Contribution ID: **54** Type: **Poster**

Invisible Higgs Boson Decay in a Model with Diracon

Neutrino oscillations provide clear evidence for physics beyond the Standard Model (BSM). While most studies focus on Majorana neutrinos, Dirac neutrino scenarios offer a consistent and less explored alternative with interesting phenomenological implications, including the prediction of a Diracon, a Goldstone boson arising from the spontaneous breaking of a global symmetry.

In this work, I study a simple extension of the Standard Model based on an anomaly-free global \(U(1)_D\) symmetry, introducing a complex scalar field and right-handed neutrinos to realize a Dirac seesaw mechanism. The phenomenology is explored with a focus on invisible Higgs boson decay channels into the new scalar states. In addition, I analyze the resulting neutrino mass matrices.

The parameter space is investigated to identify regions consistent with current experimental constraints and potential signatures in future particle physics experiments. As a complementary analysis, I also study loop-induced lepton flavor violation (LFV) processes, exploring their dependence on the model parameters and their potential to provide additional phenomenological constraints.

Academic position of the presenting author

Undergraduate Student

Primary author: MOTTA, JULIAN (Universidad Nacional de Colombia)

Presenter: MOTTA, JULIAN (Universidad Nacional de Colombia)

Session Classification: Posters & Empanadas

Track Classification: Beyond the Standard Model