

Birmingham Physicists' hopes for first particle collisions

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Birmingham physicists are delighted that their experiments at the Large Hadron Collider (LHC), that aim to find what happened just after the Big Bang, will soon be underway as scientists have successfully collided together two low-energy beams of protons for the first time.

Based at the CERN laboratory, Geneva, the LHC is the world's largest machine and aims to discover many secrets of the nature of matter and the universe. By colliding particles at almost the speed of light, conditions similar to those a billionth of a second after the beginnings of the universe will be created.

Scientists at the University of Birmingham's School of Physics and Astronomy are playing vital roles in ALICE and ATLAS, two of the four main detectors that record the results of these collisions. ALICE will study the strong force – one of the fundamental forces of nature – and hopes to recreate and study the primordial soup that existed a millionth of a second after the Big Bang, an exotic state of matter called a quark-gluon plasma. ATLAS will search for new heavy particles such as the Higgs boson and possible evidence for dark matter.

Dr David Evans, who leads the Birmingham team on the ALICE detector said, 'After many years of preparations, we are finally nearing our goal of making new and exciting discoveries about the nature of the universe itself. The collisions on Monday showed that both the LHC and the ALICE detector work well so it looks like 2010 could be a year of new discoveries as the LHC ramps up to higher energy collisions.'

The experimental groups at Birmingham have designed and built key components of the sophisticated electronics that control the ALICE and ATLAS detectors. They are now preparing to analyse the first data from these experiments, expected next month.

'The first LHC collisions observed in ATLAS on Monday are a crucial milestone. These first events mark the transition from the construction phase to an operational collider and experiment,' said Professor Dave Charlton, leading member of the ATLAS team at Birmingham and deputy spokesperson of the ATLAS collaboration. 'The extraordinary progress in obtaining collisions only three days after the restart of the LHC is very promising for the new physics discoveries that we anticipate in the years to come.'

Professor Peter Watkins, head of the particle physics group at the University of Birmingham, said 'After years of hard work from everyone here at Birmingham, we are finally about to see the fruits of our labour. Birmingham physicists have played an important role in both the ALICE and ATLAS experiments. We are now looking forward to playing a major part in the exciting discoveries that await us over the next few years.'

[Photos of the first collisions on the CERN website \(http://press.web.cern.ch/press/PressReleases/Releases2009/PR17.09E.html\)](http://press.web.cern.ch/press/PressReleases/Releases2009/PR17.09E.html)

[Photos taken inside the CERN Control Centre \(http://cdsweb.cern.ch/record/1223969\)](http://cdsweb.cern.ch/record/1223969)

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