



Nuclear Theory

# Uncertainties in nuclear transition matrix elements for neutrinoless $\beta\beta$ decay II: the heavy Majorana neutrino mass mechanism

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Employing four different parametrization of the pairing plus multipolar type of effective two-body interaction and three different parametrizations of Jastrow-type of short range correlations, the uncertainties in the nuclear transition matrix elements  $M_{N}^{(0\nu)}$  due to the exchange of heavy Majorana neutrino for the  $0^+ \rightarrow 0^+$  transition of neutrinoless double beta decay of  $^{94}\text{Zr}$ ,  $^{96}\text{Zr}$ ,  $^{98}\text{Mo}$ ,  $^{100}\text{Mo}$ ,  $^{104}\text{Ru}$ ,  $^{110}\text{Pd}$ ,  $^{128,130}\text{Te}$  and  $^{150}\text{Nd}$  isotopes in the PHFB model are estimated to be around 25%. Excluding the nuclear transition matrix elements calculated with Miller-Spenser parametrization of Jastrow short range correlations, the uncertainties are found to be 10%-15% smaller.

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