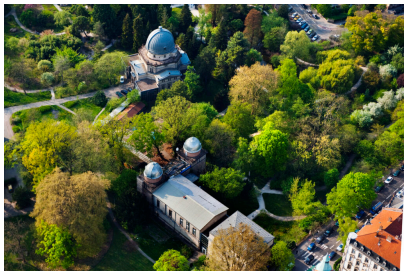

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Probing equation of state from supernova gravitational waves

Tuesday 28 October 2025 16:15 (25 minutes)

Core-collapse supernovae are sources of strong gravitational waves (GWs). We explore whether GW signals from rapidly rotating supernovae can be used to infer the equation of state (EOS) of high density matter. Focusing on the bounce and early post-bounce phases, we generate a large set of waveforms using general-relativistic hydrodynamics simulations with different EOS models. These are used to train machine learning algorithms to classify the EOS from the GW signal. We assess classification accuracy under various conditions, including detector noise.

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