Contribution ID: **411** Type: **Theory poster**

Multi-charged TeV scale scalars and fermions in the framework of a radiative seesaw model

Thursday, June 10, 2021 6:45 PM (1 hour)

Explaining the tiny neutrino masses and non-zero mixings have been one of the key motivations for going beyond the framework of the Standard Model (SM). We discuss a collider testable model for generating neutrino masses and mixings via radiative seesaw mechanism. That the model does not require any additional symmetry to forbid tree-level seesaws makes its collider phenomenology interesting. The model includes multi-charged fermions/scalars at the TeV scale to realize the Weinberg operator at 1-loop level. After deriving the constraints on the model parameters resulting from the neutrino oscillation data as well as from the upper bound on the absolute neutrino mass scale, we discuss the production, decay and resulting collider signatures of these TeV scale fermions/scalars at the Large Hadron Collider (LHC). We consider both Drell-Yan and photo-production. The bounds from the neutrino data indicate the possible presence of a long-lived multi-charged particle (MCP) in this model. We obtain bounds on these long-lived MCP masses from the ATLAS search for abnormally large ionization signature. When the TeV scale fermions/scalars undergo prompt decay, we focus on the 4-lepton final states and obtain bounds from different ATLAS 4-lepton searches. We also propose a 4-lepton event selection criteria designed to enhance the signal to background ratio in the context of this model.

Primary author: Mr ., Avnish (Institute of Physics)

Presenter: Mr ., Avnish (Institute of Physics)

Session Classification: Poster Session

Track Classification: TeV-Scale BSM