

Detecting Supernova Electron-Neutrinos in Large Xenon Detectors

Thursday, 26 October 2023 16:21 (7 minutes)

Large underground xenon detectors have strong potential for detecting supernova neutrinos. For $0\nu\beta\beta$ detectors, optimized for MeV-scale signals, electron-neutrino charged-current interactions provide one means to detect the intense flux of neutrinos emitted by a supernova. There are few existing detectors capable of measuring the electron-neutrino component of the supernova neutrino flux, which provides the opportunity to gain unique insight into the dynamics of a supernova explosion. To understand the expected neutrino signature, electron-neutrino interactions with xenon nuclei must be modeled. Using a modified version of the MARLEY event generator, electron-neutrino charged-current interactions with xenon have been simulated for current detectors and future detector concepts. A summary of the progress simulating electron-neutrino charged-current interactions with xenon using MARLEY and Geant4 will be presented.

Primary author: HEDGES, Samuel (LLNL)

Presenter: HEDGES, Samuel (LLNL)

Session Classification: Session 1/1