Abstract Submitted
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Gamma-ray Flux at Different Levels in the Homestake Mine Measured with NaI detectors[1] DONGMING MEI, KEENAN THOMAS, CHAO ZHANG, The University of South Dakota, FREDERICK GRAY, JONATHAN TOTUSHEK, CHRISTOPHER RUYBAL, Regis University — Characterization of various backgrounds is an important step to the design of DUSEL in which the low background experiments are being planned. The gamma-ray flux at the different levels in the Homestake has been measured using three identical NaI detectors arranged as an array. We report the gamma-ray flux in four categories: 1) below 3 MeV, the spectrum is expected to be dominated by radioactivities from the rocks; 2) between 3 and 5.5 MeV, the shape of the spectrum should be well explained by U, Th and daughters, which are internal contamination in the NaI crystals; 3) between 5.5 to 10 MeV, the gamma-rays flux is dominated by neutron capture on surrounding materials; and 4) the gamma-ray flux above 10 MeV is induced by muon bremsstrahlung. The measured flux will be compared to the prediction by the Monte Carlo simulation.

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