Abstract Submitted
for the APR07 Meeting of
The American Physical Society

High-spin states in ^{135}Xe N. FOTIADES, R.O. NELSON, M. DEVLIN, LANL, J.A. CIZEWSKI, Rutgers, R. KRÜCKEN, T.U.Munchen, R.M. CLARK, P. FALLON, I.Y. LEE, A.O. MACCHIAVELLI, LBNL, J.A. BECKER, W. YOUNES, LLNL, T. ETHVIGNOT, T. GRANIER, Bruyères-le-Châtel — Investigation of high-spin states in ^{135}Xe is important for comparison with shell-model calculations because this isotope has only one neutron hole in the N=82 shell and, hence, a relatively limited number of single-particle configurations at low excitation energies. The structure of ^{135}Xe was studied in two experiments: i) as a fission fragment following the fission of the ^{226}Th compound nucleus formed in a fusion-fission reaction (^{18}O at 91 MeV on ^{208}Pb) with the GAMMASPHERE spectrometer at LBNL, and ii) as an evaporation residue in the ^{136}Xe(n,2nγ)^{135}Xe reaction with the GEANIE spectrometer at LANL. The level scheme above the $11/2^-$, 527-keV isomer (from the odd neutron in the $h_{11/2}$ orbital) was established up to 3710-keV excitation energy. This is the first observation of negative-parity high-spin states in this isotope. A strong sequence was assigned to ^{135}Xe and forms the yrast decay path including the $15/2^-$ and $19/2^-$ states. A much weaker sequence of γ-rays was tentatively assigned to ^{135}Xe and is a candidate for the off-yrast sequence that includes the $13/2^-$ and $17/2^-$ states, expected in the weak coupling of the $h_{11/2}$ neutron to the even-A core. The results are compared with predictions from shell-model calculations.

Ron Nelson
LANL

Date submitted: 11 Jan 2007 Electronic form version 1.4