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Design Optimization and Fabrication of a two stage HV-LV SuperCDMS style detector HIMANGSHU NEOG, RUPAK MAHAPATRA, MARK PLATT, NADER MIRABOLFATHI, Texas A&M University — SuperCDMS interleaved Z-sensitive Ionization and Phonon(iZIP) detectors have shown great success in discrimination of electronic and nuclear recoils, while the High Voltage (HV) detectors have been reaching to lower and lower energy thresholds by sacrificing that discrimination. This work introduces a two-stage High Voltage-Low Voltage(HV-LV) design to retain both the excellent threshold performance of the HV detector and maintain the iZIP discrimination. We tried to optimize the geometry of the two-stage setup using COMSOL electric field simulations to minimize surface events and charge traps on detector surfaces. One optimized version of the detector has been fabricated and tested in contact-free setup. The preliminary analysis results will be presented.

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