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【382】 Real-time detection of Supernova Neutrinos in XENONnT

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The XENONnT experiment, projected to begin operation by early 2020 at the Laboratori Nazionali del Gran Sasso (LNGS), is a double-phase Time Projection Chamber with a 6 tonne liquid xenon target. Primarily developed to detect Weakly Interactive Massive Particles (WIMPs) that scatter off xenon nuclei, it will also be sensitive to neutrinos coming from a supernova burst beyond the edge of the Milky Way. Given its low background rate and neutrino flavour blindness of coherent elastic neutrino scatterings (CEvNS), XENONnT will be able to detect supernova (SN) neutrino bursts in real-time. We describe the framework to run an active SN trigger using XENONnT's open-source processor (Strax), based on the continual counting of proportional scintillation signals (S2) induced by such SN neutrinos.

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