Contribution ID: **183**   Type: **Poster**

The XENONnT Neutron Veto

Wednesday 27 August 2025 18:00 (2 hours)

For direct dark matter search experiments, radiogenic neutrons from the detector materials are one of the most significant background sources, since they mimic nuclear recoil signals by weakly interacting massive particles.
In the XENONnT experiment, the xenon dual-phase time projection chamber (TPC) is enclosed by a gadolinium-doped water Cherenkov detector, neutron veto (nVeto), to tag such neutrons by detecting Cherenkov lights from Compton-scattered gamma rays released after the capture of neutrons on gadolinium or hydrogen.
The XENONnT nVeto showed the neutron tagging efficiency of $(53\pm3)\%$ in its pure water phase, and almost 80% in its 0.02% gadolinium-loaded phase (preliminary).
In this poster, details of the detector configuration, the calibration method to estimate the tagging efficiency, and the achieved results are presented.

Collaboration you are representing

XENON

Author: YOSHIDA, Masashi (The University of Tokyo, ICRR)

Presenter: YOSHIDA, Masashi (The University of Tokyo, ICRR)

Session Classification: Poster session

Track Classification: Dark Matter and Its Detection