



# PHYSICS AND ASTRONOMY COLLOQUIUM

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## **“The Search for the Higgs Boson at the Large Hadron Collider”**

### Abstract

The recent discovery of a new particle is a historic event in our exploration of the fundamental constituents of matter and the interactions between them. To date, the Standard Model of particle physics is extremely successful and accounts for all measured subatomic phenomena. However the postulated Higgs mechanism, from which fundamental particles acquire mass, remains to be verified experimentally. Research at the energy frontier is being carried out at the Large Hadron Collider (LHC), operating at CERN near Geneva since 2010. From 2010 to 2012, the LHC provided proton-proton collisions at a centre of mass energy of 7 to 8 TeV, allowing the exploration of distance scales smaller than a tenth of an attometer. The products of these collisions were successfully recorded by the ATLAS detector, which will be introduced in this lecture, with emphasis on Canadian contributions. The ATLAS physics programme features Standard Model measurements and a rich array of searches for new physics phenomena.

The discovery of a new Higgs-like particle and other important results will be presented. The future increase in energy and intensity at the LHC, and the associated ATLAS plans, will also be discussed. These are exciting times indeed for particle physics!

Wednesday, February 06, 2013

3:30 p.m.

Bob Wright Centre

Room A104