Abstract Submitted
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High-Purity Germanium Characterization\(^1\) NICK WEINANDT, YONGCHEN SUN, DONGMING MEI, University of South Dakota, UNIVERSITY OF SOUTH DAKOTA RESEARCH GROUP TEAM — Underground germanium crystal growth is a main focus of the CUBED 2010 research in the state of South Dakota where the DUSEL will be hosted. High-purity germanium is essential to the construction of germanium detectors for neutrinoless double-beta decay and dark matter experiments planned for DUSEL. The characterization of germanium ingots and crystals is an important part of the high-purity germanium crystal growth process. Through the characterization process, we can learn important information such as net impurity concentration and crystal structure. The information can be fed back to the zone refining and crystal growth processes. Resistivity measurements and Hall Effect experiments were used to understand the impurity concentration of the germanium bars. Both experiments were run at 77K to avoid thermal conductivity. When resistivity and Hall Effect experiments are coupled with future research into and Spectroscopies, we can begin to understand exactly what impurities are present in the sample. With resistivity, the Hall Effect, Photo-Thermal Ionization Spectroscopy, and Deep-Level Transit Spectroscopy, we can gain a more complete understanding of the characterization techniques and the growing of the crystal. At the conference I would be able to show the results obtained from our experiments

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