Abstract Submitted
for the DNP11 Meeting of
The American Physical Society

Precise measurements of lifetimes and deorientation in ^{92,94}Zr using the Recoil Distance Doppler Shift method[1] MATTHEW HINTON, GABRIELA ILIE, VOLKER WERNER, TAN AHN, NATHAN COOPER, Wright Nuclear Structure Laboratory, RAPHAEL CHEVRIER, University of Caen Basse-Normandie, WNSL NUCLEAR STRUCTURE TEAM — The lifetime for the 2_1^+ state in ^{94}Zr is known with only 20% accuracy. In this region, involving proton and neutron sub-shell closures, it is highly desirable to know this value to greater precision, especially since ^{94}Zr has the extraordinary case where the E2 excitation strength of the 2_2^+ appears to be greater than that of the 2_1^+. Therefore, we performed a lifetime measurement using the Recoil Distance Doppler Shift (RDDS) method and the New Yale Plunger Device. Beams of ^{92,94}Zr, at energies of 245 MeV and 250 MeV, respectively, were Coulomb excited on a ^{24}Mg target and γ-rays were measured in coincidence with the forward scattered Mg ions. Nuclear deorientation effects, due to hyperfine interactions, become increasingly important at the high charge states of the recoiling ions. In parallel to the RDDS measurement, the attenuation coefficients of the angular distributions were measured. The time dependence of these coefficients was used to calculate relative magnetic moments.

[1]Research supported by U.S. Department of Energy under Grant No. DE-FG02-91ER-40609.

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Date submitted: 29 Jun 2011 Electronic form version 1.4