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## Mirror Symmetry in the $f_{7/2}$ Shell Below $^{56}\text{Ni}$ , Excited States and Electromagnetic Transition Rates in $^{55}\text{Ni}$ and $^{55}\text{Co}$

*Monday 6 June 2022 14:30 (15 minutes)*

Experiment S1758 aims to explore the charge dependence of the strong nuclear interaction by probing  $^{55}\text{Ni}$  and  $^{55}\text{Co}$  near the doubly magic  $^{56}\text{Ni}$ . This will be achieved by impinging beams of radioactive  $^{20}\text{Na}$  and stable  $^{20}\text{Ne}$  upon  $^{40}\text{Ca}$  targets to produce  $^{55}\text{Ni}$  and  $^{55}\text{Co}$ , respectively. Charged particles and  $\gamma$ -rays will be detected by combining the TRIUMF-ISAC Gamma-Ray Escape Suppressed Spectrometer (TIGRESS), the TIGRESS Integrated Plunger (TIP) and the CsI Ball. This trio allows for a higher degree of sensitivity when in unison. Data analysis will involve: transition rate reconstruction using the Doppler-Shift Attenuation Method (DSAM), Doppler-shift lineshape profile extraction from Monte Carlo simulations via the GEANT4 framework, and lifetime extraction from minimizing a  $\chi^2$  goodness-of-fit between the measured and simulated lineshapes. The results will paint a clearer picture of the charge dependence of the strong nuclear interaction.

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