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**Methods to Search for New Physics in Proton-Proton Collisions at the LHC - Same Sign Dimuon Final State for Lepton Number Violation Process.** SAMILA MUTHUMUNI, Texas Tech University — The Standard Model (SM) of particle physics is a very successful model to explain matters and interactions of matters in the universe with quarks, leptons, vector bosons and the Higgs particle. On the other hand, SM is incomplete. For example, the model does not explain the existence of dark matter and gravitation in the universe. After the discovery of the Higgs particle in 2012, searches for dark matter, graviton and other new physics beyond the SM continued at the Large Hadron Collider (LHC). A search for new physics in proton-proton collisions at the LHC same sign dimuon final state for lepton number violation process is presented with the data collected by the CMS experiment for proton-proton collision at 13 TeV with 35.9/fb . Methods used in search for lepton number violation in proton-proton collisions at the LHC have been focused, which produce two same sign muons in the final state. The measurements of cross sections for the signal region in data and estimated backgrounds from Monte Carlo (MC) simulation for the same sign dimuon channels are consistent. No excess signal is observed in those channels.

Samila Muthumuni  
Texas Tech University

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