

Spectroscopy of $A=30\sim 40$ Neutron-Rich Nuclei via Fusion-Evaporation Reactions at JAEA

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Progress of the RI beam physics has revealed the new interesting phenomena such as neutron halo and island of inversion. Theoretically, the breakdown of the well-known $N = 20$ magic number in the island of inversion is interpreted in term of the lowering of $2p-2h$ energy gap. Experimentally, however, the knowledge on the nuclear structure is so far limited to ground states and lowest-lying states due to their production methods. In order to explore further the nuclear structure, the findings on the high-spin states is also indispensable since the shell structure is also strongly dependent on the nuclear rotation and deformation. Furthermore, the nuclear deformation can rapidly evolve as the angular momentum increases.

Thus, the systematic high-spin study towards the island of inversion is of great interest. We will present some experimental results on $T_z \sim 2$ nuclei in this region produced by heavy-ion induced fusion evaporation reactions.

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