

Neutrino Oscillations and Nucleosynthesis of Heavy Elements

Monday, 9 September 2024 13:30 (25 minutes)

Neutrinos play key roles in supernova explosions and neutron star mergers, which are important sites of heavy element production in the universe. The flavor oscillations of neutrinos in these environments, particularly the collective oscillations due to the nonlinear coupling of neutrino forward scattering among themselves, have been shown to potentially impact the nucleosynthesis yield prediction. In this talk, I will discuss the recent progress in understanding the impact of collective neutrino oscillations on the nucleosynthesis yields in supernovae and mergers. I will also highlight developments aiming for consistently including collective oscillations in hydrodynamical simulations of supernovae and mergers, which are crucial for providing robust theory predictions of these events.

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Session Classification: Theoretical Nuclear Physics for Astrophysics

Track Classification: Theoretical Nuclear Physics for Astrophysics