Conference on Neutrino and Nuclear Physics (CNNP2017)



Contribution ID: 39

Type: Oral

Double-Beta Decay of Medium-Mass Nuclei within the Realistic Shell Model

Monday, 16 October 2017 15:30 (20 minutes)

We report on the calculation of double-beta decay properties for nuclei around 132Sn within the framework of the realistic shell model. The effective shell-model Hamiltonian and transition operators are derived by way of many-body perturbation theory [1,2], without resorting to empirical effective quenching factors for the transition operators. We present the results for Gamow-Teller and two-teutrino double-beta decays, comparing them with the available experimental data [3]. This is crucial in order to establish the reliability of our approach to tackle the challenging neutrinoless double-beta decay problem.

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[2] K. Suzuki and R. Okamoto, Prog. Theor. Phys. 93, 905 (1995).

[3] L. Coraggio, L. De Angelis, T. Fukui, A. Gargano, N. Itaco, Phys. Rev. C 95, 064324 (2017).

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Session Classification: Parallel