

TUESDAY

JANUARY 19

4:00 P.M.

RM 415 NSH

Electroweak SUSY and Dark Matter searches in VBF, and Exotica search in Z plus heavy-flavor jets final states

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Supersymmetric (SUSY) models can provide viable Dark Matter (DM) candidates as well as cancellation of the quadratically divergent term of the Standard Model Higgs boson mass. In spite of the extensive searches at LHC, no evidence of SUSY has been found yet as of now. The Vector Boson Fusion (VBF) jets topology provides a way to probe parameter space of SUSY models, such as SUSY Electroweak sector and compressed mass spectra, where conventional searches are limited by the thresholds of lepton or jet trigger paths. This talk covers the most recent results of SUSY searches in VBF jets and large missing transverse momentum final states using proton-proton collisions Run I data, collected with the CMS detector at the LHC. Given the relatively smaller cross sections, the analysis requires larger integrated luminosity, with respect to strongly produced signal models, which become competitive immediately once Run II data made available. The prospect of the Run II analysis, re-loading Run-I like analyses and interpretation for additional signal models, such as DM, will be discussed. The ATLAS and CMS reported moderate excesses (2-3 sigma) in LHC Run I. These excesses motivate Exotica searches in final states which have not studied yet because of either experimental signatures being too challenging, or not enough interests in the high energy experiment community. This talk also covers the first search for octo-triplet models in Z boson plus heavy-flavor jets final states using Run I data collected at the CMS detector.