

view from the top alexander murphy

Cuts leave UK's world-leading physicists in the dark

It is a remarkable fact that we do not know what the vast majority of the universe is made of. Everything we can see, planets, stars, galaxies and gas, makes up just a tiny fraction of the matter in the universe. The rest, invisible to us, was dubbed 'dark matter' by Fritz Zwicky, the maverick but brilliant astronomer, rocket scientist and humanitarian, who inferred its existence when trying to reconcile the motions of galaxies with the laws of gravity.

A vast array of more recent astronomical observations, probing the universe at many different scales and wavelengths, points to the same conclusion. Now, almost 80 years later, dark matter, and its partner dark energy, are the pervasive dogma of cosmology. At the other extreme of scale, we have a similar mystery, in that nature has presented us with a range of particles with a great variety of properties, yet we know little of why there should be such diversity.

The theory of supersymmetry may provide some of the answers. One of its most robust predictions is a new fundamental particle, produced in abundance in the aftermath of the big bang, which will be hard, but not quite impossible, to detect. It is not surprising, therefore, that proof of the existence of these elusive particles, with the fundamental impact that it would bring to both physics and astronomy, has become one of the most prized of all goals in science.

The recent snowfalls in the UK caused major disruption. Interestingly, one of the mines in the UK that has been churning out road salt as fast as it can has another reason to be in the news, for it is the home of the UK's direct search for dark matter. Since 1987, scientists at the Boulby mine in Redcar and Cleveland, near Whitby, have been at the forefront of this field, developing new technology and returning many of the world's best results.

This is world-class research, conceived, led, developed, built and operated not at Cern or up a mountain in Hawaii, but right here in the UK. From around the world the first hints of a signal may just be being seen, and our instrument is just completing its upgrade, making it well placed to make the break-through.

A second remarkable fact is that now, perhaps on the cusp of resolving one of the deepest mysteries of the universe—and when making a huge return on the investment of the last

20 years—future funding for the project is in jeopardy.

Sadly, this is but one of many such stories that could be told today. The latest funding crisis to hit the Science and Technology Facilities Council sees UK physics research cut to the bone. The list of projects terminated is long indeed. Whole areas, especially in minority communities such as particle astrophysics and nuclear physics, look likely to be wiped out. Projects based on genius, invention and innovation, are killed off at the moment of fruition: how very British.

In September last year, I had the privilege of presenting the Lord Kelvin Award lecture at the British Science Festival. I had more than an hour of questions after the talk, from an audience hugely interested in the topic of dark matter. That was but one of the hundreds of outreach events that the project has spawned, including public talks, television, radio and newspaper articles.

The present situation is a blow to the future, for it sends a strong signal that those in government simply don't believe in the role of fundamental science to inspire a much-needed next generation of young scientists.

The recent Wakeham Review of Physics noted that 6.4 per cent of UK GDP comes from physics-based industry. Fundamental science delivers solutions to the challenges that the world so evidently needs. There has been much discussion in recent weeks of the impact on the UK of a mass exodus of bankers. While the bankers may not be missed, a mass exodus of scientists will destroy any prospect of transforming our dependence on financial services into success in other areas of the knowledge economy.

Perhaps there is hope. Science minister Paul Drayson appears to be listening, and promises action before the end of February. While the focus is on how to reform the mechanism of science funding to prevent crisis in the future, let us not forget that the situation right now is nothing short of catastrophic. The loss of science, and the loss of inspiration to do science, will harm the UK for a generation to come. Its cause? A funding shortfall of less than the cost over-run of the Research Councils' UK Shared Services Centre. But its impact will be truly astronomical.

Action is needed now. Yes, it will be difficult. But difficult is what we do best.

More to say? Email comment@ResearchResearch.com

Alexander Murphy of the University of Edinburgh's nuclear physics group presented the Lord Kelvin Award Lecture at last year's British Science Festival.

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