

Proton Decay and Flavor Symmetry

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The observed hierarchies in fermion masses and mixing angles in the Standard Model, the so-called flavor puzzle, strongly suggest the presence of a new flavor structure or symmetry at high energies. At the same time, searches for nucleon decay provide one of the most powerful experimental probes of ultra-high-energy physics. Because both nucleon decay and flavor symmetries govern interactions among matter fermions, their effects are deeply interconnected: flavor structures can shape nucleon decay rates and branching patterns, while current and future experimental observations of nucleon decay can, in turn, offer significant insights into flavor models. In this talk, I will explore this relationship, highlighting how flavor symmetries can manifest in nucleon-decay signatures and how upcoming searches may reveal the underlying flavor structure of nature.

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