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Shape Coexistence in ^{69}Co DANIEL PUENTES, Florida Intl Univ, BENJAMIN CRIDER, National Superconducting Cyclotron Laboratory, CHRIS PROKOP, SEAN LIDDICK, Michigan State University — The rapid change in nuclear properties with the addition or removal of a few nucleons can provide a wealth of information on nuclear structure. One such example of rapid changes is shape coexistence which has been observed in numerous regions of the nuclear chart. Evidence for coexistence between normal and deformed configurations in the vicinity of the Ni isotopes near N = 40 has been identified in various isotopes of Co, Ni, and Cu. Levels attributed to the cross-shell proton excitations have been observed as a function of neutron number in all three isotopic chain and are observed to systematically decrease in energy with increasing neutron number. Recently, two -decaying states in $^{69}_{27}$Co have been identified. However, their relative energy separation is unknown and there are some suggestions that the deformed configuration is the ground state. Observance of a weak -ray would, at a minimum, fix the energy difference between the two states of $^{69}_{27}$Co. However, the search for the -ray transition is difficult due to the long half-life of 750-ms, a strong competition from decay, and possibly high conversion coefficient. Observance would allow for a better understanding of the systematics of deformation in the Ni region as a function of neutron number.

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