

Abstract Submitted
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Design of keV-scale neutron sources for calibration of low threshold dark matter detectors RYAN SMITH, University of California, Berkeley, SPICE/HERALD COLLABORATION — Direct detection dark matter searches are extending their reach to lower (sub-GeV) dark matter masses, requiring new detector technologies with low thresholds and new low energy calibration methods. For many detectors searching for dark matter - nucleus interactions, the ideal calibration source is a beam of monoenergetic neutrons with keV-scale energy. We will discuss recent progress in making such neutron-based calibrations practical in a university lab environment. First, we will describe a SbBe photoneutron source in which an iron filter suppresses the outgoing gamma flux with relatively little moderation of the 24 keV neutron flux. Then, we will describe a method to moderate and then filter a pulsed Deuterium-Tritium (DT) neutron generator, turning it into a pulsed keV-scale neutron source.

Ryan Smith
University of California, Berkeley

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