

# HIGH-SPIN $\gamma$ -RAY SPECTROSCOPY IN THE VICINITY OF $^{56}\text{Ni}$ <sup>1</sup>

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High-spin states of a number of nuclei near  $^{56}\text{Ni}$  have been studied by means of the  $^{28}\text{Si}(^{36}\text{Ar}, x\alpha y p z n)$  reaction. The GAMMASPHERE array in conjunction with light charged-particle and neutron detectors were used to identify and cleanly select the fusion-evaporation products. In addition to significantly extending the level schemes of many previously known  $N = Z$  nuclei from  $^{52}\text{Fe}$  to  $^{58}\text{Cu}$ , excited states in the one-neutron-hole nucleus  $^{55}\text{Ni}$  and high-spin rotational bands in the vicinity of the doubly-magic  $^{56}\text{Ni}$  have been established for the first time. Spherical-fp shell model and cranked Hartree-Fock calculations employing several Skyrme-type effective interactions have been used to interpret these data. The calculated moments of inertia of the rotational bands show considerable sensitivity to the details of the effective interactions.

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