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Phenomenology of Minimal Leptophilic Dark Matter Models at Linear Colliders

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In this talk, I discuss the phenomenology of a minimal model for GeV-scale Majorana dark matter (DM) coupled to the standard model lepton sector via a charged scalar singlet. The theoretical framework extends the Standard Model by two $SU(2)_L$ singlets: one charged Higgs boson and a singlet right-handed fermion. The latter plays the role of the DM candidate. We show that there is an anti-correlation between the spin-independent DM-Nucleus scattering cross-section (σ_{SI}) and the DM relic density for parameter values allowed by various theoretical and experimental constraints. Moreover, we find that even when DM couplings are of order unity, σ_{SI} is below the current experimental bound but above the neutrino floor. Furthermore, we show that the considered model can be probed at High Energy lepton colliders using e.g. the mono-Higgs production and same-sign charged Higgs pair production.

Time Zone

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