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A Study of Intrinsic Statistical Variation for Nuclear Recoils in Germanium Detector for Dark Matter Searches WENZHAO WEI, LU WANG, DONGMING MEI, The University of South Dakota, CUBED COLLABORATION — The intrinsic statistical variation in nuclear recoils is a critical part that cannot be ignored when calculating energy resolution of germanium detector in detecting WIMPs. Have a good theoretical understanding about the intrinsic statistical variation in nuclear recoils and develop a model for calculating this variation based on experimental data is of great importance in determining the width of nuclear recoil band, which is used to identify nuclear recoils events. Hence, we designed an experiment to study the intrinsic statistical variation in nuclear recoils with various gamma sources and AmBe neutron source. In addition, we developed a theoretical model to calculate the intrinsic statistical variation in nuclear recoils based on data from AmBe neutron source. In this work, we will present our data and theoretical calculation for nuclear recoils. This work is supported by NSF in part by the NSF PHY-0758120, DOE grant DE-FG02-10ER46709, and the State of South Dakota.

Wenzhao Wei
The University of South Dakota

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