Contribution ID: **79** Type: **not specified**

Role of Higher-Dimensional Operators in an Anomaly-free U(1) extension

Tuesday 28 June 2022 17:00 (15 minutes)

We consider an anomaly-free U(1) extension of the Standard Model with three right-handed neutrinos (RHNs) and two complex scalars, wherein the charge assignments preclude all tree-level mass terms for the neutrinos. Considering this setup, in turn, to be only a low-energy effective theory, we introduce higher-dimensional terms {\em a la} Froggatt-Nielsen to naturally generate tiny neutrino masses. One of the RHNs turns out to be very light, thereby constituting the main decay mode for the Z' and hence relaxing the LHC dilepton resonance search constraints. The lightest RHN has a lifetime comparable to or bigger than the age of the Universe, and, hence, could account for a non-negligible fraction of the dark matter. The two heavy RHNs can lead to resonant leptogenesis provided they are nearly degenerate and their mass splitting is of the order of the decay width.

Authors: Prof. CHOUDHURY, Debajyoti (University of Delhi); DEKA, Kuldeep; Dr SADHUKHAN, Soumya (Ramakrishna Mission Residential College, Narendrapur, Kolkata); Dr MANDAL, Tanumoy (IISER Trivandrum)

Presenter: DEKA, Kuldeep

Session Classification: Parallel Session I.1