

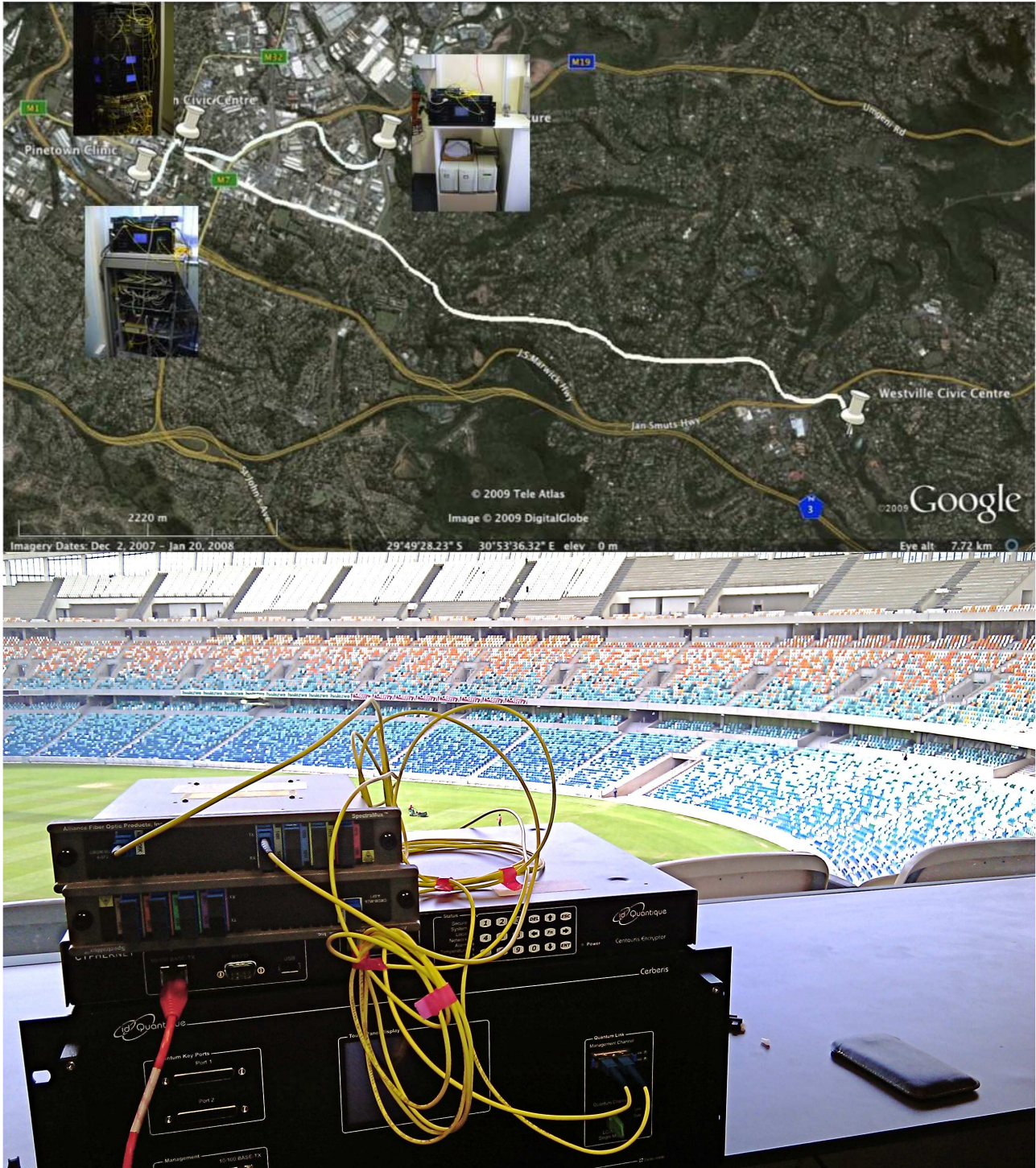
# Physics Comment

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Editor: Jaynie Padayachee

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## Cover Photographs

Courtesy of Prof. Francesco Petruccione and Mr. Abdul Mirza, Centre for Quantum Technology, University of KwaZulu-Natal

**Top:** A layout of the quantumCity project, which has been using quantum-secured communication systems within the fibre infrastructure of the eThekweni Municipality since 2008, linking municipal buildings in the suburbs of Pinetown and Westville.

**Bottom:** Equipment used in the quantumStadium project as part of Durban’s ICT

initiatives during the 2010 FIFA World Cup. Quantum cryptography will be used to secure communications between Durban’s Moses Mabhida Stadium and the eThekweni’s Joint Operations Centre.

Read all about the quantumCity project and the quantumStadium project in the article on Page 2.



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## Editor's Note

Jaynie Padayachee

It's here! The anticipation is finally over and football/soccer fever has hit. I am not much of a sports fan, but I can't help but be drawn into the spirit that is all around at the moment. The patriotism is fantastic and it gets me misty-eyed to see the South African flags flying so proudly. Thanks to Francesco Petruccione, Physics Comment has one World Cup related article, just to keep the flag flying a bit prouder...

This is another full issue. It seems to be that this is the time of year for calls for nominations for various awards and for conference

announcements.

I am planning a special issue on Astronomy and related topics for September so anyone at SAAO, specifically working on SALT, HMO, HartRAO, and SKA developments are invited to submit articles. I'm particularly interested in student work, so send this note out to any students who might be interested.

Thank you to all contributors, without whom there would not be a Physics Comment.

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## quantumCity gets quantumStadium

Francesco Petruccione and Abdul Mirza

The Durban Quantum Stadium Project was launched by Minister of Science and Technology, Naledi Pandor on 21 May 2010 at the Moses Mabhida Stadium.

Building on the quantumCity initiative, the eThekweni Municipality and the Centre for Quantum Technology (CQT), a research group at the University of KwaZulu-Natal (UKZN), has moved to secure the network linking the Moses Mabhida Stadium and the Joint Operations Centre in the city of Durban during the 2010 FIFA World Cup.

The quantumStadium project is the first public global event to use a quantum based encryption solution. This network carries voice, email and data traffic between the two buildings. It was installed in April 2010 and will at least run until the end of the FIFA World Cup.

This is the first long-term, commercially based network of its kind in the world, providing eThekweni Municipality with the leverage to enter the global quantum technology market.

Quantum Cryptography uses photons as data carriers to offer theoretically secure communication over an insecure communication channel independent of the adversary's technological advantage. Conventional cryptographic schemes take advantage of the current inefficiencies of computer algorithms making the deciphering (reversal) of an encryption scheme very costly but not impossible. This makes the retrieval of the information, in many instances, not worth the value of the information gained. However with the continuous increase in computing power the reversal of an encryption process is becoming increasingly easier. Recently at the University of Michigan, a

group of researchers were able to crack a 1024-bit RSA private key in approximately 100 hours [1]. This type of encryption is used as a standard in many online applications today.

Although quantum cryptography, or more precisely Quantum Key Distribution (QKD), technology seems to be maturing, investigations into real applicative QKD have been fairly limited. Most of the prominent projects in the recent past have failed to implement and analyze this technology in a commercial and live environment. The European FP6 project Secure Communication using Quantum Cryptography (SECOQC), the US Defence Advanced Research Projects Agency (DARPA) sponsored quantum network and the Chinese Hierarchical Quantum Network are all research based quantum-secured communication networks.

The DARPA quantum network was the first quantum network to be established. It is a research collaboration between Harvard University, Boston University and BBN Technology [2,3]. The network consists of 10 nodes linked together through an actively switched optical network. The SECOQC project aimed to standardize QKD technology through a cross-platform interface allowing the integration of various QKD systems into one network known as the Quantum Back Bone network [4]. Recently, the Chinese Group from the University of Science and Technology of China implemented a 7 node network with a hierarchical structure [5]. A trusted gateway was used to connect the two sub-networks while optical routing techniques provided multi-user access within each local network.

It is in this regard that the Centre for Quantum Technology has focused its recent flagship

project on applying QKD technology to long-term live commercial applications. The eThekweni Municipality and the CQT have partnered to provide an ultra high-level security system between one of the most crucial links of Durban's ICT initiatives during the 2010 FIFA World Cup. The quantumStadium project encrypts the link between Venue Operations Centre at Durban's Moses Mabhida Stadium and the eThekweni's Joint Operations Centre using QKD technology.

The layer 2 encryption process uses an AES encryption scheme, but features a quantum-based key distribution system to provide ultra high data security, including telephone, internet, video, data and email traffic travelling across the fibre optic link at up to 1 Gigabit per second. In collaboration with Senetas Corporation and Geneva-based idQuantique, the CQT has used the Cerberis quantum encryption solution to drive the secure communication. The physical link consists of two dark fibre pairs providing full redundancy. The quantum-encrypted fibre pair utilizes one core for the raw QKD process, while the other core is frequency modulated providing duplex communication between nodes at 1 Gbps. This fibre strand is used for both QKD post-processing communication, as well as the transfer of the encrypted data.

The quantumStadium project extends the quantumCity initiative [6] aimed at providing quantum based communication security within the eThekweni's optical fibre optic network. Since 2008, the City of Durban has been positioned to become the Smart City of Africa. This vision includes the development of an optical fibre communication backbone to provide citizens with e-services such as online learning, health advice, internet business solutions, public sector productivity tools and surveillance. These facilities increases the dependence on online communication and therefore the quantumCity was proposed to enhance this experience with cutting edge communication security solutions.



**The unveiling of the quantumStadium project. Left to Right: Mr A. Mirza (Project Manager - CQT), eThekweni Mayor Councillor Obed Mlaba, Prof. F. Petruccione (Head - CQT), Minister of Science and Technology Ms N. Pandor, Premier of KZN Dr. Z L Mkhize, Prof R. Slotow (DVC & Head of College: Agriculture, Engineering And Science - UKZN)**

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*Author Biography:* Francesco Petruccione is head of the Centre for Quantum Technology at the School of Physics of the University of KwaZulu-Natal. Abdul Mirza is a project manager at the Centre for Quantum Technology.

## The Laser at 50

Download a free copy of the May 2010 issue of Physics World that marks the 50th anniversary of the invention of the laser <http://physicsworld.com/cws/m/1723/211965/download/may2010>

For a more personal look at how lasers are

shaping different areas of science and technology, check out our series of five exclusive video interviews with leading physicists: <http://physicsworld.com/cws/m/1723/211965/channel/multimedia>

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## Physicist Receives T W Kambule Award for a 'Distinguished Young Black Female Researcher'

The NRF sponsored T W Kambule Award for a 'Distinguished Young Black Female Researcher over the last 5 to 10 years' was made to Dr Rapela Regina Maphanga of the Materials Modelling Centre at the University of Limpopo, for her contribution to the computational modelling of materials particularly for electrolytic manganese dioxide.

Dr Maphanga is a senior researcher in the field of computational modelling of materials. She has handled complex research problems, using a variety of computational modelling methods. In particular she uses a cutting edge and rare

technique called the "amorphisation and recrystallisation" (A and R) method. An evolutionary simulated A and R method generates atomistic models for electrolytic manganese dioxide (EMD) which captures much of the microstructure associated with the complex EMD. Electrochemical properties of EMD are governed by the rich and complex microstructure it accommodates. She is actively participating in projects to motivate learners, especially girls, to pursue careers in science, engineering and technology.

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## Solar-based Heating and Cooling: A Lay-Man's Insight

Kevin Meyer

### Background

There has been a lot of discussion around the water-cooler about the merits of installing a solar-water heater. There's also a lot of rumour and speculation about the costs, rebates and savings.

To answer some of these questions, I decided to do some research for myself, and share the results with Physics Comment readers.

### Photo-voltaic vs. Heat-Pump vs. Photo-thermal

When talking about renewable energy and from solar panels in particular, most of you should be able to tell the difference between photo-voltaic (PV) and photo-thermal (PT) systems.

In PV systems, only between 6% (conventional PV panels) and 43% (bleeding-edge research panels) of the incoming light can be converted to electrical energy. IBM is credited with a 9.6% conversion efficiency system using low-cost materials. A rule of thumb implies that average power output is only 20% of peak power, so that 10kW solar system only leaves you with 2kW average (over a 24-hour period). Sticking to peak-power conversion limits – if you wanted to heat your 6kW geyser using PV solar panels, you'll need between 75 and 30m<sup>2</sup> of panel (or about 60m<sup>2</sup> if you get some IBM panels)! In Johannesburg, a quick check with a local supplier reveals that PV solar panels cost between R25 to R40 per Watt, including VAT. For example, some polycrystalline 75W panels, with a 16.5% conversion efficiency, are R30 per Watt. So, for the 6kW geyser, it'll cost about R150,000 to power the 6kW geyser (including VAT and a volume discount) – which is complete rubbish,

because this doesn't take into account the conversion efficiencies of the electrical system that converts the solar-generated electricity into something compatible with the geyser heating element!

Heat-pump systems use compression / expansion cycles of a refrigerant to transfer heat from outside (down to less than 0°C, in some cases) to inside (up to around 65°C), with some power provided by your AC-mains system. Standard commercial systems can provide between 2kW and 5kW of heat for every 1kW of AC-mains input. The efficiency of heat-pump systems depends on the heat-exchanger temperatures, and the desired output temperature. The cosmetic benefit of a heat-pump system comes from the fact that the heat exchangers are quite small, and can be placed far from each other. Thus the hot-water cylinder (in your roof, for example) can be heated by a heat exchanger hidden around the corner of your house. Another advantage of a heat-pump system is that the cooling that occurs at the "cold" heat exchanger can be used to provide HVAC cooling! So in summer, the same process that provides your geyser with hot water cools your house. Just remember, though, that in a power blackout, the heat-pump system stops working.

Photo-thermal systems can use no (or very little) AC-mains to provide hot water. These systems are normally used to supplement (or replace) hot-water geysers, but are also used to heat pools and provide under-floor heating. Thermo-siphon systems use the natural convection currents (hot water rises) to cycle water between the panels and an elevated hot-water cylinder. In an indirect (closed) system, the hot fluid is a

frost-resistant liquid that uses an immersed coil to heat the water in the hot-water cylinder. The solar-heated liquid only cycles through the panels and the immersion coil. In a direct system, the water that comes out of your hot-water tap is the same water that has been cycling through the panels and the hot-water cylinder. Direct systems are not recommended in areas where temperatures can drop below 4°C, when ice can start forming. If ice forms, the expansion can destroy panels and crack pipes. Some systems have pumps to force hot water circulation, and heating elements to ensure hot water availability. Some systems even have sensors that circulate hot water through the panels when conditions approach freezing, to prevent ice from forming. At the moment, it seems that PT systems have a typical efficiency of around 30%, but this can be increased through the use of vacuum-enclosed collectors with focussing optics. A decent, 200 litre indirect heating thermo-siphon system could cost about R22,000, fully installed (and qualifies for a R6,778 rebate, see below).

### Return on Investment

At present, my electricity consumption costs about 58c per kWh (or 16c per MJ). Thus, using these figures, it costs between R3.30 and R4.70 to heat my 200-litre geyser to 45°C, depending on inlet water temperature (summer and winter estimates). If I install a completely passive system (thermo siphon with no pumps and heating elements), this is my approximate daily "pay back" value – so a R30,000 system will take about 25 years (excluding inflation and increases in electricity prices) to pay itself back for a small household! If I include 8% inflation and a few 30% electricity tariff increases, this period reduces to about 8 years. The R22,000 system (or R15,222 after rebate) pays for itself after 5 years.

Obviously, the more hot water you use, the greater your potential daily payback is, limited only by your daily thermal input (how many panels you have, how efficient are they, etc.).

### ESKOM rebates

If you install an SABS approved system, using a

registered installer, you can also get more than R6,700 back in rebates from ESKOM (administered by Deloitte). The value of the rebate depends on the efficiency of the installed system!

If your system has an integral heating element, then you have to get a licensed electrician to install a geyser timer switch – so that the geyser heating element does not come on during peak usage times.

At the moment, only PT solar systems qualify for the rebate.

And, No, your existing geyser does not have to be damaged (like having a hole drilled into it), if the new system does not use it.

### Reducing losses

Having said all this, of course you should also look into reducing your thermal losses first! It's a waste of money to install a solar or heat-pump system, but not replace your (draughty) louvre windows!

If you're interested in knowing your energy losses (and don't have access to a thermal imaging system!) you should consider the following: do you have "think pink" or equivalent insulation in your roof? Do your windows seal properly (do your curtains waft in the breeze on windy days – even with the windows are closed?) How large are the gaps under your outside doors? Do you have curtains or blinds to cover your large glass French doors? If you're really interested in cutting your heating losses, do some reading on the Internet.

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*Author Biography:* Kevin Meyer received a Ph.D. in Physics from UCT in 2001. Between 2001 and 2006 he was employed in various software development roles. He has been performing freelance software, hardware and business analyst services ever since. He may be emailed at [kevin@kmz.co.za](mailto:kevin@kmz.co.za), and is available for hire.

## Techtrack: New system enables weather service to 'nowcast'

Kelvin Kemm

This year is the 150<sup>th</sup> anniversary of the South African Weather Service (SAWS).

We have this fact to celebrate, but we also have something else to celebrate: the introduction of SAWS's new Doppler radar system.

This new R240-million system is an addition to

the existing radar network. Actually, South African meteorologists were the first in the world to use radar in weather experiments.

Way back in 1947, local meteorologists were using radar in cloud seeding experiments, so the local folks have a wealth of experience under their belts.



Of course, it is important to point out that a sophisticated weather radar system is composed of not only the fancy hardware but also the human element of the skilled people who operate the instrumentation and those who interpret the results.

The new South African system is the best of its type in the world. There is nothing like it in Europe, and nothing superior in the US.

The Doppler system can 'see' clear air moving at a distance of up to 100 km. It does this by measuring the movement of dust in the air. From such an ability, the scientific team can project wind shear. This is of great importance to aircraft pilots and to ground controllers at airports.

So the new world of weather analysis is making an immediate and direct impact on the day-to-day operations of the economy. There is a term that I discovered which was new to me: 'nowcasting'. This means projecting the weather up to two hours ahead. In fact, it is real-time monitoring and real-time interpretation as well, of course.

The meteorologists can look deep into storm systems. The new radar was chosen as being ideal for South African conditions, so the frequencies were chosen to ideally suit local conditions of the composition of air, dust, moisture and so on.

The folks can 'see' into the storms and, in real time, figure out how much water is being precipitated and where. This then provides them

with the ability to give early warning to the authorities on the ground regarding the possibility of flash floods or rapidly rising rivers running from a wider catchment area.

It is also possible to determine atmospheric conditions on the potential flight paths of aircraft flying between South African cities. This information is, potentially, of great value to airlines, not only from a safety point of view but also from the point of view of fuel efficiency. Advance notice of the flight path conditions will allow an airline to plot a route without having to take late evasive action because a storm comes up suddenly in front of an aircraft.

The ability to practise 'nowcasting' is a valuable economic factor for the country. There must be many other potential users of 'nowcasting' information – ranging from farmers to operators of long-range trucks and civil engineering contractors to fishing fleets – no doubt, there are many that I cannot think of off the cuff.

I have spoken to the SAWS folks about this new radar system, and they are excited about its current and future capabilities.

I am sure they will figure out even neater applications as they become familiar with the functions that they now have on hand.

*Techtrack appears each week in Engineering News ([www.engineeringnews.co.za](http://www.engineeringnews.co.za)). It has been reprinted here by permission of K. Kemm. This Techtrack appeared in Engineering News, Vol 30 No 14, 9-15 April 2010).*

*Kelvin Kemm is a business consultant and can be emailed at [stratek@pixie.co.za](mailto:stratek@pixie.co.za).*

## Physics 500

The Physics 500 Project aims to identify and track physicists in Industry. The purposes of the project are to:

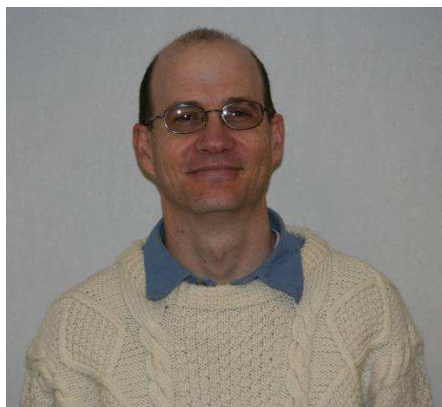
- Identify industries in South Africa that employ physicists,
- Identify physicists working in South Africa,

- Use this information to promote physics,
- Promote collaboration between the SAIP and industry.

For more information, visit the project website at: <http://www.saip.org.za/physics500/login.php>

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### Kevin Meyer from Nigel



### Qualifications

- In 2001, Ph.D. in Physics at UCT, "Development of a Plasma Source Ion Implantation Facility for the Modification of Material's Surfaces"
- In 1998, certified: Natural Scientist by SACNASP
- In 1996, M.Sc., from Physics at UND, "Two-Dimensional Plasma Sheath Observations in Plasma Source Ion Implantation"
- In 1994, B.Sc. (Honours), from Computer Science at UND, "Spoken Number Recognition using the Fast Wavelet Transform"

## **Career**

- Started 2004 at Envirovision Solutions as "Senior Scientist"
- Started 2002 at Thoroughbred Technologies in Simulators as "Senior Software Developer"
- Started 2000 at CyberTracker Software in Software Development as "Senior Software Developer"

## **Survey**

### **Why did you originally choose to study physics at university?**

During my matric year I knew I wanted to go to university and so my decision was affected mostly by what was available at my local university. My personal preferences made me believe that pure science was more interesting than engineering, and the information I read made physics sound more interesting than chemistry and the life sciences. This was helped by the fact that I enjoyed the physics in science at school.

### **Did you enjoy your university physics? What inspired you about physics?**

It was very interesting. While I found the coursework to be very difficult, I did enjoy the way physics made me think about problems. Mostly I was inspired by the concepts and philosophy of physics - the discussions with people in my physics classes made the subject more interesting than the formal subject content. In general, I did not have very inspiring lecturers.

### **What did you do after graduating from university with your highest physics degree?**

In my final years of writing my PhD thesis, the institute that I was working at ran into severe funding issues that brought a sudden end to my research funding. Since I was writing up at the time, I started scanning newspapers for interesting sounding jobs that would also allow me to finish my thesis. It was there that I found an interesting advert for a job doing software development. It turned out that someone who had a very unconventional physics background owned the company and since I had honours in Computer Science and a very strong programming background, I was a compelling candidate for the position. I then worked for various software development companies over the next 6 years.

### **What made you choose a career in industry rather than a career in academia?**

Initially, it was a lack of awareness of any interesting research opportunities - none of the universities near me had job offers that could compete with the private sector software development work I was doing. Later, I realized

that I did not care to teach people who did not want to learn, and that at a university I would have to lecture people who were only doing physics because they had to. Additionally, my unconventional physics background complicated my potential position as an academic physics researcher. Most recently I have become very disillusioned with the attitudes of academic physicists compared to the sense of relevance of working in industry.

### **When did your industrial career really take off?**

It hasn't really taken off yet. I would say that it has taken some time to realize that maybe software development wasn't really for me. I still enjoy programming, but the personal reward is no longer worth the cost. I have now started a science-based and electronic module manufacturing business, and only do contract software and internet development for projects that really appeal to me.

### **If you consider yourself no longer a physicist, what made you give up physics to pursue your career?**

Certainly in the beginning my choice was affected by my not being able to find a physics-based job. I did not want to lecture, and neither did I want to perform nuclear research, so that did not leave me with many options. I was unsuccessful at landing a job with the only consulting company that seemed genuinely interested in employing physics PhD graduates. Basically, I followed the job opportunities that arose and was led away from physics. I still use the philosophy and problem solving skills I acquired during my physics education, and I greatly value the non-physics skills I acquired during my MSc and PhD research.

### **Is there a particular contribution in industry that you are especially proud of and that you attribute to your training in physics?**

At the moment, I would have to say that I am most proud of my involvement in this project. My previous contributions have all been very limited in scope and this project has the potential to benefit the future of physics and industry in South Africa. I have been able to take the initial mandate from the SAIP and create the Physics 500 project website. It has been interesting and challenging to work with the physicists outside of academia and produce this brochure.

### **How does your physics training help with your career?**

I would have to say that doing physics for so long has left me thinking about problems in a certain way. This problem solving process seems to have allowed me to provide solutions to problems that no-one else considers - unless it was this way of thinking that made physics appealing to me?



Other than that, I haven't used any of my formal physics education except for a brief period that required some programming that used some first year mechanics. Naturally, my involvement with the Applied Physics Group of the SAIP also presented me with the opportunity to work on this project.

### **What advice do you have for physics students thinking of embarking on a similar career?**

Physics is a hard subject. If you are up to the challenge then, by all means, go for it. But there are simpler, less challenging approaches that are more career-oriented. I would say that unless you are determined to remain a "wild gun", and happy to plan your own career, perhaps an engineering degree would be more appropriate. Having said this, though, you must always stick to your dreams. Finally, if you do decide to choose physics, I must emphasise the importance of mathematics. I have a weak mathematical background, and this has always hindered my understanding of the details of physical processes. Don't fall into the same trap.

### **What advice would you give to university departments to make their physics teaching and research programmes more useful for industry?**

Most importantly I would have to recommend that physics departments stop trying to cram too much detail into the three-year undergraduate course. If they tied their physics content in with local industries, and showed physics being applied to the real world, I believe more people would find physics interesting. Physics graduates could then choose whether to specialize in

"applied" or "academic" physics at the honours level, with appropriate coursework. That would be the time to introduce the more abstract physics content to the "academic" stream. In industry, you need a wide and somewhat shallow understanding of the physics affecting the real-world processes, and only when you start identifying problems do you spend the time learning more about the factors affecting them.

### **What are your perceptions about the importance of physics in present-day society?**

I don't want to downplay the importance of the work done by physicists investigating phenomena affecting industry, but they're not likely to discover the next revolutionary change in our knowledge space. This is probably a result of too much emphasis on the importance of directed research. While directed research is important, physics will only become really important if physicists can do more free thinking and undirected research. Too much focussed research prevents the discovery of unsuspected phenomena, like radio waves and lasers. The world probably only needs a few inspired physicists who are left alone to perform undirected research and they will produce the future miracles. Let directed physics research make small, new discoveries (like massive magneto resistance, in 1988) and let the engineers continue refining them (to make the compact hard drives found in the new iPod). I think that most of the "physics in society" is actually done by engineers refining and applying decades-old physics.

## **Academy of Science of South Africa launches a TWOWS National Chapter**

**Sophie Huyer**

The Academy of Science of South Africa (ASSAf) hosted an International Conference of the Academy of Sciences for the Developing World (TWAS) from 19 to 23 October 2009 at the Durban International Convention Centre. The conference provided the ideal platform to announce the establishment of a National Chapter of the Third World Organisation for Women in Science (TWOWS).

There are currently 76 full members of TWOWS in South Africa, some of whom are also Members of ASSAf. These TWOWS members are currently inactive in the international organisation and do not reap the benefits of networking or of strengthening links due to the absence of an in-country coordinating structure. With the establishment of a TWOWS National Chapter, it is planned to initiate activities that will link up with South Africa's S&T policy of increasing the

participation of women in science. The Executive Committee will hold its second meeting in May 2010 to discuss among others the TWOWS NC 2010/2011 strategic action plan.

### **Executive Committee Members**

Prof. Roseanne Diab (Chair) – U. KwaZulu-Natal

Prof. Maureen Coetzee – U. Witwatersrand

Prof. Sibusiso Moyo - Durban U. Technology

Prof. Jill Farrant – U. Cape Town

Prof. Jennifer Thomson – U. Cape Town

Prof. Linda Richter - Human Sciences Research Council

TWOWS members residing in South Africa can contact Mutheu Ngila (mutheu@assaf.org.za) for further information.

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## Invitation to Submit Articles for the Astronomy Special Issue

To commemorate the five year anniversary of first light with SALT, Physics Comment is planning a special issue on Astronomy and related topics and invites articles from SAAO, specifically SALT, HartRAO and HMO researchers. Articles on SKA developments would also be welcome. Articles from students working at any

of these institutions are particularly welcome. Deadline for submission of articles for the next issue is 31 August 2010.

Details on  
<http://www.saip.org.za/PhysicsComment/>

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## SAAO to host the International Astronomical Union's Office for Astronomy Development

The South African Astronomical Observatory in Cape Town has won a bid to host the International Astronomical Union's Office for Astronomy Development. South Africa was chosen as the winner from a total of about 20 countries which had submitted proposals. The Office for Astronomy Development is the key component of a challenging mission to take astronomy to the developing world. It will play a central role in the coordination and management of all the existing International Astronomical Union's educational activities, as well as in the recruitment and mobilisation of participating volunteers.

Minister of Science and Technology, Naledi Pandor said, "This award represents a boost to all our current astronomy-related activities, including our bid to host the SKA. South African universities will benefit from their proximity to the Office, because of the opportunities for workshops and sharing of experiences. The Office is potentially a breeding ground for African

leaders in the field of astronomy and development, with many opportunities for volunteer, contract and part-time work at specific projects. South Africans will have access to the biggest network for astronomy outreach and education in the world a wonderful injection of energy into an already active and effective science education community."

"One objective of the Office is to take astronomy into parts of the world where there is none at all. Poor rural parts of South Africa provide an ideal close location to test and validate projects for wider implementation. These communities will therefore be the first to benefit."

"Everyone is an astronomer at heart - all young people are curious about the universe and their part in it. It is not about turning people into professional astronomers; it's about harnessing their natural curiosity about their environment and turning that into a desire to learn more."

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## Prizes, Awards, Fellowships and Competitions

### ***AU-TWAS Young Scientists' National Award***

The AU-TWAS Young Scientist National Award which is open to both male and female young researchers is designed to recognize the scientific achievements of young researchers working and living in Africa and to encourage them to continue to strive for excellence in their scientific careers.

In each African country, the AU-TWAS award will be given annually in the following 2 fields of science:

- Life and Earth Sciences;
- Basic Sciences, Technology and Innovation.

For each award, AU and TWAS shall make available a yearly amount of up to US\$5,000 as prize money. In addition to the cash award, the

winners will also receive a certificate.

This new initiative, to be implemented from 2010, has been developed from the existing TWAS award for young scientists from developed countries. In African countries, the AU-TWAS Young Scientists National Award will replace any previous agreement of collaboration signed with TWAS within the framework of the prizes to young scientists from developing countries.

The deadline is 30 June 2010. Application forms and further information is available from the ASSAf Office.

Email: [phillistas@assaf.org.za](mailto:phillistas@assaf.org.za)

Website: [www.assaf.org.za](http://www.assaf.org.za)

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## **Condensed Matter Physics and Materials Science Awards Programme**

The Condensed Matter Physics and Materials Science specialist group has an awards programme designed to reward young scientists working in the field of Condensed Matter Physics and Materials Science. Entries for the publication awards can now be submitted!

More information on these awards is available on the web page of the CMPMS Specialist group ([www.cmpms.co.za](http://www.cmpms.co.za)). CLOSING DATE: Entries for 2010 must reach the CMPMS secretary no later than 30 June 2010.

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## **Recognising the Achievements of South African Women in Science**

As part of its response to the vision of the National Research and Development Strategy, which is to improve the quality of life of all South Africans, the Department of Science and Technology recognises the achievement of women scientists and researchers in South Africa or Africa through the South African Women in Science Awards. The Department aims to increase the number of prominent women scientists and women researchers, increase their access to research professions in the country, and profile them as role models for younger women scientists, researchers and girls countrywide.

These awards also form part of the Department's celebration of National Women's Month. The 2010 South African Women in Science Awards categories are:

- Distinguished Woman Scientist in Life Sciences
- Distinguished Woman Scholar Award for Academic Excellence in Social Sciences or Humanities

- Best Emerging Young Woman Scientist in Life Sciences
- Best Emerging Young Woman Researcher Award in Social Sciences or Humanities
- Achiever Award for a Woman Scientist in Industry
- Achiever Award for a Woman Researcher in Indigenous Knowledge Systems and Local Innovation (two)
- Fellowships for Women Scientists (three)
- TATA Africa Scholarships for Women in Science, Engineering and Technology (three)

Nominations should reach the Department of Science and Technology by 30 June 2010. No late entries will be accepted.

Entries can be posted to the Project Coordinator, SA Women in Science Awards, Department of Science and Technology, Private Bag X894, Pretoria, 0001, or submitted electronically to [WISAwards@dst.gov.za](mailto:WISAwards@dst.gov.za).

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## **Future Technology Competition, Closing Date: July 2010**



The poster features the text "ready to evolve?" at the top in a stylized font. Below it are three futuristic red cars. The title "Future Technology Competition" is prominently displayed in a red, outlined font. The text below describes the competition's goal: "Cars have evolved over the years, increasing the distance we travel, together with a higher level of comfort and safety. Have you got a ground-breaking idea for automotive technology and design? Enter this competition, and you may stand a chance to win cash as well as see YOUR vision realised in a concept car...". It lists the prizes: "1st Prize - R10 000", "2nd Prize - R5 000", and "3rd Prize - R2 000". At the bottom, it provides the email address "futuretechnology@ukzn.ac.za" for an entry form. A logo for "Innovation" is visible in the bottom right corner.

**ready to evolve?**

**Future Technology Competition**

Cars have evolved over the years, increasing the distance we travel, together with a higher level of comfort and safety.

Have you got a ground-breaking idea for automotive technology and design? Enter this competition, and you may stand a chance to win cash as well as see **YOUR** vision realised in a concept car...

**1st Prize - R10 000**  
**2nd Prize - R5 000**  
**3rd Prize - R2 000**

E-Mail [futuretechnology@ukzn.ac.za](mailto:futuretechnology@ukzn.ac.za) for an entry form...

Proudly hosted by  
**innovation**  
University of KwaZulu-Natal



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## Funding Opportunities

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### **PhD and Post-Doctoral positions**

Very well funded PhD and Post-Doctoral positions available in an inter European research network. The project has just recently started which is why the positions are not yet filled and they are in a number of EU countries. The research is based

on earth system models and you can find more details here:

<http://www.greencycles.org/vacancies/>

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### **TWOWS Postgraduate Training Fellowship for Women Scientists 2010 Call for Applications**

The Third World Organization for Women in Science (TWOWS) is an international autonomous organization based in Trieste, Italy.

TWOWS is accepting applications for its postgraduate fellowship programme. The TWOWS fellowship supports female students from Sub-Saharan Africa and Least Developed Countries (LDCs) who wish to pursue postgraduate training leading to a PhD at centres of excellence in developing countries.

The fellowship supports research projects in the natural sciences. The minimum qualification of applicants is an MSc degree (or equivalent) or an outstanding BSc honours degree in a field of the natural sciences. Both sandwich and full-time

fellowships are available.

Please see [www.twows.org/activities](http://www.twows.org/activities) for more information on the application procedure, eligibility criteria and to download the application form.

Deadline to apply is 31 July 2010.

TWOWS Secretariat, Third World Organization for Women in Science (TWOWS), c/o TWAS, the academy of sciences for the developing world, ICTP Campus, Strada Costiera 11 - 34151 Trieste ? Italy, Tel: (+39 040 2240-321), Fax: (+39 040 2240-689), E-mail: [info@twows.org](mailto:info@twows.org), <http://www.twows.org>

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### **NITheP Internship Programme**

The National Institute for Theoretical Physics (NITheP) hosts an internship program. Under this program you can apply for financial support to spend university recess periods at the NITheP nodes. This is a call for applications for the June-July recess 2010. The next opportunities will be

during November-December 2010, and January 2011. More information is available at <http://www.saip.org.za/Opportunities.html>

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## Vacancies

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### **Head: Development Laboratory, Engineering, Hartebeesthoek Radio Astronomy Observatory**

The Hartebeesthoek Radio Astronomy Observatory (HartRAO) is situated in the Hekpoort / Skeerpoort area, 30 km west of Johannesburg in the Gauteng Province of South Africa. HartRAO is part of the South African National Facility for Radio Astronomy, within the National Research Foundation (NRF). The observatory operates several radio telescopes equipped with multiple microwave receivers, a Satellite Laser Ranger (SLR) and Global Navigation Satellite System (GNSS) base station receivers. Equipment for these instruments is developed and supported on site by engineers in the Development Laboratory and its electronic, microwave and mechanical workshops. HartRAO also supports the South African Square Kilometre

Array Project and the development and operation of radio telescopes in the Karoo near Carnarvon in the Northern Cape Province, including MeerKAT, C-BASS and PAPER.

We invite applications for the following position:  
**Head of the Development Laboratory**

The position is occupied by an Electronic Engineer, or equivalent.

#### **Requirements for the position**

A BSc (Eng) or MSc (Eng) in electronics, or international equivalent, is essential. Applicants must have hands-on experience in computer-aided analysis and design of electronic systems. Experience in microwaves and automated

measurement and control would be added advantages.

#### **Key responsibilities:**

- Management of the purchasing, development, upgrading, testing and operational support for the research systems and instrumentation supporting the radio astronomy and space geodesy research.
- Management of the electronic, microwave and mechanical workshops.
- Development, testing and operational support of electronic systems.
- Supervision of engineering and technical staff.
- Training engineering and technical students and junior technical staff.

Research systems operated by the observatory function 24 hours a day. Supporting these

systems and those off-site may involve work out of normal working hours and sometimes away from Hartebeesthoek.

Applicants must be able and willing to ascend the structure of the 26-m radio telescope and other antennas.

We offer a negotiable cost to company salary package. Included in the package are medical and pension benefits, as well as group life insurance scheme, and ample leave and sick leave privileges.

For further information see the HartRAO website (<http://www.hartrao.ac.za>) and South Africa's SKA website (<http://www.ska.ac.za>).

Suitably qualified applications should be done through career junction at [www.careerjunction.co.za](http://www.careerjunction.co.za) or to the addresses above by 18 June 2010.

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### ***Technical Manager: Satellite Laser Ranger, Geodesy Department, Hartebeesthoek Radio Astronomy Observatory***

The Hartebeesthoek Radio Astronomy Observatory (HartRAO) is situated in the Hekpoort /Skeerpoort area, 30 km west of Krugersdorp in the Gauteng Province of South Africa. HartRAO functions as a National Facility within the National Research Foundation (NRF). On site it operates several radio telescopes equipped with multiple microwave receivers, a Satellite Laser Ranger (SLR) and GPS base station receivers. Equipment for these is developed and supported on site by electronic, microwave and mechanical workshops. HartRAO also supports the South African Square Kilometre Array project, and the development and operation of the MeerKAT radio telescope array in the Karoo.

The search is for a SLR Manager reporting to the Space Geodesy Manager.

#### **Requirements for the position**

Minimum four year Technical University qualification BTech/NDip or BSc (Eng) in electronics is a prerequisite. Higher qualifications and extended experience is an advantage. Applicants must have hands-on experience in electronic system maintenance, fault-finding and repair, design and construction of electronic systems, both digital and analogue. Computer literacy is necessary; candidates with programming experience are preferred. Experience in microwaves, measurement and

control systems as well as laser systems would be added advantages.

#### **Key responsibilities**

- Management of the technical aspects of the MOBLAS-6 NASA Satellite Laser Ranging system
- Purchasing, development, upgrading, testing and operational support for the research systems and instrumentation supporting space geodesy research.
- Development, testing and operational support of electronic systems for research purposes.
- Supervision and training of operations staff.
- Participation in the development of a Satellite and Lunar Laser Ranging system.

Research systems operated by the observatory functions 24 hours a day in h8 hours shifts.

Applicants must be able and willing to attend training courses at NASA, Goddard Space Flight Centre, USA.

For further information see the HartRAO website (<http://www.hartrao.ac.za>) and South Africa's SKA website (<http://www.ska.ac.za>).

Suitably qualified applications should be done through Career junction at [www.careerjunction.co.za](http://www.careerjunction.co.za) before 22 June 2010.

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## Upcoming Conferences & Schools

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### 2010

#### **2010 African School on Electronic Structure Methods and Applications, Cape Town, July 2010**

The registration for the African School on Electronic Structure Methods and Applications for 2010 is now open. Please view <http://www.nithec.ac.za/general/10.php> for registration details. The School will take place at AIMS, Muizenberg, Cape Town from 19 July to 30 July 2010. The School is sponsored by IUPAP

(C13, C20, C14 and C10), NITheP, ICTP, SAIP, Democritos, ICMR and the MCC. The deadline for applications is 31 March 2010. There is limited space for participants, so please register early. Young faculty and senior postgraduate students are welcome to participate.

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#### **35<sup>th</sup> ICHEP Conference, Paris, France, 21 – 28 July 2010**

The 35<sup>th</sup> International Conference on High Energy Physics (ICHEP2010) will be held in Paris, France from July 21 to July 28 2010. Organisers hope that this conference will be a great success since they are expecting, among many other exciting talks, that the first LHC results will be presented.

The conference registration fees have been fixed at 450EUR. Limited funding is available for fees and travel support. Applications will be evaluated on a case-by-case basis.

All practical information regarding the conference

can be found on its web site: <http://www.ichep2010.fr>.

Letters of invitation for visa applications will be provided on request. The organisers request that arrangements must be made in advance in order to find a hotel room in Paris in July. A list of hotels can be found on the Conference website. Cheap accommodation for students has been reserved and must be requested upon registration.

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#### **55<sup>th</sup> Annual South African Institute of Physics Conference, Pretoria, September 2010**

The 55<sup>th</sup> Annual Conference of the South African Institute of Physics (SAIP), organised by the CSIR National Laser Centre, will be held from 27 September to 1 October 2010 at the CSIR International Convention Centre in Pretoria. The theme of the conference will be the 50-year celebration of the laser. Schools that will be hosted as part of this event: Nuclear Physics, 50 years of the LASER. For the first time, the host intends to solicit extended (one-page) abstracts,

which are to be published in proceedings with an ISBN number. The proceedings will be made available in electronic format.

Abstract submission is now open for SAIP2010.

##### **Contact Information:**

Email: [saip2010@saip.org.za](mailto:saip2010@saip.org.za)

URL: <http://www.saip.org.za/events/saip2010/>

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#### **22<sup>nd</sup> International CODATA Conference, 24 to 27 October 2010, Stellenbosch**

CODATA, the Committee on Data for Science and Technology, an interdisciplinary Scientific Committee of the International Council for Science (ICSU) is holding their 2010 Conference at the Spier Estate in Stellenbosch, Western Cape, from 24 to 27 October. CODATA works to improve the quality, reliability, management and accessibility of data of importance to all fields of science and technology and provides scientists and engineers with access to international data activities for increased awareness, direct cooperation and new knowledge. CODATA was established in 1966 by ICSU to promote and encourage, internationally, the compilation, evaluation and dissemination of reliable numerical data of importance to science and

technology.

CODATA is concerned with all types of data resulting from experimental measurements, observations and calculations in every field of science and technology, including the physical sciences, biology, geology, astronomy, engineering, environmental science, ecology and others. Particular emphasis is given to data management problems common to different disciplines and to data used outside the field in which they were generated.

Scientific data are one of the key components that have propelled the growth of science and technology. Recent spectacular achievements in information technology have changed the way



scientific research is being carried out. Similarly, modes of storage, dissemination, archival and management of data have undergone a sea change. It is now possible to network research groups located anywhere in the world via the Internet and to transfer huge amounts of data and other information practically instantaneously. It is hoped that this infrastructure, together with possibilities of grid computing and other recent developments, will be instrumental in taking science to new heights and that technological developments will lead to the transformation of human society.

This evolution has also resulted in many challenges for the scientific community- ranging across data management, data quality, data access and data archiving issues, to name but a few.

The unprecedented rate of advancement in science and technology means that scientific data and information will play a critical role in the scientific, social, economic and policy evolution of all nations- both developed and developing. Achieving scientific development depends on increased cooperation among scientists from the North and the South.

This conference will provide a truly international forum where scientists and policy makers can assemble to discuss these challenges. In doing so we will build on the vision of the ICSU Regional Office for Africa (ROA):

- Excellence in science is to be linked to policy-making and sustainable socio-economic

development in Africa:

- Equitable access to scientific data and information, and establishment of scientific capacity that may be used to contribute to the production of new scientific knowledge for the sustainable benefit of society.

### **Young Scientists**

Promoting the involvement and integration of young scientists in science and technology policy areas is not a new phenomenon and has always been on the agenda of many scientific organizations around the world. However, with the rapid advancement of information and communication technologies and the function they currently play in the science world, the role of young scientists in maximizing the impact of the digital age on science has been more seriously realized and acknowledged.

Building on the highly successful Young Scientists activities that took place around the 21st International CODATA Conference in Kyiv in 2008, a schedule of Young Scientists events will be incorporated in and around the 22nd International CODATA Conference. We propose that young scientists be one of the main themes of the 2010 conference as in 2008.

For further information on Young Scientists check our website (<http://www.codata2010.com/young-scientists-participation.php>).

More details about the conference and how to register may be found on the official conference website: <http://www.codata2010.com>

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## **9<sup>TH</sup> World Conference on Neutron Radiography and Radiography and Tomography School, October 2010**

**Frikkie de Beer**

The International Society for Neutron Radiology (ISNR) with the support of the South African Nuclear Energy Corporation (NECSA) are pleased to announce that the 9<sup>th</sup> World Conference on Neutron Radiography will be hosted in South Africa at Kwa-Maritane from Sunday 3 October 2010 to Friday 8 October 2010. The conference theme will be: "Big 5 on Neutron Radiography".

Held once every four years, this prestigious international event will provide the ideal platform from which to target a focused audience and reach all the major role players in the international neutron radiography community. We are conscious of the need to create

awareness and unite the efforts of those that are in the industry and therefore look forward to welcoming the world's leading neutron radiographers and researchers to Africa to join this conference. Through joining this event, an excellent opportunity for South African researchers to gain knowledge on the details of the technique and its unique scientific areas of application is being created. If you would like more information on the Conference please visit the conference website: <http://www.wcnr-9.co.za/> or the ISNR website: <http://www.isnr.de/>

## 48th Annual MSSA Conference, 24 to 29 October 2010, Bela-Bela, South Africa



The Annual Conference of the Microscopy Society of Southern Africa will be held from 24 to 29 October 2010 at the Forever Resorts Warmbaths (Bela-Bela). This 48th Annual Conference is hosted by the University of Limpopo.

The 2010 conference will consist of 3 parts: Workshops, a Technical Forum and the scientific parallel sessions. The workshops are planned to run from 24 to 25 October 2010 and those interested in organizing workshops should please contact the Conference Convener at [mssa2010@ul.ac.za](mailto:mssa2010@ul.ac.za).

### Technical Forum

The Technical Forum (TF) will take place on Tuesday 26th October 2010, which will allow interested delegates to participate in the Technical Forum without clashes with the scientific parallel sessions. The format has been proposed to be a combination of the conventional TF format and the themed session format used at  $\mu$ -MSSA in 2007.

Three themed sessions are planned to run before lunch. Each of these will consist of a keynote address given by a selected speaker (Please note that these are 'applications sessions' and not a 'sales pitch'). At the end of each session, the Chair will open the floor to a panel discussion. The theme topics for the 2010 sessions will be announced at a later stage.

Two conventional TF format sessions will be held after lunch. Delegates are invited to present 20 min talks on commercial sales promotions (e.g. new equipment) or technical presentations. Delegates interested in presenting talks are requested to submit abstracts by 09 September 2010 to Prof Mike Lee at [michael.lee@nmmu.ac.za](mailto:michael.lee@nmmu.ac.za). Instructions to Authors for the Technical Forum abstracts can also be found at the Conference website.

### Scientific Programme

The conference programme will include invited speakers delivering the John Matthews Memorial and Boris Balinsky Lectures, as well as oral and poster presentations delivered in two parallel sessions, viz. Materials Sciences and Life Sciences. Wherever possible, presenters will be identified to deliver Keynote Address presentations at the beginning of sessions.

Poster sessions form an integral part of the conference will be displayed in prominent locations for the duration of the meeting, to be

presented in chaired sessions.

### Abstract Submissions

Deadline for abstract submission is 30 June 2010. Please visit our website and follow the procedure for abstract submissions. Abstracts can be submitted for consideration either as oral or poster presentations. Please adhere closely to the Instructions to Authors for Conference Abstracts. Submit abstracts and programme questionnaire to [mssa2010@ul.ac.za](mailto:mssa2010@ul.ac.za). Instructions to Authors for the submission of abstracts can be found at the Conference website. Please ensure that e-mail addresses as submitted are correct as these addresses will be used in all correspondence and acceptance of abstract notifications.

### Student Grants

A limited number of Student Grants are available for students to attend the conference. Applications should be sent to Mr Alan Hall (Laboratory for Microscopy and Microanalysis, Natural Sciences Building II, University of Pretoria, PRETORIA 0002, [alan.hall@up.ac.za](mailto:alan.hall@up.ac.za)) before 30 July 2010.

### MSSA Prizes

Conference delegates stand a chance of being awarded various prizes in the categories listed below. Awards will be made at the Gala Dinner.

- ALS/JEOL AWARD for the Most Upcoming Microscopist. The winner of this award (amounting to an estimated R25, 000) will be sponsored to travel abroad and present a paper / poster at an international Conference.
- ANASPEC PRIZE of R1,000 for the paper or poster that uses microscopy to address an industry-related problem.
- FEI PRIZE for each of the best papers published in a recognised international Journal for Physical Sciences or Life Sciences during the period July 2009 to June 2010. Candidates need not be members of the Society, but must be resident in Southern Africa. Three reprints and a letter of application, including permanent home address, should be sent before 31/08/2010 to Mr Alan Hall ([alan.hall@up.ac.za](mailto:alan.hall@up.ac.za))
- FIONA GRAHAM PRIZE of R1, 500 is awarded to students who submit a 'first-time-accepted-no changes-required' abstract for the conference.
- MARY VEENSTRA PRIZE of R500 will be awarded for the best poster presentation on any form of microscopy presented at the conference.

- SMM TECHNOLOGIES AWARD of R1, 000 for the best paper or poster using confocal microscopy.
- SMM TECHNOLOGIES prize of R1, 000 for the most innovative technique in microscopy, and/or on the novel use in SA of an established technique.
- WIRSAM LIGHT MICROSCOPY PRIZE of an Olympus camera for the best light microscopy oral or poster presentation.
- WIRSAM SCIENTIFIC will award a prize of R850 for the best paper presented by a student author.
- WIRSAM TESCAN PRIZE for R1, 000 for the most exceptional presentation at the conference.
- CARL ZEISS PRIZE for the best low voltage scanning electron micrograph.

### Registration

All delegates are required to register by submitting a completed Registration Form accompanied by proof of payment before 31 August 2010 to qualify for the 'Early Bird Registration' fee. All registrations received after 31 August 2010 will be accepted subject to paying the late fee. If you would like to become a member of MSSA kindly visit <http://www.microscopy.org.za/membership.htm> for information and an application form.

### Cover Micrograph

You are invited to submit original and aesthetically-pleasing micrographs for the cover of the Conference Proceedings. Kindly submit your entries by 20 August 2010 to [mssa2010@ul.ac.za](mailto:mssa2010@ul.ac.za).

### Trade Presentations and Exhibitions

Interested companies and/or parties should

contact the Conference Secretariat for more information and to book exhibition space. Please visit our website [www.mssa2010.co.za](http://www.mssa2010.co.za) to view the Trade/ Exhibition/ Sponsorship Manual.

### Deadlines

Submission of abstracts for the Proceedings  
30 June 2010

Application for Student Grants  
30 July 2010

Final Circular  
02 August 2010

Cover micrograph competition  
20 August 2010

Final registration date and payment  
31 August 2010

FEI Prize reprint submissions  
31 August 2010

Submission of abstracts to Technical Forum  
09 September 2010

### Conference Secretariat

Scatterlings Conference & Events

Carolyn Ackermann Tel: +27 11 463 5085

Fax: +27 11 463 3265

E- mail: [caro@soafrica.com](mailto:caro@soafrica.com)

### Conference Convener

Dr Chantéle Baker

Electron Microscope Unit

University of Limpopo: Medunsa Campus

PO Box 84 Tel: +27 12 521 4334

MEDUNSA Fax: +27 86 621 7740

0204 E-mail: [mssa2010@ul.ac.za](mailto:mssa2010@ul.ac.za)

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## International Conference on Magnetic Materials (ICMM-2010), Kolkata, India, 25 to 29 October 2010

The International Conference on Magnetic Materials (ICMM-2010), organized by Experimental Condensed Matter Physics (ECMP) Division, Saha Institute of Nuclear Physics (SINP), Kolkata, India, will be the third in the series, the earlier two being held in 2000 and 2007. The meeting is intended to provide a forum for

presentation and discussion in the recent developments in magnetic materials.

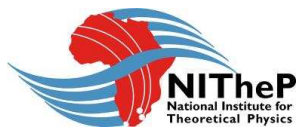
Website:

[http://www.saha.ac.in/cs/icmm.2010/web/Home\\_Page.htm](http://www.saha.ac.in/cs/icmm.2010/web/Home_Page.htm)



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## Workshop on the Physics of Exceptional Points, 2-5 November 2010



The National Institute for Theoretical Physics will host a 4-day workshop on the Physics of Exceptional Points at the Stellenbosch Institute for Advanced Study (STIAS), Stellenbosch, South Africa from 2 to 5 November 2010.

Different types of spectral singularities occur generically in open quantum and classical systems. The coalescence of two or more eigenvalues (in contrast to degeneracies) give rise to surprising and often dramatic physical effects in atomic and molecular physics, in optics, in mechanics, to name a few; quantum phase transitions and chaotic behaviour can be understood by these singularities called exceptional points. A host of literature in recent years dealt with these effects, directly and indirectly. The workshop brings together some of the experimental and theoretical researchers active in the field.

Four-day workshop, There will be between 25-30 participants, up to ten invited speakers, long (3-hour) lunch breaks, evenings free. To allow abundant time for individual discussions, six talks (40 + 5 minutes) are planned for each day.

Postgraduate students of all fields are encouraged to participate. It is intended to present introductory lectures. There will be limited financial support for postgraduate students.

As of June 2010, the invited speakers are:

- Holger Cartarius, Weizmann
- Pavel Cejnar, Prague
- Uwe Guenther, Dresden
- Alexej Mailybaev, Moscow
- Roland Lefebvre, Orsay
- Nimrod Moiseyev, Technion
- Jan Wiersig, Magdeburg
- Achim Richter, Darmstadt/Trento
- Miloslav Znojil, Prague

More information can be found at:

[http://www.saip.org.za/documents/opportunities/20100531\\_ExceptionalPoints.pdf](http://www.saip.org.za/documents/opportunities/20100531_ExceptionalPoints.pdf) or contact Dieter Heiss (dieter@physics.sun.ac.za, tel: +27 (0)21 808 3383).

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## Workshop on Discovery Physics at the LHC, 5 to 10 December 2010, South Africa

A workshop on Discovery Physics at the LHC will be held from 5 to 10 December in the Kruger National Park. Please refer to the conference

website for more information:  
<http://www.saip.org.za/events/kruger2010/>

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## 2011

### 40<sup>th</sup> South African Chemical Institute Convention, January 2011, South Africa

SACI 2011, the 40<sup>th</sup> South African Chemical Institute (SACI) Convention incorporating the 3rd Federation of African Societies of Chemistry (FASC) Congress will be held from 16 to 21 January 2011 at the University of the Witwatersrand in Johannesburg, South Africa. The biannual SACI Convention will be organised by the Gauteng Coordination Committee of SACI. The local organising committee is putting together a full, multi-session programme that will address the conference theme: Chemistry – the key to Africa's future. The event will celebrate the UNESCO International Year of Chemistry, IYC 2011 (an IUPAC event)

The event will showcase research activities in all traditional branches of chemistry (Organic, Inorganic, Physical, Analytical, Environmental) as well as interdisciplinary areas (such as Materials chemistry, Bio-organic chemistry etc.). The

programme will provide a platform for presenting work going on in the African continent, as well as in the rest of the world.

The Convention will take place six months after the 2010 World Cup Football (soccer) event to be held in South Africa. Advantage will thus be taken of the infrastructure developed for the World Cup, and in particular Johannesburg, the economic hub of South Africa. We hope to make SACI 2011 an exciting, eventful and rewarding time for all delegates. Registration fees and accommodation costs will be kept to a minimum.

The 3<sup>rd</sup> FASC Congress will be hosted at the Convention on Friday 21st January 2011. The day will be set aside for a FASC Programme on Green Chemistry

The official language of the Convention will be English

## 4th IUPAP International Conference on Women in Physics, Stellenbosch, South Africa, 5 to 8 April 2011

The 4<sup>th</sup> IUPAP International Conference on Women in Physics (ICWIP 2011) will be held in April 2011 in Stellenbosch. This triennial meeting is organized under the auspices of the International Union of Pure and Applied Physics and will be hosted by the South African Institute of Physics and Women in Physics in South Africa.

ICWIP 2011 will provide a forum for both scientific presentations and for discussion of issues related to attracting, retaining and improving the status of women in physics. More information is available from the conference website: <http://www.acitravel.co.za/icwip2011/>

## Physics Comment Editorial Policy

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:

1. 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).
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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](mailto: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/>