

PHYSICS DEPARTMENT COLLOQUIUM

“The Flavor Enigma: A Window to Physics Beyond the Standard Model”

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The flavor enigma, which is the origin of the observed pattern of the Standard Model fermion masses and mixings, is a fundamental unresolved issue whose solution requires physics beyond the Standard Model. Attempts to address the flavor puzzle have recently been rejuvenated due to the discovery of neutrino oscillations, which confirm that neutrinos are massive and lepton mixing is observable. In this talk, I provide an overview of the flavor enigma of the Standard Model and discuss approaches to address this puzzle within the broad context of quark-lepton grand unification. I focus on a particular phenomenological approach to parametrizing the lepton mixings in analogy to Wolfenstein's parametrization of the quark mixings, and argue that within this approach, results from planned next generation neutrino experiments will provide important insight into the flavor puzzle.

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