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Neutrino astronomy with supernova neutrinos

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[arXiv:1802.02577] Modern neutrino facilities will be able to detect a large number of neutrinos from the next Galactic supernova. We investigate the viability of the triangulation method to locate a core-collapse supernova by employing the neutrino arrival time differences at various detectors. We perform detailed numerical fits in order to determine the uncertainties of these time differences for the cases when the core collapses into a neutron star or a black hole. We provide a global picture by combining all the relevant current and future neutrino detectors. Our findings indicate that in the scenario of a neutron star formation, the supernova can be located with a precision of 1.5 and 3.5 degrees in declination and right ascension, respectively. For the black hole scenario, sub-degree precision can be reached.

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