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On lepton flavor universality in B decays

Present measurements of $b \rightarrow c \tau \nu$ and $b \rightarrow u \tau \nu$ transitions differ from the standard model predictions of lepton flavor universality by almost 4σ . We examine new physics interpretations of this anomaly. An effective field theory analysis shows that minimal flavor violating models are not preferred as an explanation, but are also not yet excluded. Allowing for general flavor violation, right-right vector and right-left scalar quark currents are identified as viable candidates. We discuss explicit examples of two Higgs doublet models, leptoquarks as well as quark and lepton compositeness. Finally, implications for LHC searches and future measurements at the (super)B- factories are presented.

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