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Shell evolution below ^{132}Sn and its impact on Gamow-Teller β decay from the ($27/2^+$) isomer in ^{127}Ag

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The change of the shell structure in atomic nuclei, so-called *nuclear shell evolution*, occurs due to changes of major configurations through particle-hole excitations inside one nucleus, as well as due to variation of the number of constituent protons or neutrons. We have investigated how the shell evolution affects Gamow-Teller (GT) transitions, which dominate the β decay in the region below the doubly magic nucleus ^{132}Sn, using the newly obtained experimental data on a long-lived isomer in ^{127}Ag. The experiment has been carried out at the RIBF facility as part of the EURICA decay spectroscopy campaign. The $T_{1/2} = 67.5(9)$ ms isomer has been identified with a spin and parity of $(27/2^+)$ at an excitation energy of 1942^{+14}_{-20} keV, and found to decay via an internal transition of an $E3$ character, which competes with the dominant β-decay branches towards the high-spin states in ^{127}Cd. In this presentation, the underlying mechanism of a strong GT transition from the ^{127}Ag isomer is discussed in terms of configuration-dependent optimization of the effective single-particle energies in the framework of a shell-model approach. Besides, I will introduce a new project of decay spectroscopy at RIBF with a highly efficient fast-timing $LaBr_3$(Ce) array IDATEN.

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