

The gravitational memory of supernova neutrinos

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When a burst of neutrinos from a core collapse supernova passes by the Earth, it causes a permanent change in the local space-time metric, called the gravitational memory. Long considered unobservable, this effect will be detectable in the future, for a galactic supernova, at upcoming deci-Hertz gravitational wave interferometers. I present a new phenomenological description of the memory and its application to different core collapse scenarios. Using this model, I discuss the detectability of the supernova neutrino memory and its physics potential in the context of multi-messenger astronomy.

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