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Contribution ID: 82

Type: **Invited talk**

Disappearing track searches at LHC and future colliders

Tuesday, 12 November 2019 11:30 (30 minutes)

The neutral wino and the lightest neutral higgsino are dark-matter candidates. If those are the lightest SUSY particles, the lightest chargino can be long-lived and can travel macroscopic distances then decay in detectors. In such scenarios, dark matter particles can be searched for using a “disappearing track” signature. Such searches have been done at the LHC giving lower limits on their masses. Much higher sensitivities are expected in future analyses at the LHC and at future colliders. With an optimal detector layout at the Future Circular Collider, the sensitivity can cover the entire mass range compatible to the thermal relic abundance.

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Session Classification: DM Collider