

Mathematics alumni

Dear Madam/Sir,

We trust you and yours are keeping well in these extraordinary times.

This term's newsletter focusses on some of the contributions being made by members of the Faculty of Mathematics to address the pressing challenges of the coronavirus pandemic. Read on to find out about modelling disease spread, harnessing the power of AI to improve COVID-19 diagnosis and treatment, and understanding droplet and aerosol dispersal.

The pandemic has also brought out the importance and difficulty of communicating uncertainty, both in government and to the general public. We highlight the work of the Winton Centre looking into public perceptions of risk across several countries.

We hope you find this newsletter interesting.

Yours,

Colm-cille Caulfield (Head of DAMTP) James Norris (Head of DPMMS)

Maths vs disease: fighting COVID-19



Julia Gog is Professor of Mathematical Biology at the Department of Applied Mathematics and Theoretical Physics. Her research focuses on modelling the spread of disease. She is currently helping to lead efforts to fight the COVID-19 pandemic, as one of the scientific experts whose work feeds into SAGE, informing the UK Government.

Interviewed in March, she told us more about the mathematical models that deliver the predictions and gave an insight into the momentous questions scientists are grappling with.



Al and machine learning supporting healthcare

Using machine learning to help hospitals manage capacity

A partnership between Professor Mihaela van der Schaar's research group in DAMTP and the NHS aims to help hospitals manage capacity during the COVID-19 pandemic and beyond.

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Developing AI tools to improve COVID-19 diagnosis

The Faculty's Cambridge Image Analysis group is collaborating with clinicians and researchers on the development of an AI tool to help diagnose COVID-19 and make prognoses for infected patients.

Read more



Communicating evidence and uncertainty

Investigating public perceptions of risk in different countries

The Winton Centre for Risk and Evidence Communication, based at the Department of Pure Mathematics and Mathematical Statistics, has been investigating a crucial aspect of the coronavirus pandemic: people's perception of the risk that the disease poses and their attitudes to their governments' responses.



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The three Rs: engaging policy makers and the public with vital maths

Communicating complex mathematical ideas to the general public has been essential during the pandemic. A recent collaboration between the Faculty's flagship outreach and education project and researchers has also been highlighted in UK Government guidance.



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Cross-disciplinary research to combat COVID-19

A call to action

In March 2020, an urgent call went out to the scientific modelling community to help fight against the COVID-19 pandemic. Co-ordinated by the Royal Society, the Rapid Assistance in Modelling the Pandemic (RAMP) taskforce is chaired by Michael Cates, the Lucasian Professor of Mathematics at Cambridge. We spoke to him to learn more.



Learn more

Social distancing: how close is safe?

As the world gradually emerges from lockdown, fluid dynamicists in Cambridge and Imperial College London are investigating how to keep safe as we move about our daily lives.

Professor Paul Linden explains how a new research project brings together expertise ranging from the airborne transport of particles and droplets to the ventilation of buildings.



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From soft matter physics to finding ways out of lockdown

Soft matter physicists don't usually study humans and their diseases, but do model how molecules meet and react with each other. Now, to combat COVID-19, they are putting their modelling skills to new uses.

Dr Ronojoy Adhikari from DAMTP's Soft Matter Research Group tells us about the modelling tools they are developing to help find potential ways forward out of lockdown.



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Faculty of Mathematics

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