Abstract Submitted
for the APR09 Meeting of
The American Physical Society

The Cryogenic Dark Matter Search and Carrier Transport in 40 MilliKelvin Germanium $< 100 >$[1] KYLE SUNDQVIST, University of California, Berkeley, THE CRYOGENIC DARK MATTER SEARCH COLLABORATION — The Cryogenic Dark Matter Search (CDMS) is searching for Weakly Interacting Massive Particles (WIMPs) via their interactions in Ge and Si detectors at a temperature of 40 mK. Measuring the ionized charge and non-thermalized phonons from particle interactions enables CDMS to discriminate candidate WIMP interactions from electromagnetic background. Operation at such low temperature represents a unique regime for electron and hole transport processes. As these carriers are always hot, typical assumptions of thermal equilibrium are no longer valid. We have simulated transport processes of charge carriers in germanium $< 100 >$ at a temperature of 40 mK. We will present how this new understanding is beneficial to future detector development.

[1]Funded by the NSF and DOE

Kyle Sundqvist
University of California, Berkeley

Date submitted: 09 Jan 2009 Electronic form version 1.4