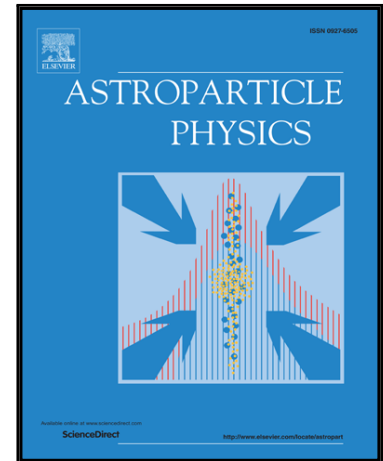


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Background studies of high energy γ rays from (n,γ) reactions in the CANDLES experiment

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Abstract

High energy γ rays with several MeV produced by (n,γ) reactions can be a trouble for low background measurements in the underground laboratories such as double beta decay experiments. In the CANDLES project, which aimed to observe the neutrino-less double beta decay from ^{48}Ca , γ rays caused by (n,γ) reactions were found to be the most significant background. The profile of the background was studied by measurements with a neutron source and a simulation with validity check of neutron processes in Geant4. The observed spectrum of γ rays from (n,γ) reactions was well reproduced by the simulated spectra, which were originated from the surrounding rock and a detector tank made of stainless steel. The environmental neutron flux was derived by the observed

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