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A Fast Neutron Spectrometer for Underground Science THOMAS LANGFORD, ELIZABETH BEISE, HERBERT BREUER, DYLAN ERWIN, University of Maryland, CHRISTOPHER BASS, CRAIG HEIMBACH, JEFF NICO, National Institute for Standards and Technology — The characterization of the fast neutron fluence has become a critical issue for experiments that require extreme low-background environments, such as neutrino-less double-beta decay, dark matter searches, and solar neutrino experiments. In such experiments, fast neutrons may be the dominant and a potentially irreducible background, thus necessitating precise information about the fast neutron fluence and energy spectrum. The most reasonable approach to addressing the problem is through the complete characterization of the neutrons through both site-specific measurement and benchmarking of simulation codes. We will discuss the progress toward the development of a large-volume, segmented detector consisting of plastic scintillator and ^3He proportional counters. The detector will be placed in an underground environment to measure the fast neutron flux and energy spectrum. A prototype detector has been constructed and testing is in progress. We will discuss the status of the project and present data from the prototype detector.

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