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Observing supernova neutrinos to late times

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The next Galactic supernova (SN) will probably occur while current or next generation neutrino experiments are online. It is crucial to have correct understanding of the basic characteristics of the expected neutrino signals. The nominal expectation of the duration of the neutrino signal is ˜ 10 s; this expectation guided both theoretical and experimental effort. We simulate SN neutrino emission at late times and predict the detected neutrino signals in large neutrino experiments. We find that neutrino signals from a SN should be detected out to ˜ 1 min. We will discuss how this will change future theoretical and experimental effort in SN studies.

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