

# Dark Matter Signals in Dileptons

Thursday

December 4

4 P.M.

Rm 415 NSH

Mr. Nirmal Raj  
University of Oregon

At the LHC a standard search channel for new physics is the production of a pair of leptons. New resonances or contact operators can be gleaned from peaks or broad deviations respectively in the invariant mass distribution ( $m_{ll}$ ) of this channel. I'll demonstrate in this talk how hidden sectors can show up in dileptonic events through radiative corrections to the Standard Model process, giving rise to spectacular features in  $m_{ll}$ , and in the leptonic angular distributions. One compelling possibility that can be probed is that of dark matter with scalar messengers coupling it to the quarks and leptons. I will present constraints from dilepton spectrum measurements at the LHC and dark matter experiments, and make predictions for the bounds from the high luminosity 14 TeV LHC as well as a 100 TeV collider.