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Constraints on SU(2)_L-preserving NSI from τ decays

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Neutrino non-standard interactions (NSI) have been studied in a variety of contexts and suggested as a possible mechanism for resolving certain unexpected results in oscillation experiments. NSI may be generated in various ways and take a variety of forms. We focus on flavor-changing neutral current NSIs involving tau neutrinos. In simple scenarios in which these are generated by dimension-six effective operators, it is often the case that flavor-violating interactions of charged leptons are also generated; the strengths of these interactions are then related by SU(2)_L symmetry. We investigate for this subset of NSI the restrictions which can be obtained by utilizing the stringent experimental limits on charged lepton flavor-violating tau decays, finding that the quark contributions to these operators are often constrained to be on the order of 10^-3.

Abstract

Primary author(s) : PAZ CASTRO, Santiago (Universitat de València); PASSEMAR, Emilie; Sr. WILLIAM, McNulty (Indiana University)

Presenter(s) : PAZ CASTRO, Santiago (Universitat de València)

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