Abstract Submitted
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Collective behavior in ^{71}As[1] R.A. KAYE, C.J. DROVER, S.R. ARORA, N.R. BAKER, Ohio Wesleyan University, S.L. TABOR, T.A. HINNERS, C.R. HOFFMAN, S. LEE, Florida State University, J. DÖRING, BfS (Germany), J.K. BRUCKMAN, Monmouth College — High-spin states in ^{71}As were studied using the ^{54}Fe(^{23}Na, $\alpha 2p$) reaction at 80 MeV provided by the John D. Fox superconducting accelerator at Florida State University. Prompt γ-γ coincidences were measured using an array of 10 Compton-suppressed Ge detectors. The yrast band based on the $\pi g_{9/2}$ intrinsic configuration was extended up to a $(\frac{37}{2}^+)$ state and now shows evidence of a band crossing near $\hbar\omega = 0.7$ MeV. Lifetimes of 17 excited states were measured using the Doppler-shift attenuation method applied to the experimental line shapes of decays in three known rotational bands. Transition quadrupole moments Q_t inferred from the lifetimes indicate that moderate to high collective behavior persists to the highest observed spins in the lowest positive- and negative-parity bands. The band suggested to be based on the $\pi f_{7/2}$ orbital shows similar collectivity and large intraband $B(M1)$ strengths, but the associated Q_t values are somewhat smaller than expected from cranked Woods-Saxon calculations. These results will also be compared with the predictions of the projected shell model.

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