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# Beyond-mean-field approaches for nuclear neutrinoless double beta decay

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Neutrinoless double beta decay, if it exists, would provide a crucial probe to fundamental symmetries in nature. Over the years, it has been investigated with many different methods ranging from mean-field approaches based on the quasiparticle random-phase approximation over investigations within the Interacting Boson Model and configuration mixing calculations in restricted configuration spaces. In this talk, we discuss calculations of the nuclear matrix elements for neutrinoless double beta-decay based on beyond mean-field methods in relativistic and non-relativistic density functional theories. In particular, we also present recent progress in the microscopic derivation of relativistic mean-field applications for asymmetric nuclear matter and for finite nuclei.

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