

Matrix elements for neutrinoless double beta decay

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The present-day results of the calculation of the $0\nu\beta\beta$ -decay nuclear matrix elements (NMEs) are discussed. The progress in the calculation of the double beta decay NMEs within the QRPA is presented in the context of the restoration of the SU(4) symmetry. A connection between the $2\nu\beta\beta$ -decay and $0\nu\beta\beta$ -decay matrix elements is analyzed. An impact of the quenching of the axial-vector coupling constant on double-beta decay processes is investigated and a novel approach to determine quenched value of g_A is proposed. The question is addressed whether light and heavy neutrino contributions to $0\nu\beta\beta$ -decay are experimentally distinguishable. Several simplified benchmark scenarios within left-right symmetric models are considered and the conditions for the dominance of the light or heavy neutrino mass mechanisms are analyzed.

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