Abstract Submitted
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Shears bands in ^{204}At and ^{206}Fr?[1] E.P. SEYFRIED, D.J. HARTLEY, US Naval Academy, W. REVIOL, D.G. SARANTITES, C.J. CHIARA, O.L. PECHENAYA, Washington University, K. HAUSCHILD, A. LOPEZ-MARTENS, CSNSM, Orsay, France, M.P. CARPENTER, R.V.F. JANSSENS, D. SEWERYNIAK, S. ZHU, Argonne National Lab — Excited states above the (10^-) isomers in the N = 119 isotones ^{204}At and ^{206}Fr have been observed for the first time. The experimental setup consisted of Gammasphere and the evaporation-residue detector Hercules. A beam-target combination of ^{30}Si + ^{181}Ta (E_{lab} =152 MeV) was utilized for 20 hours in order to obtain these data (via the α3n and 5n channels, respectively). Both nuclides display a sequence of transitions with γ-ray energies between 130 and 300 keV. These structures are similar to the shears bands observed primarily in Pb nuclei [1]; however, the dipole character of the γ-rays must be verified. Alignment plots for the band structures indicate that a crossing occurs at a relatively low frequency of $\omega \approx 0.23$ MeV. This is in contrast with the shears bands in the N = 119 Bi and Pb nuclei where no crossings are observed, and in N < 119 Pb nuclei where crossings are normally found at $\omega \approx 0.30$ MeV. Possible interpretations of the nature of this crossing will be discussed. [1] R.M. Clark and A.O. Macchiavelli, Annu. Rev. Nucl. Part. Sci. 501, 1 (2001).

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