

Abstract Submitted  
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**Measurement of the Sodium Quenching Factor Across Multiple NaI(Tl) Detectors**<sup>1</sup> WILLIAM THOMPSON, Yale University — Though several measurements of the sodium quenching factor in thallium-doped sodium iodide (NaI(Tl)) detectors exist, results from current measurements are in disagreement below about 30 keV<sub>nr</sub>. This discrepancy directly impacts the interpretation of results from NaI(Tl)-based WIMP direct detection and coherent neutrino-nucleus elastic scattering searches. It has been suggested that this disagreement, rather than reflecting a true variation of the quenching factor across different NaI(Tl) detectors, is due to unaccounted for systematic errors in previous measurements. In particular, it has been suggested that previous experiments have overestimated the quenching factor at low energies due to an imperfect knowledge of the trigger efficiency of the NaI(Tl) detector setups. To reconcile the tension between measurements, we have performed an experiment to measure this quenching factor in five separate NaI(Tl) detectors in the same experimental setup. Additionally, we have implemented a "threshold-free" triggering scheme to remove possible bias arising from trigger inefficiency of the NaI(Tl) detector. In this talk, we will present the results of our experiment and a comparison with previous NaI(Tl) quenching factor measurements.

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