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Probing the structure of ^{130}Xe and ^{136}Xe with inelastic neutron scattering T.J. ROSS, A. CHAKRABORTY, B.P. CRIDER, A. KUMAR, M.T. MCELLISTREM, E.E. PETERS, F.M. PRADOS-ESTEVEZ, S.W. YATES, Departments of Chemistry and Physics & Astronomy, University of Kentucky, Lexington, KY 40506, J.R. VANHOY, Department of Physics, United States Naval Academy, Annapolis, MD 21402 — Xenon isotopes in the vicinity of A = 130 provide an opportunity to study the transition in nuclear character from γ soft to vibrational. Although these even-mass Xe isotopes are stable, they prove difficult to investigate directly due to their gaseous nature and thus remain relatively lightly studied. To shed new light on the low-lying structure of these isotopes, experiments have been performed at the University of Kentucky where samples of *solid* $^{130}XeF_2$ and $^{136}XeF_2$ were excited via the (n,n'γ) reaction. Excitation function measurements (between 1.8 and 3.3 MeV) allow the placement of new levels and transitions and provide information about the J^π of levels. Gamma-ray angular distribution data allow the determination of transition multipolarities, γ-ray branching ratios, and level lifetimes (using DSAM techniques). We will present new information concerning the low-spin structure of these transitional nuclei. This material is based upon work supported by the U.S. National Science Foundation under grant no. PHY-0956310.

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