



Contribution ID: 42

Type: **not specified**

Leptophilic fermion WIMP ~Role of future lepton colliders~

Thursday, 18 March 2021 07:00 (20 minutes)

The leptophilic weakly interacting massive particle (WIMP) is realized in a minimal renormalizable model scenario where scalar mediators with lepton number establish the WIMP interaction with the standard model (SM) leptons. We perform a comprehensive analysis for such a WIMP scenario for two distinct cases with an SU(2) doublet or singlet mediator considering all the relevant theoretical, cosmological and experimental constraints at present. We show that the mono-photon searches at near-future lepton collider experiments (ILC, FCC-ee, CEPC, etc.) can play a significant role to probe the yet unexplored parameter range allowed by the WIMP relic density constraint. This will complement the search prospect at the near-future hadron collider experiment (HL-LHC). Furthermore, we discuss the combined model scenario including both the doublet and singlet mediator. The combined model is capable of explaining the long-standing muon ($g-2$) anomaly which is an additional advantage. We demonstrate that the allowed region for anomalous muon ($g-2$) explanation can also be probed at the future colliders which will thus be a simultaneous authentication of the model scenario.

Time Zone

Asia/Pacific

Primary author: Dr SAHA, Ipsita (Kavli IPMU)

Presenter: Dr SAHA, Ipsita (Kavli IPMU)

Session Classification: PD1: Theoretical Developments

Track Classification: Physics and Detectors Tracks: PD1: Theoretical Developments