

Phenomenology 2025 Symposium



Contribution ID: 182

Type: **not specified**

Right-Handed Neutrino Masses from the Electroweak Scale

Tuesday 20 May 2025 17:30 (15 minutes)

We explore the possibility that the right-handed neutrino Majorana mass originates from electroweak symmetry breaking. Working within an effective theory with two Higgs doublets, nonzero lepton number is assigned to the bilinear operator built from the two Higgs fields, which is then coupled to the right-handed neutrino mass operator. In tandem with the neutrino Yukawa coupling, following electroweak symmetry breaking a seesaw mechanism operates, generating the light SM neutrino masses along with right-handed neutrinos with masses below the electroweak scale. This scenario leads to novel phenomenology in the Higgs sector, which may be probed at the LHC and at future colliders. There are also interesting prospects for neutrinoless double beta decay and lepton flavor violation. We also explore some theoretical aspects of the scenario, including the technical naturalness of the effective field theory and ultraviolet completions of the right-handed neutrino Majorana mass.

Mini Symposia (Invited Talks Only)

Plenary (Invited talks only)

Authors: Dr BHOONAH, Amit (University of Pittsburgh); Prof. BATELL, Brian (University of Pittsburgh); HUANG, Wenjie

Presenter: HUANG, Wenjie

Session Classification: Neutrino

Track Classification: Neutrino Physics