



Experimental High Energy Physics at the University of Toronto

Faculty Members

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Today's high-energy physics is the culmination of twenty-five centuries of searching for an understanding of the ultimate nature of matter. The University of Toronto has one of Canada's most active groups in elementary particle physics and relativity. Over the last 20 years, the standard model of particle physics has gradually taken shape, and it has successfully withstood tests of unprecedented precision. Still, we know that this model cannot be complete. Experimentalists and theorists at the University of Toronto are actively trying to find ways to move beyond the current particle physics paradigm. We have a number of exciting research positions available to undergraduate students for May-August 2002.

Undergraduate Summer Research Positions

ATLAS at CERN: The ATLAS experiment at the Large Hadron Collider at the CERN laboratory in Geneva is being constructed to look for new physics beyond the Standard Model of Particle Physics. Students are needed to help with construction and testing of the innovative ATLAS Forward Calorimeter and to work on the software associated with both the calorimeter and the physics of the experiment.

Calorimetry in CDF II: The Toronto CDF II group is involved in studies of the highest-energy proton-antiproton collisions ever made, using the Tevatron Collider at Fermilab. Students will be involved in validating our calorimeter reconstruction algorithms and data quality, with most of the work being performed at Toronto.

Hadronic Monte Carlo Simulations: Students will help improve the description of hadronic physics processes in GEANT4, which is the newest worldwide framework for Monte Carlo detector simulation in subatomic physics. Monte Carlo computational techniques are also widely used in industry and finance.

ZEUS Analysis: The ZEUS experiment is a large experiment at the HERA electron-proton collider at the DESY laboratory in Hamburg. ZEUS has made detailed measurements of the structure of the proton, with important results testing quantum chromodynamics and the electroweak theory. The experiment has been recently upgraded and we need a student interested in particle physics to reside in Hamburg and help with the beginning of a new data taking period.

Experience in C++ or similar languages would be useful for most of these positions.

Third or fourth year students are preferred, but all applications are welcome.

The deadline for NSERC supported summer positions is February 15.

For more information, see <http://cepheid.physics.utoronto.ca/ehep>, or contact Prof. David Bailey, Physics Department, University of Toronto, 60 St. George St., Toronto, Ontario, Canada, M5S 1A7

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Inquiries about Graduate Studies are also always welcome.