

Abstract Submitted
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Germanium Crystal Growth for DUSEL Experiments LOGAN BREKKE, CUBED COLLABORATION — The Center for Ultra-low Background Experiments at DUSEL (CUBED) is a research center supported by both DOE EP-SCoR and the state of South Dakota to grow high-purity germanium crystals for Deep Underground Science and Engineering Laboratory (DUSEL) projects at the Homestake mine in Lead, SD. My specific project within the CUBED program was Germanium Crystal Growth. I assisted in growing Ge crystals using the Czochralski method, along with producing and examining Ge wafers fashioned from the crystals we grew. Our main goal was to perfect the growth process, aiming to eventually grow Ge crystals that meet the strict high-purity and low-dislocation requirements of detector-grade crystals. Throughout the summer, we made significant progress and improvements to our growth equipment and technique. The research and process development performed within the CUBED program are preliminary activities in a much larger project. The ultimate objective is to move the crystal growth and other activities underground to DUSEL, thereby making it the only site in the world where high-purity Ge crystals are grown in a deep underground environment. Through our research and development we are contributing to the efforts of the DUSEL project by assembling and improving both knowledge and strategy of the crystal growth process and equipment. This groundwork will allow for a “running start” once the activities are moved to the underground site.

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