

Abstract Submitted  
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**State-of-the-Art Multi-Dimensional Core-Collapse and Supernova Simulations**<sup>1</sup> ADAM BURROWS — We have performed the first 2D multi-group calculations of core collapse, bounce, and explosion (at times) that incorporate multi-D neutrino transfer. In addition, we have investigated the possible role of rotation of the core (using the code’s “2.5”-D capability), calculated the “final” rotational profiles of protoneutron stars, and calculated gravitational radiation signatures. Moreover, we have determined the growth and role of “l=1” anisotropies in the post-bounce configuration using realistic equations of state, multi-neutrino transport, realistic initial models, and state-of-the-art neutrino opacities. The mechanism of core-collapse supernovae, the origin of pulsar kick velocities, and the energy-dependent anisotropy of the neutrino spectra and fluxes are all addressed. Finally, new simulation capabilities that we are developing are discussed.

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Adam Burrows  
University of Arizona

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