

Abstract Submitted
for the APR13 Meeting of
The American Physical Society

Towards a Low Threshold SuperCDMS Experiment BRADFORD WELLIVER, University of Florida, SUPERCDMS COLLABORATION — Astrophysical evidence points to the existence of particle dark matter that comprises the majority of the mass of the universe. A natural candidate for these particles are Weakly Interacting Massive Particles, or WIMPs. Lately there has been much interest in dark matter search experiments for low mass WIMPs. Detection of WIMP dark matter with mass below $20 \text{ GeV}/c^2$ requires a low-energy trigger threshold. However, lowering the trigger threshold also makes us sensitive to triggering on random noise which can hamper livetime. In order to minimize triggering on this random noise the original trigger filters for SuperCDMS were replaced with improved filters that reduce the amplitude of random noise substantially compared to an event-generated signal, thus allowing us to lower the trigger thresholds without the livetime penalty we would otherwise accrue. An overview of how this was accomplished as well as post-triggering methods of noise discrimination will be discussed. Predictions for the improved low thresholds will be compared to data, and the impact on a low mass WIMP search will be described.

Bradford Welliver
University of Florida

Date submitted: 11 Jan 2013

Electronic form version 1.4