

## High Energy Physics Division Seminar

# Julia Gonski

Harvard University

**"Probing Natural Supersymmetry with ISR: A Snapshot of Stop and Higgsino Searches at ATLAS"**

Host: **Sergei Chekanov**

January 23, 2019 – 11:00 a.m.

Building 362 / F108

**Abstract:**

Natural supersymmetry has earned a unique focus in the search for new physics, in part because of its organic solution to the hierarchy problem. Minimizing fine tuning in this solution often puts the superpartners of the Higgs (higgsino) and top quark (stop) well within LHC reach. In the most natural scenario, the higgsino and stop masses are additionally expected to be close to the masses of their Standard Model partners, known as a "compressed" spectrum. Small mass splittings in a decay chain present several experimental challenges, since the final state objects are very soft and there is little missing energy. In order to build a sensitive analysis around these difficulties, a variety of new techniques are utilized, including improvements with ISR-assisted topologies using the Recursive Jigsaw Reconstruction (RJR) method. Here, these novel strategies and the idea of naturalness are used as a lens to interpret the status of stop and higgsino searches with ATLAS and discuss future search prospects.

HEP Division Seminar Schedule:  
<https://indico.fnal.gov/event/19453/>