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EXO-21-006: Search for long-lived particles decaying to a pair of muons in proton-proton collisions at 13 TeV

Abstract: An inclusive search for long-lived exotic particles decaying to a pair of muons is presented. The search uses a data set collected by the CMS experiment at the LHC in proton-proton collisions at 13 TeV in 2016 and 2018 and corresponding to an integrated luminosity of 97.6 fb−1. The experimental signature is a pair of oppositely charged muons originating from a common secondary vertex spatially separated from the proton interaction point by distances ranging from several hundred μm to several meters. The results are interpreted in the frameworks of the Hidden Abelian Higgs model, in which the Higgs boson decays to a pair of long-lived dark photons, and of a simplified model, in which long-lived particles are produced in decays of an exotic heavy neutral scalar boson.

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