

Tomorrow's Mathematicians Today 2023

The tenth IMA conference for undergraduate mathematicians, Tomorrow's Mathematicians Today (TMT), took place online on Saturday 11 and Sunday 12 March 2023, and was hosted by the University of Greenwich along with the IMA. The conference provides an opportunity for mathematics undergraduates from all round the UK to gain experience presenting and hear their peers talking about the mathematics that excites them, as well as providing keynote talks by distinguished mathematicians. This year over 150 people registered for the conference, which was a record number.

Once again the quality of student presentations was truly remarkable, with every single talk of a very high standard. In order to accommodate all the presentations, the undergraduate talks were mainly organised into two parallel streams. The subjects were very wide-ranging, including pure mathematics, mathematical modelling, quantum computing, computer proof, machine learning, the mathematics of music and many other topics.

Six talks were shortlisted for the IMA Prize for the Best Presentation. The judges had an extremely difficult task in choosing between them, eventually awarding the prize to Maria Esteban Casadevall of Heriot-Watt University for her talk on 'An Introduction to Machine Learning in the Hyperbolic Space'. She presented a fascinating application of geometrical ideas in one of today's most important interdisciplinary research areas.



Students at the TMT Networking Evening at Greenwich

The IMA offered a Popular Vote Prize for the presentation most enjoyed by the student audience. It was remarkable, and a testament to the quality of the talks, that there were votes for every single undergraduate presentation! The winner was Veronica Bitonti of University College London (who had shared the Popular Vote Prize at TMT2022). This year Veronica gave a provocative and wide-ranging talk on 'Intellectual Challenges: Algorithms and Undecidable Problems in Group Theory'.

Each of the two days finished with a keynote talk by a distinguished mathematician. On the Saturday we were joined from California by Professor Edward Frenkel, author of the remarkable popular book *Love and Math*. Professor Frenkel's inspirational talk was entitled 'Imagination and Knowledge'. It covered a lot of ground, stimulating passionate discussion and providing the perfect end to an exciting but demanding afternoon.

On the Sunday Professor Sarah Hart talked about the connections between mathematics and literature, the subject of her

book *Once Upon a Prime*, which was published shortly after the conference. The discussion after Professor Hart's talk, which covered both literature based on mathematical structures and fiction about mathematicians, reflected the enthusiasm and excitement of the audience.

As it happened, the two keynotes tied together many of the topics that had arisen from the student talks over the weekend and both offered much food for thought, rounding off each of the conference afternoons with inspiring but accessible ideas.

While the online nature of TMT allows undergraduates from all round the UK to participate easily, avoiding the expense and time of travel, participants miss the in-person networking that was possible in pre-pandemic TMTs, with the online networking sessions during the conference only partially filling the gap. So as an experiment for TMT2023, an in-person reception was held at the University of Greenwich on the evening of Friday 10 March, the day before the conference weekend, for those delegates who could travel to Greenwich. This was a very popular event, much enjoyed by those who were able to attend. One delegate wrote:

The networking evening at the University of Greenwich was the highlight for me.

Since the first TMT at Greenwich in 2010, founded by Noel-Ann Bradshaw, the conference has acquired a reputation for friendliness, with students from all round the country meeting, hearing each other present and providing a very enthusiastic audience. The 2023 event was no exception and once again the supportive audience enjoyed two days of outstanding talks.

Feedback from the delegates was very positive, with words like 'amazing', 'inspiring', 'engaging' and 'enjoyable' prominent in the responses. They commented on 'the lack of pretentiousness', 'the diversity of topics' and 'the opportunity to meet peers from other universities'. Feedback included:

Being able to give a talk on a personal topic of interest to a wider audience was a really valuable experience.

I really like being able to meet undergraduate students across the UK that have a passion for mathematics.

I enjoyed the opportunity to share what I have learnt this year and to hear ideas from others.

I really enjoyed how diverse the talks were.

While the title of the conference is misleading – the content and quality showed that those presenting are already fully entitled to regard themselves as mathematicians – this was another wonderfully exciting event full of varied and exciting mathematics. TMT2023 showcased very impressive contributions from all the student speakers, with a large, friendly, enthusiastic and supportive audience. The conference website, sites.google.com/view/imatmt2023, contains details of the programme including all the abstracts and links to recordings of some of the talks. Once again, the bar has been set high for undergraduates presenting at the next TMT.

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