

Abstract Submitted  
for the APR10 Meeting of  
The American Physical Society

**Calibration of the MiniCLEAN detector**<sup>1</sup> MICHAEL AKASHI-  
RONQUEST, University of North Carolina / Triangle Universities Nuclear Labora-  
tory, DEAP/CLEAN COLLABORATION — The DEAP/CLEAN collaboration is  
constructing MiniCLEAN, a single-phase noble-liquid dark matter experiment with a  
projected sensitivity to the spin-independent WIMP-nucleon cross-section of roughly  
 $2 \times 10^{-45} \text{ cm}^2$  for  $M_{\text{WIMP}} \approx 100 \text{ GeV}$ . The low background nature of MiniCLEAN,  
coupled with its monolithic self-shielding liquid argon target, makes calibration of  
the detector a challenge. The MiniCLEAN calibration system will probe the detec-  
tor's response using external  $\gamma$  and neutron sources. Light sources will be utilized  
to further understand the optical response of the detector. Radioisotope spikes will  
circumvent self-shielding for low energy calibration, and will also enable dedicated  
demonstration of argon pulse-shape discrimination using greatly increased amounts  
of  $^{39}\text{Ar}$ . In addition to probing 3D position and energy reconstruction in Mini-  
CLEAN, the calibration system will also mimic many of the expected backgrounds.

<sup>1</sup>This work is supported by the State of North Carolina.

Michael Akashi-Ronquest  
University of North Carolina / Triangle Universities Nuclear Laboratory

Date submitted: 26 Oct 2009

Electronic form version 1.4