Abstract Submitted
for the DNP16 Meeting of
The American Physical Society

Electric Monopole Transition Strengths in Stable Nickel Isotopes[1]

LEE EVITTS, ADAM GARNSWORTHY, TRIUMF, TIBOR KIBEDI, ANU, SUPER-E COLLABORATION — Electric monopole ($E0$) transition strengths are a sensitive probe for investigating nuclear structure and shape coexistence. There is a need for $E0$ transition strengths in closed shell nuclei in order to develop our understanding of the mechanisms responsible for the generation of electric monopole strength. Simultaneous detections of γ rays and internal conversion electrons must be measured in order to determine an $E0$ transition strength. A series of measurements in the stable nickel isotopes were performed at the Australian National University. Excited states in ^{58,60,62}Ni were populated via inelastic proton scattering. The CAESAR array of Compton-suppressed HPGe detectors was used to measure the ($E2/M1$) mixing ratio of transitions from angular distributions of γ rays. The Super-e spectrometer was used to measure electron-gamma branching ratios in order to extract $E0$ transition strengths for a number of $J^\pi \rightarrow J^\pi$ transitions. An overview of the experiments will be presented, along with preliminary results for $E0$ transition strengths between $J^\pi \neq 0$ states in the semi-magic nuclei, ^{58,60,62}Ni. A comparison with the matrix elements obtained from a new microscopic model for $E0$ transitions will be made.

[1]This work was supported in part by the Natural Sciences and Engineering Research Council of Canada (NSERC)

Lee Evitts
TRIUMF

Date submitted: 30 Jun 2016 Electronic form version 1.4