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Low-lying Structure of ^{134}Xe from Inelastic Neutron Scattering[1]

E.E. PETERS, B.P. CRIDER, S.F. ASHLEY, M.T. MCELLISTREM, S.W. YATES, University of Kentucky, Depts. of Chemistry and Physics & Astronomy — Unlike the transition from spherical vibrators to axially symmetric rotors, little is known about the transition from spherical vibrators to gamma-soft nuclei. The stable isotopes of xenon span a region which exhibits this lesser understood shape transition. While ^{136}Xe shows evidence of being a spherical vibrator, the lighter xenon nuclei demonstrate gamma-soft behavior. Measurements to determine the nuclear structure of the xenon isotopes are difficult, however, since they are gases under ambient conditions, and solid targets are much more amenable to typical methods. Recently, highly enriched ($> 99.9\%$) samples of ^{132}Xe and ^{134}Xe were converted to solid XeF_2. These isotopes were studied at the University of Kentucky 7-MV Van de Graaff accelerator facility using the inelastic neutron scattering reaction with gamma-ray detection. Both excitation function and angular distribution data were obtained for the low-lying levels. First results of the experiments on ^{134}Xe will be presented.

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