INSTABILITIES IN 3D SIMULATIONS OF NEUTRINO-DRIVEN CCSNe FROM 13 RSG PROGENITORS

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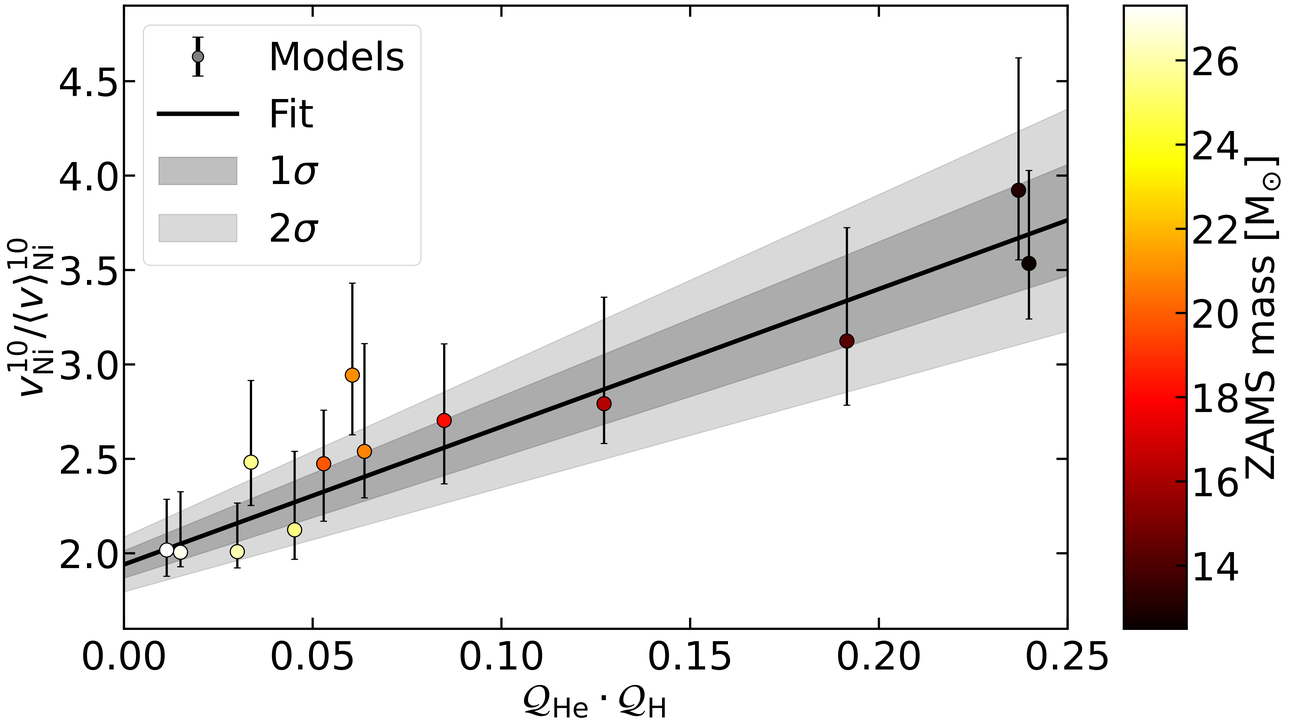
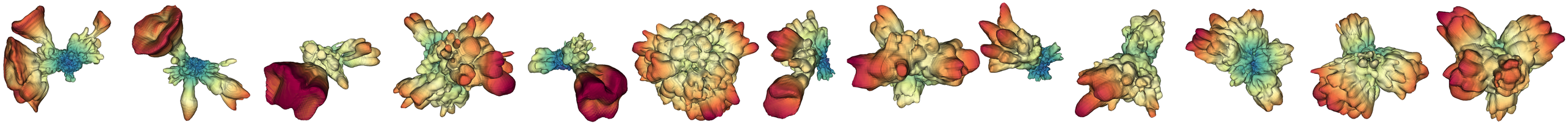
Neutrino-driven core-collapse supernova explosions of 13 red supergiant progenitor stars.

Extent of Ni mixing is related to the density stratifications of the progenitor star, in particular in the He and H shells.

$$\mathcal{Q}_{\rm He} \equiv \frac{\int_{R_{\rm (C+O)/He}}^{R_{\rm He/H}} \rho r^3 dr}{\Delta R_{\rm He} \times (\rho r^3)\big|_{\rm (C+O)/He}}$$

$$\mathcal{Q}_{\rm H} \equiv \frac{\int_{R_{\rm He/H}}^{2R_{\rm He/H}} \rho r^3 dr}{\Delta R_{\rm H} \times (\rho r^3)\big|_{\rm 2R_{He/H}}}$$



Ni final morphology at 1 year after the explosion