

Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Calibration of PICO Bubble Chamber Dark Matter Detectors¹

MIAOTIANZI JIN, Northwestern University, PICO COLLABORATION — The PICO Collaboration builds bubble chambers for the direct detection of WIMP dark matter. I will present the suite of calibration experiments performed to measure the sensitivity of these chambers to nuclear recoils (the expected WIMP signal) and to gamma rays (a common background to the WIMP signal). These calibrations include measurements with a 10-ml C3F8 bubble chamber at Northwestern University and with a 30-ml C3F8 bubble chamber deployed in the University of Montreal's tandem Van de Graaf facility, giving the bubble chamber response to a variety of gamma rays, broad-spectrum neutron sources, and mono-energetic low energy neutrons. I will compare our measured sensitivities to those predicted by a simple thermodynamic model and will show how the results impact our ability to detect dark matter, with a focus on light WIMP searches.

¹Supported by DOE grant: DE-SC0012161

Miaotianzi Jin
Northwestern University

Date submitted: 08 Jan 2016

Electronic form version 1.4