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Constraining new scalar interactions with the rare $\tau \to \eta\pi\nu$ decay

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The sensitivity of the rare eta-pion decay channel of the tau lepton to new physics (NP) is investigated in the framework of models that contain scalar interactions. The different sources of isospin breaking are included in the Standard Model contributions. Using the current upper limits on the branching ratio of this rare decay, combined with precise measurements of other allowed semileptonic decays of taus, allow us to set constraints on the parameter space that characterizes the new physics contributions. Although these constraints are competitive with other direct and indirect searches of NP, a future measurement of this rare decay channel and a better understanding of the scalar form factor can provide the strongest constraints on the specific models under consideration

Author: Mr PORTILLO SANCHEZ, Diego (Cinvestav)

Co-author: LOPEZ CASTRO, Gabriel

Presenter: LOPEZ CASTRO, Gabriel

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