

Supernova Gravitational Waves with Machine Learning

Core-collapse supernovae are powerful explosions marking the end of massive star's lives. These events give birth to neutron stars and, in some cases, black holes. Despite extensive research, the intricate details of these explosions remain elusive. Strong gravitational waves (GWs) emitted during these events carry vital information about their origins. Detecting these waves could significantly enhance our understanding of these supernovae.

In this talk, I will review our current knowledge of GW emission in core-collapse supernovae. I will then highlight our research, where we simulate numerous rotating star models. By applying machine learning techniques, we aim to determine whether it is possible to extract source parameters, such as progenitor rotation, mass, and the properties of high-density nuclear matter, from the GW signals produced at the moment of collapse.

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