Abstract Submitted
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Low-lying levels of ^{76}Ge, a candidate for neutrinoless double-β decay[1] S. MUKHOPADHYAY, Department of Chemistry and Physics & Astronomy, University of Kentucky, Lexington, KY, B.P. CRIDER TEAM, E.E. PETERS TEAM, F.M. PRADOS-ESTE'VEZ TEAM, M.T. MCELLISTREM TEAM, S.W. YATES TEAM — The low-spin structure of ^{76}Ge was studied at the University of Kentucky with the (n,n$'\gamma$) reaction. This nucleus is a parent in double-β decay and is also a rare example of a nucleus to exhibit rigid triaxial deformation in the low-lying states. Excitation function measurements performed with neutrons from 1.6 to 3.7 MeV helped determine the threshold for the γ rays and hence their placement in the level scheme. Lifetimes, spins,multipolarities, and branching ratios were obtained from angular distributions measured at neutron energies of 3.0 and 3.5 MeV. New levels identified around 2 MeV will give insight to the nuclear structure aspects of ^{76}Ge. It is also important to identify any γ rays around 2039 keV, as the experimental signature for neutrinoless double-β decay is a weak peak at this energy. In a recent study with 4.9-MeV neutrons, a reported 2039-keV γ ray from the 3952-keV level was not observed. However, definitely a new level at 3147 keV with 2584- and 2038-keV γ rays to the 2_1^+ and 2_2^+ states, respectively was established. These findings indicate that backgrounds in the search for the neutrinoless double-β decay of ^{76}Ge may be more complex.

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Sharmistha Mukhopadhyay
Department of Chemistry and Physics & Astronomy,
University of Kentucky, Lexington, KY

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