

## High Energy Physics Seminar

Monday, February 11, 2019 @ 3:30 PM  
Room 4138  
Physics Research Building



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*Using Electroweak Bosons and the  
Higgs Boson to Probe New Physics  
at the LHC and Upgrades of the CMS  
Detector to Maximize Chances of  
Such a Discovery*

The SM describes the building blocks of matter and their interactions. It has been tested extensively with experimental data and found to be incredibly successful in describing nature. Discovering the Higgs boson in 2012 at the LHC completed the picture of the SM. The LHC is at the forefront of directly searching for new physics which is Beyond-Standard-Model (BSM), and I will discuss searches for supersymmetric partners of the electroweak bosons, as well as measurement of an extremely rare process with three  $WW$  bosons as stringent tests of the SM. I will also discuss the recently completed CMS Phase-1 pixel upgrade and the R&D studies towards solving the future trigger and computing challenges at CMS using innovative machine learning approaches.

