

Abstract Submitted
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Implementation of a beta NQR system at the NSCL for ground state quadrupole moment measurements R.R. WEERASIRI, P.F. MANTICA, K. MINAMISONO, J. PEREIRA, J. PINTER, J. STOKER, National Superconducting Cyclotron Laboratory, Michigan State University — The nuclear electric quadrupole moment is one of the most important basic properties of the nucleus, which provides a direct measure of the nuclear charge distribution. A beta ray detected nuclear magnetic resonance (β -NMR) technique in the presence of an electric-field gradient is capable of measuring ground state quadrupole moments (Q) of beta unstable nuclei (β -NQR). For such measurements, a β -NQR system is being constructed based on the present β -NMR system at the NSCL. Due to the quadrupole interaction, several different radio frequencies (rf) are required to saturate NMR transitions, which are produced by function generators. Several LCR resonance circuits are used to provide rf field for the NMR and they have to be switched one after the other within very short time period because of the shorter lifetime of the nucleus of interest. Poorly known Q (^{37}K) will be measured to test the system and unknown Q (^{35}K) will be measured later. The neutron rich sd shell and the pf shell are of interest as well.

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