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D. R. Aguilera-Dena: Pre-explosion Core Properties of Superluminous Supernova and Long Gamma-Ray Burst Progenitors

mercredi 29 mai 2019 18:15 (10 minutes)

Modeling the evolution and mass loss history of rapidly rotating massive stars at low metallicity, we found that chemically homogeneously evolving stars with enhanced rotational mixing could be suitable candidates for both SLSNe in the magnetar-driven scenario and for lGRBs in the collapsar scenario. They retain a high angular momentum in their cores, enough to power these types of explosions, and have masses, abundances and magnetic fields that could also be consistent with observations of SLSNe and the hypernovae associated with lGRBs; particularly reproducing the observed the lack of He in their envelopes. The outcome of core collapse is determined by whether core collapse results in the formation of a fast spinning neutron star or a black hole. We analyze the evolution of these progenitors, as well as the parameter space where NS formation might favored over BH formation, and properties of their cores and of their CSM at core collapse.

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Classification de Session: Students' presentations