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Lifetime Measurements of ^{170}Hf and a test of the Confined Beta Soft Rotor Model M.K. SMITH, Central Connecticut State University, V. WERNER, A. HEINZ, J.R. TERRY, J. QIAN, R. WINKLER, R. CASPERSON, E. WILLIAMS, Yale University, Z. BERANT, Yale, NRC Negev, R. LÜTTKE, Yale, Darmstadt, B. SHORAKA, Yale, Surrey, G. HENNING, Yale, ENS-Cachan — Significant deviations from rigid rotor model energy level predictions have been known to occur in rare earth nuclei. Recently, it was shown these deviations may be caused by centrifugal stretching effects within the nucleus [1]. New geometrical models have been proposed that account for centrifugal stretching, such as the confined beta soft model (CBS). We present the results from a high precision lifetime experiment performed with the New Yale Plunger Device at WNSL, Yale University. The ground state band of ^{170}Hf was measured through the J=12^+ level using the Recoil Distance Doppler Shift method. Excited states were populated in the ^{124}Sn(^{50}Ti,γ)^{170}Hf fusion evaporation reaction. Using the lifetimes, the B(E2) values and the quadrupole deformation parameter are determined. Centrifugal stretching is observed as an increased deviation in energy at higher spins in 170Hf. These results are compared to theoretical predictions from the CBS rotor model. Supported by grant DE-FG02-91ER40609.

[1] Costin et al, Phys.Rev. C 79, 024307 (2009)

M.K. Smith
Central Connecticut State University

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