

24th International Workshop on Next Generation Nucleon Decay & Neutrino Detectors (NNN25)

NNN25

International Workshop on Next Generation
Nucleon Decay and Neutrino Detectors

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The HALO Supernova Neutrino Detector

Wednesday, October 1, 2025 5:00 PM (25 minutes)

HALO, the Helium and Lead Observatory, has been operating at SNOLAB for thirteen years as a low-maintenance, high-lifetime supernova neutrino detector. The HALO detector is principally composed 79 tonnes of lead from a decommissioned cosmic ray station, and is instrumented by 368 m of SNO's ultra-low activity He-3 neutron counters. Supernova neutrinos interacting with the lead target may produce one or two neutron emission through CC or NC excitation of the lead nuclei. HALO detects these neutrons with an average efficiency of 28% and an extended burst of detected neutrons would be consistent with a galactic supernova explosion. Since October 2015 HALO has been providing low threshold and very low latency supernova alarms to the SuperNova Early Warning System (SNEWS) coincidence servers. The collaboration will present the status of the detector as well as concepts for future HALO-like detectors.

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