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CFA LECTURE SERIES

Calibration of dark matter detectors using a pulsed monoenergetic neutron beam

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Several experimental efforts are currently underway to search for WIMP dark matter by detecting low energy nuclear recoils that are possibly induced by WIMP interactions. A detailed understanding of the response of such detectors to nuclear recoils is critical for the accurate interpretation of WIMP search results, as well as estimates of the sensitivity of future experiments. I will discuss the use of a pulsed monoenergetic neutron beam to cleanly characterize the response of detectors to nuclear recoils. My focus will be on the calibration of liquid argon time projection chambers as part of the SCENE experiment, though I will also briefly discuss recent calibrations of other detector technologies using the same technique, as well as plans for future measurements.

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