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In-beam Spectroscopy of ^{68}Se. S.M. FISCHER, D.P. BALAMUTH, P. HAUSLADEN, University of Pennsylvania, C.J. LISTER, D.J. BLUMENTHAL, J. SCHWARTZ, Argonne National Laboratory, M.J. LEDDY, University of Manchester, D.G. SARANTITES, M. DEVLIN, Washington University. — Nuclei with N≈Z in the A=70 mass region exhibit rapid changes in shape with the addition or subtraction of one or two particles; shape coexistence has been demonstrated in slightly lighter systems. Experimental investigation of these N=Z nuclei has proven to be quite difficult, principally due to very low cross sections for relevant fusion-evaporation reactions. To date only three transitions have been reported [1] in ^{68}Se. In the present work, ^{68}Se was produced via the ^{40}Ca(^{36}Ar,2α) reaction at a beam energy of 140 MeV. The Gammasphere and Microball arrays were used to detect γ-rays of fold 3 and higher in coincidence with evaporated charged particles. Doppler corrections were applied on an event-by-event basis to γ-rays in coincidence with 2 α particles, and a careful subtraction of feedthrough channels was performed. Two previously identified transitions in ^{68}Se have been confirmed and at least seven new transitions have been observed. The proposed level scheme, based on coincidence relationships and γ-ray angular distributions, will be discussed.

[1] C.J. Lister *et al.*, Phys. Rev. **C42**, R1191 (1990).

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