Contribution ID: **75** Type: **oral presentation**

Sensitivity study of Neutrino opacities to Skyrme EOS in CCSNe

Tuesday 26 August 2025 16:04 (12 minutes)

When a core-collapse supernova (CCSN) explodes, it emits an enormous number of neutrinos, which carry away approximately 99% of the total energy.
These energetic neutrinos play a crucial role in both the explosion mechanism and nucleosynthesis as they propagate through the CCSN environment.
The propagation of neutrinos can be described by the general relativistic Boltzmann equation, in which the collision can affected by term equation of state .
In the equation of state, there are nonrelativistic models based on Skyrme interactions and relativistic models using relativistic mean field (RMF) theory.
Such modifications can alter neutrino opacities and transport properties, potentially affecting the supernova explosion and neutrino process.
We present a comparative study quantifying the sensitivity of neutrino interaction rates to representative Skyrme and RMF EOSs and discuss the resulting implications for neutrino luminosity predictions in CCSN.

Research field of your presentation

Theoretical Low-energy nuclear physics

Author: CHOI, Young_so (Soongsil University)

Co-authors: JANG, Dukjae (Gachon University); Prof. CHEOUN, Myung-Ki (Soongsil University)

Presenter: CHOI, Young_so (Soongsil University)

Session Classification: Young Scientist Session 3