

Beta decay of the very neutron-rich nucleus ^{85}Ge

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Beta decay of very neutron-rich nucleus ^{85}Ge ($Z=32$, $N=53$) was studied at the Holifield Radioactive Ion Beam Facility at Oak Ridge National Laboratory. A high-purity beam of ^{85}Ge was obtained by combining two-stage electromagnetic separation with ion-source chemistry. The partial level scheme with several new transitions in the daughter nucleus ^{85}As was proposed for the first time. The low-energy level structure of ^{85}As was interpreted within the shell model framework. To comprehend the evolution of the level structure in $N=52$ isotones, the shell model calculations were extended to the neighboring ^{81}Cu , ^{83}Ga and ^{85}Br nuclei. According to them, the increasing number of protons leads to a change of the expected ground-state spin values. This suggests that strong competition may appear between $\pi f_{5/2}$ and $\pi p_{3/2}$ proton single-particle orbitals for $N=52$ isotones.

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