Contribution ID: **105** Type: **not specified**

Supernova gravitational waves and protoneutron stars

Thursday, October 10, 2024 10:10 AM (20 minutes)

Supernova gravitational waves are potentially the next candidates to those from the compact binary mergers. The gravitational waves generally depend on the supernova models, such as the progenitor mass and equation of state (EOS) for a higher-density region. So, even if one succeeds in detecting them in the future, it may be difficult to directly extract physical information from them. Up to now, the supernova gravitational waves have mainly been studied via numerical simulations. From such simulations, the gravitational wave signals are shown, whose frequencies increase from a few hundred hertz to kilo-hertz. On the other hand, the origin of this signal has been unclear. To understand the gravitational wave signals appearing in numerical simulations, we are studying them with the approach of asteroseismology. In particular, using the numerical data of simulations we prepare the protoneutron star models and determine the specific oscillation modes on each time step. Then, we successfully identify the gravitational wave signals that come from the fundamental oscillations of protoneutron stars. In this talk, we also show the recent progress in supernova gravitational waves with asteroseismology.

Presenter: SOTANI, Hajime (RIKEN)