

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 fusion reaction $^{28}\text{Si}(^{36}\text{Ar}, 2\alpha)$. In addition to several new spherical states, two well-deformed rotational bands have been identified. One of the bands is identical to the one in the neighboring odd-odd nucleus ^{58}Cu on an absolute energy scale. There is strong evidence that this band partially decays via proton emission into the ground state of the daughter nucleus ^{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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