

**SUSY 2024**

Theory meets Experiment

Madrid

10-14 June 2024

Contribution ID: 176

Type: **Parallel Talk**

## Early Universe hypercharge breaking and neutrino mass generation

*Friday 14 June 2024 11:00 (20 minutes)*

Extensions of the Standard Model (SM) scalar sector featured in radiative neutrino mass models possess the ingredients for exotic thermal histories and rich possibilities for beyond SM physics. In this talk, we will explore the possibility of early Universe non-restoration of the  $U(1)_Y$  gauge symmetry in the Zee-Babu neutrino mass generation model and the ways in which this phenomenology can be harnessed in mechanisms of baryo- and leptogenesis. We will find that subtleties in the treatment of finite-temperature perturbation theory play a decisive role in mapping out the parameter space of phenomenological interest. The highlight of the talk will be a novel baryon asymmetry generating mechanism which crucially relies on the high-temperature  $U(1)_Y$  breaking phase and the exotic phenomenology of charge-breaking SM lepton masses therein.

**Primary authors:** Prof. NO REDONDO, José Miguel (IFT UAM-CSIC & Universidad Autónoma de Madrid); Prof. MERLO, Luca (IFT UAM-CSIC & Universidad Autónoma de Madrid); Mr LÓPEZ ZURDO, Sergio; LOZANO ONRUBIA, Álvaro (IFT UAM-CSIC & Universidad Autónoma de Madrid)

**Presenter:** LOZANO ONRUBIA, Álvaro (IFT UAM-CSIC & Universidad Autónoma de Madrid)

**Session Classification:** Flavour physics and neutrinos

**Track Classification:** Flavour physics and neutrinos