

Towards an Innovative and Sustainable Approach to Development

Annual Report June 2012 - June 2013



AIMS

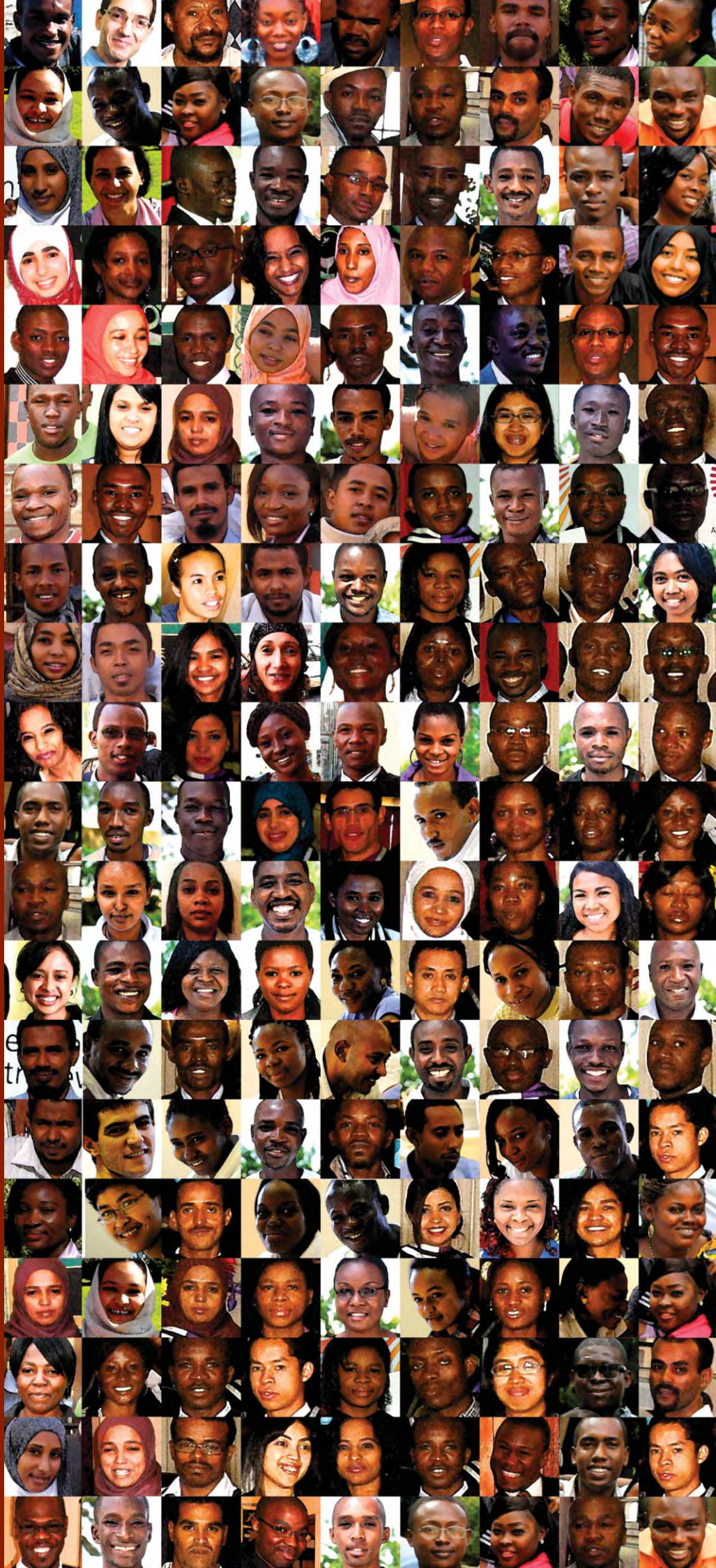
African Institute for
Mathematical Sciences
NEXT EINSTEIN INITIATIVE

Contents

- 3 Message from the Chairman**
- 4 Message from the Executive Director**
- 6 2013 in Review**
 - *AIMS-NEI Vision, Mission, Values*
- 8 Growth of the Network**
 - *Training*
 - *Future Centres*
 - *Research*
 - *Advancement*
- 12 AIMS Centre Highlights**
 - *AIMS-Ghana*
 - *AIMS-Sénégal*
 - *AIMS-South Africa*
- 16 Alumni**
 - *Statistics*
 - *Alumni Profiles*
 - *Global Alumni Reunion*
 - *Alumni Association*
- 20 New Initiatives**
 - *Call to Action*
 - *AIMS Industry Initiative*
- 21 AIMS in the Media**
- 22 AIMS-NEI Staff**
- 22 AIMS-NEI Board of Directors**
- 23 List of Partners**

The reporting period for this report is June 2012 to June 2013.

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Inspired by Our Students

In 2008, when we launched AIMS Next Einstein Initiative, it seemed a distant dream. It captured our core belief: that a vast untapped pool of scientific and technical talent lies waiting to be discovered in Africa. With the early success of the first AIMS centre in South Africa, we believed we had a proven a model for how to unlock this talent: by gathering together the brightest African graduates and bringing the best lecturers in the world to teach them, we could create a transformation in Africa's prospects for science, technology, and development.



followed by AIMS-Ghana (2012) and AIMS-Cameroon which should open later in the year.

Thierry assembled a professional staff, establishing

high quality. Those have been the guiding principles of the original AIMS centre in Cape Town, as well as in the growth of the network.

“Everything we do is inspired by our marvellous students. Most have overcome huge obstacles to pursue their education and their passion for science. They give everything to their studies and they go on to become examples of what young Africans can do. They are ambassadors; they are role models; they are the future.”

CREATING A pan-African network of scientific centres of excellence is more easily said than done. In 2008, we were a long way from realizing this vision. What we did know was that it would require exceptional leadership, committed staff, and an unequalled pioneering spirit.

One of our highest priorities was to recruit an Executive Director. That person needed to understand the African landscape well – both its positive and negative features. They needed formidable intelligence, foresight, energy,

and managerial ability. They had to be able to interact with academics and scientists from all over the world, and above all, to inspire everybody they met to contribute to our common cause.

Thierry Zomahoun brought all these qualities to AIMS, and much more. He has been a dynamo driving the pan-African AIMS network ever since.

Thierry and his team's achievements have been little short of remarkable. New centres have opened in short order: AIMS-Sénégal (2011),

effective financial systems, building relationships across the network, and laying the ground for this unique continent-wide institution. He and his team have raised AIMS' profile among African leaders and consolidated major funding commitments with the Canadian government, the UK government, and the Humboldt Foundation in Germany, among others. Just as significant, they have secured funding agreements with every host country, making them true partners in carrying AIMS' vision forward.

AIMS has many unique features, summarized in our motto, which is that we want Africa to be: RICH – relevant, innovative, cost-effective, and

Everything we do is inspired by our marvellous students. Most have overcome huge obstacles to pursue their education and their passion for science. They give everything to their studies and they go on to become examples of what young Africans can do. They are ambassadors; they are role models; they are the future.

We hope and believe that by creating the conditions in which large numbers of young African people can become scientists, technologists and, more generally, highly skilled people, the spinoff from our search for the next Einstein may be just as significant as the goal itself.

Sincerely,
Professor Neil Turok

A Dream of Transformation

AIMS began as a dream, a vision that scientific and mathematical prowess would transform the African landscape and aid in its sustainable development. At AIMS, we believe this dream has become a reality. To date, we have trained over 560 students from 38 African countries, and have moved beyond a single centre to a network of pan-African centres in Ghana, Sénégal and South Africa with plans for further expansion.



THIS YEAR, the AIMS qualification has transformed from a Postgraduate Diploma to a fully accredited Master's Degree. Our research centres are flourishing – attracting highly qualified staff and visitors to study socially relevant topics each year. AIMS has begun Career Development initiatives including The *AIMS Industry Initiative*, which was launched this year and seeks to engage industry across the scope of AIMS network activities. AIMS has also begun offering online courses, to connect the knowledge at AIMS with the broader community and learners across the globe.

As AIMS continues to contribute to African development, African governments are coming on board to support AIMS initiatives in their countries. We have seen tremendous support in South Africa, Sénégal and Ghana, and now we turn our sights towards Cameroon, who have already pledged to open an AIMS Centre in their country. President Paul Biya of Cameroon acknowledged the key role that AIMS plays, and stated in his Youth Day speech that *“...AIMS is planning to establish a Centre of Excellence*

in our country to build the capacity of our scientific community. This mark of trust by a prestigious knowledge institution should not only consolidate our own trust in ourselves, but also spur our youth to choose studies in the scientific and technical fields in

Reunion include *A Call to Action* which urges officials to invest in Mathematical Sciences education, and the creation of *The Next Einstein Forum*, a global forum celebrating science in Africa and highlighting the essential role that science plays in human development.

I am pleased to report that the media and the global community at large have begun to catch on to the AIMS scientific revolution, and

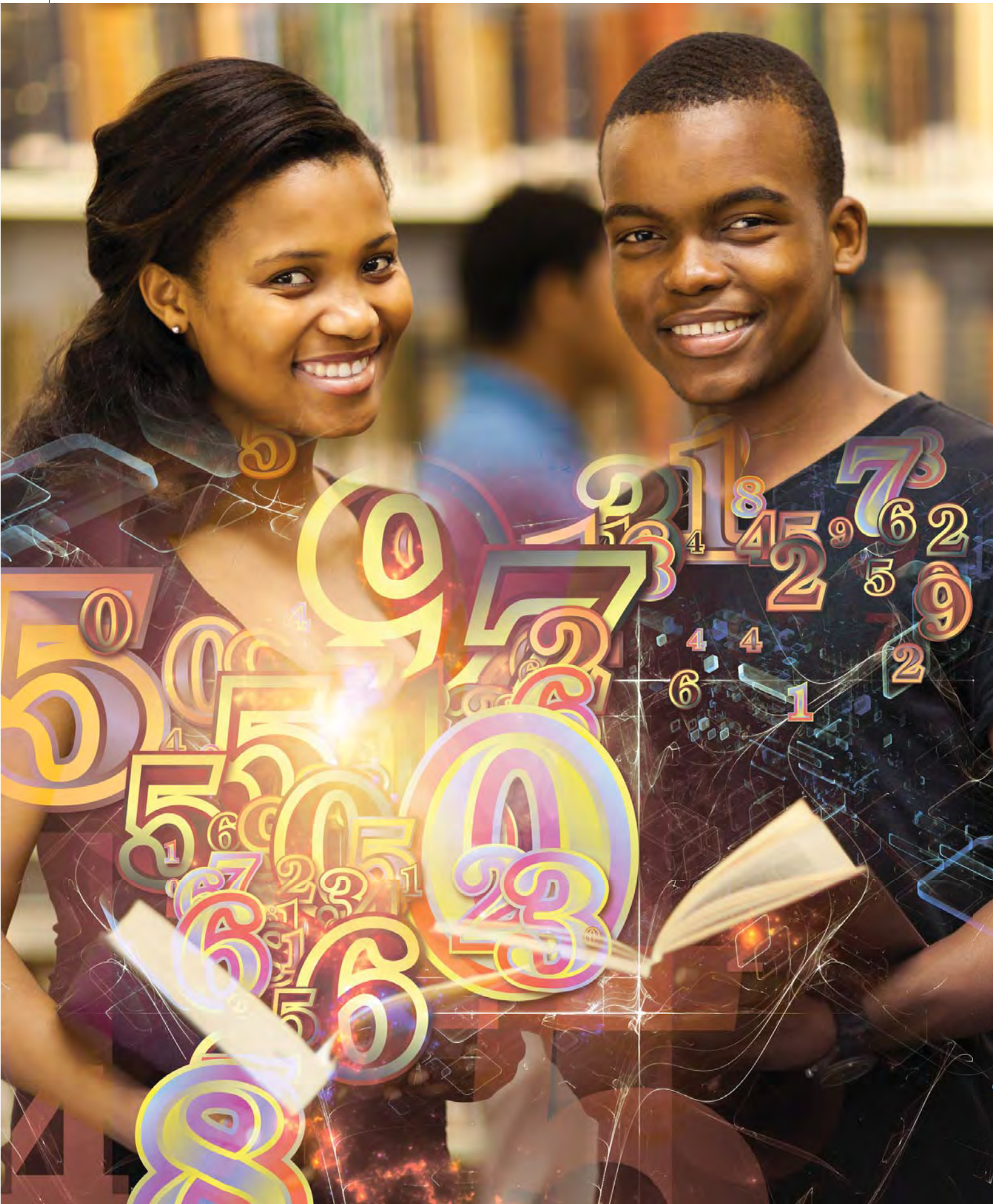
“This year AIMS hosted our first ever Global Alumni Reunion, which marked the 10-year anniversary of AIMS, and brought together leading industry and academic leaders with our accomplished alumni.”

which they are naturally gifted.”
This year AIMS hosted our first ever Global Alumni Reunion, which marked the 10-year anniversary of AIMS, and brought together leaders from industry and academia with our accomplished alumni. We were deeply honoured to have many notable guests and speakers at the event, including Her Excellency Naledi Pandor, South African Minister of Home Affairs, an exceptional female public figure and longtime supporter of AIMS. Concrete and immediate results from the Global Alumni

incorporate it into their own coverage. For example, in March, AIMS was represented at the BBC Africa Science Festival in Uganda, and our Alumni have been highlighted in print media around the world.

Of course, none of our achievements would be possible without the continued support of our generous partners and supporters. On behalf of all AIMS staff, students and Alumni, let me express our heartfelt gratitude.

Sincerely,
Thierry Zomahoun



Exceeding all Expectations

This year AIMS celebrated its 10 year anniversary and it is fair to say that AIMS has far exceeded the expectations and dreams of its founding group and supporters. To recognise the importance of this milestone, the first ever Global Alumni Reunion was held and AIMS launched a book on its history titled AIMS: the first decade. Other notable achievements for the year included over 100 students graduating, planning for a future centre in Cameroon, online courses and the launch of the AIMS Industry Initiative.

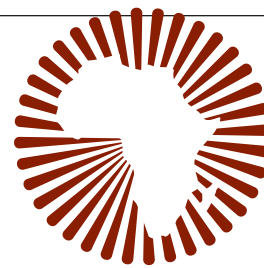


**Robert Bosch
Stiftung**

Additional Partners



AIMS Centres graduated 109 students with a Master's in Mathematical Sciences



Integration of Career Development Programmes

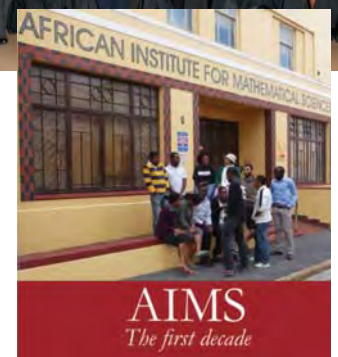
AIMS Global Alumni Reunion



Government buy-in to open future AIMS Centres: AIMS-Cameroon



AIMS and its Schools Enrichment Centre (AIMSSEC) celebrated 10 years of existence



Online Courses at AIMS-South Africa



Launch of The AIMS Industry Initiative



Creation of the Next Einstein Forum

**NEXT
EINSTEIN
FORUM**

AIMS-NEI Vision, Mission, Values

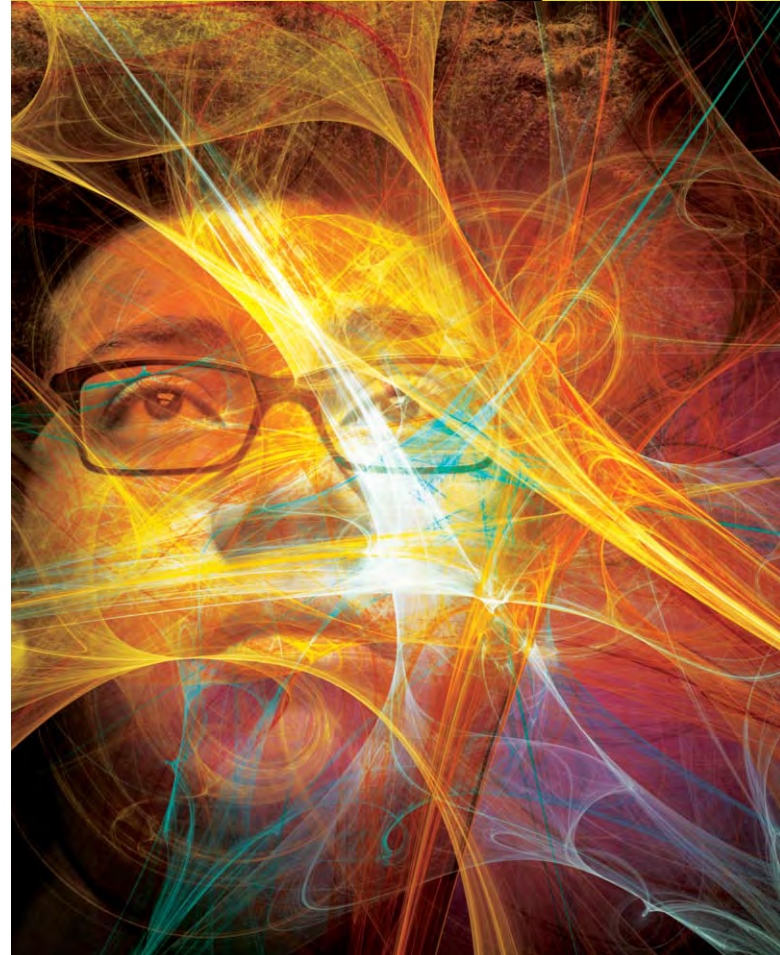
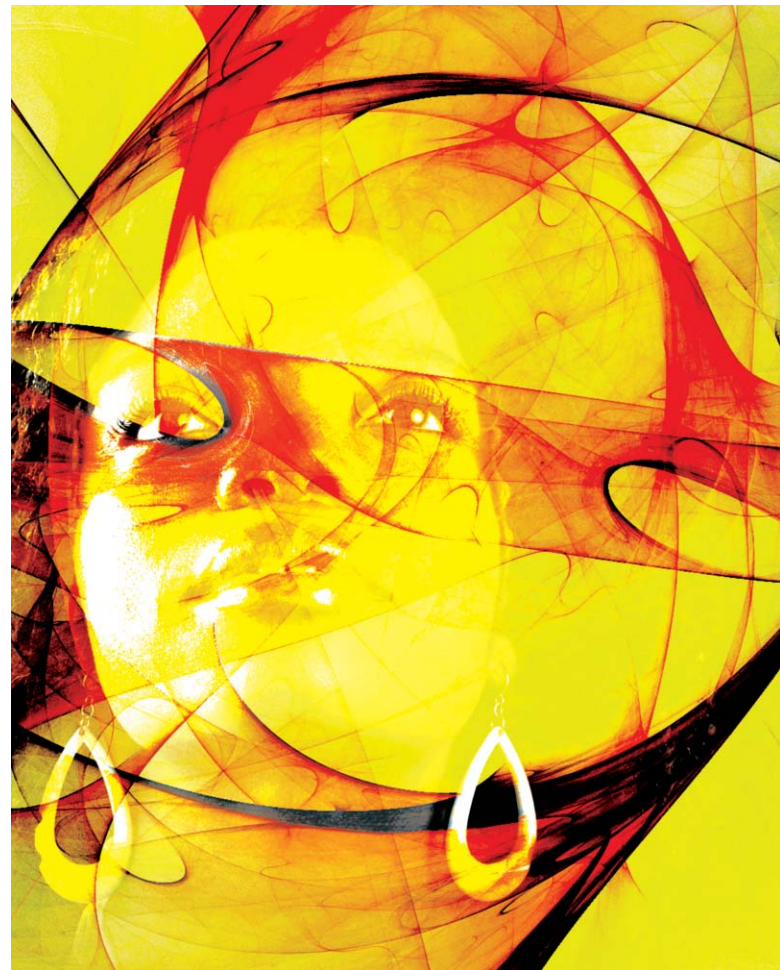
The first African Institute for Mathematical Sciences (AIMS) centre was established in 2003, in Cape Town, South Africa. Following the success of this centre, the African Institute for Mathematical Sciences – Next Einstein Initiative (AIMS-NEI) was established, thanks to the generous support of the Canadian government through the International Development Research Centre (IDRC).

AIMS-NEI seeks to develop AIMS as a network of

innovative pan-African centres for post-graduate training, research and educational outreach. The second AIMS centre was then opened in Sénégal in 2011 and the third in Ghana in 2012. A fourth Centre is slated to open in Cameroon in October, 2013. AIMS-NEI plans to build a network of 15 Centres of Excellence across the continent by 2023, thereby making a major contribution to the growth of scientific and technical capacity in Africa.

The Vision of AIMS-NEI is to lead the transformation of Africa through innovative scientific training, technical advances and breakthrough discoveries which benefit the whole of society.

The Mission of AIMS-NEI is to enable Africa's brightest students to flourish as independent thinkers, problem solvers and innovators capable of propelling Africa's future scientific, educational and economic self-sufficiency.



Advancing Maths across Africa

There has been extensive growth across the network including the incorporation of a Careers Development programme, hosting of selected online courses, planning for future centres, building research capacity through amongst others the Research in Africa project, the establishment of an Advancement Task Force and the consolidation and expansion of funding with existing and new partners.

allowing students to go through the process of taking an idea, developing the concept and pitching it to a group of investors. To complement this, company site visits are organised to expose students to the opportunities available to them in industry, and an internship programme has been implemented.

AIMS also offers courses towards a **BSc Honours in Mathematics** with a focus in Biomathematics. There is also a **BSc Honours in Mathematical Finance** available. These courses are hosted by AIMS-South Africa in conjunction with

“AIMS is a bridge between our specific family stories and where we want to go.”
Charles Mberi Kimpolo, DRC, AIMS Alumni

Training

AIMS recruits students from all over Africa for a postgraduate programme taught by outstanding international lecturers within an exceptional 24-hour learning environment. AIMS’ curriculum focuses on advanced, broadly applicable mathematical skills relevant to Africa’s development needs. Each AIMS Centre operates as a partnership between African and international universities, combining local ownership with international oversight and involvement.

The **Master’s in Mathematical Sciences** is the distinctive innovative AIMS Model which is now available in Ghana, Sénégal and South Africa. This programme attracts over one thousand applications from all over Africa each year. This model includes skills courses, review courses and a research project. The skills courses focus on upgrading students’ skills in problem-solving and computational skills and also provide an introduction to computer programming and scientific writing. The review courses introduce the students to cutting-edge topics in the Mathematical Sciences. The

“There are kids who are talented and clever to build this continent but they don’t have the chance or the opportunity and all of that talent is wasted. And that stuck with me, and lead me to open AIMS.”
Neil Turok, AIMS Founder

final phase, the project research phase, is where students write research essays on topics proposed by local and international academics.

Part of the AIMS Model includes **Careers Development**, which has been developed to ensure that students graduating from AIMS have the skills needed to excel in the wide range of careers which are available to them, and the awareness of these opportunities to allow them to apply their skills in the areas where they can make the most impact and gain the greatest fulfilment.

Career development activities within an AIMS centre are built around e-weeks – an intensive week of classes and workshops in business and entrepreneurship – where experiential learning opportunities are used,

Stellenbosch University’s (SU) Honours in Mathematics. Students spend the first half of the year at AIMS and the second half of the year at SU.

This year AIMS offered **Online Courses**, hosted by AIMS-South Africa. This centre has filmed selected courses and to made them available to a larger audience as an online facility. These courses are taught by leading international and local experts and are highly interactive – the students engage with the lecturer throughout the class, are encouraged to learn together in a journey of questioning and discovery, and the lecturers respond to the needs of the class rather than to a predetermined syllabus. It is hoped that African universities choose to use these courses to supplement and enhance their own postgraduate programmes.



The Prime Minister of Cameroon, Philemon Yang with AIMS-NEI Executive Director Thierry Zomahoun and AIMS-South Africa Director, Barry Green.



Official launch of AIMS-Ghana March 2013.



The AIMS Global Alumni Reunion.



The Honorable Naledi Pandor, South African Minister of Home Affairs speaking at the Global Alumni Reunion.



Professor Neil Turok speaking at the Global Alumni Reunion.



Naser Faruqui, IDRC Director of the Science and Innovation Program speaking at the Global Alumni Reunion.



The first TEDxAIMS event took place in January 2013, with the theme: "The Future of who knows what."



Mathematics of Planet Earth 2013 Public Lecture hosted by AIMS-South Africa. The speaker was Professor Inez Fung, University of California.



Filming of AIMS lectures and talks for online courses.



Future Centres

AIMS-CAMEROON
 Discussions are at an advanced stage between AIMS-NEI and the government of Cameroon. The government is willing to do whatever it takes to open an AIMS centre in their country. Cameroon has a huge number of exceptionally skilled academics and professors in the Mathematical Sciences. Beyond a simple extension of the network, AIMS-Cameroon confirms the growing interest of African governments to consider Maths and Science as central to African development.

Research

AIMS believes that research is a key activity for development and the advancement of Maths and Science across Africa. AIMS Research Centres are building research capacity in Africa; from financial mathematics to epidemiological modelling and Big Data analysis, AIMS' research teams seek to address relative and meaningful problems through academic vigour.

The Research Centre at AIMS-South Africa had over 350 visitors including workshop and conference participants. The visitors programme has been made possible by the continued support of the South African Department of Science and Technology and the National Research Foundation. Visitors this year included Professor Mama Foupouagnigni from the Department of Mathematics, University of Yaounde, Cameroon, who interacted with students and academic staff and discussed possible cooperation between AIMS-South Africa and the Cameroonian mathematics community.

“The African Institute for Mathematical Sciences is planning to establish a Centre of Excellence in our country to build the capacity of our scientific community. This mark of trust by a prestigious knowledge institution should not only consolidate our own trust in ourselves, but also spur our youth to choose studies in the scientific and technical fields in which they are naturally gifted.”
President Paul Biya of Cameroon

“We are very convinced of AIMS...It is a lively group of people and we know it is much much more than mathematics, it is a big portion of science and also humanities.”
Ulrike Albrecht, The Humboldt Foundation

The Research Centre at AIMS-South Africa was also strengthened during 2012/2013 by the following new appointments:

- Research Chair in Observational Cosmology with Multi-wavelength Data, Professor Romeel Davé, took up his position in January 2013.
- Professor Johan de Villiers was appointed as resident researcher in Analysis and Approximation Theory.
- Dr Lafras Uys was appointed as resident researcher in the area of Biomathematics.
- Professor Martin Kuntz joined the Research Centre as an SKA Africa Visiting Professor from January 2013.

AIMS-Sénégal has appointed a new research chair, Sénégalaise Humboldtian and Mathematician, Dr Mouhamed Moustapha Fall. The endowed chair is the core element of the “Humboldt Collaborative Centre”, which is being funded over the next four years by the German Federal Ministry of Education and Research. The Humboldt Foundation and the German Academic Exchange

Service (DAAD) are acting as partners in the project to promote networking between AIMS-Sénégal and German universities as well as with other AIMS centres.

AIMS-Sénégal is planning on opening a research centre in September 2013. They have scheduled a number of activities including:

- The organization of a national workshop on *Partial Differential Equations* presided over by the minister of Higher Education and Scientific Research, Professor Mary Teuw Niane.
- Publishing of articles in well-known international scientific journals.
- Regular organization of scientific presentations.
- Partnership with universities in Sénégal both on teaching and research.
- Research visit opportunities for local and international researchers.

**Advancement
ADVANCEMENT TASK
FORCE**

The Advancement Task Force for the AIMS Network met in Berlin from May 22-24, 2013. The objectives of the Advancement Task Force are to: raise the profile of AIMS through global momentum, develop mid-to-long term strategic partnerships, and increase and diversify funding sources through coordinated fundraising.

The analysis of the current financial situation of the network helped to identify Task Force priorities, including fundraising for approved budget and restricted funds. In terms of growth, AIMS has an existing chapter in North America, and the team discussed the possibility of opening AIMS chapters in Germany, Sweden and the United Kingdom.

achievement of the respective organizations' mission and goals.

The government of Canada through the International Development Research Centre (IDRC) was AIMS' first major donor when, in 2010, Prime Minister Stephen Harper committed to to support AIMS' expansion across Africa. IDRC's mandate is to support science in developing countries, seeking to help countries develop local, long-term capacity in science rather than being dependent on imported skills. Additionally, IDRC believes that there is a need for global science cooperation to address shared challenges, such as climate change, food insecurity, and infectious diseases, so having experts from around the world collectively work on these challenges is essential.

The initial government contribution facilitated the ongoing support of AIMS-South

2012, the **UK government's Department for International Development (DFID) and IDRC** signed a Memorandum of Understanding to build on existing IDRC funding to AIMS-NEI over the next five year period. Up to 25 million GBP will be made available to AIMS on a matching fund basis and will contribute to the establishment of two additional centres, bringing the total number of AIMS centres to six by the end of 2017.

Fund. The purpose of the fund is to provide financial compensation for mathematical science departments in Scotland which release staff for teaching or other supportive activities at one of the AIMS centres.

During the 2012-2013 academic year, seven visits by Scottish academics to the AIMS centres in Ghana and South Africa were funded, contributing to the training of 85 Master's students. Eleven

“We must never allow anyone to let us believe that investing in science is esoteric.”
The Honorable Naledi Pandor, South African Minister of Home Affairs

“AIMS is about quality in all respects. You have the best students from Africa selected solely on merit; you have Nobel Prize winners and Fields medallists who donate their time as lecturers; you have really effective and functional facilities. So everything about AIMS seems to mesh together to produce results. But at the end of the day it's about the students. And when you meet these students, it is inspirational.”
Naser Faruqi, IDRC Director of the Science and Innovation Program

Within this tri-partite agreement, IDRC is providing a further \$2 million USD contribution to build the research capacity of the AIMS network and its graduates through the AIMS-NEI Research in Africa Project. This research funding will support the launch of a joint AIMS-Ghana and AIMS-South Africa Chair position, while also setting up a research grant programme for AIMS Alumni.

Long-time AIMS supporter Bernd Schroers, Professor at the School of Mathematical and Computer Sciences at Heriot-Watt University in Scotland, has not only lectured at all AIMS centres but is also currently a member of the AIMS-Ghana Board of Directors. In 2012, Schroers established a **partnership with the Scottish government** in response to an initiative by members of the Scottish mathematical community. As a result, the Scottish Funding Council has generously agreed to make funds available to set up the James Clerk Maxwell AIMS

applications have been received from lecturers for the 2013-2014 academic year. The funded visits have already led to new linkages between Scottish mathematicians and the mathematical community in various African countries, particularly in Ghana. It has also enabled Scottish universities to increase their visibility in Africa, with postgraduate recruitment from Ghana in mathematical sciences at Heriot-Watt University alone showing a remarkable five-fold increase.

The Robert Bosch Stiftung is one of the major German foundations which undertakes philanthropic and social endeavors. The Robert Bosch Stiftung supported AIMS with the Global Alumni Reunion and 10-year Anniversary this year. AIMS and the Foundation are working together on a number of other initiatives as well.

PARTNERSHIPS

As befits a unique and innovative organization, AIMS seeks to establish unique and innovative long-term partnerships that provide effective and sustainable approaches to development while contributing to the

Africa, and the establishment of AIMS-Sénégal, AIMS-Ghana and AIMS-Cameroon, while also providing support for the establishment of the AIMS-NEI Secretariat as a coordinating body to the growing Network.

This partnership was further strengthened when, in

Nurturing Africa's Talent

With graduates from AIMS-South Africa being joined by those from AIMS-Ghana and AIMS-Sénégal the dream of transformation is becoming a reality. Each centre has its own unique character but one common goal of building Mathematical Science capacity in Africa.



AIMS

African Institute for
Mathematical Sciences
GHANA

LOCATED IN A small fishing town, Biriwa, AIMS-Ghana was launched in August 2012, and graduated 26 students from 12 countries across the continent, including 8 women, with a Master's in Mathematical Sciences this year.

In its first year, AIMS-Ghana formed partnerships with local universities: Kwame Nkrumah University of Science and Technology (KNUST), University of Cape Coast



(UCC), and University of Ghana (UG) as well as international Universities: Durham University (UK), Karlstad University (Sweden) and Nanyang University (Singapore).

AIMS-Ghana partnered with the Institute for Mathematical Sciences, Ghana, to organise the 15th Abdul Salam/Edward Bouchet Workshop Modelling, Simulation and Optimization. The workshop included young

mathematicians from some West African countries and resource persons from the UK, USA, Norway and Ghana. The Light Year Foundation also held a workshop on Solar Panels with the students at AIMS-Ghana.

AIMS-Ghana's students have been involved in outreach activities to enhance public awareness of the wonder and importance of mathematics and science. This outreach supports the work of high school teachers and needs of young learners – especially those from disadvantaged communities and women. AIMS-Ghana students have been visiting Biriwa Junior High School to help the teachers with the teaching of mathematics, often times with some of the visiting lecturers.



"I had many remarkable experiences at AIMS. The professors who taught us were truly amazing. They are leading researchers in Mathematical Sciences and there were no boundaries between them and us [the students], which was very impressive. AIMS brought together brilliant minds across the continent under the same roof. It was a beautiful experience to learn from different cultures and also share ideas with very bright students. The facilities we had at AIMS, makes learning mathematics fun. I have always been faced with the choice of making good grades or understanding the courses during my undergraduate studies. In AIMS, there is only one choice and it is to understand and do research. There is no doubt that AIMS has inspired my life and led me to where I am today. It was a privilege to be part of AIMS."

Seth Kurankyi Asante, AIMS Graduate from Ghana



AIMS-South Africa 2012-2013 Cohort Graduation Ceremony.



AIMS-Sénégal 2012-2013 Cohort Graduation Ceremony with Professor Mamadou Sanghare.



AIMS-Ghana 2012-2013 Cohort Graduation Ceremony with Professor Francis Allotey and the Canadian High Commissioner, Trudy Kernighan.



AIMS-South Africa 2012 Cohort Recognition of Achievement Ceremony.



Naser Faruqi of Canada's International Development Research Centre addressing the audience at the opening of AIMS-Ghana with Minister of Environment, Science, Technology and Innovation, Dr Joseph Oteng-Ajsei and Minister of Education, Professor Naana Jane Opoku-Agyeman.



German Foreign Minister, Dr Guido Westerwelle, accompanied by a delegation of about 40 people including business representatives, government officials and the media, visited AIMS-South Africa in April 2013.



Mary Teuw Niane, Minister of Higher Education and Fallou Sylla, Mayor of Mbour meet Centre Director, Professor Mamadou Sanghare and students at AIMS-Sénégal.



AIMS

African Institute for
Mathematical Sciences
SENEGAL



LOCATED IN Mbour, AIMS-Sénégal was launched in September 2011, and graduated 34 students from 16 African countries with a Master's Degree in Mathematical Sciences this year, including five women. Additionally, the AIMS-Sénégal PhD programme was successfully launched with two students: one from Cameroon and one from Sénégal.

This year, the centre awarded a Chair of Mathematics and its Applications to Dr Mouhamed Fall, a top Sénégalaise researcher. The major scientific event organised by Dr Fall was a

national scientific workshop on *Partial Differential Equations*. This workshop attracted a group of approximately 20 researchers from different parts of Sénégal and was presided over by the Minister of Higher Education and Research.

Through various activities AIMS-Sénégal has reached out to the community to promote the role of mathematics in science, technology and development. The centre organised information and sensitising visits to universities in Sénégal and neighbouring countries, particularly targeting women audiences. In collaboration

with the Ecole Normale Supérieure (the Sénégalaise teacher training school) a teaching module was developed that introduces Secondary School Maths teachers to a new way of teaching mathematics. The objective of this module is to equip teachers with new and innovative teaching methods capable of increasing students' interest in mathematics.

AIMS-Sénégal has explored various local partnerships. The centre started discussions with the Sénégalaise National Academy for Sciences (Académie Nationale des Sciences du

Sénégal) to conduct joint activities for the promotion of Mathematical Sciences in the country. AIMS-Sénégal has also partnered with local businesses to set up fundraising initiatives for the creation of a national contest on computer applications and mathematical modeling, centered on finding development-oriented solutions for relevant social problems.

AIMS-Sénégal also coordinated university visits in the Gambia and Mauritania in order to attract students from these countries to the programmes at AIMS.



"AIMS put me in contact with the mathematics authorities of the world, scholars and scientists. I have particularly been impressed by Professor Augustin BANYAGA (Rwandese-American) from Pennsylvania State University who came as a visiting professor. Meeting him was very enriching. It taught me that an African, born in Africa, went to secondary school in Africa is today one of the best scientists in the world, contributing to the influence of mathematics in the world. He is proof that science transcends race."

Crispin Mbulanga, AIMS student from Burundi



AIMS

African Institute for
Mathematical Sciences
SOUTH AFRICA

LOCATED IN Muizenberg, Cape Town, AIMS-South Africa was launched in August 2003, and graduated 49 students with a Master's in Mathematical Sciences this year, including 17 women. AIMS-South Africa also celebrated its 10th anniversary this year, and has graduated 470 students over the past decade.

In 2013, AIMS-South Africa converted the AIMS Postgraduate Diploma to a structured coursework Master's Degree in the Mathematical Sciences. While maintaining the unique innovative character of the programme, this positive change will give greater recognition and value to the courses offered. Additionally, to better adapt to varying academic schedules, AIMS-South Africa now has two intakes each year: one in August more suited to the academic calendar outside South Africa, and one in January, that accommodates South African students.

To date, one 154 academics have offered courses at AIMS-South Africa and the young Research Centre has attracted over 500 visiting scientists. AIMS-South Africa also hosts public lectures which

are attended by members of the public and AIMS students.

AIMS-South Africa launched the AIMS Schools Enrichment Centre (AIMSSEC) in 2003, which has offered professional development programmes to more than 1000 teachers from rural South African schools and is recognised for the impact it is making. As AIMS-South Africa's Outreach Programme, AIMSSEC also offers free learning resources for learners from five to 18+ years.

In January 2013, AIMSSEC started a new course – the *AIMING Higher "Maths with Wings."* The course objectives are: to enable

teachers to teach up to an internationally equivalent university entrance standard; inspire teachers to learn more university-level mathematics relevant for school teaching; develop their teaching skills and; to help them foster learners' skills. In May 2013, AIMSSEC was invited to form part of a European Commission FP7 Science in Society consortium to do research with eight European Universities.

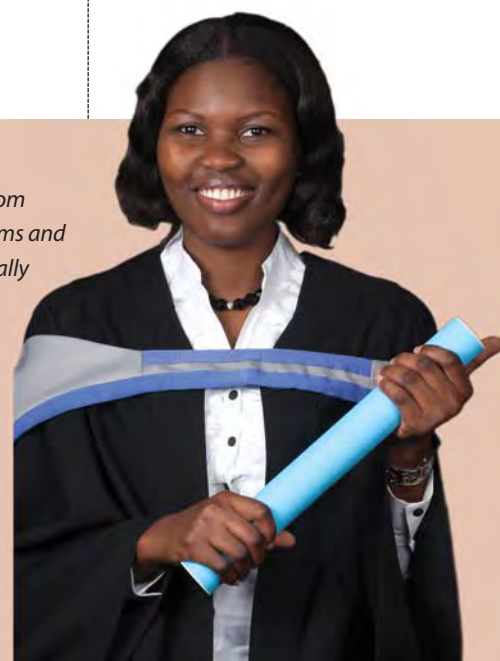
AIMSSEC plans to expand distribution of free interactive resources to promote activity-based learning to support the South African school mathematics curriculum

and to support similar programmes based in AIMS-Sénégal and AIMS-Ghana.

AIMS-South Africa continues to receive generous support from the South African Departments of Higher Education and Training, and Science and Technology. In May 2013 the National Skills Fund of the Department of Higher Education and Training approved a substantial grant to AIMS-South Africa for its Schools Enrichment Centre and for bursaries for South African students following the Master's programme.

"What AIMS is doing is an amazing thing, clever students from disadvantaged backgrounds are helped to reach their dreams and give back to their families in one way or the other. I never really quite knew the extent to which AIMS has reached until I saw the AIMS alumni that were present at the recently concluded Global Alumni Reunion. I would therefore like to encourage all alumni to help someone out there to reach his/her dream in the spirit of AIMS and to let everyone out there know what AIMS is doing and also help raise funds for future AIMS students."

Eniola Fumilayo Kazeem, AIMS Graduate from Nigeria



Creating a Network for the Future

AIMS continues to invest in supporting the growing Alumni network, in order to monitor and support their career progress, and to engage with them for the promotion of Mathematical Sciences and the advancement of the overall AIMS network.

| KEY METRIC | DATA | GENDER BREAKDOWN |
|--|-----------------------|---|
| Total number of Alumni (including Class of 2013) | 560 from 38 countries | 172 women |
| # of PhD degrees completed/in process* | 55/149 | 10 women/35 women |
| Number of Master's degrees completed/in process* | 233/99 | 68 women/36 women |
| % of Alumni in Africa* | 61% | 30% of Alumni in Africa are women |
| % of Alumni currently employed (in industry, in academia)* | 34% (10%, 24%) | 31% of working Alumni are women |
| % of Alumni currently studying* | 56% | 29% of Alumni studying are women |
| Number of Alumni currently teaching globally* | 83 | 33% women |
| % of Alumni employed or studying within 6 months of graduation | 88% | 30% of Alumni employed/studying are women |

*Based on data updated in November 2012

Alumni Profiles

AIMS Alumni are doing great things and changing the landscape of Africa through their groundbreaking research and initiatives across the globe. The following alumni presented their work at the AIMS Global Alumni Reunion, and personify the change that AIMS is making in the world.

“The knowledge we learned at AIMS does not end at solving theoretical problems, but solving real problems that our communities are facing. In order to do this, we need data, it helps us to reveal even the hidden problems that are facing our communities.”
Angelina M Lutambi, Alumna



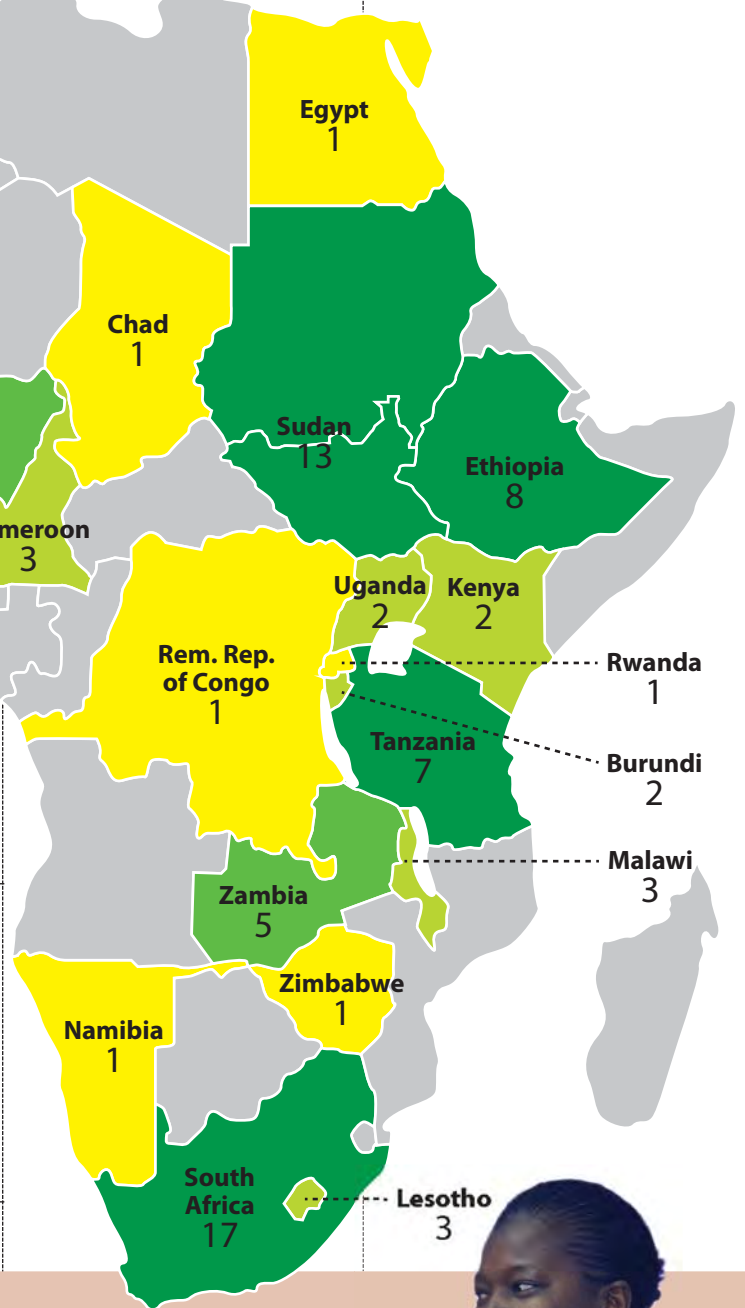
“When I first heard about the Next Einstein Initiative, I was intrigued by the idea that there existed an institute in Africa that, from my perspective, promoted genuine creativity and vision and that is what attracted me the most to AIMS. During my stay at AIMS I met a lot of people from different corners of the planet and got an idea of what it means to be an academic, particularly the attitude required to be a leading mathematician or physicist. My time at AIMS helped me become a more focused thinker in almost every faculty of my life. The knowledge I acquired only made me hungrier for more knowledge and it’s for this very reason, I believe, I may be able to solve problems and in general do great things with my life. I will continue my studies in South Africa and hope that someday I’ll inspire young people to have the vision I was given at AIMS.”

Mark Shawa, Zimbabwe, 2013 graduate

Where AIMS Alumni are teaching in Africa

As of June 30th, 2013 – 81 AIMS-Alumni, (including 26 women) are teaching across Africa. Countries and numbers of alumni are listed at right.

“Every single AIMS alumnus is a pioneer. You represent so much. You are bringing one hundred, one thousand, and one million young people towards education, enlightenment, and elevation in Africa.”
Professor Neil Turok, AIMS Founder



Angelina M. Lutambi, from a family of nine children in rural Tanzania, is a 2004 AIMS graduate. She holds a Master's Degree from Stellenbosch University investigating the properties of models of the spread of HIV/AIDS. She returned to Tanzania in 2007, and now works as a research scientist for the Ifakara Health Institute in Tanzania. She is also a doctoral student at the Swiss Tropical Institute, Basel.

At the Global Alumni Reunion, she spoke about how data can be used to help combat Malaria. "AIMS has been training us to be problem solvers, and we are trying our best to apply the skills that we have acquired at AIMS to solve the problems that our countries are facing," she said. "The knowledge we learned at AIMS does not end at solving theoretical problems, but solving real problems that our communities are facing. In order to do this, we need data, it helps us to reveal even the hidden problems that are facing our communities."

Angelina M Lutambi, Tanzania, 2004 graduate



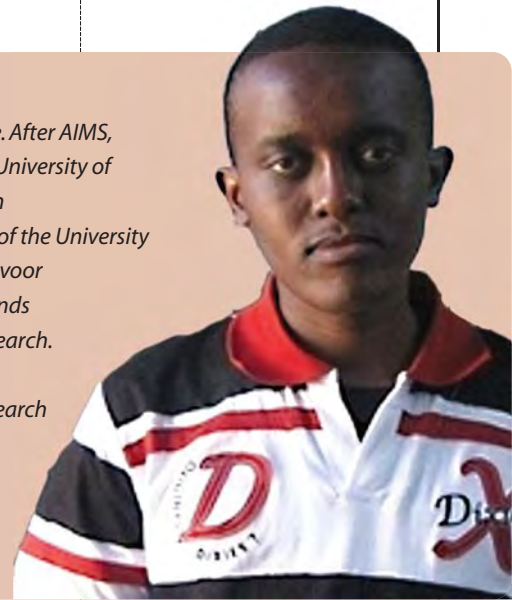
AIMS Global Alumni Reunion

From June 27 - 29, 2013, AIMS held their first ever Global Alumni Reunion, titled "Transforming Africa Through Knowledge-Based Enterprise", in Cape Town, South Africa. This event brought together 220 participants from 43 countries comprising leaders in education, research institutes, governments, the scientific community, civil-society organizations and AIMS alumni. 125 AIMS alumni were present, and represented over 30 countries, from all graduating classes since 2003, and all AIMS centres – Ghana, Sénégal and South Africa. This event linked current and future leaders in development and the mathematical sciences to address how Mathematical Sciences education can transform the African Continent.

AIMS was honoured to host so many incredible speakers and panelists. Among noted guests were, Professor Ben Turok who gave a keynote address and the Honorable Naledi Pandor, South African Minister of Home Affairs.

Prosper Ngabonziza, from Rwanda, is an AIMS 2010 graduate. After AIMS, Prosper received a Master's in Experimental Physics from the University of Johannesburg, South Africa. Currently, he is pursuing a PhD. in Nanotechnology at the MESA+ institute for nanotechnology of the University of Twente, Netherlands. He is also working for FOM (Stichting voor Fundamenteel Onderzoek der Materie), which is the Netherlands governmental organization that supports physics related research. His research focuses on investigation of Topological Insulator Materials. At the Global Alumni Reunion, he presented his research on nanotechnology.

Prosper Ngabonziza, Rwanda, 2010 graduate



The Happy Feet Dance Troupe "kick-off" the AIMS Global Alumni Reunion with a South African Gumboot Dance.



“We are a part of the world where many pioneers come to begin things, but it is rare that institutions survive. We struggle, as South Africa, to overcome the legacy of poor or limited Science and Maths teaching in our country, and AIMS has forged ahead and made us all proud.”
Minister Naledi Pando



The Next Einstein Forum (NEF)

The Next Einstein Forum (NEF) is an international institution for science and its applications to human development, hosted by Africa.

To be held once every two years in Africa, NEF Global Gatherings will bring outstanding thinkers in the science, technology, industry and policy communities together from across Africa and around the world, connecting them with Africa's next generation of science and technology stars.

The first historic, high-profile gathering of over 500 people will take place in 2015 and will be looked to as the moment Africa joined the international stage in science.

WHO WILL ATTEND?

- 500 outstanding thinkers
- 50% from Africa, 50% from the rest of the world
- 50% senior experts, 50% stars of tomorrow
- Representatives of the scientific, technology, industry and policy communities
- At least a third women

Confirmed attendees include Sir Leszek Borysiewicz, the 345th Vice Chancellor of Cambridge University, and the Honorable Aicha Bah Diallo, global champion of girls' education as well as five Nobel Laureates.



NEXT EINSTEIN FORUM

“Thank you for the risk you took 10 years ago to give us an opportunity to make our dreams come true. Over the last three days we have been challenged and moved. People say Africans are one mile long in enthusiasm, and one inch deep in commitment. But these Africans are not in this room.”
AIMS Alumni

AIMS Alumni Association

At the end of the AIMS Global Alumni Reunion, the alumni announced their commitment to the AIMS vision, through the formation of the AIMS Alumni Association and its Steering Committee. The purpose of this association is to continue the cross-cultural and knowledge exchange among alumni after their time in AIMS' programmes.

“I came to AIMS for two reasons. The first is that I wanted to do Mathematics of Finance but not at the honours level since I already had an honours degree. The second was that AIMS offered a range of courses across mathematical sciences which I had been meaning to study. The scholarship package allowed me to achieve both these things. Being in a different city and working with students from all over Africa and lecturers from all over the world was just the cherry on top. The main goal was to study Mathematical Finance so I could better develop financial software. AIMS helped me a lot in that it provided me with the opportunity to work with Professor Jeff Sanders (a theoretical computer scientist) and Professor Raouf Ghomrasni (a financial mathematician) who gave me my first exposure to working with financial formulae and computer algorithms.”

Musa Kurhula Baloyi, South Africa, 2012 graduate



Investing in Future Generations

In order for Africa to compete in the global economy it is imperative that leaders from Africa and the rest of the world and industry invest in training Africa's youth in science, engineering and mathematics so that future generations can create "homegrown" solutions to Africa's development challenges.



Thierry Zomahoun and the AIMS Team announce the "Call to Action" and The Next Einstein Forum, at the conclusion of the AIMS Global Alumni Reunion, in June 2013.

AIMS Call to Action

AIMS announced a Call to Action in June 2013 to elevate the status of Mathematical Sciences education in Africa. AIMS and its supporters are asking entities such as the African Development Bank, the African Union and the United Nations, as well as government officials and leaders in the international development community, to step up to the plate and recognize the key role that education in Maths and Science play in Africa's development.

Traditional approaches to development have focused predominantly on basic needs, such as eradicating poverty, disease and environmental degradation. When the issue of education is addressed, it is only at a primary level, and excludes secondary or tertiary education. For instance, *The United Nations' Millennium Development Goals* call for

universal primary education, but many of today's economic powerhouses built their economies through advanced skills and training in science, technology, engineering and mathematics (STEM). In order for Africa to compete in the global economy it is imperative that African and world leaders invest in STEM education for Africa's youth.

Some key "asks" of the Call include: to advocate and commit resources for scientific training as the foundation for innovation and "homegrown" solutions to Africa's development challenges; to advocate for the inclusion of STEM training in the RIO+20 Sustainable Development Goals; and to help AIMS create a high-level global forum showcasing Africa's scientific and technical talent, The Next Einstein Forum.

The AIMS Industry Initiative

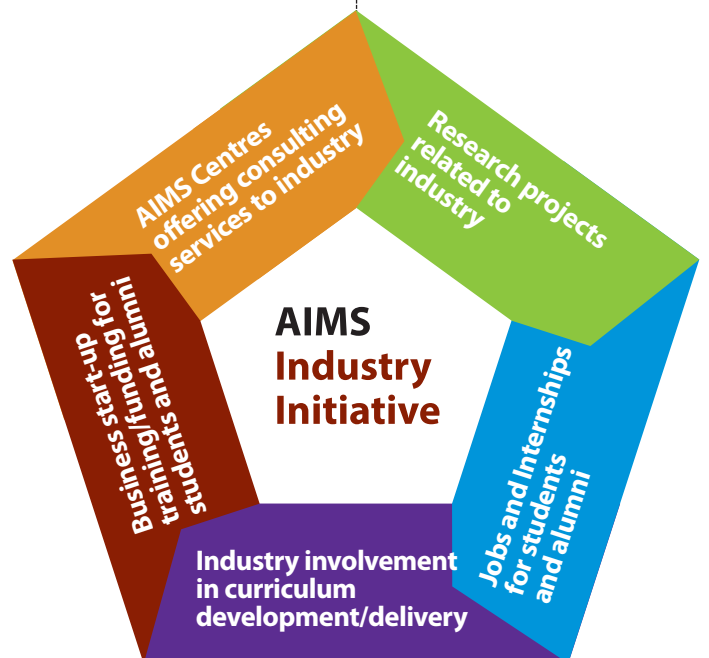
The AIMS Industry Initiative has been launched to engage industry across the scope of AIMS network activities, from industry visitors talking to students about career opportunities, to research collaborations broadening the scope of centre research activities; there are a wide range of opportunities for the AIMS Network and industry.

In collaboration with industry partners, the AIMS Industry Initiative seeks to



maximise the opportunities and potential for the Mathematical Sciences to contribute to Africa's economy through human capital, knowledge transfer and applied research.

So far the AIMS Industry Initiative has launched an internship programme which has allowed five AIMS graduates to undergo a six month internship experience with employers from across the world, including CommuniTech in Canada.



AIMS Making News Worldwide

In 2013, AIMS recognized communications as a key factor in terms of the brand's overall success. The AIMS Secretariat drafted a Communications Strategy in order to better situate AIMS, its partners, and the Mathematical Sciences, in the public arena. As the AIMS network is expanding and interest in the AIMS model is growing rapidly, it is essential that AIMS harnesses all the tools available to ensure the vision and success of AIMS reaches a worldwide audience.

SINCE THE drafting of this strategy, AIMS has had success with communications and the work of AIMS has been broadcast across the global platform. Over the past year, AIMS has been featured in various forms of

external media. For example, in March, AIMS was represented at the BBC Africa Science Festival in Uganda. AIMS Alumni have been highlighted in various publications – sharing their research and their experiences. AIMS centres have

been featured and applauded for bringing change to Africa, and young Africans. Overall, the media have begun to catch on to the AIMS scientific revolution, and incorporate it into their coverage.

Searching For Einsteins: Africa at Cutting Edge of Scientific, Tech Advancement

EXCERPT: Most people's lists of critical priorities for Africa would feature safe water sources, primary healthcare, basic education and jobs. How about Ivy-league tuition in quantum theory and mathematical physics? Not so much? In fact, a project is now being rolled out across the continent in the belief that it's precisely those arcane things that are needed to jump-start Africa's development. Called the "Next Einstein Initiative" (NEI), handsomely funded centers for postgraduate math and physics training – featuring sometimes Nobel Prize-level lecturers – have been launched in Ghana, South Africa and Sénégal. A fourth center is due to open in Cameroon.

Institute Aims to Find 'African Einstein'

By Nontando Mposo, iol SciTech. February 8, 2013

EXCERPT: The search is on for the next scientific genius. The African Institute for Mathematical Sciences (AIMS) in Muizenberg, which finds and then trains top scientists and mathematicians from across Africa, has a new programme to nurture scientific and technical talent.

What if Africa were to Become the Hub for Global Science?

EXCERPT: And from the African Institute of Mathematical Sciences (AIMS), itself an institute with strong links to the global physics community, there is the Next Einstein Initiative. This is currently setting up centres of excellence in Africa for the mathematical sciences, and is connected to some of the most forward-thinking academics in the fields of maths and physics across the continent, as well as in Canada, the UK and the US.

CAMEROON: Maths Institute to Go Operational In Cameroon

EXCERPT: Executive Director/Head of the Secretariat of the African Institute for Mathematical Sciences-Next Einstein Initiative Secretariat (AIMS-NEI Secretariat), Thierry Zomahoun told reporters after an audience with the Minister Delegate at the Ministry of External Relations in charge of Relations with the Commonwealth, Joseph Dion Ngute that "If all goes well, I guess by September or October this year, we should be celebrating the opening of AIMS-Cameroon." His visit to Cameroon was basically to lobby for the putting in place of the institution in Cameroon. On July 12, 2013, words started being translated into action with the Minister of External Relations, Prof. Pierre Moukoko Mbonjo on behalf of the government of Cameroon signing an agreement with Thierry Zomahoun on the establishment arrangement of AIMS-Cameroon.

AIMS-NEI Staff



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Executive Director, AIMS-NEI



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Director, Partnerships and Outreach



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Chair



Professor Barry Green



Professor Fernando Quevedo



Professor Keith Moffatt



Dr Howard Alper



Professor Mamadou Sanghare



Professor Russel Botman



Professor Francis Allotey



Mr Mohammed Gharbi



Robert Bosch **Stiftung**



3

Total Number of Centres

560

Total number of Alumni (over 30% women)

38

African countries represented by students



AIMS

African Institute for
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NEXT EINSTEIN INITIATIVE

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