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Nucleosynthesis in self-consistent, multi-dimensional simulations of CCSNe J. AUSTIN HARRIS, Lawrence Berkeley National Lab, W. RAPHAEL HIX, MEREK CHERTKOW, University of Tennessee, STEPHEN BRUENN, Florida Atlantic University, ERIC LENTZ, University of Tennessee, DANIEL KASEN, Lawrence Berkeley National Lab — Observations of nuclear abundances in core-collapse supernova ejecta, highlighted by γ-ray observations of the ^{44}Ti spatial distribution in the nearby supernova remnants Cas A and SN 1987A, allow nucleosynthesis calculations to place powerful constraints on conditions deep in the interiors of supernovae and their progenitor stars. This ability to probe where direct observations cannot makes such calculations an invaluable tool for understanding the CCSN mechanism. Unfortunately, despite knowing for two decades that supernovae are intrinsically multi-dimensional events, discussions of CCSN nucleosynthesis have been predominantly based on spherically symmetric models, which employ a contrived energy source to launch an explosion and often ignore important neutrino effects. As part of the effort to bridge the gap between first-principles simulations of the explosion mechanism and observations of both supernovae and SNRs, we investigate CCSN nucleosynthesis with self-consistent, 2D simulations using a multi-dimensional radiation-hydrodynamics code. We present nucleosynthesis results for several axisymmetric CCSN models models which qualitative differences from their parameterized counterparts in their ejecta composition and spatial distribution.

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