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Core-Collapse Supernova Explosion Mechanisms: SASI vs Neutrino Driven Convection[1] TIMOTHY HANDY, TOMASZ PLEWA, Florida State University, ANDRZEJ ODRZYWOLEK, Jagiellonian University, Cracow, Poland — Despite advances in theory and computer models, the explosion mechanisms in core collapse supernovae (ccSN) are still under debate. In particular, the reported relative importance of the standing accretion shock instability (SASI), non-SASI turbulent fluctuations, and bulk convective motion due to neutrino heating varies between research groups, with no current consensus. In this work we offer our own insight into the problem, utilizing an extensive database of 2D and 3D ccSN models tuned to match the energetics of SN 1987A. We propose, implement, and apply novel methods for characterizing the post-bounce evolution of the stellar core. Our analysis focuses on energy transport, convection, morphology of the flow, and statistical properties of fluid motions. We compare the results of our work to those reported by other groups. In particular, we find that our models indicate more vigorous explosions in 3D as compared to 2D for the same neutrino luminosity.

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