



# TRIUMF

Canada's National Laboratory for Particle and Nuclear Physics  
Laboratoire national canadien pour la recherche en physique  
nucléaire et en physique des particules



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## **March 30: Canadian Scientists Join Partners to Open New Window on the Universe**

*Canadian Contributors Available for Comment as LHC Particle Collider in Geneva Begins Physics Experiments*

(Vancouver, BC) – On Tuesday, March 30, CERN's Large Hadron Collider (LHC) will begin colliding subatomic particles at the highest energies ever reached by a man-made accelerator. This achievement will open a new era of discovery about the basic nature of the Universe. After several delays, this milestone marks the beginning of the LHC Scientific Program that scientists throughout the world have worked toward over the past two decades. Some of proudest contributors will be Canadians who helped design, build, and commission the LHC and the massive ATLAS physics experiment. As history is made, university faculty and students across the country will be available for comment.

The new world record is set by the collisions of billions protons with an energy of about seven TeV per collision. Up until now, the massive LHC has been warming up and going through its paces. Scientists believe that when the high-energy particles are brought into collisions, new discoveries will emerge about the structure of space and time, including perhaps the elusive Higgs boson or even tiny, extra dimensions of space.

Canadians from eleven different research institutions (University of Alberta, University of British Columbia, Carleton University, McGill University, Université de Montréal, University of Regina, Simon Fraser University, University of Toronto, TRIUMF, University of Victoria, and York University) have been participating in this global scientific quest and will be available to discuss the scientific and technical aspects. Interested media should contact the news offices at participating universities to seek expert, local comment.

The Large Hadron Collider accelerates two counter-rotating beams of protons to nearly the speed of light and then brings them into collision inside giant, cathedral-sized detectors that study the subatomic debris that comes flying outward. The Canadian team plays a leading role in the ATLAS detector, akin to a gigantic digital camera that examines the millions of collisions per second and identifies which ones should be stored and analyzed in more detail. The goals are just as awe-inspiring: probe the structure of space to search for extra dimensions, identify and study why matter has mass in the universe, and explore theories that connect subatomic particles to the cosmos through dark matter and dark energy.

TRIUMF, Canada's national laboratory for particle and nuclear physics, led Canadian involvement in the LHC and has worked with universities and companies across Canada to contribute key elements of the Large Hadron Collider accelerator itself as well as the ATLAS detector. TRIUMF is also home to one of the ten supercomputer (so-called Tier-1) data centres around the world that processes the enormous volumes of data from the ATLAS experiment and distributes it to the thousands of scientists involved.

This milestone is possible after a major refit of the LHC demonstrating the excellent performance of the updated machine. The LHC will now run for the next 18 months, and the data collected by ATLAS will allow scientists to probe the origins of matter to an unprecedented precision where physics theories predict new phenomena will lie. Whether the LHC discovers the Higgs Boson, Supersymmetry, new dimensions in space or time, or something that scientists have not yet imagined, our understanding of the universe promises to advance in a breathtakingly large step.

Follow LHC progress on twitter at <http://www.twitter.com/cern>. For photos, video and latest information see <http://press.web.cern.ch/press/lhc-first-physics/>. For more information about Canadian involvement in the LHC and ATLAS, see <http://www.atlas-canada.ca/>.

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### **About TRIUMF**

TRIUMF is Canada's national laboratory for particle and nuclear physics. Located on the south campus of the University of British Columbia, TRIUMF is owned and operated as a joint venture by a consortium of the following Canadian universities, via a contribution through the National Research Council Canada: University of Alberta, University of British Columbia, University of Calgary, Carleton University, University of Guelph, University of Manitoba, McMaster University, Université de Montréal, Queen's University, University of Regina, Simon Fraser University, Saint Mary's University, University of Toronto, University of Victoria, and York University.

### **About ATLAS Canada**

ATLAS-Canada comprises about 150 faculty members, post-doctoral fellows and students from eleven Canadian institutes: the University of Alberta, University of British Columbia, Carleton University, McGill University, Université de Montréal, University of Regina, Simon Fraser University, University of Toronto, TRIUMF, University of Victoria and York University. ATLAS Canada and the Canadian Tier-1 Data Centre are supported in part by NSERC, CFI, CANARIE, and the BC Knowledge Development Fund. See <http://www.atlas-canada.ca/>.

### **About CERN**

CERN, the European Organization for Nuclear Research, is the world's leading laboratory for particle physics. It has its headquarters in Geneva. At present, its Member States are Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom. India, Israel, Japan, the Russian Federation, the United States of America, Turkey, the European Commission and UNESCO have Observer status. Canada has made important contributions to CERN's flagship accelerator, the Large Hadron Collider and one of its associated particle physics detectors, the ATLAS experiment. See <http://cern.ch> and <http://lhc-first-beam.web.cern.ch/>.

### **About the Large Hadron Collider**

The Large Hadron Collider or LHC is a particle accelerator which, at 27 kilometres in circumference, will be the world's largest and most complex scientific instrument when it switches on in fall 2008. The LHC is the world's most powerful particle accelerator, producing beams seven times more energetic than any previous machine, and around 30 times more intense when it reaches design performance, probably by 2010. It relies on technologies that would not have been possible 30 years ago. The LHC is, in a sense, its own prototype.

### **About ATLAS**

ATLAS is a worldwide collaboration comprising over 2500 scientists and engineers from 178 institutions in 35 countries and regions. These are Armenia, Australia, Austria, Azerbaijan, Belarus, Brazil, Canada, China, Czech Republic, Denmark, France, Georgia, Germany, Greece, Hungary, Israel, Italy, Japan, Morocco, Netherlands, Norway, Poland, Portugal, Romania, Russia, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Taiwan, Turkey, United Kingdom and the United States of America.

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