

## Letter of support from industry against cuts to PPAN science

As physics PhDs and ex-academics working in industry, we signatories are concerned about the scale of proposed cuts to Particle Physics, Astro, and Nuclear (PPAN) physics. Major scientific projects and facilities across particle and nuclear physics, astronomy, astrophysics and cosmology are at risk; theory groups and high-performance computing clusters supporting these activities are being crippled; moreover, the UK's reputation as a reliable partner for flagship international projects could be irreversibly harmed. This sudden change comes despite an overall increase in science funding by UKRI, reflecting a structural shift away from curiosity-driven research.

These significant reductions will not only eviscerate world-leading programmes of fundamental physics and astronomy, but also damage the pipeline of intellectual capital supplying the UK economy. Curiosity-driven research in PPAN science is vital for attracting and training a highly technical workforce and for inspiring young minds into STEM subjects. These PhD graduates, early-career researchers, technicians, theorists, and software and hardware engineers go on to deploy their valuable skills in a variety of industries. Reducing funding for blue-sky research will therefore have knock-on consequences for maintaining a critical mass of scientific talent in the UK. In the short term, it will force young academics, often trained in the UK, to move abroad to pursue their career; in the longer term, it will weaken the flow of highly-qualified scientists going into industry.

Studies are clear about the positive returns on investment in fundamental science and their practical benefits to society. Money invested in blue-sky research not only supports UK industry through the development of sophisticated technology and large facilities; the return on investment can also manifest itself in myriad unforeseen ways. The World Wide Web open internet standard, without which the large language models of AI companies would not be possible, was invented at CERN to address the information-sharing needs of large scientific collaborations. More directly, medical imaging technology and new methods for probing molecular structure were spun off from advances in particle physics.

Whether directly or indirectly, the tree of technology grows unpredictably from the fertile soil of fundamental science. Starving the roots to grow the tree will not enable the ecosystem to flourish.

We urge the UK government to reconsider such drastic action. Maintaining scientific excellence and international leadership in curiosity-driven research is symbiotic with the needs of industry and an integral part of delivering improvements to our everyday lives.

Yours sincerely,

A full list of signatories can be found at: <https://industry-openletter-stfc.github.io/index.html>

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