

Searching for hints of LNV in rare meson decays

Thursday 6 June 2024 15:30 (20 minutes)

The observation of a lepton-number violating (LNV) process would have far-reaching consequences for our understanding of fundamental physics. It would have implications on the viability of leptogenesis scenarios, and point toward a Majorana nature of neutrinos. In this talk, we will point out the possibility of searching for a hint of LNV in the rare meson decays $K \rightarrow \pi + \text{invisible}$ and $B \rightarrow K(K^*) + \text{invisible}$ through detailed measurements of kinematic distributions in the missing energy. Although our main focus is on LNV, we highlight that our framework can also be used to search for other types of new physics. In particular, we show to what extent one can distinguish between new physics contributions from a dark sector and LEFT through dedicated measurements of kinematic distributions only. Finally, we point out that the observation of LNV in rare meson decays would have implications for flavor structures in the UV, and could put high-scale leptogenesis under tension.

Primary authors: BURAS, Andrzej (Munich); HARZ, Julia; MOJAHED, Martin

Presenter: MOJAHED, Martin

Session Classification: Parallel Session PII.4