PHYS659 (3 credits):

High-pT Higgs boson production

Fall 2020
Prof Jahred Adelman

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The course will study the high-pt region of Higgs boson production using the ATLAS detector at the LHC, specifically in the diphoton decay channel. The student in the course will learn how to run the ATLAS HGam software that selects candidate Higgs boson diphoton events, and will be able to compare the kinematics and expected number of events and rates for both signal and background. This work can then be studied in the context of both improved photon identification as well as EFT models of beyond-Standard Model physics, which requires potential new Monte Carlo event generation.

As a part of the course, the student is expected to join NIU ATLAS group meetings, as well as to weekly ATLAS HGam meetings as needed. Weekly presentations of finished and planned work plans are expected in the NIU group meetings.

The student is expected to interact by videoconference with the instructor at least 1x/week to discuss progress, along with the instructor's postdoctoral researcher, who will be present for the work from Europe. There will be no homework during the semester; the regular presentations in group meetings and HGam meetings will be used to evaluate performance. Instead of a final exam, the student is expected to provide a summary of work performed and lessons learned at the end of the semester.

The goal of the course is for the student to begin to understand physics analysis on ATLAS and how it can

If you need an accommodation for this class, please contact the Disability Resource Center as soon as possible.The DRC coordinates accommodations for students with disabilities. It is located on the 4th floor of the Health Services Building, and can be reached at 815-753-1303 (V) or drc@niu.edu. Also, please contact me privately as soon as possible so we can discuss your accommodations. The sooner you let us know your needs, the sooner we can assist you in achieving your learning goals in this course