

# Recent Developments in $\beta$ decay studies within the Nuclear Shell Model

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The necessity of calculating reliable nuclear matrix elements for neutrinoless double  $\beta$  decay has further stimulated the research on the mechanisms responsible for the renormalization of the  $\beta$ -decay operator. We tackle this point using the many-body perturbation theory to derive effective Hamiltonian and operators for nuclear shell model calculations. Here, I will present recent results obtained for medium-mass nuclei, discussing the effect of the renormalization for both allowed and forbidden  $\beta$ -decay transitions.

**Autore principale:** DE GREGORIO, Giovanni (Istituto Nazionale di Fisica Nucleare)

**Relatore:** DE GREGORIO, Giovanni (Istituto Nazionale di Fisica Nucleare)

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