Abstract Submitted
for the DNP07 Meeting of
The American Physical Society

Tailoring a target for transient field measurements of magnetic moments of short-lived excited states with radioactive beams B. KRIEGER, N. BENCZER-KOLLER, G. KUMBARTZKI, G. GURDAL, Rutgers, C. GROSS, ORNL, R. HATARIK, P. O'MALLEY, S. PAIN, L. SEGEN, Rutgers, A.E. STUCHBERY, ANU, N. STONE, U.Tenn, C. BAKTASH, D. RADFORD, C.-H. YU, ORNL, C. BINGHAM, M. DANCHEV, R. GRZYWACZ, U.Tenn, R.V.F. JANSSENS, ANL — An understanding of target magnetization and kinematics is essential to determine g factors using the Transient Field (TF) technique with Coulomb excitation of radioactive beams (RIB). With stable beams, layered targets of C/(Gd or Fe)/Cu are used. The Coulomb scattered C ions are detected in Si counters, located above and below the beam axis, in coincidence with γ-rays recorded in 4 Ge Clover detectors. With RIBs, the background from beam scattering is critical. For example, the ^{132}Te beam at ORNL contains $\sim 10\%$ of isobaric ^{132}Sb that decays via the ^{132}Te, $4_1^+ \rightarrow 2_1^+ \rightarrow 0_1^+$, γ cascade. Removing the Cu from the target greatly reduces the scattering of RIBs. Furthermore, with thinner ferromagnets, the ^{132}Te ions decay in flight and the de-excitation γ-rays are Doppler shifted and easily distinguishable from the Sb unshifted background. While such a target without Cu backing does not provide sufficient cooling for a beam of 10^9 p/sec, it is adequate for a RIB of 10^7 p/sec. Results will be shown for both gadolinium and iron targets. Work supported by the US NSF and DOE.

Brenna Krieger
Rutgers University

Date submitted: 20 Jul 2007 Electronic form version 1.4