



LONDON
MATHEMATICAL
SOCIETY

The London Mathematical Society
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Annual Review 2010-2011



Protecting the future of the mathematical sciences

Welcome from the President

In the past year the LMS has confronted many major issues affecting both research and higher education. The International Review of the Mathematical Sciences 2010, Impact and the 2014 REF, the consequences of cuts in science funding announced in the 2010 comprehensive spending review, and widespread anxiety over EPSRC policy have all required input from the Society – alone and as part of the Council for the Mathematical Sciences (CMS). Protecting the future of the mathematical sciences will require that our efforts on these issues continue for the foreseeable future.

The LMS has continued to develop areas of strategic priority with the beginnings of a new membership drive (helping to ensure the Society's future), funding to encourage independent activities by young researchers, and a major investment, both in funding and time, aimed at developing the Society's new website, which provides an invaluable communication tool for LMS members, and the wider mathematics community.

During my tenure as LMS President I have been committed to increasing openness and the involvement of the membership, and I believe that the work of the outgoing Council, and the many people who have helped it, will bring about an atmosphere in which we have easier access to the ideas of the entire Society.

The past year was my final year as LMS President and it has been an enormous privilege to have held the office of President and to have represented the Society both in the UK and abroad. The past two years have been challenging for LMS and I am happy that they have ended both with a keener sense of our own special identity, and with a very focussed collaboration in CMS.

I will continue to support the endeavours of the Society as a member and I wish the Society, and its new President, Dr Graeme Segal, every success in defending the traditional values of mathematics.

Angus Macintyre

Professor A. J. Macintyre
President, London Mathematical Society (2009–2011)

About the LMS

The London Mathematical Society (LMS), founded in 1865, is the UK's learned society for mathematics. The Society has as its purpose the advancement, dissemination and promotion of mathematical knowledge in the UK and worldwide.

The Society's main activities include publishing journals and books, providing grants to support mathematics and organising scientific meetings and lectures. The Society is also involved in policy and strategic work to support mathematics and the mathematics research community. This work includes engaging with government and policy-makers on mathematics education and research, participating in international mathematical initiatives and promoting the discipline.

The Society receives its resources through publishing activities, investments and endowments. Providing funding in support of mathematical activities is one of the primary mechanisms through which the Society achieves its charitable aims, namely to 'promote and extend mathematical knowledge'. This is vital for the continued health of mathematics as a subject, which impacts on a wide range of societal activities.

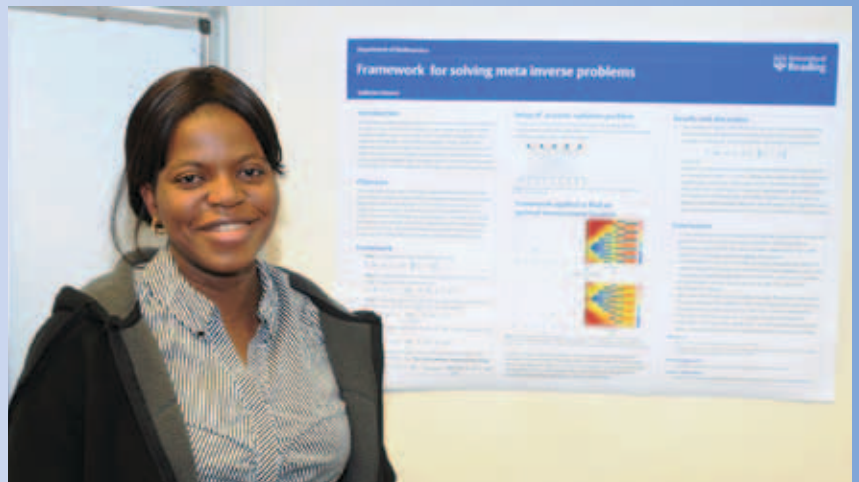
Funding the Advancement of Mathematical Knowledge

LMS Grants

Over the past year the Society awarded **£409,428** in grants to support mathematical research and collaboration, with £121,500 for mathematical conferences, £52,000 to support Joint Research Groups and Research in Pairs, and £30,000 to support academic visitors to the UK. A further £46,000 went to support other UK mathematics research bodies. Grants were introduced to promote new academic mathematics appointments in higher education institutions under the Conference Grants Scheme, with six grants awarded over the year. The agreement to support the Young British and Russian Mathematicians Scheme was renewed for a further five years.

Support for Women in Mathematics

Another successful LMS Women in Mathematics Day was held this year. Over 50 people attended the 2011 event and there was a successful poster competition. The event comprises talks and discussion groups and is aimed in particular at postgraduates, final year undergraduates and those at an early stage in their research career. The day provides a valuable opportunity to meet and talk with women who are active and successful in mathematics. Other direct support for women in mathematics includes childcare grants and travel grants.



Winner of the 2011 poster competition: Ndifreke Udosen, University of Reading

Support for Early Career Researchers

The Society awarded grants in the past year of almost **£100,000** to support early career research mathematicians, which included funding for the *Young Researchers in Mathematics Conference*, held in 2011 at the University of Warwick. This is a national conference for postgraduate students, planned, organised and run by the students themselves.

In addition the Society approved a grant for the *Prospects in Mathematics* event aimed at final year undergraduates interested in pursuing a PhD in mathematics. These meetings are important events that encourage students to take up research opportunities in mathematics and are organised each year at a different university around the country.

Support for Postgraduate Short Courses

Five LMS-EP SRC Short Courses for postgraduates were held during the past year, attracting over 120 participants. The Short Courses are jointly funded with the Engineering and Physical Sciences Research Council (**£63,400** over the past year) to provide training at the research frontier. They cover a wide range of mathematical topics that are either of very general interest or in nationally important strategic areas.

The Short Courses allow a rare opportunity for mathematicians at the start of their research careers to attend lectures by world-renowned academics, brought together in a single place, and to network with other young researchers. Such training exposes the students to the culture and standards of world-class research, preparing them to engage in the international research arena.

The LMS Lecture Series

The 2011 *LMS Invited Lecturer*, Professor Emmanuel Candès (Stanford University, US), visited Cambridge in March 2011 to give an eight-lecture mini-course on Compressed Sensing. The lectures were filmed by the Isaac Newton Institute (INI) and within three weeks of the final lecture had received 31,000 views on the INI website.

Another significant event in 2011 was the visit to London in July of the *Fields Medallist*, Professor Cédric Villani. The LMS was delighted to welcome Professor Villani to one of eight Society meetings held throughout the year, where he gave a well received presentation on mathematics and economics.

Professor Ben Green (University of Oxford) was awarded the *Forder Lectureship* in 2010. This is awarded every two years where a mathematician from the UK is invited by the LMS and the New Zealand Mathematical Society to give lectures at universities in New Zealand over a period of four weeks.

The *Mary Cartwright Lecture* is organised annually by the Society's Women in Mathematics Committee and the 2010 lecture was presented by Professor Alison Etheridge, University of Oxford.



Professor Emmanuel Candès

Professor Cédric Villani
and LMS President
Professor Angus Macintyre

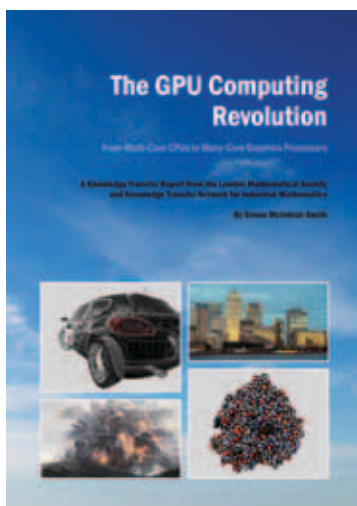
Other LMS Funded Activities

During the past year the Society has awarded **£60,000** in support of other mathematical activities. In August 2010 representatives of the Society attended the International Congress of Mathematicians in Hyderabad, India and prior to that sent a delegation to the General Assembly of the International Mathematical Union (IMU) in Bangalore. The Society had a promotional stand in Hyderabad, which was visited by mathematicians from the UK and elsewhere to discuss the Society and mathematics in a wider context. The Society also held a formal meeting on *Mechanisms for Strengthening Mathematics in Developing Countries*. Over 100 mathematicians and those interested in mathematics from around the world attended. A number of overseas members took the opportunity to sign the Members' book, dating back to 1865.

The Society has a major commitment to mathematics education and through its Education Committee an Education Day was organised in May 2011, in conjunction with the Heads of Departments of Mathematics (HoDoMs). The topics discussed on the day were the current state of play and future directions for A-level mathematics, and the training of mathematics lecturers.



Researchers at the University of Sheffield



Successful Collaborations

The Society's Computer Science Committee has worked with the Knowledge Transfer Network for Industrial Mathematics to produce two reports – *Applications of Bayesian Networks: Managing Risk in the Modern World* and *The GPU Computing Revolution: From Multi-Core CPUs to Many-Core Graphics Processors*. The reports address areas where mathematics and computing have come together to provide significant new capabilities.

Written by senior researchers the reports are aimed at both business and government. The reports are designed to raise awareness among managers and decision-makers about new tools and techniques, allowing them to assess the potential for impact and exploitation in their own fields, alongside information about potential collaborators and suppliers.

The Society also provides support to other national and international mathematics organisations whose aims reflect those of the Society, including the Isaac Newton Institute (Cambridge), the International Centre for Mathematical Sciences (Edinburgh) and the International Mathematical Union Development Fund.

Celebrating Mathematical Achievements

The LMS recognises and celebrates the achievements of the mathematics community by awarding a series of prestigious prizes to eminent mathematicians who have produced a distinguished body of work. Prizes are also awarded to younger mathematicians who are building their career and reputation in mathematics.



2011 LMS prize winners. Alexander Pushnitski, Jonathan Bennett, Angus Macintyre (outgoing LMS President), Graeme Segal (incoming LMS President), Bryce McLeod, Jonathan Pila, Barbara Niethammer, Brian Davies

Prizes

Over the past year the LMS awarded prizes to the following individuals:

Polya Prize	Professor E.B. Davies, FRS, King's College, London
Naylor Prize and Lectureship	Professor J.B. McLeod, FRS, University of Oxford
Senior Whitehead Prize	Dr J. Pila, University of Oxford
Whitehead Prize	Dr J. Bennett, University of Birmingham Dr A. Gorodnik, University of Bristol Professor B. Niethammer, University of Oxford Dr A. Pushnitski, King's College, London

Publishing and Disseminating Mathematical Knowledge



Publishing

The Society has 12 peer-reviewed journals, four book series and individual book titles. The past year has again been very successful for LMS Publishing, with a 26% cent increase in pages published in *Proceedings*, which is now published monthly, and further page increases planned for the journals for 2012.

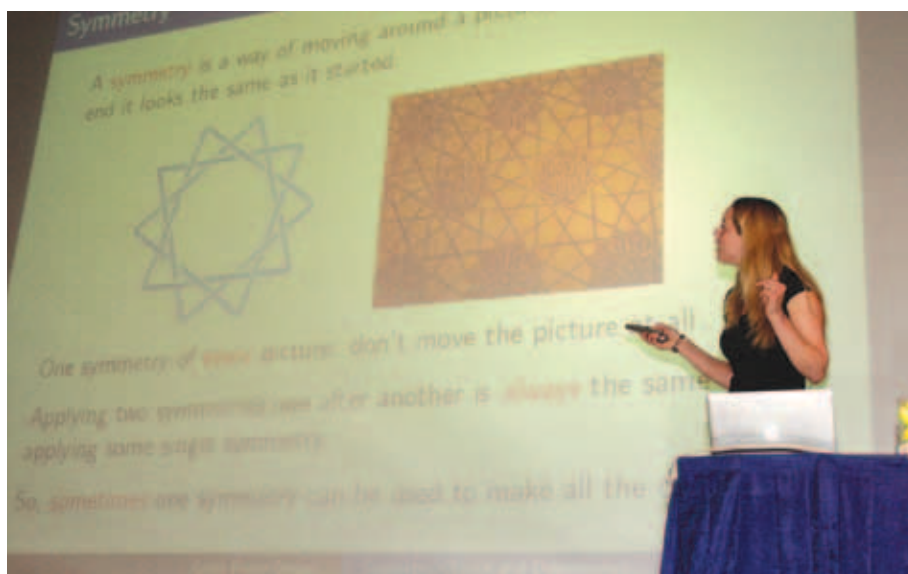
Despite the adverse economic climate there was an increase in net income from publications of 30%, which will be used to support future Society activities.

The Society developed and launched a new web-based article management system for authors, reviewers and editors, with user-friendly operation and streamlined workflows. This was designed to assist in managing the large volume of papers processed each year in producing the internationally renowned journals in the Society's portfolio. The Society has also introduced a paid open access option on all its journals.

Advancing and Promoting Mathematics

Policy and Public Affairs

The LMS seeks out opportunities for bringing mathematics, and the role and importance of mathematics, to the attention of decision-makers, policy advisers and funders. The LMS contributes actively to public debate on matters affecting mathematics research and education. It does this through position statements such as those on funding described in the next section, policy, responses to government inquiries and other high level consultations, links to other bodies involved in policy issues and representing the views of Society members within the mathematical sciences community. The Society is one of the five constituent bodies of the Council for the Mathematical Sciences (CMS) – the others being the Edinburgh Mathematical Society (EMS), the Institute of Mathematics and its Applications (IMA), the Operational Research Society (ORS) and the Royal Statistical Society (RSS), and we can often amplify our influence by joining with our partners in making policy statements.



Dr Hilary Weller and Dr Colva Roney-Dougal presenting the 2011 *Popular Lectures*

Funding Issues

Over the past year the Society has engaged on a number of national issues. The Research Policy Committee produced three policy papers for use by the International Review of Mathematical Sciences 2010 – *Research and Teaching in Symbiosis, UK Government Funding for Mathematical Sciences Research and Doctoral Training in Mathematics in the UK*.

The Society responded to the Department for Business, Innovation and Skills (BIS) White Paper on Higher Education, and the Department for Education (DfE) Review of the National Curriculum. It also responded to the Science and Technology Select Committee inquiries on the Comprehensive Spending Review (CSR) 2010 and Peer Review. Preparing for the Research Excellence Framework (REF) 2014 will be of major importance over the next few years.

With the announcement of cuts to science and research funding in the 2010 CSR there has been major activity. The LMS, principally through CMS, has vigorously represented the views of the LMS membership and the mathematical community and seeks to influence EPSRC to minimise the damage to mathematical research and to make constructive changes in response to the International Review of Mathematical Sciences 2010 (IRMS).

Parliamentary Links

For the first time LMS and mathematics was represented in the prestigious Parliamentary Links Day, as part of CMS. The event was hosted by Andrew Miller MP (Chair, Science and Technology Select Committee) and was attended by a wide range of MPs, academics, industrialists and the media.

Promotion

Mathematics underpins our 21st century technology, economy and society, and contemporary mathematics affects the daily lives of many people worldwide. The Society is involved in a wide range of activities promoting the creativity and impact of mathematics and ensuring that the wider public is aware of the importance of mathematics.

A major achievement over the past year has been the launch of the new LMS website. The website was completely redesigned to give the site a more accessible look and feel, with added features including new functionality such as the ability to submit journal papers on-line. Much of the content was also recast and the site now provides an efficient way to promote the Society's many activities. The site continues to be developed, with Phase 2 of the project already underway, which will include the ability for members to update their own details online and provide grant applicants with the facility to apply via the website.



De Morgan House: LMS Headquarters, Russell Square, London

The Society's *Popular Lectures* present exciting topics in mathematics (and its applications) to a wide audience. The lectures are aimed at those who have an interest in mathematics as well as being useful for A-level students. This year's lectures were presented by Dr Colva Roney-Dougal (University of St Andrews) and Dr Hilary Weller (University of Reading). The lectures, which took place in both London and Birmingham, were attended by over 600 people.

The LMS opened the doors of De Morgan House to the public as part of the London Open House weekend. It is the first time the LMS has participated and the event was a huge success. There were over 300 visitors, with queues outside the building throughout the day. The visitors enjoyed a tour of the building and a presentation about mathematics through the years.

The LMS is also active in helping to promote mathematics through the British Science Association *Science Festival*. The 2011 event was held in Bradford and attracted a wide range of audiences, including school and college students, teachers, academics, industrialists, the media and the public. The British Science Association Mathematics Section Presidential address was given by Professor Caroline Series (University of Warwick) and the LMS exhibited promotional and membership material at this event.

For more information on
all LMS activities visit:
www.lms.ac.uk