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Developing a supernova neutrino burst trigger at DUNE

Wednesday 27 August 2025 18:00 (2 hours)

The Deep Underground Neutrino Experiment (DUNE) is a liquid argon neutrino detector currently under construction in the United States. One key physics goal of the experiment is to observe the neutrino signal from a core-collapse supernova in our galactic neighbourhood. DUNE's LAr-TPC design will provide unique sensitivity to the electron neutrino component of a supernova burst neutrino signal via charged current interactions. This signal has many unique features compared to that of other neutrino sources and can provide significant challenges to the data acquisition (DAQ) system. Burst detection relies on the development of a dedicated supernova burst trigger for DUNE, with the aim of providing prompt and reliable early warnings for astronomers in the event of a supernova in our galaxy. Expected supernova sensitivities and background rates for the DUNE Far Detector will be presented.

Collaboration you are representing

DUNE

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