

Abstract Submitted
for the APR07 Meeting of
The American Physical Society

A DEAP & CLEAN Program for WIMP Dark Matter ANDREW HIME, Los Alamos National Laboratory, DEAP & CLEAN COLLABORATION — Weakly Interacting Massive Particles (WIMPs) provide a compelling explanation for dark matter that could be directly detected as they recoil in massive and ultra-pure detector targets operating deep underground. Thus far, the direct detection of WIMPs has eluded the most sensitive of experiments and it is desirable to achieve sensitivities some three orders of magnitude beyond the state-of-the-art. This will require development of novel detector technologies exploiting target masses of order a ton and with unprecedented control of radioactive background in order to achieve the desired sensitivity of a single event per ton per year. We have realized a conceptually simple and scalable detector technology using the unique properties of scintillation light in liquid argon and liquid neon. Ultimately, we envision a very massive detector of liquid neon that could serve simultaneously as a detector of WIMP dark matter and low-energy (pp-fusion) solar neutrinos. A DEAP & CLEAN program will be described that makes effective use of liquid argon and liquid neon, interchangeably, in a single detector.

Andrew Hime
Los Alamos National Laboratory

Date submitted: 08 Jan 2007

Electronic form version 1.4