

Round up

The Oxford Mathematics Newsletter • Spring 2019



Mathematical
Institute

Spotlight on Sir Henry Savile

Art exhibition

Oxford mathematical alphabet

Research highlights

New starters

2018 highlights

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- Art exhibition
- Oxford mathematical alphabet
- Outreach
- Sir Henry Savile

[Some 2018 highlights and 2019 resolutions from Institute members](#)

My mathematical highlight of 2018 was...

[Getting my first paper published](#)

[Learning about D-modules and the Bernstein-Sato theorem](#)

[Advancing the state of the art in cryptography](#)

My mathematical resolution for 2019 is to...

[Solve the dynamics of stratified flows at large scales using statistical mechanical methods](#)

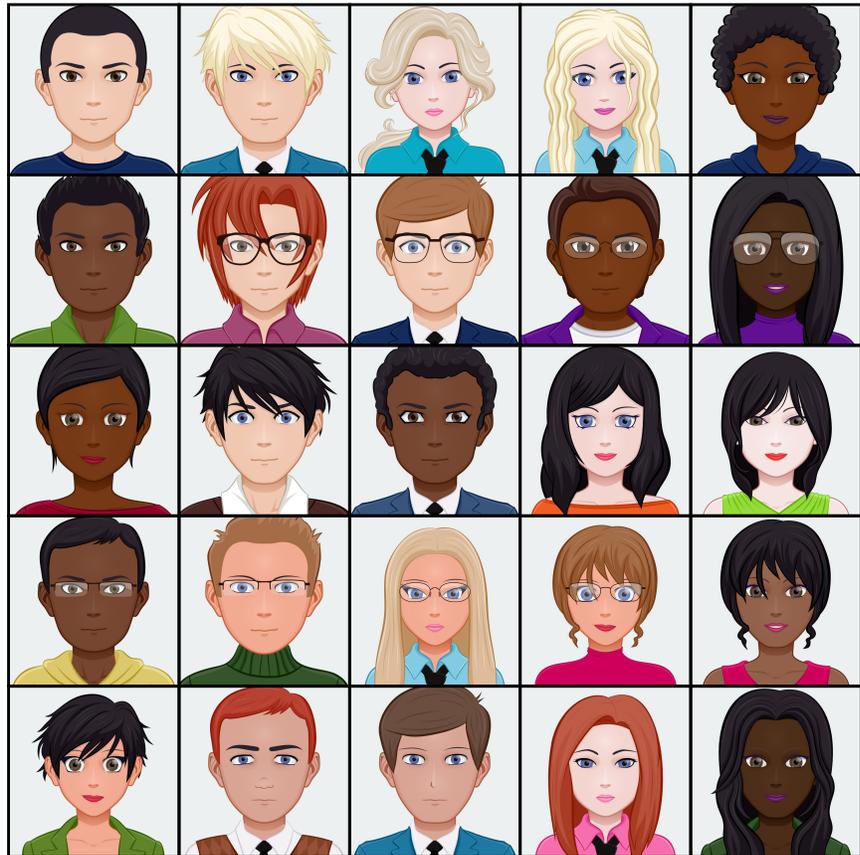
[Solve the Riemann hypothesis](#)

[Earn myself a million dollars in the process](#)

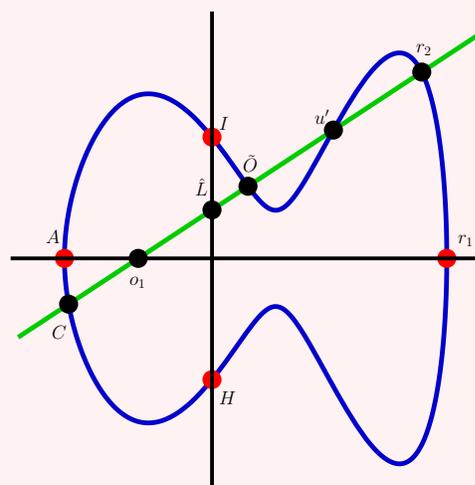
[Solve the turbulence problem as an encore](#)

New starters

A big welcome to our new graduate students.



Research highlights



From L-functions to tracking disease via data security and why your cup of coffee sloshes, our researchers continue to expand the boundaries of mathematics. In a funding environment where impact is ever more important, spreading the word about our important and intellectually challenging work is crucial. A full range of our case studies can be found in the Research section of our website at:

<http://maths.ox.ac.uk/research/case-studies>

Public Lectures

The audiences for our Oxford Mathematics Public Lectures are full of aspiring mathematicians still in their teens, and a healthy cohort from the “I was useless at maths at school” crew.

Oxford Mathematics Public Lectures
08.03.18

Alain Goriely
Can Mathematics Understand the Brain?

The human brain is the object of the ultimate interest for scientists. It is also the most complexly wired system we know. How can we understand its structure and function? We will also consider the dramatic but fascinating program of neurogenesis for our brains, and, naturally, how it differs from that of other vertebrates.

Alain Goriely is Professor of Mathematical Modelling, University of Oxford and a Fellow of Royal Society. He is also a member of the Centre for Mathematical Sciences, Cambridge.

5-6pm Thursday 8 March 2018
Lecture Theatre 1, Mathematical Institute, Oxford

To register email: external-lectures@maths.ox.ac.uk

Mathematics is an entry to learning about science and technology today, and our lectures cover as much maths and life as possible—from tackling influenza via the mathematics of architecture to the enduring mystery of prime numbers.

Oxford Mathematics Public Lectures
07.02.18

Michael Bonsall
Scaling the Maths of Life

In this talk Michael Bonsall will explore how we can use mathematical tools to better understand the complex world around us. We will look at developmental biology, ecology and neuroscience, all of which are rich with mathematical ideas. We will also see how these ideas have shaped our lives in the past, and how they are shaping our lives in the future.

Michael Bonsall is Professor of Mathematical Biology at Oxford.

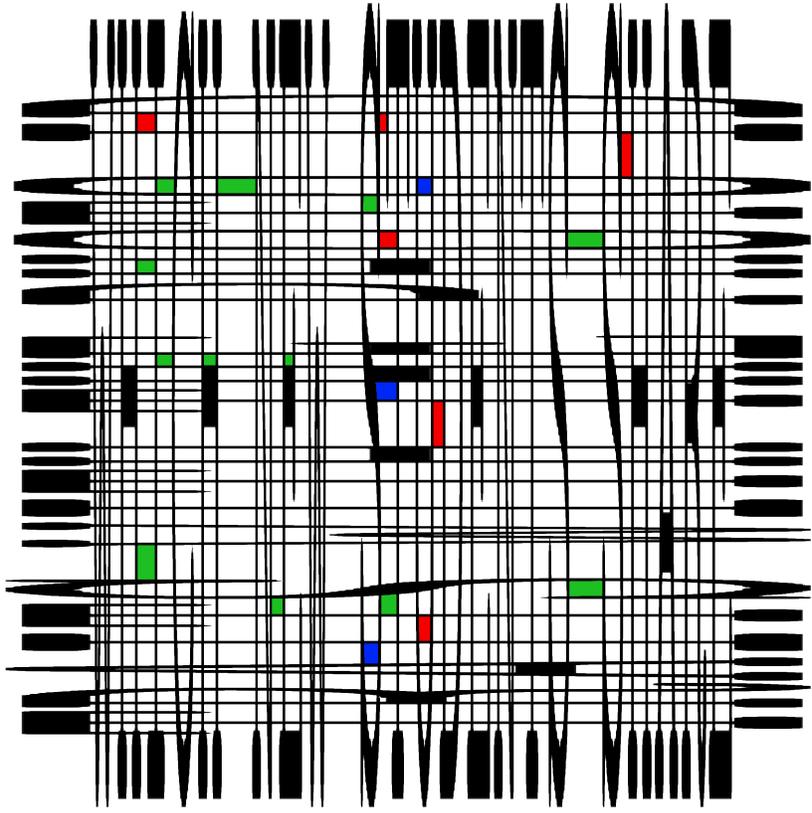
5-6pm Wednesday 7 February 2018
Lecture Theatre 1, Mathematical Institute, Oxford

To register email: external-lectures@maths.ox.ac.uk

All of our lectures are broadcast live and you can watch them any time on our Oxford Mathematics YouTube Channel.

Art exhibition

From 1st May to 9th May the institute will be hosting an exhibition of work by the Dutch artist Piet Mondrian, including *Composition in red, blue and green*, shown below.



Oxford Mathematical Alphabet

The Oxford Mathematics Alphabet posters are a way of promoting our research and introducing potential students to our work. They can all be viewed on, or downloaded from, the Mathematical Institute website.

Oxford Mathematics Alphabet

I is for inverse problems

All mathematical models require information to be fed into them. Inverse problems are those where we are faced with the problem of determining the cause from the effect. This is often a very difficult problem to solve, and it is often the case that the only way to solve it is to use a mathematical model. Inverse problems are a central part of many scientific disciplines, including medicine, geophysics, and astronomy.

Dr Patrick Farrell
Oxford Centre for Applied Mathematics and Modelling

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Outreach

Our Mathematical Institute Outreach team visits and hosts schools from across the country, especially those from under-represented groups and areas.

In 2016/17 we spent more than 500 hours on outreach activities, interacting with over 15,000 students. Over 300 of these individual students would be the first in their family to go to higher education, over 600 came from neighbourhoods where the fewest number of people have historically entered higher education, and over 700 came from high deprivation neighbourhoods. Over 1500 different schools attended our events, or were visited across the UK, and we interacted with students from nearly every local authority.

The 2017 UNIQ, PROMYS Europe and Sutton Trust summer schools were all very successful, with 64 students applying and 20 students being made admissions offers.

Sir Henry Savile

Sir Henry Savile (1549-1622) was a well-known English scholar and mathematician. He served as the Warden of MerTon College, Oxford, and the Provost of Eton.



He endowed the Savilian chairs of Astronomy and of Geometry at Oxford University in 1619. With a bit of detective work, Savile was one of the scholars who translated the New Testament from Greek into English. Savile was keen to impart his understanding of mathematics to his students at Oxford, and in founding the Geometry chair he gave thirteen preparatory lectures on the original books of Euclid's Elements in 1620.

There have been 20 Savilian Professors of Geometry, including John Wallis, who introduced the use of ∞ for infinity, and Edmond Halley, who successfully predicted the return of the comet named in his honour. The painting of Savile shown here still hangs in the office of the current Savilian Professor of Geometry, Dame Frances Kirwan.

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