

Abstract Submitted
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Improving axion detection sensitivity in high purity germanium detector based experiments¹ WENQIN XU, STEVEN ELLIOTT, Los Alamos National Laboratory — Thanks to their excellent energy resolution and low energy threshold, high purity germanium (HPGe) crystals are widely used in low background experiments searching for neutrinoless double beta decay, *e.g.* the MAJORANA DEMONSTRATOR and the GERDA experiments, and low mass dark matter, *e.g.* the CDMS and the EDELWEISS experiments. A particularly interesting candidate for low mass dark matter is the axion, which arises from the Peccei-Quinn solution to the strong CP problem and has been searched for in many experiments. Due to axion-photon coupling, the postulated solar axions could coherently convert to photons via the Primakoff effect in periodic crystal lattices, such as those found in HPGe crystals. The conversion rate depends on the angle between axions and crystal lattices, so the knowledge of HPGe crystal axis is important. In this talk, we will present our efforts to improve the HPGe experimental sensitivity to axions by considering the axis orientations in multiple HPGe crystals simultaneously.

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