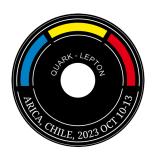
### 42nd International Symposium on Physics in Collision



Contribution ID: 82 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  $pp \to \tilde{e}_L \to e \tilde{\chi}_1^0$  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,  $\lambda'_{111}$ , in the mass range  $10~{\rm GeV}$ 

 $lesssimm_{\tilde{\chi}^0_1}$ 

 $less sim 230\,{}^{\circ}{\rm GeV}$ . We perform Monte Carlo simulations and conclude that at the high-luminosity LHC, the proposed search can probe values of  $\lambda'_{111}$  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**

Nicolas Neill, Universidad de Tarapacá

#### Internet talk

No

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Track Classification: High Energy Particle Physics