



# AIMS

African Institute for  
Mathematical Sciences  
NEXT EINSTEIN INITIATIVE

June 2014



# Network News



## Note from the Executive Director

# AIMS Broadens its Footprint

*Three months after the launch of AIMS-Cameroon, we are excited about the momentum we are gathering around the globe with respect to both AIMS and scientific skills development.*

A number of prominent figures were in attendance at the launch of our newest centre in Cameroon earlier this year. They included: two Nobel Laureates, a Fields Medallist, the former Governor General of Canada and the Cameroonian Prime Minister. The presence of such luminaries and key decision makers at our events increases our organisation's visibility, as our distinguished guests go on to spread the word about what they have seen at AIMS. As the first of our centres in the Central African sub-region, AIMS-Cameroon offers a key opportunity to broaden the pivotal pool of young scientists readying themselves to meet the developmental challenges of the continent.

Since that step forward, AIMS has remained at the forefront of key discussions addressing the scientific and technical skills gap in Africa. I was thrilled to represent AIMS at the University of Michigan's Third Biennial Science Technology Engineering and Mathematics (STEM)-Africa Conference, an event which brought together key stakeholders to collaborate on programmes that will build the capacity for Maths and Science education in Africa. While in Michigan, I had the privilege of meeting with the World Bank's Vice President for Africa, and discussing potential opportunities to forge a link between our organisations.

At the World Economic Forum on Africa, *Forging Inclusive Growth, Creating Jobs*, held in Abuja, Nigeria, I was given the opportunity to present the AIMS model as part of a panel discussion on new approaches for the transformation of Africa.

We are also delighted with the successes of our prestigious colleagues who have been instrumental in furthering the depth and breadth of the AIMS movement. In March, AIMS founder and Chair, Dr Neil Turok, was an invited speaker in the All-Stars Sessions of the TED 2014 conference in Canada. Neil also received honorary doctorates from Nelson Mandela Metropolitan University and Rhodes University, both in South Africa. We are proud that our founder is continuing to make a significant impact through his ground-breaking contributions to theoretical physics and his support for the mathematical sciences in Africa. Our distinguished Research Fellow, Professor Peter Sarnak, received this year's Wolf Prize in Mathematics, for his work on Number Theory, Analysis, Geometrics and Combinatorics. We are overjoyed that such a prestigious award was extended to a member of the AIMS family.

Our Centres continue to prove that the AIMS model is effective, efficient and relevant by attracting first-rate students who graduate and go on to conduct excellent research, partner with industries and give back to communities. Through the AIMS Industry Initiative we are creating excellent opportunities for our young students to learn how to apply their skills to the workforce, while simultaneously creating key alliances with local businesses.

Research is solidifying within the network; our Research Chairs are collaborating with other international institutions, and research opportunities are being given to AIMS students and alumni. We are grateful to the Robert Bosch Stiftung foundation and the International Development Research Centre (IDRC) in Canada for making these opportunities possible.

We have a lot to look forward to in the coming months. In June and July, AIMS-Cameroon, AIMS-Ghana, AIMS-Senegal and AIMS-South Africa will hold their graduations, releasing yet another batch of sensitive, committed and skilled youth into Africa. They too will contribute towards finding solutions for development issues that will benefit our world. In addition, the President of the United Republic of Tanzania has pledged his government's commitment to open an AIMS Centre of Excellence in September 2014. Lastly, the Next Einstein Forum (NEF) is gaining more and more momentum, and preparations are under way to host this top-rate conference which will promote scientific discoveries and draw the world's best scientists, entrepreneurs, leaders, policymakers, educators and young African talent. The event is tentatively planned for October 2015, and the government of Senegal has already expressed their interest in hosting us. These exciting plans will help us build on existing momentum as a leader and partner in tackling the skills shortage in Africa and changing the landscape of science as we know it.

We now have three functioning Advancement Chapters – in Canada, Germany, and our newest addition, the United Kingdom. It is important to AIMS to become truly bilingual, and since opening centres in Francophone countries, we are now gaining a significant amount of Francophone media coverage. As we move beyond the predominantly Anglophone coverage, AIMS is now being made accessible to a diverse audience, allowing us to reach more and more people across the globe.

The vision of AIMS is truly coming to fruition and I could not be prouder of our staff, students, alumni, tutors, partners and lecturers. I want to take this opportunity to thank you for your continued support and for your belief in AIMS.

Sincerely,  
Thierry Zomahoun

## IN THIS ISSUE...

**AIMS-NEI VISION:** *Leading the transformation of Africa through innovative scientific training, technical advances and breakthrough discoveries that benefit the whole of society.*

1 **Note from the Executive Director**

2 **Network News**  
6 **AIMS Industry Initiative**

7 **Alumni**  
8 **Research**  
10 **AIMS Outreach**

11 **AIMS in the Media**  
[www.nexteinstein.org](http://www.nexteinstein.org)

**EXCELLENCE • RESPECT • PAN-AFRICANISM • INTEGRITY**

## Network News

# AIMS at the Heart of Global Discussions

*In the past three months, AIMS has been at the table of some of the biggest decision-making organisations in the world.*

**A**IMS is increasingly being invited to participate in global discussions on STEM with key stakeholders, including the recently held World Economic Forum on Africa, the University of Michigan's Biennial STEM-African Initiative conference and the African Union's ministerial meetings.

AIMS attended the sixth ordinary session of the Conference of Ministers of Education of the African Union (COMEDAFVI). The meeting was officially opened on April 25th by Mr Philemon Yang, Prime Minister of the Republic of Cameroon, in the presence of Mme Youssouf Hadidja Alim; Minister of Basic Education of Cameroon; members of the Cameroon government and diplomatic corps; the students of the Pan-African University; partners and invited guests. Pre meetings began on April 21 and AIMS was invited as a partner through the Association for the Development of Education in Africa (ADEA).

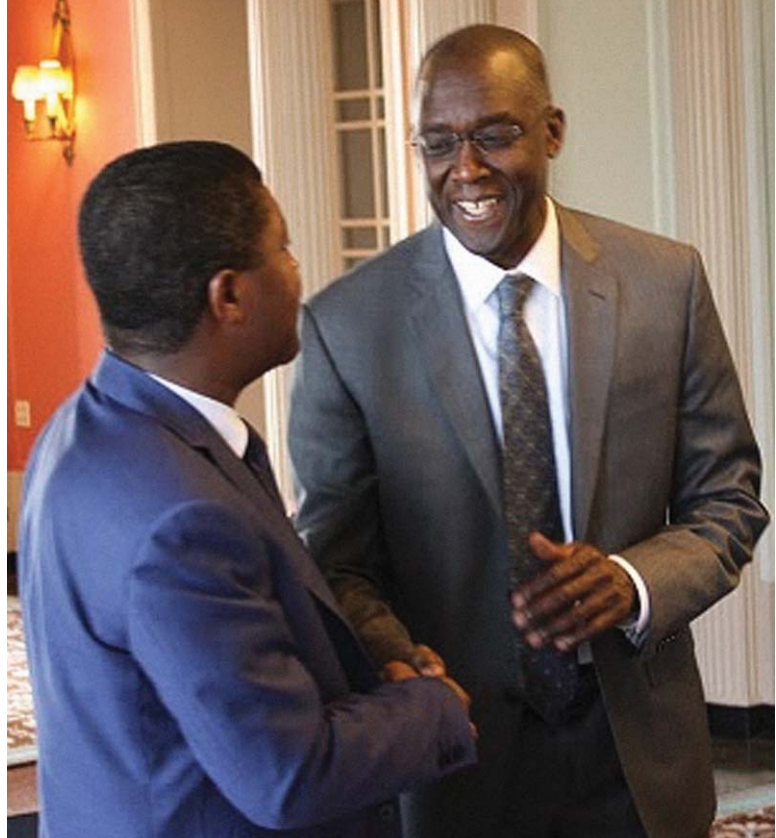
Representing the AIMS network, Executive Director, Thierry Zomahoun presented AIMS as a working model to support the AU strategy for Science Technology, Engineering and Mathematics (STEM). During this meeting, several partnerships were identified and initiated, notably with the Commission of the African Union and FAWE among others.

Earlier in the month, Thierry travelled to the Great Lakes State, Michigan. On April 1st he attended the University of Michigan's Third Biennial STEM-Africa Initiative conference, titled *Effective U.S. Strategies for African STEM Collaborations, Capacity Building and Diaspora Engagement*.

Of this prestigious meeting Thierry said,

*"I was thrilled to be a part of this important meeting in the United States. This conference brought together the leadership from the American and African academic communities to collaborate on programs to build capacity for education in maths and science in Africa and I found the discussions very powerful."*

Thierry participated in a panel discussion, where he highlighted the transformation of Africa's youth, science and entrepreneurship through the emergence of STEM centres of excellence. He also spoke about the motivation to create a wave of young African scientists to address key African and global development issues including public health, food security, illiteracy, sustainable development, economic development, good governance and peace and security.



*Thierry Zomahoun with the Vice-President for Africa of the World Bank.*

Thierry had a bilateral meeting with Makhtar Diop, World Bank Vice-President for Africa, and Andreas Blom, Senior Education Economist. The three engaged in a productive conversation about future opportunities for collaboration. Thierry commented,

From May 7th – 9th, AIMS was invited to attend the World Economic Forum's Regional Meeting in Africa, Forging Inclusive Growth, Creating Jobs, held in Abuja, Nigeria. The meeting served as an important opportunity to engage with this international institution committed to improving the state of the world through public-private cooperation. Thierry was invited to special private sessions on shaping inclusive growth and also participated in the Global Agenda Council's dinner where members made presentations on the successful projects the Forum has undertaken in order to tackle specific issues.

AIMS' attendance at this premier global forum was an important opportunity to build on existing momentum and for the next stage of growth of the AIMS network.

Thierry summed up the meeting,

*"We anticipate that the relationships we've forged at this meeting will lead to accelerated progress in our mission to enable Africa's brightest students to flourish as independent thinkers, problem solvers and innovators propelling Africa's future scientific, educational and economic self-sufficiency."*



*H.E. President Macky Sall*

## The Next Einstein Forum on Track

**T**he Next Einstein Forum (NEF) is an international forum for science, where outstanding thinkers and leading stakeholders come together in Africa from the scientific, industry, civil society and government sectors to showcase leading scientific advances, breakthrough discoveries and collaborate to use science to further human development.

Officially launched in June 2013, the NEF has generated momentum and enthusiasm from around the world. AIMS gratefully acknowledges the support of the Robert Bosch Stiftung Foundation, a founding member of the NEF.

The event is tentatively planned for October 2015 and discussions with host nations are nearing completion. The Founding Patron of the NEF is Sir Leszek Borysiewicz, Vice Chancellor of the University of Cambridge and noted public speaker on the role of science to support human development.

The NEF team is now hiring – view all positions currently available at:

<http://www.nexteinstein.org/jobs> ●



# **$\pi$ Day Links AIMS, MAT and The United Republic of Tanzania**

AIMS in partnership with the Mathematics Association of Tanzania (MAT) celebrated the 10th anniversary of Pi Day, an annual event commemorating the mathematical constant  $\pi$  (pi).

**P**i Day is held on the fourteenth day of the third month (3/14) since 3, 1 and 4 are the first three significant digits of pi. The goal of the celebrations is to raise awareness about mathematics and its importance in society. This particular year marked the 10th anniversary of the event, for which MAT and AIMS forged a partnership with the common goal of increasing participation and showing the relevance of mathematics in our lives. The partnership also aims to make maths a more popular subject among students, a goal which requires policy-makers to address and improve the way in which mathematics is currently taught in schools.

The Guest of Honour was the Vice-President of the United Republic of Tanzania, Dr Mohammed G. Bilal. Dr Bilal delivered the keynote address, which emphasised the importance of mathematics specifically in relation to Tanzania's economic growth. He urged students to take their mathematics studies seriously and teachers to make their teaching relevant to the needs of the country. The Vice-President was full of gratitude for the partnership and confirmed his government's commitment to support the establishment of the AIMS Centre of Excellence in Tanzania in September 2014.

Dr Bilal presented the awards donated by AIMS to the top-performing students in the National Mathematics Contest organised by MAT.

The event was held in Dar es Salaam and attended by over two thousand school children and their teachers. AIMS also partnered with IMAGINARY to exhibit their Mathematics Software, SURFER, which is interactive and allows users to visualise algebraic surfaces in real time. IMAGINARY is a project to promote mathematics through an interactive, visual and creative platform, and has a broad partnership in Europe and beyond. According to Dr Anthonia Mey, IMAGINARY's representative at the event, there is much that AIMS and IMAGINARY can do together to promote the study of mathematics in Africa. In fact, IMAGINARY sees AIMS as a preferred partner on the

***The Guest of Honour was the Vice-President of the United Republic of Tanzania, Dr Mohammed G. Bilal. Dr Bilal delivered the keynote address, which emphasised the importance of mathematics in relation to Tanzania's economic growth. He urged students to take their mathematics studies seriously and teachers to make their teaching relevant to the needs of the country.***



*Guest of Honour was the Vice-President of the United Republic of Tanzania, Dr Mohammed G. Bilal, who also delivered the keynote address.*



*AIMS exhibition.*

continent. For the 2014 Pi Day celebrations in Tanzania, several activities were organised including exhibitions where the application of mathematics to real life situations and to other sciences was shown to students and teachers.

As part of the pre-Pi Day activities, a two-hour live televised discussion on the topic "How can we improve the teaching and learning of mathematics in Tanzania?" was held at the ITV studio in Tanzania and conducted by notable figures in the field of mathematics. Viewers in Tanzania and beyond were able to contribute to the conversation via live questions and comments. The participants comprised of academics from the University of Dar es Salaam, Teacher Training Colleges, secondary and primary school mathematics teachers (both working and retired), postgraduate mathematics students of mathematics, and AIMS representatives. The discussion reiterated the benefits that an AIMS-Tanzania centre will bring to both teachers and students of Mathematical Science. The participants urged the Tanzanian government to push ahead with the opening of the new centre. ●



*Samuel Awuku, Director, Centre Development and Public Engagement – AIMS-Tanzania.*



*Students marching.*





Dr Neil Turok

## AIMS Founder Receives Honorary Doctorates

**Dr Neil Turok received an honorary doctorate from Nelson Mandela Metropolitan University on April 10th and another from Rhodes University on April 11th.**

**D**r Turok was honoured for his significant and ground-breaking contributions to theoretical physics and his support for mathematical sciences in South Africa. "I am amazed and honoured to receive these degrees," Turok said in his address to the convocation. "The opportunity to associate with universities that have such strong spirit was one I couldn't pass up." What motivated Turok to accept these doctorates was his love and commitment to the advancement of the mathematical sciences in South Africa and Africa. **"Twenty thousand years ago, mathematics was invented here in Africa. The oldest mathematical artefacts have been found here in Africa,"** he reminded the academics, graduates, students and parents assembled. "We've been able to use the knowledge from mathematics to build society's progress. In fact, every technological advance is underpinned by this knowledge used to build a better world." ●



Arun Sharma presents AIMS

## AIMS Represented at "Africa Days" in Germany

The AIMS network was invited to speak at the German government's *BMBF Africa Days*, a three-day set of events hosted by the Federal Ministry for Education and Research, with the goal of providing input to the government's growing engagement with Africa.

**A**IMS was represented by AIMS-Germany representative Arun Sharma, and was an excellent opportunity to highlight AIMS' position as a proven and effective pan-African platform, capable of engaging some of Africa's top young talent. Arun also promoted AIMS' interest in engaging with universities and governments from around the world, Germany included. AIMS was honoured to be the only partnership cited during the opening plenary as an example of successful German-African cooperation. ●

## AIMS United Kingdom Chapter Opens

*The UK remains absolutely key for AIMS, both as a base and an ally.*

**W**e are pleased to announce that the AIMS-UK office is now operational, having opened on May 5th, at Potters Bar, Hertfordshire, (less than 20 minutes' train ride from central London). Four people are currently employed at the UK office, with a professional fundraiser soon to join the team.

The UK Office will support and contribute to AIMS' mission and vision through the following key objectives: to develop strategic partnerships and alliances, to raise funds and to raise the profile of AIMS in the UK. ●



## Dr Neil Turok at TED 2014 Conference

In March this year, founder and Chair, Dr Neil Turok, was an invited favourite speaker in the All-Stars Sessions of the TED 2014 conference in Vancouver, Canada.



Dr Neil Turok at TED.

**D**r Turok provided an update on the progress of his 2008 TED Prize wish – to help him grow AIMS and promote the study of Maths and Science in Africa, so that the world's next Einstein may be African. Dr Turok was joined on stage by AIMS Alumni Martial Ndeffo and Kidist Zeleke, who represented the worldwide community of AIMS graduates. ●

## AIMS-Senegal New Partnership Negotiations with Nestlé

A promising meeting took place between AIMS-Senegal and Nestlé in Dakar.

**A**s part of AIMS' goal of strengthening links with industry, AIMS-Senegal Career Development Officer, Ms Kadidjatou Drame Diop, met with Mr Diouf Semou (Corporate Communications & Public Affairs Manager, Western Cluster) and Mr Abraham Konde (Recruitment, Training & Development, Western Cluster). The discussions were centred on company visits, internships and entrepreneurship competitions. The possibility of extending a partnership to the Nestlé Regional Office was also discussed. ●



Students and tutors visit Nestlé.



**R**epresentatives from AIMS-Ghana and Karlstad met to learn from one another, discuss ways for their programmes to interact internationally, and to strengthen their partnership agreement.

## AIMS-Ghana

# Delegation from Karlstad University Visits AIMS-Ghana

**AIMS-Ghana**

## Visit by AIMS-NEI's Executive Vice President

Dr Dorothy Nyambi visited the Centre in April to familiarise herself with operations at the Centre, meet current students and interact with staff and lecturers. Dr Nyambi held meetings with the management of Ashesi University and the Association of African Universities in Accra during her stay in Ghana. ●

*Dr Dorothy Nyambi and staff of AIMS-Ghana.*



**AIMS-Ghana**

# Career Fair at the University of Ghana

Students from AIMS-Ghana participated in a Career Fair organised by the University of Ghana Counselling and Placement Centre on March 14th.

The Fair included exhibitions from several organisations that provided information for the students on skills that are sought by employers. Among the participating organisations were: Groupe Ndoum, a privately held business group with member companies in financial services, hospitality, real estate, IT, media and entertainment; Airtel Ghana; Unilever; and Ghana Global Career Centre, a human resource solution provider, as well as several others.

Students from AIMS-Ghana conversed and networked with officers of participating organisations and several enquiries were made about job opportunities.



Although the majority of AIMS-Ghana students are currently advancing their education, they were pleased to come into contact with a range of potential employers and discuss the impact that mathematical science could have on their organisations. ●



# AIMS Online

A video about the course *Studying Entrepreneurship at AIMS* given by University of Oxford professor Graham Richards, also an AIMS-South Africa Council member, is available online. It includes interviews with Professor Richards and students. This is an exciting new step, as AIMS sees online learning as a powerful tool and a new way to reach diverse groups of learners around the globe. To view the video please visit [https://www.youtube.com/watch?v=iPT065cW\\_qQ](https://www.youtube.com/watch?v=iPT065cW_qQ)





Left to right: Thierry Zomahoun, Habiba Chakir, H.E. Jakaya Kikwete, Samuel Awuku, Dr Neil Turok.

## AIMS-Tanzania

# AIMS Delegation Impresses Tanzanian President in Advance of Fifth Centre Opening

*A high profile delegation from the AIMS-Next Einstein Initiative (AIMS-NEI) had an audience with H.E. Jakaya Kikwete, President of Tanzania, and his Minister of Education and Vocational Training, Shukuru Kawambwa on May 30th in Toronto following the Canadian Summit on Maternal, Newborn and Child Health*

**A**IMS Chairman and founder Dr Neil Turok was joined at the meeting by Executive Director Thierry Zomahoun, Director of Strategic Partnerships Dr Habiba Chakir, Director of Development and Public Engagement at AIMS-Tanzania Sam Awuku and Canadian Member of Parliament Joe Daniel.

"We were delighted to have an audience with the President," said Dr Turok. "During our meeting with President Kikwete, we received concrete assurances that our plans for our new centre in Tanzania will move ahead this fall."

The President met with the delegation immediately following the closing press conference with Canadian Prime Minister and summit co-chair Stephen Harper and United Nations Secretary General Ban Ki-moon. The meeting was held in the Prime Minister's suite at Toronto's Fairmont Royal York Hotel in the heart of Canada's

## New AIMS-NEI Canada Offices



*AIMS-NEI Canada moved into their new offices on March 1.*

**T**he AIMS-NEI Canada offices are located in uptown Waterloo, a short distance from key partners the Perimeter Institute for Theoretical Physics and the University of Waterloo. The new AIMS-NEI Canada address is:

**African Institute for Mathematical Sciences**  
20 Erb Street West, Suite 1004  
Waterloo, ON, Canada  
N2L 1T2

largest city. H.E. Alex Massinda, High Commissioner of Tanzania to Canada, Hon. Ramadhan Abdalla Shaaban, Minister of Education and Vocational Training for Zanzibar and Professor Sylvia Temu, Director of Higher Education for Tanzania, joined the President.

"We are excited to bring the AIMS formula of uniting top scholars in mathematics and science to teach and research with Africa's brightest students in Tanzania," said Thierry Zomahoun.

Read more:

<http://www.nexteinstein.org/aims-delegation-impreses-tanzanian-president-in-advance-of-fifth-centre-opening> ●

## AIMS-South Africa

# Chief Director of Basic Science & Infrastructure, DST Visits AIMS-SA

*Dr Daniel Adams, Chief Director of Basic Science & Infrastructure from the Department of Science and Technology (DST), visited AIMS on April 22nd to learn more about the AIMS Research Centre programmes.*

**T**he visit started off with an introduction by Professor Barry Green, AIMS-SA Director, followed by short talks on each of the different groups in the Research Centre, including Astrophysics and Cosmology; Mathematical and Physical Biosciences; Mathematical Finance, and

Mathematical Foundations and Scientific Computing. Three researchers also gave their perspectives on the Research Centre, Ms Phumza Thafeni, Mr Nakedi Wilson Leboho and Ms Michelle Lochner.

Dr Adams noted that he was pleasantly surprised by the breadth and depth of the AIMS Research Centre programmes, and he was encouraged to see that the Research Centre has been clever in using other instruments to help with funding, "AIMS is doing it right." He went on to say that the priority areas of the DST are: to support mathematics as a basic science; to interface mathematics with new technologies; and the Big Science projects. "I am delighted to see that AIMS is addressing all of these areas, especially the SKA one of the Presidential Projects."

AIMS is well positioned to align itself with other key strategies of the DST, for example the Bio-Economy Strategy, which was recently launched. Dr Adams invited AIMS to respond to the challenges of Big Data including interaction with the Centre for High Performance Computing. "There is a serious leakage in the pipeline of education," Dr Adams said, and he sees AIMS working to repair this through the work of AIMSSEC and their participation in initiatives like Famelab. ●



Dr Adams addresses members of the AIMS Research Centre.

# AIMS Industry Initiative

## AIMS-Senegal Students Commencing their Internship at IKAGEL

**T**he AIMS Industry Initiative was established in 2013 with the goal of bridging the gap between AIMS and industry – opening AIMS students' and graduates' eyes to the range of opportunities on offer to them, whilst at the same time demonstrating to industry professionals the value that the mathematical sciences can bring to their business.

Three AIMS-Senegal students commenced their internship at IKAGEL, an international fishery company, on March 17th. These students are working on renewable energy and optimisation issues that showcase the contribution that mathematical sciences can make in addressing development challenges.

Kokoura Mensah (from Togo) and Aby Sall (from Senegal) have chosen to work on transforming its fish waste into energy through a technique known as "methanisation." The objective of the internship is not only to increase the students'



employability but also to help IKAGEL find a lasting solution that is both respectful of the environment and capable of reducing the company's energy costs. Bakary Dembo Sylla (from Mali) has chosen to work on the optimisation of the use of daily workers, by coming up with a model that can facilitate the evaluation of their performance while minimising their related costs.

AIMS-Senegal has also created an internship partnership with KA Atlas Geomatics. The selection process has begun and internships for the two successful AIMS-Senegal students will begin as early as July. ●

## Alumni

### ALUMNI PROFILE

## Akinlotan Morenikeji Deborah



*Akinlotan Morenikeji Deborah, from Ondostate, Nigeria, is a 2012 AIMS-SA graduate with distinction.*

**A**fter her studies at AIMS, she went to Stellenbosch University (SU) in South Africa for a Master of Science degree in Mathematics. The degree was officially awarded to her in April 2014. At SU, she mathematically

modelled the dynamics of HIV-related malignancies and particularly investigated the incidence of HIV-related lymphomas in the Western Cape of South Africa.

Deborah recently moved to Australia and is currently pursuing a doctorate degree in Applied Mathematics at Queensland University of Technology. Her research interests include the modelling of infectious diseases and she is currently working on a Chlamydia Trachomatis project. She is also an entrepreneur, having begun her own business in professional cake making and sewing.

Deborah aspires to be a role model for the African youth who have no-one to look up to, particularly girls and young women. She strongly believes in giving back to the society that has invested so much in her, and encourages aspiring young women and men to continue their studies. Despite her packed schedule Deborah finds the time to offer cheap or free tutoring services to these young people. She also believes in giving back to AIMS, which she believes has empowered her and opened up a world of opportunities for her. She is now a member of the Steering Committee that is setting up the framework for the AIMS Alumni Association. ●



### ALUMNI PROFILE

## James Malm

*James Malm, born in Accra, Ghana, learned the value of education through his grandmother who raised him and his five siblings.*

**W**hile his grandmother had no formal education, she believed so strongly in the power of knowledge and learning that on many occasions she sold her belongings to support her grandchildren throughout school. Today, Malm is proud to have followed her advice. He has completed his doctoral studies in Finance and holds a faculty position at the College of Charleston in the United States.

Malm obtained a BSc in Electrical Engineering at the Kwame Nkrumah University of Science and Technology in Ghana. Through the DAAD-IAESTE Internship Programme he proceeded to Germany where he worked as a Research Intern at the Robert Bosch Stiftung Company in Stuttgart. In 2004, he enrolled in AIMS-SA to pursue a Postgraduate Diploma in Mathematical Sciences. While at AIMS-SA, he studied and lived with other students from diverse African countries

and developed sound interpersonal skills. According to Malm, the AIMS programme developed his aptitude for critical thinking, problem-solving, writing and research. During Malm's time at AIMS-SA, he also had the opportunity to strengthen and empower others by teaching high school maths and science teachers in Maseru (Lesotho) interactive teaching techniques, lesson planning and cost-effective project implementation.

Since graduating from AIMS, Malm has held several positions within Ghana, teaching, tutoring and mentoring of students in the areas of Business Finance, Financial Management, Operations Management, Business Statistics and Financial Modelling. He has been the recipient of numerous awards that recognise his teaching and research skills, including the *Best Graduate Student Paper Award* in the Business and Commerce category at the 2010 Graduate Student Association Research and Thesis conference. He has also presented his research work globally.

Malm continues to give back to Africa and coordinated a book drive at the University of Alabama that sent 1,500 books to elementary school children in Ghana. Passionate about legal environment and corporate financial policies, he hopes to contribute to the development of financial markets in Africa and other regions of the world. Malm has one piece of advice for the current and future AIMS students, "no matter what obstacles get in the way, always keep trying, keep reaching, keep dreaming, keep believing and never get discouraged... and, when things work out, do not forget to give back to society." He remains grateful to all the supporters and benefactors of AIMS. ●



## Two AIMS Alumni Participate in the Student Recruitment Drive in Cameroon

In collaboration with the AIMS Department of Academic Development and AIMS-Cameroon, Ms Sylvie Djiomba Njankou and Mr Kouakep Tchaptchié Yannick, graduates from AIMS-Senegal, assisted in the student recruitment drive in Cameroon.

**A**s part of the AIMS Student Recruitment drive for the 2014/15 academic year, Dr Rosita Yocgo, AIMS Research Manager, and Professor Mama Foupouagnigni, AIMS-Cameroon Academic Director, solicited support from AIMS graduates during a tour of Cameroon's universities.

Kouakep is pursuing his PhD in Biomathematics at the University of Ngaoundere, Cameroon, while also working as a teacher in the Government Bilingual High School (GBHS) in Mbe, Cameroon. Kouakep is the co-founder of African Opportunity Network (<http://africanopportunity.net/about/team/>) a site that he initiated after being inspired by a talk delivered at AIMS-Senegal. The talk described the barriers faced by Africans wanting to access graduate programmes

### Research

## AIMS Distinguished Research Fellow Receives The Wolf Prize

The Wolf Prize has been presented most years since 1978 to living scientists and artists for "achievements in the interest of mankind and friendly relations among peoples, irrespective of nationality, race, colour, religion, sex or political views."



Left: Mr. Kouakep Tchaptchié Yannick. AIMS-Senegal alumni. Right: Ms. Sylvie Djiomba Njankou. AIMS-Senegal alumni.



or build partnerships abroad.

Sylvie is preparing to begin PhD studies in Biomathematics at the University of Stellenbosch, South Africa. As an AIMS alumna, Sylvie strongly believes that the next Einstein will come from Africa and she encourages youth, especially women like herself, to dream big and work hard towards attaining their goals. From her personal experience at AIMS, she cherishes the fact that AIMS provides a uniform study platform to all Africans irrespective of culture, social standing or gender. By studying, living and working with other females like herself from across Africa while at AIMS, she was fascinated by the commonalities which they all shared as African women, and the common goal which they strive on achieving – Africa's development. ●

**T**his year *The Wolf Prize in Mathematics* was awarded to Professor Peter Sarnak, from the Institute for Advanced Study in Princeton for his deep work on Number Theory, Analysis, Geometrics and Combinatorics. Professor Sarnak grew up in South Africa, studying at the University of the Witwatersrand, before moving to the United States. He is a friend of AIMS and one of AIMS' Distinguished Research Fellows. The AIMS family is proud to congratulate Prof Sarnak for his award. ●

## AIMS Announces the Small Research Grant Program for Alumni

*The continuous professional growth of AIMS students and alumni remains a top priority for the AIMS network.*

**W**ith generous support from the government of Canada's International Development Research Centre (IDRC), and within the framework of the AIMS Research for Africa Project, AIMS is pleased to launch the AIMS Small Research Grant Program, a five-year grant program that will provide the opportunity for students and alumni to conduct individual research projects. This support from IDRC is part of a larger research grant that is focused on building the research capacity of the AIMS network and strengthening AIMS centres as major research hubs in Africa.

The first call for proposals under this program will target AIMS alumni and current AIMS students aspiring to graduate by the end of June or December. The call will award approximately five grants per annum to AIMS alumni interested in applied/interdisciplinary or industry research. The call for proposals will remain open throughout the year but reviewed bi-annually (July and January) by a qualified review panel.

The program has been designed with some unique features, which will further enhance the skills of the grantees and extend the AIMS research network:

- The program will familiarise AIMS students and Alumni with grant application and management processes, an important skill for those seeking future careers in research.
- Grants are tenable in any academic or research institution although grantees will be expected to spend at least 10% of their research time at an AIMS Research Centre of their choice. This is expected to boost inter-institutional collaboration and collaboration between AIMS Centres.
- It is also expected that, through this program, research activities and research domains will rapidly be embraced in new AIMS centres while existing AIMS centres' research activities will be strengthened through the grantees' interaction with each other.
- Furthermore, this program is expected to leverage additional research funding from within the local and global scientific community, particularly with partners within the Canadian research community.

Africa can benefit from having a larger number of researchers, generating research-based solutions for its development challenges. AIMS therefore calls upon partners, global funding bodies, industry, tertiary institutions, governments, and individuals to consider supporting the program by offering additional research opportunities to more talented young researchers.

To find out how you can be involved visit

<http://www.nexteinstein.org/small-research-grants>.

To apply as an AIMS alumni or student visit

<http://www.nexteinstein.org/aims-alumni-small-research-grant>. ●



# AIMS-NEI Appoints Two Research Chairs

With generous support from the government of Canada's International Development Research Centre (IDRC), and within the framework of the AIMS Research for Africa Project, the AIMS network is pleased to welcome Dr. Wilfred Ndifon and Dr Gaston Mazandu to the AIMS research team.

Working from both AIMS-Ghana and AIMS-South Africa as their base, the two researchers will collaborate as Joint AIMS Career Development Research Chairs in Quantitative Immunology and Bioinformatics, with relevance to some pertinent diseases in Africa like influenza, tuberculosis and malaria.

To further build on the existing partnerships between AIMS and Canada, both Chairs will work closely with a Canadian partner institution.

The AIMS-NEI Department of Academic Development believes that through this IDRC-funded Chairs program, the AIMS network will further grow in number of researchers thanks to new opportunities which will be made available to talented research Master's, PhD and Post-doctorate students and fellows. This will translate to an increased research output, both for the researchers involved and for



Left: Dr Wilfred Ndifon. Right: Dr Gaston Mazandu. (AIMS-South Africa Alumni).

the AIMS network. More importantly, the Chairs' research findings could have several important benefits to African societies, countries, and policy-makers.

Dr Ndifon and Dr Mazandu are currently stationed at AIMS-Ghana and AIMS-South Africa, respectively. ●

## AIMS-South Africa Slams Science

Dr Rejoyce Gavhi from the AIMS-South Africa Research Centre was a "Slammer" at the Science Slam held at SciFest Africa in Grahamstown, South Africa this March.

Dr Gavhi presented her work, "Geometric Modelling in Animated Movies." SciFest Africa is South Africa's National Science Festival sponsored by its Department of Science and Technology (DST). A Science Slam is a Science

Communication format. Excellent young researchers present their current research topics in a focused, accessible, informative and entertaining manner in front of a mixed audience of pupils, students and scientists. ●

## Research at AIMS-Senegal

AIMS-Senegal has seen many achievements in its work centred on research in the last quarter. This can be seen through activities such as participation in international events, submission of papers, scientific visits hosted by the centre, invitations to conduct scientific visits, and their preparation for an international workshop.



Group photo of fishery workshop.

In March, the Chair Holder Dr Mouhamed Moustapha Fall travelled to the University of Turin in Italy. There he worked alongside Professor Susanna Terracini, President of European Women in Mathematics, on some Partial Differential Equations (PDEs) modelling formations of patterns. While in Italy, Professor Fall also visited the University of Milano-Bicocca where, with Professor Veronica Felli, they worked on Spectral Properties of some problems arising from Mathematical Physics.

Some of the students at AIMS-Senegal have been invited to conduct their Master's Research with various research groups, including:

- Pierre Chirs Gerry Poathy, in the "Laboratoire d'Optique Atmosphérique" du Centre National de la Recherche Scientifique de Lille
- Lucien Penlap Woguia CNRS-CEMTHI Orleans in France
- Koffi Novignon Amouzou in the research group on Solar Energy of the University of Ziguinchor in Senegal

AIMS-Senegal, thanks to generous funds from the International Centre for Pure and Applied Mathematics (CIMPA), will be hosting the colloquium *Méthodes Algorithmiques et Applications en Géométrie Algébrique Réelle et Théorie des Nombres* from June 16th – 29th. AIMS-Senegal also hosted the workshop *Mathematical Tools For Understanding and Managing Fisheries: Synthesising and Refining Data and Models* from May 7th – 9th.

AIMS-Senegal will host a summer school on *Dynamical Systems and Ergodic Theory* from June 4th - 14th, an event co-financed and co-organised by ICTP (International Centre for Theoretical Physics) Trieste, Italy, NLAGA-Project (Non Linear Analysis, Geometry and their Applications) UCAD (Université Cheikh Anta Diop), Dakar, Ministry of Research and Higher Education of Senegal and Professor Fall. ●

## Outreach

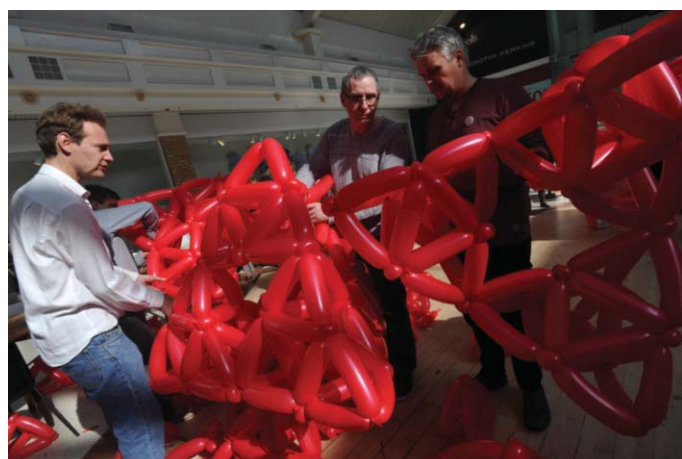


## AIMS Schools Enrichment Centre Fundraises and Sets World Record

**AIMS Schools Enrichment Centre (AIMSSEC) raised ZAR 4,008 (£225) for the programme at an event on March 15th where they beat the Guinness World Record for the largest balloon pyramid – a Sierpinski Tetrahedron – standing at 7.2 meters high.**

**T**his event helped show the public that Maths can be fun, and featured Bubbz the Mathematical Clown and the Pyraloons. Children were able to make their very own Sierpinski Tetrahedron with toothpicks and Blu-Tack to take home. Maths teachers learned about alternative activities for the classroom to keep their young pupils engaged and excited about the subject. Members of the public were encouraged to donate to AIMSSEC through "Easyfundraising," a free service that donates money every time you shop online, and by direct donations through GivenGain.

To read more about this event or to view the video go to <http://tinyurl.com/pcbuy2b>. ●



## AIMS-Senegal Outreach Activities

AIMS-Senegal has carried out a number of outreach activities in the last quarter. The AIMS Centre visited several local universities to advocate for the AIMS programme and the power of the mathematical sciences to transform Africa and Africans.

**A**s a result of these visits, AIMS-Senegal has received 38 student applications for the 2014/2015 academic year, and some local universities have committed to become part of the selection committee and to continue to refer appropriate students to the Centre.

AIMS-Senegal also hosted 164 local high school students from Mbour on a visit to the AIMS campus on March 15th. Group activities took place that showed how mathematics plays an essential role in everyday life. Facilitating these activities were AIMS students and tutors, who also emphasised the importance of higher education in the mathematical sciences for personal, professional and regional growth.



"Club scientifique" (science club).

Additionally, several discussions and working meetings have taken place between AIMS-Senegal and FASTEF (the national teacher training school) for the development of a Teacher Training Module and Training Workshop. The content for each module is currently being developed, and discussions with local high school teachers have begun.

Lastly, AIMS-Senegal has launched Science Clubs in targeted local schools. The first Science Club was held with students from the Lycée Demba Diop. As part of this launch there was a panel discussion on the applications of mathematics, as well as a theatrical performance illustrating mathematics' great importance. The launch also served as an opportunity for AIMS students to encourage other students to choose science studies. ●

## Recruit Africa's Top Talent from AIMS

*As competitive advantage is increasingly defined by human capital and not access to natural resources, many organisations are recognising that supporting educational initiatives, and especially those initiatives related to STEM education, is an important element of their sustainability strategy.*

**For information about how to get involved with the AIMS Industry Initiative and find out more about AIMS graduates please contact: Sunil Shah, Career Development Manager, [aai@nexteinstein.org](mailto:aai@nexteinstein.org)**



**AIMS**

African Institute for  
Mathematical Sciences  
NEXT EINSTEIN INITIATIVE



# AIMS IN THE MEDIA

# AIMS Increases Francophone Media Coverage

In 2013, AIMS identified the importance of equal visibility in both Anglophone and Francophone countries.

With the growing presence of AIMS centres in Francophone Africa, AIMS has been very successful in raising awareness of the brand and the importance of the mathematical sciences in Francophone states through media coverage and outreach. In this quarter alone there have been numerous print and radio spots on the work of AIMS. ●

## AIMS on Air RFI Airwaves

### 7 Milliards de Voisins, April 18

AIMS Executive Director Thierry Zomahoun was on air on RFI's (Radio France Internationale) programme *7 Milliards de Voisins*, a daily news programme that looks at everyday issues in the North and the South, with a weekly focus on education.

The discussion on April 18th focused on Mathematical Sciences education in Africa. Professor Mama Foupouagnigni, Academic Director at AIMS-Cameroon also joined the discussion.

For more information on the episode please visit:

<http://www.rfi.fr/emission/20140418-1-enseignement-mathematique-a-frique/>



## AIMS-Senegal on Radio France Internationale

### Radio France Internationale, May 6

On May 6th, Professor Sanghare, AIMS-Senegal Director, Long Do Cao, an AIMS-Senegal Tutor, and the Minister of Higher Education of Senegal, Professor Mary-Teuw Niane, were on Radio France Internationale's Programme, *Autour de la Question*. This is a daily interactive programme that looks at social issues such as science, technology, economy, psychology and ecology. The subject of this episode was whether or not the next Einstein will be African.

For more information on the episode please visit:

<http://www.rfi.fr/emission/20140506-1-le-prochain-einstein-sera-il-africain-emission-spedale-depuis-institut-francais>



## Le futur Einstein sera africain !

**Cerveaux.** Les réseaux de recherche AIMS placent l'Afrique scientifique sur orbite.

PAR VICTORIA GAIRIN ET OLIVIA RECASENS

« L'Afrique apportera demain à la science ce qu'elle a apporté à la musique. » Quand on sait qu'aucun scientifique africain n'a jamais eu le prix Nobel et que le continent n'a décroché qu'une seule médaille Fields, cela récompense tous les quatre ans les plus grands mathématiciens de la planète, le défi est tout un autre. Le futur Einstein sera africain ? Dans la bouche de ce cosmologiste sud-africain de 55 ans, directeur du prestigieux Perimeter Institute for Theoretical Physics de Waterloo (Canada) et professeur à Cambridge, le nom du génie des sciences n'est pas lancé à la légère. Turok, dont les parents, Ben et Mary, sont des figures de la lutte anti-apartheid, n'en est pas à son premier pari fou. Il a déjà réussi à mettre sens dessus dessous les physiciens du globe avec une théorie qui fait du big bang non pas le com-

**Le défi prend corps**  
12 ans d'existence  
4 centres déjà créés (Afrique du Sud, Sénégal, Ghana, Cameroun). Dix autres doivent suivre.

**600 diplômés en sciences**  
de très haut niveau, dont 72 % travaillent en Afrique. Une vingtaine de nationalités africaines.



Pépinière. Mamadou Sanghare et Vincent Rivasseau, cofondateurs d'AIMS-Sénégal, dont les étudiants, en 2011, ont reçu l'édifice Villani, médaille Fields 2010 (en haut).

encement de l'Univers, mais une simple étape dans le cycle infini répété de son expansion ! C'est avec la même audace que l'homme qui a la tête dans les étoiles a mis sur orbite l'African Institute for Mathematical Sciences (AIMS-NEI), un réseau d'instituts d'enseignement supérieur et de recherche en sciences. Le premier centre a vu le jour en 2003, à Muizenberg, au sud de Cap. Rapidement, la galaxie des AIMS a grossi : le Sénégal en 2011, le Ghana en 2012, le Cameroun cette année, et bientôt la Tanzanie. Dix autres doivent suivre.

**Energie.** « Neil Turok a réveillé un rêve », raconte Mamadou Sanghare, 61 ans, directeur de l'école doctorale de mathématiques et informatique de l'université Cheikh Anta Diop de Dakar. L'Afrique est empiétrée dans des problèmes qui paraissent insurmontables, mais elle a pour elle sa jeunesse, son énergie et

cette capacité à se débrouiller toute seule en toutes circonstances. » C'est en 2005 que Neil Turok vient frapper à la porte de ce mathématicien réputé. Le choix de Mamadou Sanghare n'est pas un hasard, son parcours tient aussi du défi. Enfant, il fréquente l'école de son quartier à Dakar, où l'on enseigne l'arabe, le français... mais pas les maths, qu'il pratique tout seul à la maison. Elève brillant, Sanghare décroche, à 14 ans, une bourse du Maroc. Il y passe son brevet, son bac, une maîtrise de maths, un doctorat en algèbre et enseigne quatre ans à la faculté des sciences Mohammed V, avant de rentrer au pays. C'est à Dakar qu'il ouvre le premier Laboratoire d'algèbre, de cryptologie, de géométrie algébrique et d'applications (Laagaa), où il forme des professeurs, qui essaient à leur tour sur le continent.

En trois ans, Neil Turok et Mamadou Sanghare montent, avec le Français Vincent Rivasseau, le centre AIMS-Sénégal, à M'Bour, sur la Petite Côte. « Au début, honnêtement, nos collègues n'y croyaient pas », raconte ce professeur en physique-mathématiques de 58 ans, qui enseigne à l'université d'Orsay, près de Paris. « Quand nous parlions d'Afrique, on nous répondait : « École primaire, santé, alimentation... Il a fallu expliquer comment la théorie des graphes ou la physique quantique pouvaient aussi aider les Africains. » Vincent Rivasseau, qui enseigne depuis dix ans en Afrique, est convaincu. « Pour faire des maths, on a besoin d'un feuillet suffisant. » Et, grâce à Internet, les étudiants africains ont accès à moindre coût aux bases de données scientifiques mondiales. « J'ai dû sortir de mon labo pour chercher des fonds », confie ce spécialiste de la théorie des champs. L'argent arrive non de France, mais du Canada, qui mise sur l'essor économique de l'Afrique et investit 20 millions de dollars dans la Next Einstein Initiative en 2010. La même année, Google donne 2 millions de dollars. Des personnalités comme le sculpteur Ousmane Sow ou les Prix Nobel Françoise Barré-Sinoussi et Klaus von Klitzing acceptent d'en devenir les parrains officiels.

## Le futur Einstein sera Africain

By Victoria Gairin & Olivia Recasens, Le point, No 2166, 20 mars 2014, p.122

## AIMS prend pied au Cameroun

By Simon Pierre Etoundi, "Notre Afrik", Mar 2014, No 42, P.66

Other Francophone coverage includes:



**AIMS** African Institute for Mathematical Sciences  
NEXT EINSTEIN INITIATIVE

### AIMS prend pied au Cameroun



La cérémonie officielle d'inauguration officielle de l'African Institute for Mathematical Sciences (AIMS-Cameroon) a tenu toutes ses promesses. Un événement solennel ! Pour les autorités camerounaises, il s'agit d'un rendez-vous de la plus haute importance. Ainsi, c'est S. E. Philomen Yang, Premier ministre, chef du gouvernement camerounais, qui a présidé au nom du chef de l'Etat, le 18 février dernier, la cérémonie d'inauguration officielle de l'AIMS-Cameroon. A ses côtés pour cette occasion, la très honorable (TH) Michaëlle Jean, ancienne gouverneure générale du Canada, ambassadrice de l'Union pour l'Afrique, invitée spéciale. Il y avait aussi, entre autres personnalités de renommée internationale, De Neil Turok, fondateur de l'AIMS, M. Thierry Zomahoun, Directeur Exécutif du réseau mondial de l'AIMS, deux lauréats du prix Nobel en physique, un médaille



« L'éducation à l'AIMS est une éducation de qualité car elle offre des conditions favorables ainsi que des perspectives. »  
Mlle Esther Achong Otiyo, originaire du Kenya



« Le Cameroun est un terrain idéal pour le développement de la science et de la technologie. Nous encourageons les jeunes à entreprendre des études scientifiques. AIMS va continuer de bénéficier des savoirs multiples du gouvernement camerounais. »  
S. E. Philomen Yang, Premier ministre, chef du gouvernement du Cameroun



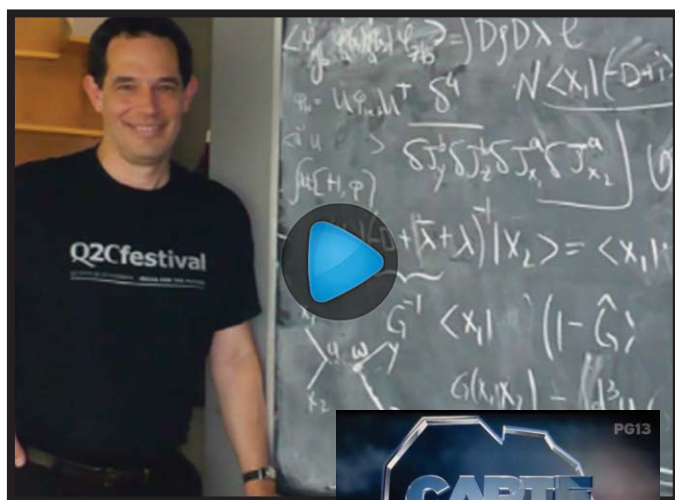
Le Premier ministre camerounais se fait présenter la maquette du siège de l'AIMS-Cameroon

pour donner des indicateurs précis aux décideurs politiques. Pour le Directeur exécutif du réseau Mondial de l'AIMS, le choix du Cameroun pour abriter ce centre peut se justifier par trois raisons : l'excellence académique des Camerounais, sa situation géographique et l'enthousiasme des autorités. Les étudiants camerounais représentent en effet 10% de l'effectif total des centaines de jeunes formés à travers les centres AIMS. Le Next-Einstein est née en 2008



Le Cameroun s'est engagé à apporter sa contribution au succès du programme AIMS





## Dr Neil Turok in a Special Feature on Carte Blanche

**Carte Blanche, April 27, 2014**

**EXCERPT:** He's the son of struggle stalwarts Ben and Mary Turok and our foremost expert on the origins of the universe. Cosmologist Dr Neil Turok believes the next Einstein will come from Africa and he's doing his best to make it happen. Carte Blanche talks to a big brain with a big heart.

To view the full video go to:

<http://carteblanche.dstv.com/player/519884>



A technician works on the vertex area of one of the two LIGO Observatory facilities. Image taken from "LIGO: A Passion for Understanding."

## LIGO: A Passion for Understanding – The Minds Behind the Film

**By Kai Staats, Expert Voices, April 16, 2014**

**EXCERPT:** Kai Staats is an entrepreneur, writer, filmmaker and now student at the African Institute for Mathematical Sciences, Cosmology Research Group, Cape Town, South Africa. Staats is currently working to earn a Masters degree in Applied Mathematics. In his former life in corporate America, Kai was founder and CEO of a Linux OS and HPC systems company where his team helped researchers and scientists improve performance in supercomputing systems.

The hunt for gravitational waves is a frontier physics effort that relies on one of the most sensitive measuring instruments humankind has ever created – and with this effort's underlying goal of capturing some of the largest events in the universe, those in the field see inspiration as a core mission.

The documentary "LIGO: A Passion for Understanding" delivers the science behind the search, conveying the raw enthusiasm and excitement of the researchers who have dedicated their careers to an immense undertaking and the ground-breaking, ultra-sensitive technology behind this new generation of "telescope."

To read the full article go to:

<http://www.space.com/25527-ligo-filmmaker-perspectives.html>

## Teaching Maths in Cape Town Leaves Lasting Impression on Pacific University Professor



**By Laura Frazier, The Oregonian, April 4, 2014**

**EXCERPT:** This winter, Pacific University professor Nancy Ann Neudauer spent three weeks teaching, sharing meals and getting to know graduate students in Cape Town, South Africa. Funded by a Fulbright Specialist Award, Neudauer taught advanced mathematics at the African Institute for Mathematical Sciences. Her 36 students were from villages and cities all over Africa, each one attending on a full-ride scholarship. Her classes were for two hours every day, and evenings were

spent working with students on homework or projects. Back in her office this week after spring break, Neudauer reflected on the bigger messages from her time in Cape Town during December and January.

To read the full article go to:

[http://www.oregonlive.com/forest-grove/index.ssf/2014/04/teaching\\_math\\_in\\_cape\\_town\\_lea.html](http://www.oregonlive.com/forest-grove/index.ssf/2014/04/teaching_math_in_cape_town_lea.html)



Robert Bosch Stiftung

IDRC  
International Development  
Research Centre



CRDI  
Centre de recherches pour le  
développement international

