## Single-particle and collective motions from nuclear many-body correlation (PCM2025)



Contribution ID: 36

Type: not specified

## Delta-isobar resonance effects on beta and double beta decays in medium heavy nuclei

Thursday, 6 March 2025 12:00 (20 minutes)

Astro- $\nu$  interactions are studied by inverse  $\beta$  decays and  $\nu$ -properties beyond the standard model are studied by neutrinoless double beta decays  $(0\nu\beta\beta)$ . The  $\beta$  and  $\beta\beta$  nuclear matrix elements (NMES) consist mainly of the axial-vector spin ( $\sigma$ ) isospin( $\tau$ ) components, The delta-isobar ( $\Delta$ ) resonance excited by the quark  $\tau\sigma$ excitation of nucleon in the nucleus is shown to quench the axial-vector components of NMEs. The effects are evaluated by using experimental energies and the strengths of the Gamow-Teller (nuclear  $\tau\sigma$ ) resonances. The quenching effect is incorpolated by the effective axial-vector coupling around  $g_A^{eff} \approx 0.7 \pm 0.1$  in units of  $g_A$  for a free nucleon. Impact of the  $\Delta$  resonance on neutrino studues in nuclei is discussed. H. Ejiri et al., Phys. Rep. 797, 1 2019, Phys. Rev. C105, L022501, C108, L11302 2023.

## Type of contribution

## Are you a student or postdoc?

no

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