

UK's lead in physics healthy but insecure

April 22 2014, by Joe Winters

The quantity and quality of scientific papers produced by UK physicists indicates that the UK remains in an elite group of nations contributing at the leading edge of physics research.

New research published today, Tuesday 22 April, shows that, when the quality of the UK's scientific output is compared with that of its leading international competitor nations, the UK's lead in [physics](#) comes despite a lack of investment relative to other scientific disciplines, such as the life sciences.

While the UK's physics base is still punching above its weight, The UK's performance in physics research: National and international perspectives also records the forceful growth of physics in emerging scientific nations such as China and India.

The new report, published by the Institute of Physics (IOP) and the UK's two leading funders of physics research, the Engineering and Physical Sciences Research Council (EPSRC) and the Science and Technology Facilities Council (STFC), uses publication and citation statistics, as well as case studies of research clusters like astrophysics and space science, to evaluate the UK's position in physics between 2002 and 2011.

Dr Frances Saunders, President of the Institute of Physics (IOP), said, "Alongside nations like the US, Canada, France, Germany, the Netherlands and Switzerland, the UK remains world leading in physics.

"The physics research being undertaken in the UK is having an impact

on some of the most important challenges we face, from management of big data to the production of advanced materials.

"However, we are seeing dramatic growth of physics bases in nations such as China and India. This growth should serve as a warning: The lead is ours to lose without internationally-competitive levels of investment."

On quantity of papers alone, the new report shows that China overtook the US in 2010 with the highest number of authors on physics papers.

The UK has now been overtaken by the Republic of Korea for the volume of papers published and the new report notes that "the UK is likely to rank eighth in the near future."

The UK's world share of physics papers is down from 5.1% in 2002 to 4.0% in 2012.

Among the other world leading nations, it is the quality of the research being undertaken that gives the UK its overall strength; in 2009, using the average of relative citations, the UK ranked first for scientific impact.

While it has been suggested that in emerging scientific nations such as India and China the quantity of papers has increased without a corresponding growth in quality, this report shows that both nations are seeing increases in quality alongside significant growth in their world share of papers.

The report also looks at rates of international collaboration – recording that two out of three UK papers in physics have at least one author with a non-UK address – demonstrating how internationally collaborative UK physics has become, with our top three collaborating nations being the US, Germany and France.

EPSRC Chief Executive Professor Phil Nelson said, "The benefits of physics research and PhD training can be seen across all sectors of the economy and society – creating new industries, providing technological innovation, and advancing healthcare. Physics-based UK manufacturing contributes £20bn to the economy and by working together we hope to ensure the UK's [physics research](#) base remains strong and competitive."

More information: The full report is available online:
www.iop.org/publications/iop/2014/file_63082.pdf

Provided by Institute of Physics

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