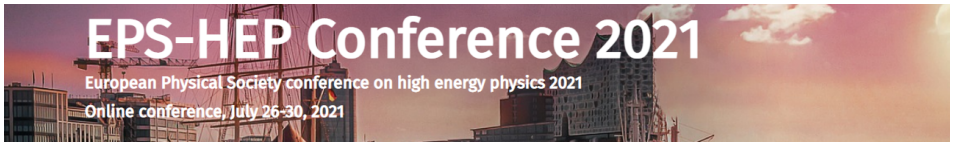

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Radiogenic Neutron Background in antineutrino experiments

This poster presents a novel correlated background present in the antineutrino detection using the inverse beta decay reaction. Spontaneous fissions and (α, n) reactions in peripheral materials of the antineutrino detector, such as borosilicate glass of photomultipliers and electronics boards, produce fast neutrons and prompt gamma rays. If the shielding from the material to the detector target was not thick enough, neutrons and gammas could enter the target volume and could form correlated signals. The background is investigated thoroughly in antineutrino experiments, and the simulation results give a hint that the background could be non-negligible in the oscillation analysis based on neutron capture on hydrogen at Daya Bay.

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Collaboration / Activity

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