

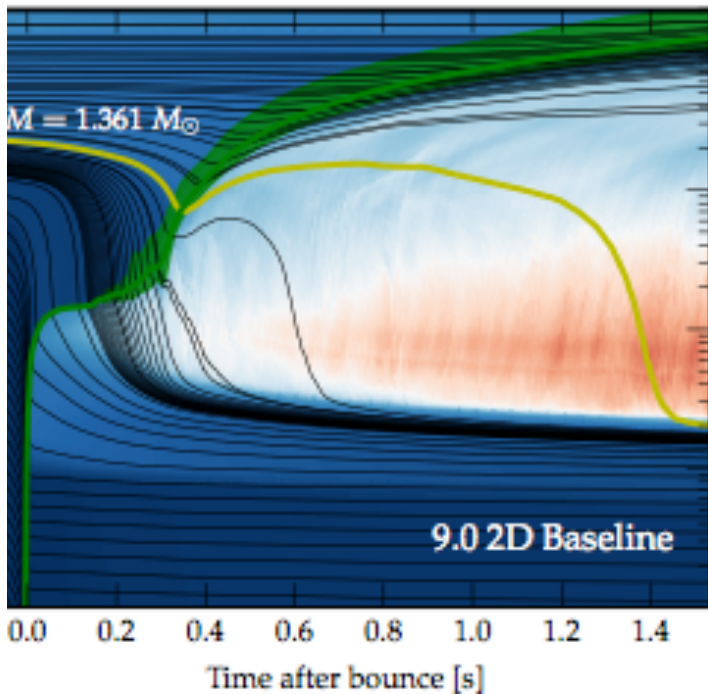
Explosions of Low-Mass Massive Stars

Objectives

We have attempted to determine how CCSN progenitors from 8 to 12 solar masses stars explode and their physical signatures.

Impact

A large fraction of CCSN progenitors resides in this mass range and have an outsized astronomical influence.



Accomplishments

The Princeton group performed new long-term Fornax simulations of electron-capture (EC) and low-mass iron-core-collapse supernovae (Radice et al. 2017). They found that ECSNe are a viable mechanism for the production of very low-mass neutron stars and that PNS convection results in an increase by a factor ~ 2 in the neutrino luminosity for all species starting from roughly half a second after bounce. This will influence nucleosynthesis and explosion energies.

Citation: Radice et al. 2017; Contact: David Radice



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