国立研究開発法人理化学研究所　仁科加速器研究センター
第256回 RIBF核物理セミナー
RIKEN Nishina Center for Accelerator Based Science
The 256th RIBF Nuclear Physics Seminar

Double Gamow Teller transition and its relation to neutrinoless double beta decay matrix element

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The double Gamow-Teller (DGT) resonance is of particular interest not only as an exotic collective excitation, but also in relevance to the neutrinoless double-beta (0nbb) decay. In this talk, I will present our theoretical studies of the DGT transition and its relevance to 0nbb-decay nuclear matrix element (NME) based on shell-model calculations. The shell-model study reveals that the centroid energy and the width of the DGT strength distribution of 48Ca are sensitive to the isovector and isoscalar pairing interactions, respectively. We also found a simple relation between the centroid energy of the 48Ca DGT giant resonance and the 0nbb-decay NME. More generally, we observe a very good linear correlation between the DGT transition to the ground state of the final nucleus and the 0nbb-decay NME. It indicates that heavy-ion double charge exchange experiments would be a useful tool to obtain the information on the 0nbb-decay NME.

＊ The talk will be given in English language.

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