

Contribution ID: 451

Type: Parallel

The cosmic origin of matter from exact proton stability

In this talk, we revisit a class of lepton-flavor non-universal gauge extensions of the Standard Model that provide a compelling framework for generating neutrino masses and mixing angles via a high-scale seesaw mechanism, while ensuring exact proton stability to all orders in the effective field theory. This setup naturally accommodates minimal thermal leptogenesis, offering a robust explanation for the observed matter-antimatter asymmetry. A feature of this construction is the prediction of a light pseudo-Nambu-Goldstone boson, the majoron, whose properties and couplings we examine in the context of dark matter, cosmology, and ongoing experimental searches. Remarkably, the model also yields a lower bound on the mass of the lightest neutrino and makes concrete predictions for the Majorana phases. These in turn lead to a testable prediction for neutrinoless double beta decay, providing a powerful experimental probe of the underlying theory.

Secondary track

Author:PONCE DIAZ, Xavier (University of Basel)Presenter:PONCE DIAZ, Xavier (University of Basel)Session Classification:T09

Track Classification: T09 - Beyond the Standard Model