Contribution ID: **75** Type: **Poster**

Full phenomenological consistency of the singlet-triplet scotogenic model

We perform a complete analysis of the consistency of the singlet-triplet scotogenic model that focus in explain the dark matter (DM) and the neutrino masses of the stadard model to one-loop. We aisle the parameter space that is in agreement with the relic density of DM reported by the Plank satellite and the recent fits to the neutrino parameters. Even more, we aisle the parameter space that is also in agreement with direct-indirect detection experiments as XENON1T and Fermi-LAT, with searches of signals at the LHC in the context of supersymmetry and with processes of lepton flavor violation. We computed for the first time the DM annihilation into two photons and the spin-dependent cross-section in this model. We studied those two process at one-loop in detail. In the end, we realized that this model is able to fulfill all its theoretical constraints and the current experimental bounds, staying alive to future searches of DM signals.

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