Measurements of neon scintillation properties for the CLEAN detector  

JAMES NIKKEL, WALTER LIPPINCOTT, ANDERS KNOspe, MATTHEW HARRISON, BEN JORNS, DANIEL MCKINSEY, Yale University, ANDREW HIME, MARK BOULAY, JEFF LIDGARD, DONGMING MEI, Los Alamos National Laboratory, KEVIN COAKLEY, National Institute for Standards and Technology, Boulder, EDWARD KEARNS, Boston University, CLEAN COLLABORATION — CLEAN is a combination solar neutrino and dark matter detector that will utilize 100 tonnes of liquid neon as scintillation media. Using a small cryogenic system called pico-CLEAN, we have measured lifetime and abundance of the singlet and triplet neon molecules formed in both electronic interactions and nuclear recoils. Ratios between these populations provide discrimination between the two types of excitations. These results provide key parameters for the design of the full scale CLEAN apparatus, and allow estimation of its sensitivity to dark matter.