Abstract Submitted
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Compact β-NMR set-up using tilted-foil polarization[1] C.J. GROSS, K.P. RYKACZEWSKI, J.W. JOHNSON, S.W. MOSKO, A.J. MENDEZ II, D. SHAPIRA, J.F. LIANG, R.L. VARNER, ORNL, N. BENCZER-KOLLER, G. KUMBARTZKI, Rutgers U., M. HASS, Weizmann Inst., P.F. MANTICA, Mich. St., R. GRZYWACZ, S.N. LIDDICK, U. Tenn., C.R. REED, J.C. BATCHELDER, UNIRIB, J.A. WINGER, Miss. St. — We are developing polarized radioactive ion beams for use in β-NMR measurements. Polarization will be induced via the multi-tilted-foil method developed in the late 70's and 80's. Neutron-rich Cu and Ga radioactive beams will be accelerated to a few MeV and passed through a series of thin carbon foils tilted $\sim 75^\circ$ with respect to the beam. Subsequent atomic polarization can be transfered to the nucleus through hyperfine coupling. Our goal is to be able to induce enough polarization into the beam (a few percent is sufficient) to enable β-NMR studies. If successful with HRIBF neutron-rich beams, we would be able to extend magnetic dipole moment measurements of ground states toward the r-process nuclei above ^{78}Ni. A proof-of-principle experiment of the beam polarization process has been demonstrated by Bendahán et al. [Z. Phys. A 331, 343 (1988)]. It is hoped that a small compact system using permanent magnets will permit the use of Ge detectors to select specific isotopes in the beam.

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