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Beam-related gamma background at the JSNS2

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The purpose of the JSNS2 experiment is to search for sterile neutrinos with Δm^2 near 1eV^2 . A 3 GeV J-PARC proton beam incident on a mercury target produces an intense neutrino beam from muon decay at rest which oscillates to anti-electron neutrinos. The JSNS2 detector is located at 24 m baseline from the target. The detector has a fiducial volume of 17 tons filled with GdLS, that efficiently can detect electron antineutrinos via the inverse beta decay reaction followed by a gamma signal from the captured neutron on Gd. The external gamma events induced by proton beam is one of the main backgrounds in sterile neutrino search. In this talk, we study beam related gamma background using MC simulation and the data taken in June 2020 and January 2021.

Collaboration name

JSNS2

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