

ROTATIONAL BANDS IN THE DOUBLY MAGIC NUCLEUS ^{56}Ni ¹

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Structures of the medium- to high-spin states in the doubly magic nucleus ^{56}Ni have been investigated using the reaction $^{28}\text{Si}(^{36}\text{Ar}, 2\alpha)$ and the γ -ray spectrometer Gammasphere in conjunction with the 4π charged-particle detector array Microball. Two well-deformed rotational bands have been identified. There is evidence that one of the bands, which is identical to a sequence in the odd-odd neighbor ^{58}Cu , partially decays via proton emission into the ground state of ^{55}Co . Predictions of extensive large-scale shell-model and cranked Hartree-Fock and Hartree-Fock-Bogolyubov calculations are compared with the experimental data.

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