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Search for neutral long-lived particles decaying into displaced jets in the ATLAS calorimeter

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New long-lived particles are a feature of many extensions to the Standard Model and may elude searches for promptly decaying particles. An analysis of data collected in pp collisions at $\sqrt{s} = 13$ TeV with the ATLAS detector at the Large Hadron Collider is described, focusing on identifying signatures of jets produced by long-lived particles decaying to Standard Model fermions within the ATLAS calorimeter system. The analysis considers benchmark hidden sector models of neutral long-lived scalars with masses between 5 GeV and 475 GeV produced by decays of heavy mediators with masses between 60 GeV and 1000 GeV. Models of stealth supersymmetry, Higgs-portal baryogenesis, and dark photons are also considered. The results of this analysis are presented using the full Run 2 (2015-2018) data set, corresponding to an integrated luminosity of 139 fb⁻¹.

Career stage

Graduate student

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