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Neutrinoless double-beta decay nuclear matrix elements for mass A∼130[1] ANDREI NEACSU, MIHAI HOROI, Department of Physics, Central Michigan University, Mount Pleasant, MI 48859, USA — Neutrinoless double beta decay is an important process that could, if measured, provide valuable information regarding several neutrino properties and it's nature. Up to date, the most significant uncertainties in the theoretical study of this decay are related to the accuracy of the nuclear matrix elements that appear in the expressions of the lifetimes. We calculate the nuclear matrix elements for 124Sn and 130Te in a shell model approach, using a recently proposed effective Hamiltonian in the jj55 model space. For a better reliability of the nuclear matrix elements results, we investigate the effective Hamiltonian performing calculations of several spectroscopic quantities that are compared to the latest experimental data available, and we also analyze the two-neutrino double beta decay and the neutrinoless double beta decay matrix elements for 136Xe. We report new values of the nuclear matrix elements for 124Sn and 130Te for both light neutrino exchange and heavy neutrino exchange mechanisms, alongside a brief overview of some recent values from the literature.

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