CMS Draft Analysis Note

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Search for compressed mass spectrum SUSY via electroweak VBF with 0-, 1-, and 2-lepton final states (Run II)

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Abstract

In this analysis, we perform a search for chargino-neutralino production through pure electroweak vector boson fusion (VBF) in pp collisions using the full Run II dat set. The final states considered have two jets, large missing transverse energy and (1) zero, (2) one or (3) two leptons. The jets are required to satisfy selection criteria to select processes with a VBF-like topology. The benchmark model for this analysis is the R-parity conserving MSSM, focusing on compressed mass spectrum scenarios. Different physics interpretations for the production and decays of the electroweakinos (light slepton, virtual W/Z, stau-dominated and Higgsino-like LSP) are explored.