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# Accessing explosion properties in a core-collapse supernova through the gravitational-wave source angular dependence

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Core-collapse supernovae (CCSN) are one of the most violent and energetic astronomical processes in the Universe. The next Galactic supernova can offer us an exceptional opportunity to delve deep into the explosion mechanism through gravitational waves (GWs) emission. Theoretical developments in CCSN modeling hint at the variation of GW signature with respect to the source angle orientation. For example, a GW signal from a core bounce has only one polarization that is emitted perpendicularly to the axis of rotation. In this project, we study the angle dependence of GW signals derived from multidimensional CCSN simulations. Then, we analyze their detectability with model-independent coherent WaveBurst algorithm using LIGO-Virgo-KAGRA data.

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