Contribution ID: **196** Type: **Poster session only**

Singlet-Doublet Majorana Dark Matter and Neutrino Mass in a Type-I Seesaw Scenario

In a bid to simultaneous explanation of dark matter (DM) and tiny but non-zero masses of left-handed neutrinos, we propose a minimal extension of the Standard Model (SM) by a vector-like fermion doublet and three right handed (RH) singlet neutrinos. The DM arises as a mixture of the neutral component of the fermion doublet and one of the RH neutrinos, both assumed to be odd under an additional $\mathcal{Z}_2$ symmetry. As a result, the DM emerges to be a dominantly Majorana particle and escapes from Z-mediated direct search constraints to mark a significant difference from singlet-doublet Dirac DM. The other two $\mathcal{Z}_2$ even heavy RH neutrinos give rise masses and mixing of light neutrinos via Type-I Seesaw mechanism. The particle content automatically allows us to extend the model by a gauged $U(1)_{B-L}$ symmetry, which is anomaly free and brings an additional portal between DM and SM particles. Relic density and direct search allowed parameter space for both the cases are investigated through detailed numerical scan, while collider search strategies are also indicated.

arXiv number (if applicable)

2009.00885

Primary author: Mr DUTTA, Manoranjan (Indian Institute of Technology Hyderabad)

Co-authors: Dr BHATTACHARYA, Subhaditya (Indian institute of Technology Guwahati); Dr SAHU, Narendra (Indian Institute of Technology Hyderabad); Dr GHOSH, Purusottam (Harish-Chandra Research Institute, Allahabad.)

Presenter: Mr DUTTA, Manoranjan (Indian Institute of Technology Hyderabad)

Session Classification: Poster Session