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Shell model calculations of double-beta decay lifetimes of ^{76}Ge and ^{82}Se[1] SABIN STOICA, ANDREI NEACSU, Horia Hulubei National Institute for Physics and Nuclear Engineering, P.O. Box MG-6, 077125 Magurele-Bucharest, Romania, MIHAI HOROI, Department of Physics, Central Michigan University, Mount Pleasant, Michigan 48859 — The neutrinoless double beta decay is the most sensitive process to determine the absolute scale of the neutrino masses, and the only one that can distinguish whether neutrino is a Dirac or a Majorana particle. A key ingredient for extracting the absolute neutrino masses from neutrinoless double beta decay experiments is a precise knowledge of the nuclear matrix elements (NME) for this process. A newly developed shell model approaches for computing the NME and half-lifes for the two-neutrino and neutrinoless double beta decay modes of ^{48}Ca using modern effective interactions will be presented. The implications of the new results on the experimental limits of the effective neutrino mass will be discussed, and compared with those obtained for the ^{76}Ge and ^{82}Se decays.

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