The 2015 ECM Autumn Conference at Bath

On Saturday 14 November, more than 80 mathematicians in the early stages of their career gathered together at the University of Bath to hear and talk about promising areas of mathematics, and the challenges that young mathematicians face in those fields. The day was a big success despite the unfortunate weather, and it gave ample opportunities to everyone who attended to network with their peers from different universities and organisations.

"I haven't been to a conference before and wasn't sure what to expect, but it was better than I'd imagined – I enjoyed every minute!"

Tiffany Massey

We started the day with a great talk by **Simon Noel**, a mathematician who switched from pure to applied maths to work on fluid dynamics, and now is successfully applying his knowledge to solve problems in aeronautics for Qinetiq. Simon explained how mathematics is used to understand turbulence, a problem that Feynman called 'the most important unsolved problem of classical physics'. In the end, Simon's talk was awarded by the attendees as the best talk of the day so it was definitely a great way to start the conference.

After a coffee break, **Snezana Lawrence** from the local Bath Spa University delivered a talk about the stereotypes of being a mathematician. It was a great talk that highlighted the challenges that mathematicians face while communicating their knowledge. Snezana had brilliant videos to illustrate her points, including one of Andrew Wiles breaking into tears while describing the moment he realised how to prove Fermat's last theorem. She also included several anecdotes about famous mathematicians that helped us understand how important it is for us not only to generate powerful ideas but to be able to communicate them effectively.

"It was so refreshing to be around like-minded people and hear about a number of interesting careers which actually use maths. Advice on PhDs/further study was also very useful."

Lizzi Pitt

Shortly after, **Rhys Kearney** told us about his work at EDF energy and how mathematics and statistics are used to estimate the probabilities of failures in nuclear reactors. He gave us detailed examples on how the probabilities are combined, depending on the design of the system. In the questions after his talk, he discussed the different ways in which the probabilities for different components can be arrived at.

After Rhys's talk, we all enjoyed lunch together, giving us a good opportunity to meet some of the very varied delegates. Sometimes the best bits of a conference are the chance discussions, but more on that later.

After lunch, we had the special ECM Catherine Richards Prize presentation by **Andrew Irving** and **Ebrahim Patel**, two former PhD students at the University of Manchester. Their talk not only presented some of their award-winning work on labelling polyhedral dice and modelling the beautiful waves created by a series of pendula, but also gave an interesting story about the benefits of collaboration in mathematics, even with people working in seemingly unrelated areas.

Best talk winner Simon Noel and ECM Catherine Richards Prize winners Andrew Irving and Ebrahim Patel (left to right).

For the first time the ECM Catherine Richards Prize was awarded at an ECM conference. Andrew and Ebrahim won the 2015 Prize for their excellent article, *Mixing Motions*, which is on page 20 of this issue. Their talk was the last one scheduled, but there were many unscheduled talks and activities at the unconference. Unconferences are designed to have more of that 'chance discussion' element that I mentioned earlier. Everyone had a chance to suggest topics to discuss or present on. Five parallel sessions were conducted, followed by the same procedure two more times to have a total of 15 sessions. Some of those were about specific areas of maths such as fractals, the golden ratio, or applications of game theory to kidney exchange, college admissions, and online dating. We had discussions on the history of mathematics and mathematics as a language, and exchanged advice on how to find a job, or on how to choose and survive a PhD.

After the conference, a group of us went to the Cosy Club for a social dinner and an opportunity to further discuss the events of the day.

The conference was a huge success, mainly due to the great efforts of **Helen Blue**, **Richard Crawford**, and **Michael Holmes** from the ECM Committee, and the exceptional organisation of **Lucy Dunford** and **Lizzi Lake** from the IMA staff. We are indebted to them for organising such a great event.

We will have our next early-career mathematicians' conference in Birmingham on 5 March. The IMA website has details of who will be speaking and how to book a place.

Josué Ortega AMIMA
ECM Engagement Leader