



Contribution ID: 974

Type: **Parallel Talk**

TeV-scale Lepton Number Violation: $0\nu\beta\beta$ -decay, the origin of matter and energy frontier probes

Tuesday 5 May 2020 14:30 (15 minutes)

Lepton number violation (LNV) is a very attractive research topic for theoretical and experimental physicists due to its implications beyond the Standard Model. It provides feasible theoretical explanations to several open questions in particle physics (e.g., the origin of neutrino mass) and also has a rich phenomenology at different energy scales. We explore the underlying connections between neutrinoless double β -decay ($0\nu\beta\beta$) experiments, hadron colliders, and cosmology observations. In the context of simplified models, we show that future collider and $0\nu\beta\beta$ experimental results may complement each other.

Summary

LNV

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Session Classification: Neutrinos II

Track Classification: Neutrinos