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Quenching Factor Measurements for Germanium Detectors at Triangle Universities Nuclear Laboratory (TUNL)

The Coherent Elastic Neutrino-Nucleus Scattering has been observed by the COHERENT collaboration using a 14.6-kg CsI[Na] scintillator at Oak Ridge National Laboratory (ORNL). This indicates a new way to build a compact neutrino detector and unlocks new channels to test the Standard Model. One challenge is to understand the neutrino-induced low energy nuclear recoils. It is commonly known that the signals from nuclear recoils can be quenched in many types of detectors, resulting in less light or ionization. Measuring the quenching factor is thus important for detectors which will be deployed at ORNL in the future. In this work, we will present the quenching factor measurements for germanium detectors at TUNL in the [0.8,4.9] keVnr range.

Mini-abstract

The quenching factor of germanium detectors at low energy is precisely mea- sured.

Experiment/Collaboration

COHERENT collaboration

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