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Status of the NEON experiment (Neutrino Elastic-scattering Observation in NaI)

Tuesday 29 August 2023 17:30 (15 minutes)

Taking advantage of recent NaI crystal detector development, we established stable data-taking of the NEON experiment with a 16.7 kg crystal array at 23.7 meters away from the reactor core of the Hanbit nuclear power plant (2.8-GWth) in April 2022. NEON aims at detecting a coherent neutrino-nucleus scattering process for reactor antineutrinos.
Using preliminary analyses of approximately 150 (143) days of reactor-ON(OFF) data, we found that the detector performs stably and better than expected, reaching crystal light yield of the unprecedented 24 photoelectrons per 1 keV energy deposit. Until now, 6 counts/day/kg/keV of the single-hit background rate at 0.6 keV have been achieved. The status of the experiment and its expected sensitivity assuming 0.2 keV energy threshold depending on quenching systematics will be reported.

Submitted on behalf of a Collaboration?

Yes

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