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Type: Oral presentation

Searching for light neutralinos with a displaced vertex at the LHC

Thursday 12 October 2023 16:30 (30 minutes)

We study a bino-like light neutralino ($\tilde{\chi}_1^0$) produced at the LHC from the decay of a scalar lepton (\tilde{e}_L) through the process $pp \rightarrow \tilde{e}_L \rightarrow e\tilde{\chi}_1^0$ in the context of R-parity-violating (RPV) supersymmetry where $\tilde{\chi}_1^0$ is the lightest supersymmetric particle. For small masses and RPV couplings, the neutralino is naturally long-lived and its decay products can be identified as displaced tracks. Following existing searches, we propose a displaced-vertex search strategy for such a light neutralino with a single RPV coupling switched on, λ'_{111} , in the mass range 10 GeV

lessim $_{\tilde{\chi}_1^0}$

*lessim*230 GeV. We perform Monte Carlo simulations and conclude that at the high-luminosity LHC, the proposed search can probe values of λ'_{111} down to two orders of magnitude smaller than current bounds and up to 40 times smaller than projected limits from monolepton searches.

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

No

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