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**Ionization Measurements of 100 mm Diameter CDMS Ge Detectors** JIANJIE ZHANG, University of Minnesota, CRYOGENIC DARK MATTER SEARCH COLLABORATION — Future generations of Germanium-based dark matter search experiments aim to probe WIMP-nucleon cross-sections orders of magnitude smaller than the current best limits. The most feasible way of scaling the current Germanium detector technology to 100 kg or 1 ton scale includes increasing the size of individual detectors. The results of the ionization measurements of two 100 mm diameter and 33 mm thick Ge crystals, which are 2.3 times the volume of the current CDMS detectors, at  $\sim 50$  mK temperature are presented in this work. Some charge transport phenomena and the effects of evolving electric fields in detector-grade Germanium crystals at sub 100 mK temperatures are more pronounced in such larger crystals because of the larger dimensions. Together with the detector Monte Carlo simulations, this work deepens our understanding of the Germanium detector physics. The ionization performance of these devices with different charge electrode configurations demonstrates the potential of implementing such crystals in the next-generation 100 kg scale SuperCDMS experiment.

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