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Exploring long-lived particles decaying into displaced dimuons at $\sqrt{s} = 13.6$ TeV : Innovative Triggers for Enhanced Sensitivity at the CMS Experiment

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This talk presents an inclusive search for long-lived exotic particles decaying to a pair of muons. The experimental signature is a pair of oppositely charged muons originating from a common secondary vertex that is displaced from the proton-proton interaction point by distances ranging between several hundred micrometers to several meters. The search uses data collected by the CMS experiment at the CERN LHC in proton-proton collisions at $\sqrt{s} = 13.6$ TeV in 2022, corresponding to an integrated luminosity of 36.6 fb^{-1} , using new trigger algorithms designed to maximize sensitivity to such events. The results of the search are interpreted in the framework of the hidden Abelian Higgs model and an R-parity violating supersymmetry model, and show substantial improvements from the analysis performed using data taken at $\sqrt{s} = 13$ TeV in 2016 and 2018.

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