Contribution ID: 15

## Quantum kinetics of neutrinos in dense astrophysical environments

Tuesday, 6 May 2025 10:00 (30 minutes)

Neutrinos play a crucial role in determining fluid dynamics and nucleosynthesis in core-collapse supernova (CCSN) and binary neutron star merger (BNSM). The neutrino kinetics which governs their transport in phase space, interactions with matter, and flavor conversions (or neutrino oscillations) is essential to develop realistic models of CCSN and BNSM. Accurate determination of neutrino radiation field involving neutrino flavor conversion requires solving quantum kinetic equation, but the numerical modeling is one of the formidable challenges in computational astrophysics. However, a remarkable progress has been made in the last few years. In this workshop, I will give an overview of the recent progress and discuss future perspectives towards incorporating effects of flavor conversions in CCSN/BNSM simulations.

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Session Classification: Tuesday morning

Track Classification: Supernovae