

# RESEARCH COUNCIL CUTS THE PIPELINE FOR MATHEMATICAL SCIENCES

**Twenty-five of the UK's leading mathematical scientists, including four Fields Medallists, have written to David Cameron to warn that "central planning and micro-managing research" will have devastating consequences for Britain.**

The Engineering and Physical Sciences Research Council (EPSRC) announced in July that researchers from all areas of the mathematical sciences, except statistics and applied probability, are ineligible to apply for fellowships until further notice. As a result, even the best of this year's PhDs in such subjects as geometry, fluid dynamics, number theory, and computational mathematics may be unable to continue their research in the UK.

The scientists say that EPSRC's decision cuts off "an essential part of the pipeline that allows some PhDs to become leading researchers". It was made "without any meaningful consultation of the UK mathematics community".

The scientists argue that mathematics is essential for the fastest growing sectors of the economy, from Google to medical imaging to financial services. "It is foolhardy to claim that one part of mathematics is the only useful one." For one thing, "business applications of mathematics often come from the most surprising and unpredictable sources."

In a separate letter, Professor Margaret Wright of New York University, the chair of the 2010 International Review of the

Mathematical Sciences panel commissioned by EPSRC, wrote to EPSRC that the new policy is not even the best way to help statistics, the science of extracting knowledge from data. The IRMS panel recommended other ways EPSRC could help statistics, which have so far been ignored.

David Delpy, Chief Executive of EPSRC, testified to the Commons science and technology committee that EPSRC's Shaping Capability policy is a deliberate move away from the goal of funding the best research. Rather, EPSRC will direct funding to EPSRC-favoured parts of each science.

Delpy claimed that EPSRC's knowledge of "the whole portfolio" means that it does not need to consult the UK's learned societies in particular sciences such as mathematics.

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## What is the Fields Medal?

The Fields Medal is often considered the highest award in mathematics, the closest thing to a Nobel Prize in mathematics. The Fields Medal is awarded only once every four years, to at most four people. The UK is exceptionally strong in mathematics, with six Fields Medallists.

## Why is mathematics important for the UK's economy?

Most new technologies build upon mathematical ideas. Medical imaging relies on mathematical analysis, while search engines use a combinatorial algorithm to judge the importance of different web pages. Climate modelling and industrial design rely on computational algorithms being developed by mathematicians. Mathematical ideas can have multiple and unexpected applications. A direct measure of the importance of mathematics for employers is that students with a postgraduate degree in the mathematical sciences have the highest average starting salary among all subjects.

## Why is EPSRC's policy on fellowships not the best way to help statistics?

Outstanding young statisticians can get well-paid jobs in industry, which makes it hard to maintain the current quality of UK statistics in universities. The International Review of the Mathematical Sciences suggested several approaches to help UK statistics, including a flexible grant scheme to ensure that statistics research is supported at a range of universities. They rejected EPSRC's restriction on

fellowships as damaging for the whole of mathematical science in the UK.

## Sources:

The web page "EPSRC funding crisis: mathematical sciences" has links to the recent letters of protest and news stories about EPSRC's fellowship policy: <http://www.dpmms.cam.ac.uk/~bt219/epsrc.html>

The Commons science and technology committee questioned David Delpy on EPSRC's policy of Shaping Capability on 14 September 2011. The recording is available at the following website. The MPs start their tough questioning at 9:42, and turn specifically to the mathematical sciences from 10:00 to 10:22. David Willetts, Minister for Universities and Science, is questioned hard on EPSRC's policy of Shaping Capability from 10:46 to 10:53.

<http://www.parliamentlive.tv/Main/Player.aspx?meetingId=9050&wfs=true>

A reference for EPSRC's funding of research grants in the mathematical sciences, including the cut from £24.2 million in 2007/08 to £12 million in 2009/10, is the April 2011 submission from the Council for Mathematical Sciences to Parliament's Science and Technology Committee: <http://www.cms.ac.uk/reports/2011/CSRfinal.pdf>

A reference for the statement that postgraduate mathematical scientists have the highest average starting salary among all UK holders of postgraduate degrees is Adrian Smith's report One Step Beyond (March 2010), p. 94: <http://www.bis.gov.uk/one-step-beyond>

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