012 SAIP Proceedings have been held up by the rate of review: the second review is still outstanding on 80% of the papers submitted! It turns out, on investigation, that the editorial committee has made committed, vigorous and determined attempts to contact the reviewers and get the show on the road for every author. Many reviewers simply don't respond to requests. Some haven't replied at all. Some have done their jobs, and more. The reviewer number goes down, and the load per reviewer goes up – and the authors may get a little annoyed. SAIP 2013 is hard on SAIP 2012's heels, and SAIP 2014 is being organised now.

In the university world, the pressure is on, either to push the students forward, or to push the frontiers back. (There is always administration to add to the fun.) There isn't a time of year when we slack off. Good reviewing is demanding, but it makes good scientists. It doesn't help the author to have sloppy work accepted, or rejected without an intelligent comment. (As the American author Joyce Carol Oates said, "A good, sympathetic review is always a wonderful surprise.")Reviewing draws on expertise, knowledge, and good ol' human wisdom, and is an accomplishment of the best scientists we have. Thank goodness we aren't in the movie business: Federico Fellini is known to have said that "Hype is the awkward and desperate attempt to convince journalists that what you've made is worth the misery of having to review it."

Can we get away without reviewing so much? Well, if we don't publish so much, we can. Recognised Proceedings for the SAIP Annual Conferences are valuable. The primary function of the conference is to act as a forum for physicists in South Africa – a place where we catch up with each other, find out what thinking is new, and welcome the youngsters joining the professional community (very important). Like most national conferences, it is often the first platform on which budding scientists speak. The call for acknowledgement of that effort in the form of Proceedings has been strong and strident for several years, and a beautiful job was done on the 2011 set – by editors, authors and reviewers.

What's the bottom line? If you've been asked to review for the SAIP Proceedings, please, luv, just do it. We can't publish without it.

Articles

Billion Tonne Asteroid Hits Pulsar

By Dr. Sarah Buchner

Introduction

Pulsars, rotating neutron stars, are like cosmic lighthouses emitting beams of radio radiation. Each time the beam sweeps past the earth we detect a pulse – like the regular ticks of a clock. We are able to measure small variations in the arrival of these ticks. South Africa's HartRAO telescope has observed the pulsar PSR J0738-4042 on a regular basis for over 20 years. In 2005 the rotation rate of the pulsar changed abruptly. A team of astronomers using the HartRAO data and data from Australia's Parkes telescope believe that they have found evidence for a billion tonne asteroid striking the pulsar.

Asteroids and Pulsars

Pulsars form from the collapsed cores of massive stars after supernova explosions. They are dense, 1.5 solar masses compressed into a radius of 10 km. Their rapid rotation and enormous moment of inertia gives rise to a very stable rotation rate. Although the shape of the pulse profile varies from pulse to pulse, on average it remains stable. We can exploit this stable profile to measure the rotation of the pulsar and build timing models to explain the arrival time of the pulses on earth. We have thus been able to use pulsars to discover extra-solar planets, test general relativity in strong gravitational fields and in the near future, hopefully detect gravitational waves.

Artist's impression of an asteroid being vaporised (JPL-Caltech/ NASA)

It has been assumed that the average pulse profile remains stable over decades of observations. In recent years this assumption has been challenged as a small number of pulsars have been discovered whose average profile switches between states on long time scales. Some of these changes in profile are correlated with changes in the spin down of the pulsar. It is thought that changes in currents in the pulsar magnetosphere are causing both the changes in emission profile and in rotation rate.

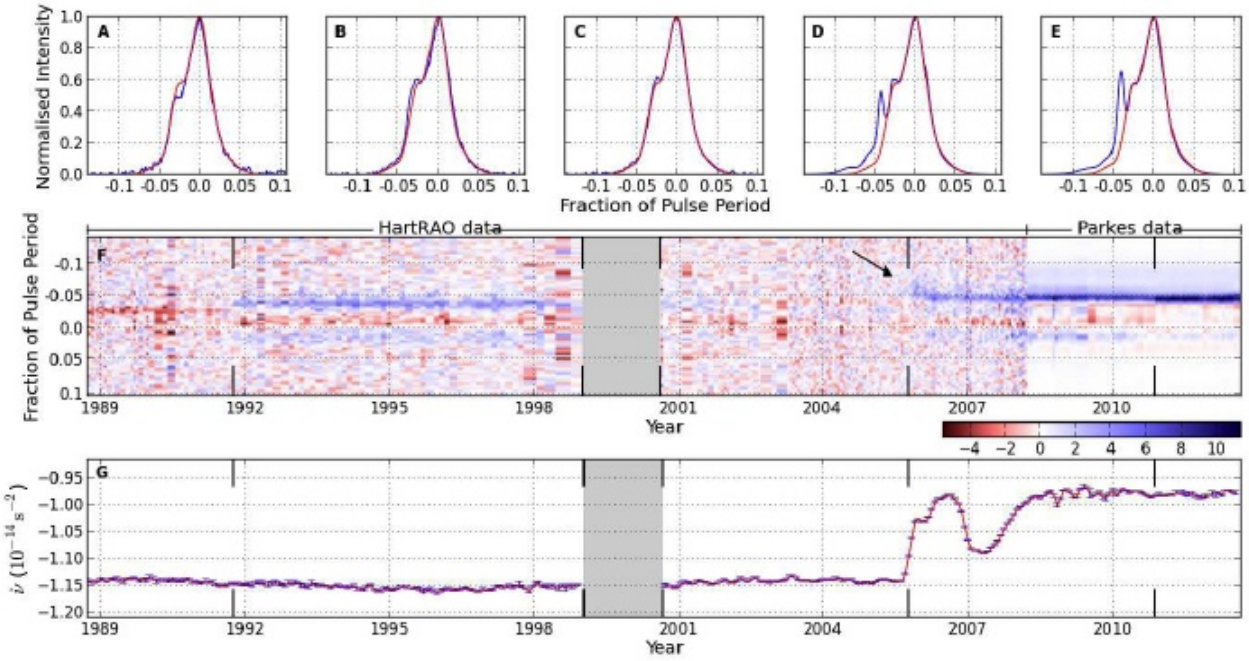
We expect that material ejected in the supernova explosion will form debris disks and asteroid belts around the newly formed pulsar. In 2008, Cordes and Cordes postulated that an infalling asteroid would interact with the pulsar magnetosphere to produce changes in the pulse shape and rotation rate.

HartRAO monitoring of J0738-4042

The 26m HartRAO telescope, 60 km outside Johannesburg, is a relatively small radio telescope and has concentrated on regular observations of bright pulsars. PSR J0738–4042, in the constellation Puppis was monitored regularly. In 2010 HartRAO astronomer Sarah Buchner attended a conference where Oxford astronomer, Aris Karastergiou spoke about changes in the pulse profile (i.e. the shape of the graph of the received signal) of this pulsar. Buchner mentioned to him that HartRAO had archival data on the pulsar. When she analysed this data she found that pulse profile changes had occurred which coincided with an abrupt, significant change in the rotation rate.

Evidence for an asteroid

A team lead by Oxford PhD student Paul Brook analysed the HartRAO data together with higher sensitivity observations using the Parkes radio telescope. The pulse shape changed a number of times between 1988 and 2012. In September 2005 the torque changed suddenly. This was accompanied by the appearance of a new component of the pulse profile.



Data from the pulsar PSR J0738-4042. The top row of images (panels A to E) show the changes in pulse profile with time. The red trace shows a constant, median, pulse profile from the HartRAO data. Panels D and E show the new pulse component.

The middle image (panel F) shows the difference between a constant, median, pulse profile, in red, and the data, in blue, in which the emergence of a new emission component is seen, marked by an arrow.

The bottom image (panel G) shows the changes in the pulsar spin-down rate with time, and highlights the big change that occurred when the new pulse component appeared.

The pulsar shape change and timing signature can't be explained by any processes internal to the pulsar. The team therefore believes that it is caused by an asteroid or in-falling debris from a disk. The pulsar beam would vaporise the asteroid but its charged particles would cause a change in the emission properties of the pulsar beam.

The results have been published recently in the Astrophysical Journal.

The environment around the pulsar is hostile – with strong radiation and particle winds.

"If a large rocky object can form here, planets could form around any star. That's exciting," Dr Shannon saidf [3].

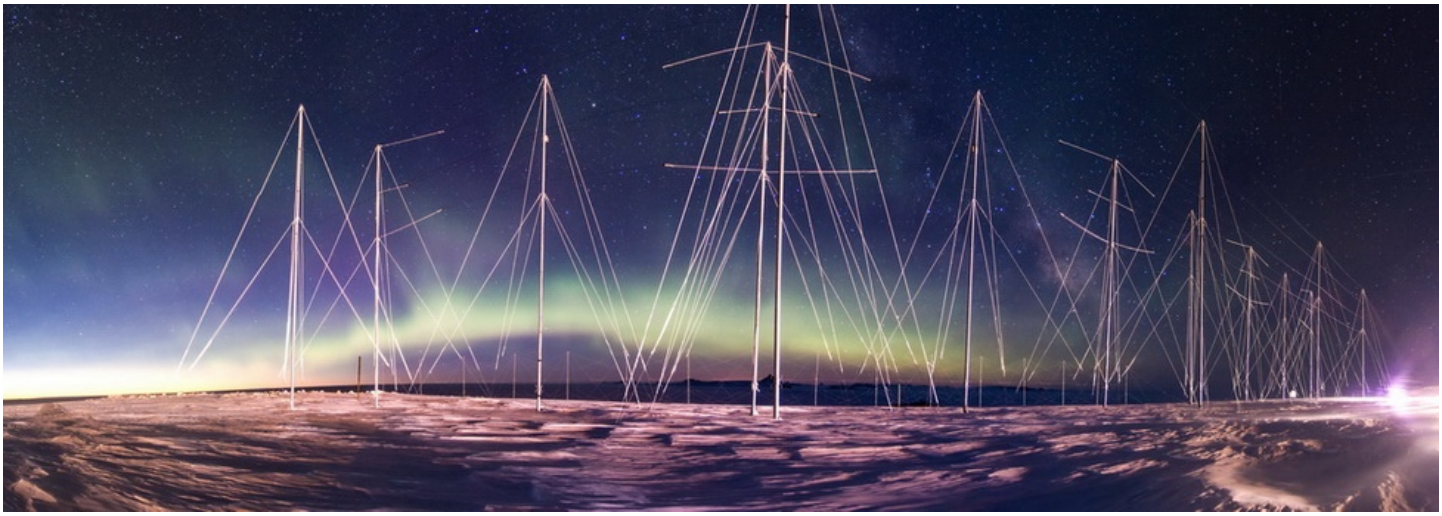
References

[1] Cordes, J. M., & Shannon, R. M. 2008, ApJ, 682, 1152

[2] P. R. Brook *et al.* 2014 ***ApJ* 780** L31 (http://arxiv.org/abs/1311.3541)

[3] http://www.csiro.au/en/Portals/Media/Rocks-around-the-clock.aspx

Author Biography: Sarah Buchner is an astronomer at HartRAO (Hartebeesthoek Radio Astronomy Observatory) and the School of Physics, University of Witwatersrand. Sarah.buchner.za@gmail.com.



SANSA's SuperDARN Radar array located at the South African research base in Antarctica. Image credit - Rob Coetzee (S52)

SANSA NEWS MARCH 2014

By Catherine Webster, Communications Officer SANSA Space Science

Space science and technology to stimulate socio-economic development

The establishment of the South African National Space Agency (SANSA) in 2010 gave rise to a giant leap for South Africa's undertakings in space science and technology and heralded a new era in the exploitation of space technology in service of humanity.

In its third year of operation, the Agency has been instrumental in moving South Africa into the global space arena as a serious space contender. SANSA offers state-of-the-art products, services and infrastructure that impact on the local and global economy, as well as the lives of all our citizens and aims to grow the knowledge economy in South Africa.

As an entity of the Department of Science and Technology, SANSA is tasked with coordinating the development of a national space programme for South Africa in collaboration with various local and international stakeholders.

Space is not as empty as you think!

While the name suggests that space is empty, that is far from true. Matter released by our sun and space weather events fills the area between our planet and surrounding bodies, and is known as space plasma. Plasma particles are the fourth state of matter (solids, liquids, gasses) and have an effect on how radio transmissions travel through space. It is important for scientists to understand what those effects are. Plasma is always confined by a magnetic field such as the sun's magnetic field, the interplanetary magnetic field or the Earth's magnetic field.

Three unique SANSA projects link to offer a deeper understanding of the world of space plasma. A digital upgrade to the South African SuperDARN radar in Antarctica, the construction of a High Frequency Direction Finding (HF/DF) interferometer array, and the tricky business of uncoiling a wire in space will all come together to give SANSA extended capabilities in space weather monitoring and space plasma studies.

Part 1: Icy challenges for SuperDARN project

The SA Agulhas II's December 2013 voyage to Antarctica saw the polar research and logistics vessel encounter tough conditions just before Christmas. Strong currents and thick sea ice prevented the ship from reaching the ice-shelf, which caused a two week delay.

When SANSA Engineers lead by Gert Lamprecht, Research Support Unit Manager, arrived at the South African Antarctic base, SANAE IV, they were informed that they would have three weeks less time than planned to install SANSA's new high frequency digital radar system.

The radar is part of an international network of 33 radars distributed over the northern and southern Polar Regions, called the Super Dual Auroral Radar Network (SuperDARN). This new digital system is going to replace the existing 17 year old analogue radar, which was due to be decommissioned in 2012, and will provide a more versatile, reliable and state-of-the-art research platform to study the ionosphere and other space weather related phenomena.

Understanding space weather, a term used to describe the effects the sun has on Earth and the planets of our solar system, is a global priority. SuperDARN data provides scientists with information regarding the Earth's interaction with the space environment. "Communication and navigation technology, town planning, resource and disaster management are highly dependent on satellites operating in our space environment. Understanding this environment has become vital in order to protect technology in space and on Earth from the devastating effects of space weather" said Dr Sandile Malinga, SANSA CEO.

Antarctica is an ideal location for space weather research instrumentation as the Earth's magnetic field lines converge at the poles and act like a funnel for space plasma to travel into the Earth's atmosphere. A single pair of SuperDARN radars can measure the position and movement of ionospheric plasma in an area of approximately 4 million square kilometres.

The team who installed and helped develop the new SuperDARN Radar. They have each performed the role of SANAE IV Radar Engineer over the last 5 years.

Left to right: Francois Olivier (S53), Philip Mey (S52), Jonathan Ward (S51), Ruan Nel (S50) & Roger van Schie (S49). Image credit - Brett Anderson (Dartmouth College/NASA)

South Africa's SuperDARN radar project is a collaborative effort between SANSA, the University of KwaZulu-Natal (UKZN) and the University of La Trobe in Melbourne, Australia. All SuperDARN data collected at SANAE IV is sent to UKZN, where it is analysed to ensure it is of good quality. The data is then archived and distributed to the rest of the SuperDARN community. The system is largely based on the next-generation, T3 digital radar platform, which was the first fully digital SuperDARN radar platform in the network, developed by the TIGER Group at the University of La Trobe. The collaboration between SANSA and La Trobe has allowed for opportunities in international research partnerships and knowledge exchange to further enhance our understanding of radar in order to better develop local skills, training and capabilities in this field.

"The Agency's new radar not only marks a milestone for national and international space weather research but has also provided a unique platform for developing skills in space science and technology," said Dr Malinga.

Despite a few challenges and the hostile Antarctic environment the radar has been installed successfully and is receiving data. Two engineers will spend the rest of the year at the Antarctic base to monitor and maintain the suite of space monitoring instruments operating from the ice, and ensure that meaningful data is transferred to the SANSA facilities in Hermanus.

SANSA engineer's with the new SuperDARN radar system after it was successfully installed at the Antarctic research base SANAE IV.
Left to right: Roger van Schie, Jonathan Ward, Philip Mey, Francois Olivier.

Part 2: Uncoiling an antenna in space

While the new SuperDARN radar has been installed in Antarctica, back on the home front SANSA is managing an experimental aspect of South Africa's first nano-satellite mission. The experiment aims to determine how to broadcast a long wave radio signal using an antenna on a satellite that can fit in the palm of a hand.

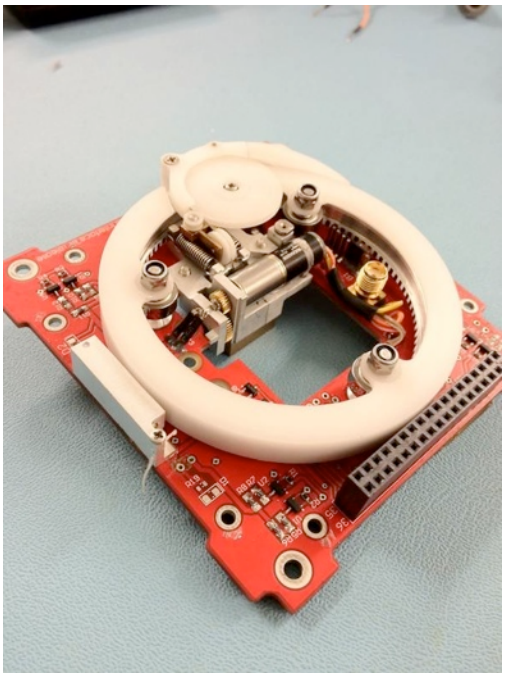
The satellite had to have an antenna of 10.5 m attached to it. That's a big feat for a small satellite. Dr Robert van Zyl from the Cape Peninsula University of Technology (CPUT) devised a rolled up antenna which is coiled like a fishing rod reel.

Now that TshepisoSAT has been launched, the 0.01 mm thick wire must be slowly uncoiled into a straight antenna. With a small tip mass placed at the wire's end, the satellite will be put into a spin, using the Earth's magnetic field and two small electromagnets fitted to the nano-satellite. This process should slowly uncoil the wire, which is similar to a piano wire in rigidity. If it bunches up or bends too much, it will fail. Between two and ten centimetres of antenna wire will be uncoiled each day. If all goes well, the antenna should be straightened out over a period of several weeks.

TshepisoSAT is the first nano-satellite to be constructed in South Africa. Funded by the Department of Science and Technology, it was designed and built by postgraduate students at the French South African Institute of Technology (F'SATI) at CPUT, in collaboration with SANSA.

Prof. Robert van Zyl, said the strength of the satellite programme is its use of nano-satellites as technology platforms for practical, hands-on skills training and applied research. "This approach offers students a unique learning experience and prepares them very well to participate in the South African space industry."

The satellite is currently intact and with most tests completed it is ready to begin its experiment. When extended, the antenna will transmit a simple radio signal that can be received by the Hermanus HF/DF array

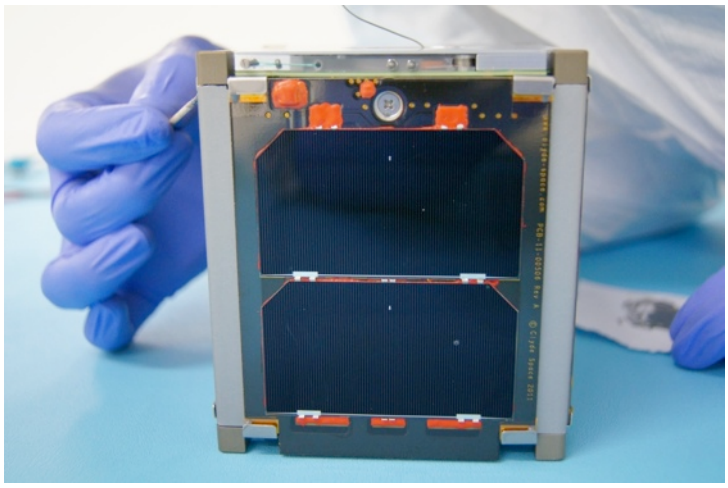


and the SuperDARN radar in Antarctica, as well as the rest of the SuperDARN network.

This will ensure there is comparable data and enable the team to determine what effect the plasma in space is having on the travelling radio wave as it propagates through it. Once the effects of the plasma are known TshepisoSAT can act as an HF beacon, and since its location in space is accurately known, it can be used to calibrate the SuperDARN radar.

On the left:The HF Beacon on-board TshepisoSAT. The 10.5 m antenna is coiled in the reel like casing.
Image credit – CPUT

On the right: The 10 centimetre cubic satellite known as TshepisoSAT, meaning "promise" in Sotho, is South Africa's first nano-satellite to be launched into space.Image credit - CPUT



Part 3: HF/DF interferometer array construction

Electric plasma in space has always affected radio frequencies transmitted to Earth from man-made satellites – in the same way glass diffracts rays of light through windows. SANSA scientists aim to better understand just how plasma diffracts radio waves. This experiment brings together the SuperDARN radar at SANAE IV, the special coiled-up antenna mounted to TshepisoSAT and a high frequency direction finding (HF/DF) interferometer array under construction at the Hermanus facility.

The project has started small – three separate antennas laid out in the shape of an 'L' are being constructed on an area of 10.5 m. Each antenna consists of two square loops one metre in diameter. The mini-array should take six weeks to complete and there will ultimately be seven antennas, the last four of which will be built when the test signals from TshepisoSAT's special antenna are confirmed as successful.

TshepisoSAT's transmissions will be received from a known position in space by either SANAE IV or the Hermanus HF/DF array. The difference between the measured and the true incoming angles of the radio wave at either antenna locations should supply the team with comparable data. This data should be enough to determine just how the signal was refracted by the plasma in space. Experience from the project will be used to calibrate SANSA's SuperDARN radar and the resulting data will be invaluable to gain a better understanding of how radio signals propagate through space.

SAIP Conference July 7 to 11, 2014

By Prof Steven Karataglidis, Scientific Chair and **Prof Hartmut Winkler, University of Johannesburg**

The Departments of Physics (Auckland Park) and Applied Physics and Engineering Mathematics (Doornfontein) of the University of Johannesburg are honoured to host the 59th Annual Conference of the South African Institute of Physics. The Conference will be held at the Auckland Park Campus of the University of Johannesburg between July 7 and July 11, 2014.

The University of Johannesburg (UJ) was formed in 2005 as a result of the mergers of the Rand Afrikaans University, the Wits Technikon and Vista University (Soweto and East Rand). With four campuses (Auckland Park, Bunting Road, Doornfontein, and Soweto), it is one of South Africa's largest universities, with around 50000 students. The campus at Auckland Park is well suited to host the meeting, with a 1000-seat auditorium for the plenary sessions and nine large lecture halls adjacent to spacious common areas where posters will be displayed, exhibitors will have stalls, and meals and tea will be served.

The two hosting departments have a combined 25 academic staff members, and conduct research in five disparate and complementary fields: Condensed Matter, Nuclear Physics, Particle Physics, Astrophysics and Physics Education.

Theoretical physics is represented well in both Nuclear Physics and Astrophysics. In Theoretical Nuclear Physics, research is conducted which runs the gamut of Nuclear Structure and Reaction Theory, as well as Relativistic Heavy-Ion Physics. A new Astroparticle Physics group has been formed, as part of the Centre of Excellence based at Northwest University. UJ astronomers are part of the broader SKA development efforts and the Cherenkov Telescope Array. UJ is an active member in SA-CERN and as such assisted the effort that led to the recent Higgs boson discovery. UJ physicists are regular users of international facilities such as ESRF and ISIS. The Physics department has well developed laboratories for research in low temperature as well as high pressure phenomena in magnetism and condensed matter, and has recently been boosted by an award of NEP funding for a Cryogen Free Measurement System. Both departments actively engage in Physics Education research, and this commitment to the improvement of physics teaching is underlined by our strong links to the Soweto Science Centre. Finally, UJ plays an active part in the study and development of both nuclear and solar energy development in South Africa.

Plenary Speakers

This year's twelve Plenary speakers cover most, if not all, of the Physics spectrum. The international speakers are: Prof Eric Fullerton (University of San Diego, USA); Prof Toshimi Suda (Tohoku University, Japan); Prof Miles Padgett (University of Glasgow, Scotland); Prof Vladimir Dyakonov (University of Wuerzburg, Germany); Prof Cedric Linder (University of Uppsala, Sweden); Prof Megan Donahue (Michigan State University, USA); Prof Marcia Barbosa (Universidade Federal do Rio Grande do Sul, Brazil); Prof Emmanuel Tsesmelis (CERN/University of Oxford. In addition, there are four plenary speakers from South Africa: Prof Bernie Fanaroff, SKA; Prof Andrew Forbes, CSIR Laser Centre; Dr Amanda Weltmann, UCT; Prof Harm Moraal, Northwest University.

These speakers will give a highly interesting and diverse selection of forefront topics in Physics. Highlights include: life after the LHC, possibilities of future accelerator developments at CERN (Tsesmelis); latest technological achievements in laser (Forbes); and, the SCRIT project, the electron-ion facility at RIKEN (Suda).

Winter Schools/Workshops

As usual, on the Monday, there are two Winter Schools for students. The first is on Astroparticle Physics, organized by the University of Johannesburg and Northwest University, covering topics of Physics at the time of the Big Bang. This field is emerging, especially with the LHC covering the energies that investigate the physics far closer to the Big Bang than has been previously achieved. It also brings in Astronomy, with one of the speakers being Prof S. Colafrancesco, the SKA Research Chair at Wits University. The second is on Magnetism, one of the research fields for which the University of Johannesburg is noted.

There are also two Workshops. The first is on Accelerator Mass Spectrometry (AMS), which is organized by and being held at iThemba Labs, Gauteng (based at Wits University). The new AMS Facility is being commissioned this year, and will bring with it the far more accurate tools of analysis of materials to Africa. (Contact Simon Mullins (smm@tlabs.ac.za) for more information.)

The second Workshop is on Photovoltaics. More information will be available on the SAIP Conference site.

Parallel Sessions

As always, there will be parallel sessions covering all of the Divisions of the SAIP, as well as poster sessions to be held on the evening of Tuesday and Wednesday.

Proceedings

This is emerging as something of a contentious issue, as we have been hearing the concerns of SAIP members around the country, with the last two conferences' Proceedings still to be published. Yes, there have been some problems. This year, we will be handling the Proceedings differently, with the LOC taking full control of accepting, reviewing, and publishing. We have already been in contact with potential referees from all fields, with a view to giving advanced notice of the papers to be distributed shortly after the Conference, with the review process to be over relatively quickly. The Proceedings will be expected to appear this year.

With that in mind, we remind conference attendees that all deadlines will be strictly enforced this year. That includes abstract submission, as well as proceedings submission. The former is by the end of business, April 11, while proceedings will be accepted until 23:59 July 6, 2014. Any abstract or proceedings submitted outside of these deadlines will not be considered. It is only with these strict deadlines that we can ensure a smooth process for both the Conference and Conference Proceedings.

We encourage all members of the SAIP Community from students to senior academics to submit abstracts and attend the conference in July. This is shaping up to be an excellent meeting, especially with the diversity represented by the topics covered by the Plenary Speakers. We hope to see you at the University of Johannesburg in July.

Prof Steven Karataglidis, Scientific Chair,

Prof Hartmut Winkler, Chair

Local Organising Committee.

Auckland Park Kingsway Campus of the University of Johannesburg

Opportunities

NRF Deputy CEO Astronomy

The NRF is seeking a visionary leader for the position of Deputy CEO: Astronomy. This position presents a wonderful opportunity to guide and stimulate the development of the rapidly growing astronomy community in South African the interest of national, continental and global astronomy interests.

Download the advert here for more details and how to apply

Physics Senior Lecturer/ Lecturer at Stellenbosch University

(Ref. NW03/089/0314)

Apply online at www.sun.ac.za/english/careers

The Department currently has three established research groups in Nuclear Physics (with focus on light-ion and lepton scattering), Theoretical Physics (with focus on quantum field theory, condensed and soft condensed matter and Bayesian analysis) and Laser Physics. The Laser Research Institute has well-equipped laboratories, which includes femtosecond laser systems.

Duties:

☒ Teaching mainly at undergraduate level;

☒ Undertaking of research in one of the existing research focus areas of the Department;

☒ Assistance with postgraduate supervision.

Requirements:

☒ PhD in Physics;

☒ Proven track record of teaching ability at undergraduate level (Senior Lecturer);

☒ Teaching experience (Lecturer);

☒ Demonstrable outstanding research potential (Lecturer) or research output (Senior Lecturer) in one of the existing research focus areas of the Department;

☒ Good writing and verbal communication skills in at least English;

☒ Ability to plan and organise independently and effectively;

☒ Ability to maintain good interpersonal relations and to work in a team.

The level of appointment will be determined by experience and research record.

Recommendations:

☒ PhD in Theoretical Physics;

☒ A research record in Theoretical Physics will be a strong recommendation (Lecturer);

☒ A postdoctoral research record in Theoretical Physics will be a strong recommendation (Senior Lecturer);

☒ Good writing and verbal communication skills in Afrikaans.

Commencement of duties: 1 May 2014 or as soon as possible

Closing date: 31 March 2014

Enquiries regarding the job content: Prof E G Rohwer on 021 808 3372

Enquiries regarding remuneration/benefits as well as technical assistance with the electronic application process: Human Resources Client Services Centre on 021 808 2753

MSc and PhD Opportunities with UKZN

The University of KwaZulu-Natal has positions for MSc studies in the High Energy Physics on the ATLAS Experiment For more information please contact Dr. Sahal Yacoob Yacoob@ukzn.ac.za

The University of KwaZulu-Natal has positions for MSc, PhD, and Post-doctoral studies available. More information may be found here: http://caes.ukzn.ac.za/Bursaries.aspx

The research group of Prof T. Konrad at UKZN offers MSc and PhD positions in Quantum Computing and Quantum Communication with photons as well as in Quantum Measurement and Control with ions. Contact Prof Konrad: konradt@ukzn.ac.za

Fullbright Programme

If you haven't already, please consult our website at http://southafrica.usembassy.gov/fulbright_program.html and browse our educational and research opportunities. If any of those programs interest you, please carefully read the requirements and note deadlines before applying.

Should you have any questions about the programs or their deadlines after reading through the information on the website please contact Fulbright_Program_SAfrica@state.gov with your questions.

For general information on studying in the U.S. and non-Fulbright funding opportunities please visit http://www.EducationUSA.state.gov<http://www.educationusa.state.gov/> or http://southafrica.usembassy.gov/educational-advising.html

Upcoming Deadline for Fullbright applications: 20. April (The Ed.).

ICTP Prize 2014: Call for Nominations

Nomination deadline is 30 September 2014

ICTP Prize 2014: Call for Nominations

20/03/2014 - Trieste

It is time to nominate young researchers from developing countries for the 2014 ICTP Prize. The prize recognizes outstanding and original contributions to physics by researchers under 40 and includes a sculpture, a certificate, and a cash prize of 3000 euros.

Past winners include Ashoke Sen (1989), the Indian theoretical physicist who has been awarded the 2012 Fundamental Physics Prize, and the current ICTP Director Fernando Quevedo (1998). The 2013 ICTP Prize was shared by two women: Yasaman Farzan (Iran) for her theoretical contributions to the physics of neutrinos, and Patchanita Thamyongkit (Thailand) for contributions to development of photovoltaic research.

The deadline for nominations is 30 September 2014. Detailed information on how to nominate a candidate is available on the ICTP Prize Page. Additional information may be obtained by writing to ictpprize2014@ictp.it.

Completed nominations must be submitted along with a signed and dated cover letter by 30 September 2014 by email (ictpprize2014@ictp.it), regular mail (ICTP Prize 2014, Director's Office,
ICTP,
Strada Costiera 11,
34051 Trieste, Italy) or fax (+39 040 2240 410).

The complete list of past winners and their award citations are available on the ICTP Prize Page.

More information: http://www.ictp.it/about-ictp/media-centre/news/2014/3/ictp-prize-2014-call-for-nominations.aspx

Upcoming Conferences & Workshops

Bring International Physics Conferences to South Africa

The SAIP Office would like to help South African physics community to bring international conferences and workshops to South Africa. The SAIP can help with hosting these conferences as well as preparing bidding documents, budgeting and fundraising.

The SAIP office has helped in hosting very successful international physics conferences and workshops.

Please email the conferences you want us to help bring to South Africa to info@saip.org.za

SAIP 2014 Annual Conference 1st Call for Abstracts

The South African Institute of Physics Annual Conference for 2014 (SAIP 2014) will be held at the University of Johannesburg 7 to 11 July 2014.

SAIP2014 abstract submission is now open.

Download the call here http://events.saip.org.za/getFile.py/access?resId=0&materialId=3&confId=34

Key deadline dates are;

IMPORTANT DATES:

03 Feb 2014 - Abstracts Submission and Registration Opens

11 April 2014 - Abstract Submission Closes

09 May 2014 - Acceptance Notifications

06 June 2014 - Registration Closes

20 June 2014 - Payment Closes

27 June 2014 - Paper Submission Deadline for Proceedings

19 Sept 2014 - Deadline for Reviewed Papers Corrections

The 4th East African Astronomy Workshop (EAAW-IV)

https://sites.google.com/site/eaasconference2014

University of Rwanda -College of Education (Former Kigali Institute of Education) Kigali-Rwanda: June 30- July 04, 2014.

The series of workshops in Astronomy in East Africa began in 2009 during the International Year of Astronomy (IYA2009). The first workshop was held in November 2009 in Nairobi, Kenya and was supported largely by the International Astronomical Union/ Teaching for Astronomy Development (IAU/TAD), Developing Astronomy Globally (DAG), SAAO, University of Nairobi and the International Science Programmes (ISP- Upsalla University). Most of the resource persons were largely drawn from outside the region, including USA and South Africa. The second workshop was held in February 2011 in Addis Ababa, Ethiopia and the resource persons were drawn largely from the East African region with only two others from South Africa, led by the Director of OAD, Mr. Kevin Govender and Dr. Petri Vaisanen of SAAO. The sponsorship came from the IAU, SAAO and the Ethiopian Space Science. Society. The third workshop was held in November 2012 in Kampala, Uganda. The resource persons were drawn from IAU/OAD, SAAO, SA SKA, African VLBI network project and from South Africa DST.

The fourth workshop, being organized by the East African Astronomical Society (EAAS) is scheduled from June 30 up to July 04 2014 at University of Rwanda-College of Education (former Kigali Institute of Education), Kigali-Rwanda.

The purpose of these workshops is to strengthen capacity building in Astronomy and Astrophysics and Space Science in general and also provide a forum for astronomers from the region to train young and upcoming scientists. It provides an opportunity for exchange of ideas, cross border co-supervision and sharing of resources. There already exists a Bachelor's degree programme in Astronomy and Astrophysics at the University of Nairobi, Kenya and a number of other universities in the region are in the process of curriculum development of the same. The Ethiopian Space Science Society is running two 1-m class optical telescopes at Entoto Observatory near Addis Ababa. There is project to transform old telecom dishes into radioastronomy antennas to make a strong VLBI African network.

None of the individual countries have enough manpower and the resources to run programmes in astronomy on their own and this calls for networking and sharing of expertise to teach and supervise students across East Africa.

Workshop on Discovery Physics at LHC Kruger-2014

December 1 - 6, 2014, Protea Hotel Kruger Gate Portia Shabangu Road, Skukuza, Mpumulanga, South Africa

We are pleased to announce the Third Biennial "Workshop on Discovery Physics at the LHC" (KRUGER 2014).

The Workshop will be held at the 4-star Protea Hotel Kruger Gate, just 100 meters from the entrance to the Kruger National Park.

Please find details in the conference web page: http://www.kruger2014.tlabs.ac.za.

The conference aims to promote scientific exchange of new results and development of novel ideas and models related to the physics of the LHC.

The following topics will be covered:

- Particle Physics;
- Heavy Ion Physics;
- Physics after the discovery of the Brout-Englert-Higgs boson.

Accommodation, registration, abstract submission and other practical details can be found on the web page. Attendance will be limited to about 100 participants because of the number of available rooms in the hotel.

Students are encouraged to also take part in a related workshop/school on ``Hot and Dense Nuclear & Astrophysical Matter - HDM2014'' which will be organized by Professor Azwinndini Muronga (amuronga@uj.ac.za) at the University of Mafeking November 24 - 28, 2014.

Other related events of interest to students are:

Chris Engelbrecht School in Particle Physics'', January 12 - 21, 2015, and the

``High Performance Signal and Data Processing'', January 26 - 30, 2015.

Limited funding for South African students is available.

We look forward to seeing you all in South Africa.

The organizers of KRUGER-2014:

O. Boeriu (Witwatersrand, Johannesburg)

Z. Buthelezi (iThemba LABS)

J. Cleymans (UCT, Cape Town) (Chair)

A. S. Cornell (NITHeP/Witwatersrand, Johannesburg)

S. H. Connell (UJ, Johannesburg)

T. Dietel (UCT, Cape Town)

S. Förtsch (iThemba LABS)

N. Haasbroek (iThemba LABS) (Secretary)

A. Hamilton (UCT, Cape Town)

W. A. Horowitz (UCT, Cape Town)

S. Karataglidis (UJ, Johannesburg)

B. Mellado (Witwatersrand, Johannesburg)

E. Sideras-Haddad (Witwatersrand, Johannesburg)

T. Vickey (Witwatersrand, Johannesburg)

H. Weigert (UCT, Cape Town)

S. Yacoob (UKZN, Durban)

The email address of the conference is kruger2014@tlabs.ac.za.

Survey on PhD research in Sub-Saharan Africa

Drawing on its global reach and experience in illuminating how research contributes to development, SciDev.Net is launching a project to generate debate on the future of PhD research in Sub-Saharan Africa.

The project:

* Runs over the next 18 months

* Publishes news, features and analysis by experts and students across the African continent and diaspora

* Explores:

1. the current status of PhD research in Africa

2. diverse arguments for how doctoral education can be improved

3. the link between PhDs and social and economic development

4. the challenges and opportunities facing the continent now and in the years to come

It is funded by the Carnegie Corporation of New York, as part of their strategy for 'developing and retaining the next generation of African academics', and will culminate in an online debate bringing together experts and academics from across Africa and the wider world.

As we embark on this exciting project, we believe it is essential to gain a stronger understanding of the opinions of academics and experts on the issues surrounding the future of PhD research in Africa. Your views will be invaluable in helping us shape our publications so that they best reflect the discussions that are taking place and help bring together stakeholders for productive and dynamic debates.

This survey includes questions on the state of PhD research in African countries today, your thoughts on the challenges and opportunities for improving doctoral education, and how PhDs can feed into debates and policies on social and economic development in Africa. It should take no more than ten minutes to complete.

Thank you in advance for your participation, and if you have any questions please email our Monitoring and Evaluation Coordinator, Jessica Romo on jessica.romo@scidev.net

Follow the link below to participate

http://team-scidev.net/1SCG-27IX0-AZRP45-XQJ9N-1/c.aspx

Physics Comment Editorial Policy

Deadline for submissions for the June 2014 issue of Physics Comment is 30. May 2014

Physics Comment is an electronic magazine for the Physics community of South Africa, providing objective coverage of the activities of people and associations active in the physics arena. It also covers physics-related ideas, issues, developments and controversies, serving as a forum for discussion. It is not a peer review journal.
Physics Comment publishes innovative reports, features, news, reviews, and other material, which explore and promote the many facets of physics. Physics Comment endeavours to:
support and inform the physics community
promote membership of the South African Institute of Physics
promote the understanding of physics to interested parties and the general public
represent the readers' point of view
focus on issues and topics of importance and of interest to the physics community
We accept submissions on any physics-related subject, which endeavours to inform readers and to encourage writers in their own researches. We aim to be politically, socially and geographically inclusive in the articles, which we commission and receive. Therefore we shall not discriminate according to political or religious views. Physics Comment does not support or endorse any individual politician or political party. However, contributions, which are being published, may contain personal opinions of the authors.
It is our desire to present unfettered the opinions and research of our readers and contributors. All articles submitted for publication are subject to editorial revision. Such revisions, if necessary, will be made in cooperation with the author.
The views expressed in published articles are those of the authors and are not attributed to the Editorial
The Editor will make the final determination of the suitability of the articles for publication.

Declaration by Author

When an author submits material for publication, this means:
The author(s) assures the material is original, his/her own work and is not under any legal restriction for publication online (e.g., previous copyright ownership).
The author allows PC to edit the work for clarity, presentation, including making appropriate hypermedia links within the work.
The author gives PC permission to publish the work and make it accessible in the Magazine's archives indefinitely after publication. The author may retain all other rights by requesting a copyright statement be placed on the work.
Authors should respect intellectual integrity by accrediting the author of any published work, which is being quoted.

Publication Deadlines

Physics Comment is published four times a year.

Issue	Closing Date	Publication Date
Issue 1	28 February	15 March
Issue 2	31 May	15 June
Issue 3	31 August	15 September
Issue 4	30 November	15 December

Specification and Submission of Content

Editorial Tone. As the voice of the physics community, the magazine will create a provocative, stimulating, and thoughtful dialogue with the readers; and provide a variety of perspectives that reflects the dynamism of the physics community.
Article types. The magazine is devoted to articles, reports, interesting facts, announcements and recent developments in several areas related to physics:
Manuscripts. Solicited manuscripts will be judged first for reader interest, accuracy and writing quality. The editor reserves the right to request rewrite, reject, and/or edit for length, organization, sense, grammar, and punctuation.
Re-use. The publisher reserves the right to reuse the printed piece in full or in part in other publications.
Submission and Format. Manuscripts must be submitted to the editor on or before the designated due date Manuscripts must be submitted electronically, on the prescribed Microsoft Word template available for download from http://www.saip.org.za/PhysicsComment/. Manuscripts are to be submitted directly to the editor:
PhysicsComment@saip.org.za.
Style. AP style is followed for punctuation, capitalization, italics and quotations.
Photography and Illustration. All solicited photography and illustration should be part of an article and will be judged first for technical quality and editorial appropriateness. The editor and art director reserve the right to request revision or reject any material that does not meet their criteria. The publisher reserves full rights to all solicited photography and illustration, including the right to reprint or reuse graphic material in other publications.

Categories of Content Contributions

Technical articles and reports: These are generic articles of about 1 500 words plus diagrams and pictures. A technical article covers a relevant feature topic. Articles are authored by the writer and publishing a 40-word resume of the author could enhance its credibility. By submitting an article that has been previously published the author confirms that he/she has the right to do so, and that all the necessary permissions have been received. Acknowledgement must be made within the article.
News: These are short editorial items usually not more than 250 words. Full colour pictures must be clearly referenced on the editorial submission and on the picture or picture file.
Advertorials: Advertorials could be published when supplied by the client. We recommend a maximum of 500 words plus one or two pictures for maximum impact. A PDF file of the laid out advertorial should be emailed by the client along with an MS Word file of the text and separate image files of the pictures. It is the client's responsibility to ensure that the advertorial is correct as it is in fact a paid for advert page.
Letters to the Editor: Letters to the Editor are encouraged. The Editor reserves the right to edit for length and format. The Editor will not change the political position of the initial letter. Physics Comment does not publish anonymous letters.
Advertising Policy: The Editorial Board will determine advertising prices for Physics Comment, subject to approval by SAIP Council. The objective will be to obtain revenue to maintain and develop the magazine. Physics Comment offers classified advertising to subscribers of the magazine for free. The advertisements must be a maximum of 60 words including the telephone number, and there is a limit of three free classifieds per subscriber, per issue. Advertisements may include a photo, which may be reduced in size or resolution by the editor to optimize loading time. All items or opportunities, which are being advertised for free, should be physics-related. The Editor reserves the right to refuse any advertising, which does not conform to the objectives of the magazine.

Submission of Articles

All articles must be submitted on the prescribed template available for download from http://www.saip.org.za/PhysicsComment/