

News & Analysis

Funding bombshell hits UK physics

Physicists and astronomers in the UK are coming to terms with a massive funding crisis that engulfed one of the country's main funding agencies last month. As a result of an £80m black hole in the budget of the Science and Technology Facilities Council (STFC), it has decided to stop funding research into the International Linear Collider (ILC), withdraw from the Gemini telescopes in Hawaii and Chile, and cease all support for high-energy gamma-ray astronomy and ground-based solar-terrestrial physics. Research grants in particle physics and astronomy could also be cut by up to 25%, which may lead to job losses at university departments.

The full extent of the problems, which had been brewing for several months, emerged after the government announced its investment in science over the next three years on 11 December. It boosted funding for the Medical Research Council by over 10% a year, but only raised support for the STFC from £573m in 2007/8 to £652m in 2010/11 – an average rise of just 4.5% a year. Although this increase is above inflation, the STFC – unlike the other research councils – also has to run large facilities and pay the UK's subscriptions to international labs like CERN.

Keith Mason, chief executive of the STFC, told *Physics World* that the £80m shortfall has arisen because of the need to pay for the running costs of the new Diamond Light Source near Oxford and the second target station at the ISIS neutron-scattering facility at the Rutherford Laboratory. He also blames the shortfall on anticipated increases in international subscriptions and the STFC's contribution to a new administration centre for the research councils.

"Given the shortfall, we have had to re-prioritize our programme", explains Mason. "We have placed the highest priority on exploiting new major facilities and maintaining our international subscriptions. The consequence is that we will cut other programmes. The next three years will be very tough and we will have to make hard decisions that will damage science and careers. We very much regret this."



Fermilab

says the news is "a very big loss for the UK in working at the forefront of accelerator science".

International shock

The £80m funding gap has angered many physicists, particularly as it is a small fraction of the overall science budget, which is set to rise by an average of 5.8% a year from £3.38bn in 2007/08 to £3.97bn in 2010/11. But it is the decision to pull out of plans for the ILC – planned as the next big experiment in particle physics after the Large Hadron Collider at CERN – that has caused particular anger. The STFC said it would withdraw because it did not see "a practicable path towards the realization of this facility as currently conceived on a reasonable timescale". However, over the past decade the UK has invested more than £30m in the ILC, involving 100 scientists at 16 universities performing research into the project.

"The UK has built up world-leading technical capability and gained major responsibilities in the global design effort," says Phil Burrows of Oxford University, who is the UK's ILC project manager. "We are embarking on the engineering-design phase, aiming for completion in 2010. This is a crazy time to pull the rug out from under the ILC's effort. It wastes the previous investment, destroys our leadership role and leaves us out of the next major international accelerator project."

Pier Oddone, director of Fermilab near Chicago in the US, which is seeking to host the ILC, told *Physics World* of his "surprise and regret" at the announcement, adding that "we will miss our British colleagues". Meanwhile, Barry Barish from the California Institute of Technology, who is overall head of ILC design,

Dim prospect

The UK will axe its funding for the International Linear Collider.

New review

But it is not just particle physics that will be hit. The decision to stop funding high-energy gamma-ray astronomy will hurt several universities, including Durham and Leeds, while axing support for solar-terrestrial physics will affect researchers at six universities and the Rutherford lab. Michael Rowan-Robinson, president of the Royal Astronomical Society, calls the cuts "very bad news" and points out that research projects in infrared astronomy, ground-based gravitational-wave astronomy, dark energy, dark matter and other fields are also in doubt. They will have to compete against new grant proposals for funding.

Although other areas of science supported by the STFC, such as nuclear physics, laser physics, space science and neutron scattering, remain relatively unscathed, plans to build a fourth-generation light source (4GLS) at Daresbury have been shelved. The STFC has instead recommended that a new proposal be submitted, which will be evaluated in summer 2009.

The Engineering and Physical Sciences Research Council, which funds research into condensed-matter physics, has done relatively well: its budget will rise by an average of 6.2% a year from £711m in 2007/08 to £843m by 2010/11. But in the light of the STFC shortfall, the UK's Department of Innovation, Universities and Skills has ordered a review into physics funding, which is to be headed by Ian Diamond, chair of Research Councils UK.

As *Physics World* went to press, the terms of reference for the review were still being thrashed out and it had not yet been decided when the review should be complete. "It must address the serious structural funding issues that have led to this shortfall," says Robert Kirby-Harris, chief executive of the Institute of Physics, which publishes *Physics World*. "It is our hope that the findings of the review are available before irretrievable damage is done to physics."

Michael Banks and Matin Durrani

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