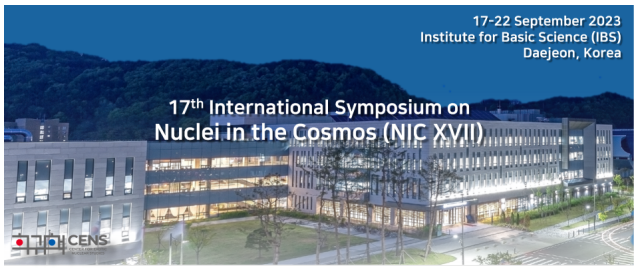

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Systematic 3D simulations of core-collapse supernova and implications for explosive nucleosynthesis

Tuesday, 19 September 2023 18:05 (5 minutes)

Systematic studies of core-collapse supernovae (CCSNe) have been conducted based on hundreds of one-dimensional artificial models (O'Connor & Ott 2011,2013; Ugliano et al. 2013, Ertl et al. 2015) and two-dimensional self-consistent simulations (Nakamura et al. 2015;2019, Burrows & Vartanyan 2020). We have performed three-dimensional core-collapse simulations for 16 progenitor models covering ZAMS mass between 9 and 24 solar masses. Our CCSN models show a wide variety of shock evolution, explosion energy, and properties of the ejected material. Most of our models have proton-rich ejecta as usual in neutrino-driven explosions, but some of them involve neutron-rich (Ye<0.45) material. We will discuss the impacts of such a divergence of the ejecta properties on explosive nucleosynthesis.

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