

Abstract Submitted  
for the APR06 Meeting of  
The American Physical Society

**Neutron Background in WIMP Dark Matter Detectors Using Liquid Argon and Liquid Neon**<sup>1</sup> ANDREW HIME, DONGMING MEI, Los Alamos National Laboratory, CLEAN COLLABORATION — Neutron-induced nuclear recoil represents an irreducible background in detectors aimed at the direct detection of WIMP dark matter. Muon-induced neutrons can be adequately suppressed by staging experiments sufficiently deep underground, however, it is also critical to suppress neutron production via  $(\alpha, n)$  interactions due to naturally occurring radioactivity in detector construction materials. We present the results of simulations for the mini-CLEAN detector under development to search for WIMP dark matter using 100 kg of liquid argon or liquid neon as the target material. We show that neutron backgrounds can be sufficiently suppressed in a conceptually simple detector using the coincidence between the prompt nuclear recoil signal and the delayed neutron capture gamma ray.

<sup>1</sup>This work is supported with funds from the Los Alamos Directed Research and Development program.

Dongming Mei  
Los Alamos National Laboratory

Date submitted: 12 Jan 2006

Electronic form version 1.4