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Challenges to Lepton Universality in B Meson Decays

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One of the key assumptions of the Standard Model of particle physics is that the interactions of the charged leptons, namely electrons, muons and taus, differ only because of their different masses. Recent studies of B-meson decays involving the higher-mass tau lepton have resulted in observations that challenge lepton universality at the level of four standard deviations. A summary of recent measurements by the BABAR, Belle, and LHCb experiments will be presented. A confirmation of these results would point to new particles or interactions, and could have profound implications for our understanding of particle physics.

Primary author: LUTH, Vera

Presenter: LUTH, Vera

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