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Gravitational Waves: Probes of Stellar Collapse¹

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Supernovae arising from the core-collapse of a massive star produce outbursts in a broad range of photon wavelengths and this emission dominates most studies of supernovae. But neutrinos and gravitational waves provide a much more direct means to study the explosive engine deep in the collapsed core. Here we review the limitations of photon observations in studying the supernova engine, focusing on what we can learn from neutrinos and gravitational waves. Gravitational waves also provide an additional probe of the supernova engine, a study of the compact remnant mass, and we will also discuss this indirect probe of the supernova engine.

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