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Observing Neutrinos from the Next Galactic Supernova with the NOvA Detectors

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The next galactic core-collapse supernova will deliver a wealth of neutrinos which for the first time we are well-situated to measure. These explosions produce neutrinos with energies between 10 and 100 MeV over a period of tens of seconds. Galactic supernovae are relatively rare events, occurring with a frequency of just a few per century. It is therefore essential that all neutrino detectors capable of detecting these neutrinos are ready to trigger on this signal when it occurs. This poster describes a data-driven trigger which is designed to detect the neutrino signal from a galactic core-collapse supernova with the NOvA detectors. The trigger analyzes 5ms blocks of detector activity and applies background rejection algorithms to detect the signal time structure over the background. This background reduction is an essential part of the process, as the NOvA detectors are designed to detect neutrinos from Fermilab's NuMI beam which have an average energy of 2 GeV-well above the average energy of supernova neutrinos.

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