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Pulse Shape Discrimination for the CONUS Experiment

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The CONUS experiment aims to detect coherent elastic neutrino nucleus scattering ($CE\nu NS$). For this goal four 1 kg point-contact high-purity germanium detectors were operated near the 3.9 GW_{th} core of the Brokdorf nuclear power plant. A very good background suppression is crucial for the success of the experiment. Pulse shape discrimination (PSD) offers a tool to reduce the background by analyzing the shapes of the individual events. The interaction positions and number of interactions of the incoming particle within the diode have an impact on the pulse shape. Dedicated studies of this shape are therefore highly beneficial for the understanding and the rejection of background events near the detector surface. This talk presents the concept of the PSD for the CONUS experiment where a background suppression of (15-25)% is achieved. This will improve the sensitivity of future CONUS analyses and allow to further refine the background model in the sub-keV energy region.

Submitted on behalf of a Collaboration?

Yes

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