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Lifetime Measurement of Nickel-58 Using RDM with GRETINA

CHARLES LOELIUS, Michigan State University — The structure of nuclei near the doubly magic ^{56}Ni has provided a sensitive probe of configuration mixing across the N=Z=28 shell gap. The shell model description of nuclei in this region is well established, with the gxpf1 interaction accurately reproducing the energy levels and transition strengths of Nuclei in the vicinity of ^{56}Ni. However, there remain open questions as to the effects of higher lying orbitals beyond the *pf* shell. These can be addressed by a study of the B(E2)'s of nuclei in near the shell gap, particularly the B(E2;$4^+ \rightarrow 2^+$) where effects of high l orbitals may be enhanced. ^{58}Ni provides a strong candidate for study, as the only previous B(E2;$4^+ \rightarrow 2^+$) measurement using the Doppler Shift Attenuation Method resulted in a B(E2) three times larger than that predicted by theory. In order to determine the possible effects of higher lying orbitals, a second measurement of the lifetime of ^{58}Ni was undertaken at the National Superconducting Cyclotron Laboratory using the the Gamma-Ray Energy Tracking in Beam Nuclear Array (GRETINA) and the Recoil Distance Method (RDM). Preliminary results of this measurement will be presented.

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