Argonne NATIONAL LABORATORY

High Energy Physics Lunch Seminar

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"Searches for di-Higgs Production and Using Hardware Track Triggers to Search for New Physics"

Host: J. Love

Sept 18, 2018 – 12:00 p.m.-1:00p.m. Building 362/F-108

Abstract: The particle physics community has been working to study the properties of the Higgs boson since its discovery in 2012. As part of the Higgs physics program, the ATLAS experiment has conducted searches for di-Higgs (hh) production, which will allow us to measure the Higgs self-coupling and compare to Standard Model (SM) predictions. We can also search for enhanced hh production in beyond-the-SM scenarios, such as resonant production via a new heavy scalar, or non-SM couplings to the Higgs boson, either of which would increase the hh cross section. Looking forward, the LHC Run 3 will bring a new set of challenges, including more pp collisions per bunch crossing. Extracting rare physics signatures from this busier environment will be difficult for the ATLAS trigger system. The FastTracKer (FTK), a hardware upgrade to the ATLAS trigger system, will use new technologies to perform full-scan tracking for each event selected at the first level of the trigger. The tracks will then be provided to the software-based High Level Trigger, which makes the final trigger decisions. This will make it possible to efficiently find difficult objects, such as taus and b-tagged jets, at the trigger level. In this talk, I will present ATLAS searches for hh production using a variety of final states, as well as their combination, and discuss the use of FTK in the ATLAS trigger system during LHC Run 3.

HEP Lunch seminar info:
Please use the doodle poll to sign-up for lunch at
https://doodle.com/poll/i7d74dhthksf6737

Chicken Sandwich $8, Sub Sandwich $9, Salad $7, Slice of Pizza- $5 (all include coffee). Soda or Water 75¢.

The HEP Lunch Seminar Schedule can be viewed at:
https://indico.fnal.gov/event/17812/