



# Highlights

## Inside this issue:

Student updates	1/3
11 <sup>th</sup> Summer School in Mathematical Finance	1
Accelerate CT visit	1
Visiting Researchers	2
Cosmology Group Updates	2
German Research Chair	2
Journal Club	2
Master's Defence	2
Seminars	2
Visitors	2
International Day of Women and Girls in Science	3
Public Lecture	3
Announcements	4

## Student updates

The August and January intakes completed the following courses: Introduction to Random Systems, Information Theory, and related topics (Stéphane Ouvry, Université Paris Sud); Sage (Rob Beezer, University of Puget Sound); Industrial Modelling (Neville Fowkes, University of Western Australia); and Surfaces (Steve Bradlow, University of Illinois at Urbana-Champaign).

On 4 February Prof. Neil Turok gave a talk to students titled:



Prof. Turok

'Beginnings'. In the talk he described his own story, how he got interested in science,

how he helped AIMS and how rewarding the journey has been. Continued on page 3.

## 11<sup>th</sup> Summer School in Mathematical Finance



Dr Jörg Kienitz



Prof. Thomas McWalter

AIMS South Africa hosted this school from 21 to 23 February 2018. The school brought to South Africa several leading academic exponents of the fast-growing field of Mathematical Finance. Local practitioners, academics and students had the opportunity to interact with international leaders in Mathematical Finance on topics and modelling techniques current in the South African and international financial markets.

Speakers included Dr Roger Lord, Prof. Thomas McWalter and Dr Jörg Kienitz. There were 51 participants including nine AIMS students.

## Accelerate CT visit

On 5 February Mr Ryan Ravens, CEO, Accelerate CT visited AIMS South Africa. He had a meeting with Prof. Neil Turok to discuss possible way for AIMS and Accelerate CT to collaborate in the future. A special tea was held for Mr Ravens to meet staff and students and he gave a short address.



Mr Ravens addresses staff and students

## Research Centre updates

### Visiting Researchers

The AIMS South Africa Research Centre welcomed the following visiting researchers:

- Dr Diletta Martinelli a post-doctoral research assistant at Edinburgh University. Her research interests are in algebraic geometry and in particular in higher dimensional birational geometry. She was at AIMS from 12 to 27 February.
- Dr Malesela (Charles) Maepa, a senior lecturer affiliated with the University of Pretoria in the Mathematics and Applied Mathematics department will be visiting AIMS from 26 February to 30 June.

### Cosmology Group Updates

The SKA will fund a joint post-doc with AIMS on machine learning and data science for the SKA and MeerKAT which is expected to reach full 64-dish capacity in March. The job description can be found at <http://bit.ly/2H30Sxj> and the

closing date for applications is 1 April. The SKA data science team is led by Prof. Bruce Bassett, in addition to his position at AIMS. More information about MeerKAT is available at [www.ska.ac.za](http://www.ska.ac.za).

### German Research Chair

In February, Dr Bubacarr Bah visited Prof. Kasso Okoudjou and attended the February Fourier Talks (FFT) 2018 conference organised by the Robert Wiener Centre for Harmonic Analysis and Applications at the Department of Mathematics, University of Maryland, College Park.

Department of Applied Mathematics and Statistics, Johns Hopkins University. Dr Bah is working on collaboration projects with Prof Okoudjou; while he is exploring possible collaborations with Dr. Gngang.

The FFT is an annual conference featuring a diverse array of invited talks in the field of Harmonic Analysis and Applications.

He also spent a day visiting Dr Edinah Gngang at the

### Journal Club



Dr Martinelli

On 13 February Dr Diletta Martinelli (Edinburgh University) gave a talk titled: 'A gentle introduction to the Minimal Model Program.'



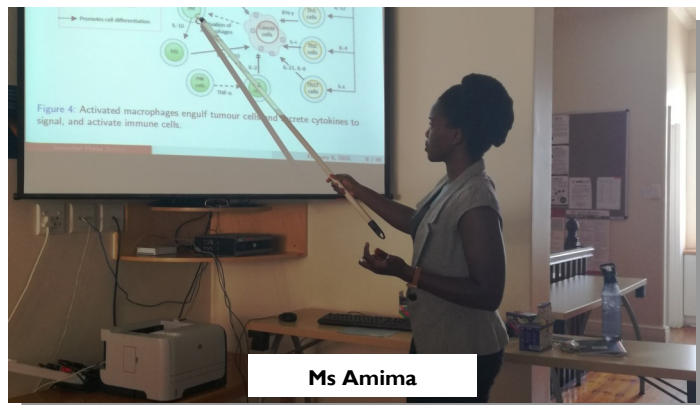
Ms Kamkuemah

On 20 February Ms Martha N. Kamkuemah (AIMS and Stellenbosch University) gave a talk titled: 'The net of devices using TCP.'

## Master's Defence

On 6 February, Ms Innocenter Amima did her MSc Thesis Defence titled: 'Investigating tumour micro environment

dynamics based on cytokine-mediated innate-adaptive immunity.' Her supervisor was Dr Gaston Mazandu.



Ms Amima

### Seminars

Prof. Alan Beardon (Cambridge) gave two seminars on 26 and

27 February titled: 'Finding the zeros of a polynomial.'



Prof. Beardon

### Visitors

Dr S Krishnannair Acting HOD: Mathematical Sciences, University of Zululand visited AIMS South Africa from 27-28 February to explore the establishment of a partnership between AIMS and Zululand.

Ms Susan Oakes from the London Mathematical Society visited on 28 February to view the centre and find out more about the activities we host as AIMS was featured in their latest [newsletter](#).



Dr Krishnannair and Ms Oakes with Prof. Green

## Student updates continued ...

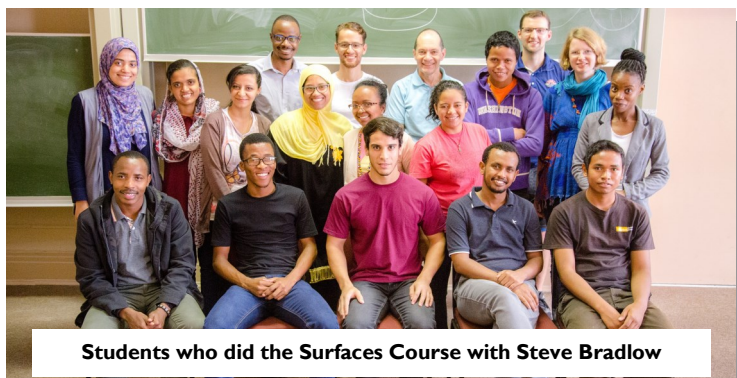
He also talked about some of the big challenges in basic physics today and why, in his view, we may be on the threshold of revolutionary advances. Finally, he talked about the future: how we need to reinvent universities and the way we do science,

why Africa may be the ideal place to do this and why he believes the next Einstein could be African.

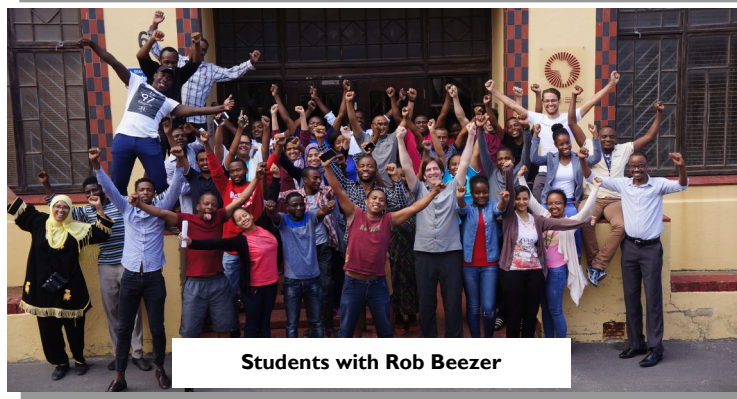
On 8 February students joined Prof. Turok on a special outing to view the opera Totsi at the Artscape Theatre.



Students who joined Prof. Turok on the outing to the opera



Students who did the Surfaces Course with Steve Bradlow



Students with Rob Beezer

## International Day of Women and Girls in Science

In celebration of this day which took place on 11 February 2018, AIMS ran a social media campaign aimed at inspiring young girls to pursue careers in science.

It was done under the theme #BreakingBoundaries.

Students took part in a photoshoot by writing one word that describes how they have broken boundaries in their lives.



## Public Lecture



Dr Zimmermann

On 6 February 2018, the AIMS South Africa Public Lecture Series presented a talk titled: 'Understanding Artificial Intelligence' by Dr Hans Georg Zimmermann.

Dr Zimmermann spoke on why Artificial Intelligence is just now attracting such attention in science and the general public –

even though the subject has a long tradition back to 1955. He believes the answer to this question has to do with an interplay of several scientific and sociological developments. He discussed the vision of Artificial Intelligence, what we did reach up to now and what we can expect in the future for science, technology and society.

# Announcements

## Applications for the AIMS Master's 2018-2019 are now OPEN.

The AIMS Master's Program is not a typical university program. We look for the most talented and motivated students from across the African continent. Taught by top international and local lecturers, the program is supported throughout by tutors who work closely with the lecturers and students. The program material is purposefully broad, allowing students to learn about a wide spectrum of mathematical topics and their applications before focusing on a specialised topic for their research project. Please visit <https://www.aims.ac.za/en/programmes/aims-structured-masters-in-mathematical-sciences/aims-structured-masters-applications-august-intake> for more information and to apply.

## Applications for Teaching Assistants for the 2018-2019 academic year are OPEN.

AIMS South Africa needs a dedicated group of advanced students and academics as tutors for its academic year, to assist in its exciting teaching programme. For more information and to apply please visit <https://www.aims.ac.za/en/opportunities/tutors>. Applications close when all positions are filled. Enquiries please contact Prof. Jeff Sanders, Academic Director of AIMS South Africa ([jsanders@aims.ac.za](mailto:jsanders@aims.ac.za))

## Data Science Workshop 2018

The annual AIMS Data Science Workshop will be held in Muizenberg, Cape Town, from 9 to 13 April 2018. This workshop will introduce its participants to Data Science, which is very a hot area of research and application both in academia and industry and may go by any of the following names: big data, data analytics, machine learning, deep learning, etc. There is a need for understanding and application of Data Science techniques. Consequently, besides introduction to Data Science algorithms, participants will be exposed to the mathematical underpinnings, computational tools, and practical applications of the Data Science algorithms. In this workshop more focus will be given to coding in Python and parallel computing than in the previous workshop.

### Intended audience:

MSc and PhD students from South African universities with an interest in Data Science

### Registration

Please complete the online registration form which can be found [here](#)

The closing date is 13 March 2018.

Administration and logistics: [data-workshops@aims.ac.za](mailto:data-workshops@aims.ac.za)

## Opportunities for South African PhD students in Mathematical and Statistical Sciences

AIMS is pleased to announce the following opportunities:

- Attendance at Special Courses
- Research in Pairs Visits

These opportunities are funded by the Teaching Development Grant provided by the Department of Higher Education and Training and overseen by the University of Pretoria.

For more information please visit <https://sites.google.com/aims.ac.za/phdopportunities/>

## The 2018 AIMS-ESMT Industry Immersion Program (AIMS-ESMT IIP) is now open for applications.

AIMS in partnership with the European School of Management and Technology (ESMT) in Berlin and with funding support from the German Academic Exchange Service (DAAD), launched the AIMS ESMT Industry Immersion Program (AIMS ESMT IIP) at AIMS South Africa in 2017.

It will start in July at AIMS South Africa. It is a 20-week structured program which will include a 12-week internship with an industry partner. Applications from AIMS students and alumni interested in pursuing a career in industry are warmly welcomed.

For more information on the program and the application process, please follow the link below.

<https://www.nexteinstein.org/aims-esmt-industry-immersion-program/>

The application deadline has been extended to 15 March 2018. We look forward to receiving your application.