

Abstract Submitted
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Dark matter detection with mini-CLEAN JAMES NIKKEL, M. HARRISON, B. JORNS, W. LIPPINCOTT, D. MCKINSEY, Yale University, A. HIME, D. MEI, K. RIELAGE, L. STONEHILL, Los Alamos National Laboratory, K. COAKLEY, National Institute for Standards and Technology, M. BOULAY, Queen's University, D. GASTLER, E. KEARNS, Boston University, CLEAN COLLABORATION — mini-CLEAN is a planned WIMP detector containing approximately 100 kg of liquid neon or liquid argon scintillator viewed by 32 photomultipliers. The cryogenics will be cooled with a pulse-tube refrigerator, allowing either liquid to be used as the active detection medium. The ability to exchange the two scintillators, with different sensitivities to WIMPs and fast neutrons, will allow both of these event populations to be distinguished and characterized. New measurements of the scintillation yield and time dependence for both gamma ray Compton scattering events and low energy nuclear recoil events in liquid neon and liquid argon show highly effective pulse-shape discrimination at low energies. Recent tests of photomultipliers at liquid neon temperature, as well as measurements of neon purification will be presented. The predicted sensitivity of mini-CLEAN to WIMP dark matter will be discussed. Results from mini-CLEAN will also provide key parameters for the design of a future 100-ton CLEAN detector, with simultaneous sensitivity to pp solar neutrinos and WIMPs.

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