

# The story of a 27km long machine and the fundamental building blocks of the Universe

September 7 2006

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Due for completion in 2007, the Large Hadron Collider (LHC) at CERN (the Conseil Européen pour la Recherche Nucléaire, or European Organisation for Nuclear Research) in Geneva, is the largest scientific experiment ever attempted.

The circular device, which is 27km in circumference and sits 100m below the French-Swiss border, is the latest and most powerful in a long line of machines aimed at uncovering the fundamental building blocks of the Universe. Having taken 7 years to complete and costing many billions of Euros, when it is finally switched on the LHC will collide beams of protons that would fit comfortably inside the zero on a twenty pence piece and yet carry as much energy as an aircraft carrier travelling at 30mph. The aim is to recreate the conditions present in the Universe less than a billionth of a second after the Big Bang.

“The LHC is humanity’s most ambitious attempt yet to understand the most profound questions about our origins,” says Dr Brian Cox, a research fellow at the University of Manchester who is working on the ATLAS experiment, one of the five particle detector experiments being constructed at the LHC.

“In a sense, the LHC is a time machine, allowing us to take giant detectors back to the first instants after the Big Bang and watch the Universe evolve,” he says. “Understanding the origin of mass is a certainty and signposts to a (possibly THE) fundamental theory of the Universe may be uncovered. We are truly journeying into unknown

territory.”

Dr Cox will make his comments as part of the BA Lord Kelvin Award Lecture – ‘The story of a 27km long machine and the fundamental building blocks of the Universe’, an event at the BA Festival of Science. The Festival is taking place in Norwich from 2-9 September and will bring together over 300 of the UK’s top scientists and engineers to discuss the latest scientific developments with the public.

The opportunity to present a popular and prestigious BA award lecture at the Festival of Science is offered to five outstanding communicators each year. The award lectures aim to promote open and informed discussion on issues involving science and actively encourage young scientists to explore the social aspects of their research, providing them with reward and recognition for doing so.

In addition to lectures and debates at the University of East Anglia, the Festival will also feature a host of events throughout Norwich as part of the Science in the City programme.

Source: British Association for the Advancement of Science

Citation: The story of a 27km long machine and the fundamental building blocks of the Universe (2006, September 7) retrieved 26 April 2024 from <https://phys.org/news/2006-09-story-27km-machine-fundamental-blocks.html>

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