

Abstract Submitted
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Search for Neutral Long-lived Particles Decaying in the CMS Endcap Muon System CHRISTINA WANG, Caltech, CMS COLLABORATION
— We present a first search at CMS that uses the endcap muon system (EMS) as a sampling calorimeter to identify hadronic showers produced by decays of long-lived particles (LLPs). The EMS comprises of gas ionization Cathode Strip Chambers (CSCs) sandwiched within the steel material of the magnetic flux-return yoke. LLPs that decay to hadrons within the EMS induce hadronic and electromagnetic showers resulting in localized, high-multiplicity CSC hit showers that are identified with a novel reconstruction technique. The unique design of steel flux-return yoke in the CMS detector provides exceptional shielding from SM background that dominates existing LLP searches. The search yields competitive sensitivity for proper lifetime from 0.1m to 1000m with 137 fb^{-1} of proton-proton collisions at 13TeV recorded during 2016-2018 at the CMS detector.

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