

Abstract Submitted  
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**Proto-neutron star convection in 3D supernova simulations** HIROKI NAGAKURA, ADAM BURROWS, Princeton University, DAVID RADICE, The Pennsylvania State University, DAVID VARTANYAN, University of California, Berkeley, — It has been suggested that the envelope of proto-neutron star (PNS) is convectively unstable during the development of core-collapse supernova (CCSN) explosion. The PNS convection appears from the early post bounce phase and persists for a long time ( $>1s$ ) whether the shock wave is revived or not - thus it would be a generic feature in all massive stellar death including a case with black hole formation. This could also affect the neutrino - gravitational wave signals, magnetic field amplification in PNS and explosion mechanism of CCSN. However, we know little about the physics of PNS convection since detailed analyses with 3D CCSN models are required to build a comprehensive understanding of the complex dynamics: it has not been done thus far. In this talk I will present a result of our systematic study of PNS convection in 3D CCSN simulations and then discuss the basic characteristics and diversity of PNS convection.

Hiroki Nagakura  
Princeton University

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