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Probing neutrinoless double-beta decay by nuclear observables

Content

Observing neutrinoless double-beta $(0\nu\beta\beta)$ decay –a decay in which two nucleons inside a nucleus beta decay simultaneously without emitting neutrinos –would be a clear signal of lepton-number violation and would improve our understanding of neutrinos. While the experiments hunting for this decay are approaching ton scales, the required nuclear-theory input remains a major obstacle to planning and interpreting the experiments.

In this talk, I will discuss different ways to improve the nuclear-theory predictions for $0\nu\beta\beta$ decay by using experimental data on other nuclear processes such as charge-exchange reactions and muon capture on nuclei. I will also talk about recent corrections to the traditional decay operators based on chiral effective field theory.

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