



Contribution ID: 50

Type: Oral presentation using Zoom

## Radiative Neutrino Mass with GeV Scale Majorana Dark Matter in Scotogenic Model

*Thursday, 28 October 2021 20:20 (20 minutes)*

The experimental observations from the colliders established the standard model (SM), the most successful phenomenological framework to explain the non-gravitational interactions of fundamental particles at high energy. Non-zero neutrino mass and dark matter cast a shadow over its success. This necessitates the extension of the SM. The most straightforward and elegant extension of the SM to explain these two phenomena is the Scotogenic model, where the SM particle spectrum extends with three isospin singlet right-handed neutrinos and one doublet scalar while all of these being odd under  $Z_2$  symmetry. In this work, we have considered the lightest right-handed neutrino as the dark matter candidate and freeze-out mechanism for producing the observed dark matter relic density. The charged lepton flavor violation decay processes constrain the upper side of Yukawa coupling while the observed relic density limits the lower side. We have performed a unique parameterization to attain the highest possible Yukawa coupling while satisfying LFV and DM constraints. The reduced number of free parameters and large Yukawa coupling makes the model predictability at lepton colliders very high. Collider phenomenology for possible signatures performed at lepton colliders and the required luminosities estimated for detection. The exclusion bounds on the inert charged scalars were recast at the 13 TeV LHC.

### 1st preferred time slot for your oral presentation

19:00-21:00 JST (12:00-14:00 CEST, 6:00-8:00 EDT, 3:00-5:00 PDT)

### 2nd preferred time slot for your oral presentation

10:00-12:00 JST (3:00-5:00 CEST, 21:00-23:00 EDT, 18:00-20:00 PDT)

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**Session Classification:** H-3: BSM particle production

**Track Classification:** Parallel sessions: Topical Groups: Session H: BSM particle production