

# **Physics Colloquium**

Thursday, March 22<sup>nd</sup>, at 3:30 pm in SC 234

**Dr. Eric Feng**

*CERN*

## ***Tracking Down the Higgs Boson with the ATLAS Experiment***

Despite the hugely successful discovery of the Higgs boson at the LHC, the Standard Model of particle physics remains unable to explain many features we see in the universe. New phenomena like supersymmetry have been postulated to describe the large hierarchy of energies, the nature of dark matter, and the source of matter-antimatter asymmetry. We present the latest, most precise ATLAS measurements of the Higgs boson mass, charge-parity, and couplings to other particles, which are sensitive to many well-motivated models of new physics. Over the next 15 years, the High-Luminosity LHC will provide a much larger data sample enabling even higher precision. A new all-silicon ATLAS Inner Tracker, which will cover a much wider acceptance than the current tracker, is being developed to cope with the huge radiation, data rates, and occupancy. The immense progress, challenges, and opportunities of this detector upgrade are discussed.

**Meet & Greet graduate students, Refreshments**  
**at 3:00 pm in SC 103**