

Hyperdeformation in Xe Nuclei.

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Nuclear structure physics is testing nuclei to the limits of their existence by imposing extreme values of Isospin, Excitation energy and Angular momentum on them. In hyperdeformed nuclei the deformation parameter is the central issue. Theoretical predictions are that nuclei at extreme angular momentum might acquire shapes with small axis ratio 3:1 and that rotational bands might exist in the corresponding potential well. Signals from hyperdeformed structures have been in the experimental focus for more than a decade and whether the existence of hyperdeformation at high spin has been firmly identified, is still debated. A recent experiment at ANL using the GAMMASPHERE array provides preliminary results on hyperdeformation in ^{124}Xe , and forms the basis for the present report. So far, discrete line rotational bands corresponding to hyperdeformation have not been identified, but weak signals from the analysis of unresolved spectra indicate cascades with a moment of inertia $128h^2 \text{ MeV}^{-1}$ which is expected for hyperdeformed rotors.

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