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Detecting neutrinos from the next galactic supernova in the NOvA detectors

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Core-collapse supernovae emit about 99% of their gravitational energy in a burst of neutrinos. This signal carries precious information about the processes inside the collapsing core as well as neutrino properties. The large liquid scintillator detectors used by the NOvA experiment provide a possibility to detect such a signal. A dedicated trigger system was developed to perform a search for inverse beta decay neutrino interaction candidates in real time and detect potential supernova bursts, saving the data from the detector for further offline analysis. This system has been running in stable mode since November 2017. Recent improvements in the detection algorithms allowed to extend the sensitivity range for the 9.6 $M_{\odot}$ star collapse up to 7 kiloparsec.

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