Modeling Background Distributions for the SuperCDMS Soudan High Threshold Analysis BRETT CORNELL, Caltech, SUPERCDMS COLLABORATION — The SuperCDMS Soudan experiment searches for interactions of WIMP dark matter particles with germanium detectors, using ionization yield and fiducialization to reject backgrounds. An exposure of 3000 kg-day has been accumulated with 9 kg of new-generation SuperCDMS iZIP detectors, which use a sophisticated ionization electrode and phonon sensor structure to report information about the three-dimensional position of each event. We report on the development of a model for background distributions that exploits this new position information as well as improved simulations of detector physics. This model will be used to optimize nuclear recoil acceptance and background rejection for a cut-based analysis, and it may be further developed for an eventual maximum likelihood analysis.

Brett Cornell
Caltech