

David Abrahams Presents his IMA Gold Medal Lecture

Hot on the heels of the IMA Council and Annual General Meeting on 25 June 2025, the IMA awarded its Gold Medal to Professor I. David Abrahams FRSE CMath FIMA. The Gold Medal is awarded every two years for outstanding contributions to mathematics and its applications over a number of years. David, like previous winners, exemplifies this. Throughout his career he has brought together the pure and the applied sides of the mathematics community to tackle challenges.

He has also been a respected and energetic director of both the International Centre for Mathematical Sciences (ICMS) in Edinburgh and the Isaac Newton Institute for Mathematical Sciences (INI) in Cambridge. David was at the helm of the INI during the Covid-19 pandemic and steered it through that period as it pivoted to online delivery. Bringing mathematicians together with the INI and the ICMS, he helped the mathematical community respond with useful initiatives throughout the pandemic.



The IMA president presents David with his medal

As well as describing the history, he drew compelling similarities to our modern world. Today, as in Victorian times, the world is in flux with international tariffs, environmental and health crises, culture wars and global disorder. As the Victorians grappled with the change wrought by industrialisation, telegraphs and railways, we are grappling with the impacts of artificial intelligence (AI).

Amusingly, David used AI twice in his talk. The first time he used it to produce a good description of applied mathematics. However, later he demonstrated its habit of hallucinating as it claimed the illustrator of Sherlock Holmes and the father-in-law of J.J. Thomson were brothers. Today, as in the Victorian era, there is a lot of room for improvement. However, as David pointed out, engineering and applied mathematics attracted a lot of vitriol in their earlier days. So, perhaps it's too early to draw sweeping conclusions about AI. One of the questions David posed was: How do we maintain society in the face of AI? As possibly the biggest fundamental change since the industrial revolution it's certainly one to ponder.



Applied Mathematics in a Changing World

His academic record is also exemplary with around 180 published papers and major contributions in a long list of areas: acoustics, fluid/structural interactions, non-destructive evaluation, fracture mechanics, linear and nonlinear elasticity, composite materials modelling, electromagnetism, water waves, aero- and hydro-acoustics and seismology. However, he doesn't stand still and has diversified further, bringing his skills to bear on challenges in mathematical finance, nonlinear viscoelasticity and the melting of glaciers.

David's combination of openness, wisdom, collaboration and boundless enthusiasm is invaluable and contagious. In presenting his medal, Professor Hannah Fry HonFREng FIMA (President of the IMA) described David as being like Sir David Attenborough with fewer cameras and more partial differential equations. This seems very apt, as they both have a passion for their subjects and for seeing other people enjoy and appreciate them.

The atmosphere in the room at the Royal Society was jovial as David accepted his award and reflected on his 46 years in applied mathematics. In fact, he took the theme of reflection into his lecture. A proud northerner, he wove a story of Manchester's role in the development of applied maths during the Victorian era. This included the story of the civic universities and the evolution of the establishment (represented by Oxford and Cambridge) through the people involved. In the Victorian era, the civic universities were the 'universities of the busy', while Oxford and Cambridge were for the education of the gentry and clergy.



The AI elephant in the room

Throughout the talk David was engaging, thought provoking and entertaining. The rapturous applause was slow to die down for the latest winner of the IMA's Gold Medal.

A future issue will feature David's article based on his lecture, which can be viewed on the IMAmaths YouTube channel.

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