

EPSRC Mathematical Sciences Newsletter

Dear Subscribers,

Welcome to the spring edition of the Maths@EPSRC email newsletter. A roundup of interesting news from EPSRC and elsewhere as well as details about future activities of interest to the Mathematical Sciences community and beyond are included!

We are always looking to improve so if you have any thoughts or ideas for features that you would find particularly interesting then please let us know. Send your thoughts to maths@epsrc.ac.uk.

Please feel free to pass this email on to any colleagues who might find it interesting.

Open and Upcoming Calls

CRUK Multidisciplinary Awards

EPSRC's Healthcare Technologies Theme is currently working with Cancer Research UK to support a series of [Multidisciplinary Project Awards](#) which bring approaches from engineering, ICT, mathematical and the physical sciences to bear on long standing problems in cancer.

Reflecting the collaborative nature of the scheme, these awards are held jointly by a) A Principal Investigators (PI) from engineering, ICT, mathematical and physical sciences, and also b) A PI working in cancer research. The research themes within remit for this award include:

- The direct application of physics, engineering, chemical or mathematical concepts to address the underlying physical processes of cancer, including tumour initiation, growth and metastasis.
- The development of new transformational approaches or the translation of technologies for direct applications in, or a clear path to, a direct application in the prevention, diagnosis or treatment of cancer. Proposals for the first applications of technologies in cancer research and those which demonstrate potential clinical applicability are encouraged.
- In addition, we welcome proposals across all engineering and physical science disciplines including physics, engineering, mathematical and computational modelling, chemical and molecular sciences, materials science, molecular/tissue engineering and regenerative medicine.

Research proposals should demonstrate a strong collaboration between the disciplines involved, and be grounded in a biological/cancer problem, whilst also giving equal weighting to both the Cancer and the Engineering/Physical Science/mathematical aspects of the proposal. We are particularly keen to involve researchers from EPSRC's community who have never applied their skills to Cancer.

The awards are being administered by CRUK so queries should be directed towards Dr Richard Muscat, Research Funding Manager, Cancer Research UK md.award@cancer.org.uk

EPSRC announce new Deputy CEO

EPSRC have announced the appointment of Professor Tom Rodden from the University of Nottingham in the role of Deputy CEO. Professor Rodden's role will involve working alongside our CEO Phil Nelson while he also acts as Chair of RCUK Strategic Executive. Professor Rodden has been appointed to the role for 2 years and shall officially join EPSRC from the 18th of April and will continue to maintain some of his research commitments at the University of Nottingham during this time.

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EPSRC Peer Review College Refresh

Our Peer Review college is an essential part of our assessment process to ensure that the highest quality of research is supported across the range of our portfolio. As part of the college refresh programme taking place in 2016, EPSRC invites expressions of interest from candidates who wish to join its Associate Peer Review College. This call is open to anyone who fulfils the initial selection criteria set out on our website which can be found [here](#).

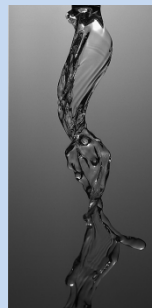
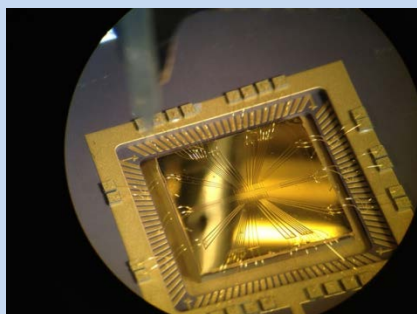
The final selection of candidates from the pool of expressions of interest will be on the basis of individual knowledge, need for expertise in particular research areas and the structure of the new EPSRC delivery plan. (Due to be published Spring 2016)

As part of this refresh programme we aspire to better reflect the diversity and experience of our science base. We also wish to increase our access to expertise in cross and multi-disciplinary areas. However, all applications will be judged on individual merit. Final decisions on those invited will be made within EPSRC.

The expression of interest process involves the completion of a short smart survey questionnaire which can be found at the following [link](#).

EPSRC Photo Competition – Winners announced!

As highlighted in our previous newsletter, the EPSRC photo competition has now closed and the winners have been announced. The winning image was a gold chip being used to trap ions for use in quantum computing and was awarded to Diana Prado Lopes Aude Craik and Norbert Linke from the University of Oxford.



A number of images were submitted across five categories and the winning images can all be viewed on the EPSRC website, including an example of fluids dynamic research shown through a rotating jet of a viscoelastic liquid.

EPSRC Programme Grants

EPSRC would like to congratulate our newest programme grant holders; Professor Alessio Corti from Imperial College London and Professor Idris Eckley from the University of Lancaster. Information in regards to both of these research projects can be found on Grants on the Web. We look forward to hearing about the exciting developments from these projects in the coming years.

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Mathematical Sciences Fellowships

Following consultation with the Mathematical Sciences Strategic Advisory Team (SAT) a decision was taken to close the priority area of New Connections between Mathematical Sciences and ICT at the Early Career stage. This decision was taken due to the historically low number of applications to this priority area. This change shall take effect as of 1st of October 2016 and applications to this priority area are still permitted until this date. Applications can be made to the following priority areas for EPSRC fellowships at the following career stages.

Postdoctoral	Early Career	Established Career
Statistics and Applied Probability	Statistics and Applied Probability	Statistics and Applied Probability
New connections from Mathematical Sciences	New connections from Mathematical Sciences	New connections from Mathematical Sciences
Mathematical Aspects of OR	Mathematical Aspects of OR	
Intradisciplinary Mathematics	Intradisciplinary Mathematics	
Complexity Science		
	New Connections between Mathematical Sciences and ICT	

Uncertainty

EPSRC recently published a report of the an event held in collaboration with DSTL to define a research strategy for uncertainty. This event was held in September 2015 and was attended by a cross cutting section of academics, end users and government representatives to discuss real problems in uncertainty. The report on this event can be found on our website [here](#). EPSRC intends to follow up on this event in line with the recommendations provided at the end of the report and a workshop to define these future plans is being planned for the near future and information will be available on the EPSRC website in due course.

EPSRC Mathematical Sciences SAT meeting

The latest EPSRC Mathematical Sciences strategic advisory team (SAT) meeting was held on the 25th of February 2016. Notes from this meeting will be available on the EPSRC website in due course. Topics discussed at this meeting included changes to the Mathematical Sciences taxonomy (including the introduction of the new research area Mathematical Biology), an update on the EPSRC delivery plan and budget allocation (which was yet to be determined at that time) and a discussion on the recommendations from the EPSRC Mathematical Sciences Infrastructure review.

The SAT were also updated on the Balancing Capability process and engagement events which had been held and were planned for the various communities within the Mathematical Sciences taxonomy.

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Balancing Capability: Call for evidence

Balancing capability is one of the three key strategies for EPSRC. This strategy is an important part of managing our portfolio of investments by aligning them to areas of UK strength and national importance. As part of this process the Mathematical Sciences theme (and the other themes within EPSRC remit) have been extensively engaging with stakeholders to gather input to this process ahead of reviewing the research rationales to reflect changes to the research landscape.

As part of this process a broader call for evidence has been established which has sought input from the academic research base and wider stakeholders to help identify other evidence to support our own evidence, knowledge and analysis. Guidance on how to provide evidence for this call can be found on the EPSRC website or by clicking [here](#).

Returns for the Call for evidence are sought from an institutional level and individuals are being asked to work through their host institution to provide contributions to this call. **The call is open from the 11th of April until the 3rd of June 2016.**

EPSRC Mathematical Sciences Community Engagement

As part of the evidence gathering phase of balancing capability, the EPSRC Mathematical Sciences theme have ran several workshops to engage with the wider maths community.

The three most recent events, the **Pure Maths Engagement Workshop**, the **Applied Maths Engagement Event** and the **Mathematical Physics Engagement workshop** were held at Birmingham NEC Hilton Metropole, 28th & 29th January 2016, and Leeds Novotel, 3rd & 4th February 2016, and Birmingham NEC Crowne Plaza on the 30th of March 2016 respectively.

Over several facilitated sessions, EPSRC colleagues asked attendees to think about the past, present and future of the UK mathematical landscape and to think about potential avenues for the impact of their research. From these events EPSRC has obtained useful evidence regarding the quality, national importance and capacity of UK mathematics and we would like to thank all attendees for their hard work during the workshops.

As a continuation of this process the Mathematical Sciences theme will also be hosting a series of regional workshops over the coming months to disseminate information and to engage with a wider cross-section of the community. Further information in regards to the regional workshops shall be made available in due course.

Early Career Forum

Supporting early career researchers is a key strategy of the EPSRC across all themes. Over the last year the Mathematical Sciences theme have been holding a series of events with a cohort of early career academics who span the various disciplines of our taxonomy. Recently a wrap up event was held for the Forum where the cohort provided feedback on the benefits and improvements which could be made to future Early Career support schemes.

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Sir Andrew Wiles wins the 2016 Abel Prize

EPSRC would like to extend its congratulations to the eminent UK mathematician Sir Andrew Wiles who was the recent recipient of the 2016 Abel prize. The prize was awarded in recognition of the research which solved Fermat's last theorem and led to multiple significant developments in the field of number theory.

(<http://www.abelprize.no/nyheter/vis.html?tid=67106>)

"Mathematicians shocked to find pattern in 'random' prime numbers"

A recent study has found that the previous treatment of prime numbers as occurring randomly is not quite right. Mathematicians at Stanford University in California have discovered that a prime number ending in 1 is less likely to be followed by another prime ending in 1.

(<https://www.newscientist.com/article/2080613-mathematicians-shocked-to-find-pattern-in-random-prime-numbers/>)

"From Pure Maths to shopping and sculpture"

Professor Peter Giblin from the University of Liverpool shares his tale of unexpected impact achieved from his theoretical work on singularity theory and its eventual manifestation into an application for online shopping.

(<http://www.epsrc.ac.uk/blog/articles/from-pure-maths-to-shopping-and-sculpture/>)

"New EPSRC-funded maths research suggests there could be a layer of iron-rich meteorites hidden under the Antarctic ice."

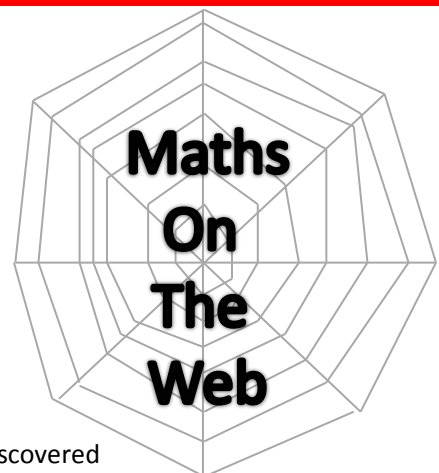
Maths researchers at the University of Manchester have published a paper in Nature Communications describing how iron-rich meteorites are sinking below surface which explains a significant lack of iron and stony-iron variety found on the Antarctic continent. The maths research may pave the way for scientists to learn more about the origins of the Solar System."

(<http://www.nature.com/ncomms/2016/160216/ncomms10679/full/ncomms10679.html>)

"EPSRC-funded research demonstrates that it may be possible to estimate the size of a large crowd based on geographical data from mobile phones and Twitter, according to a new study."

Warwick University researchers studied geo-tagged tweets and mobile phone use over a two-month period in Milan. The team said it could enable measurement of events such as protests. Federico Botta, the PhD student who led the analysis, said the mobile phone-based approach had advantages over other methods for estimating crowd sizes. 'This is very quick... it does not rely on human judgement, it only relies on having the data related to mobile phones, or Twitter activity.'

(<http://datasciencelab.co.uk/video/counting-crowds-with-mobile-phone-and-twitter-data/>)



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