

Realistic Nuclear Shell Model and Double-Beta Decay: the STRENGTH project

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The detection of the neutrinoless double-decay is nowadays one of the main goals in many laboratories all around the world, triggered by the search of "new physics" beyond the Standard Model.

I report on the calculation of the nuclear double-beta decay properties for nuclei that are possible candidates for such a process 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 without resorting to empirical effective quenching factors for the transition operators. The computational challenges of such an approach will be underlined.

The reported research activity is carried in the frame of the STRENGTH (STructure and REaction Nuclei: towards a Global THeory) project of INFN.

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