Abstract Submitted
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Three-dimensional simulation of core-collapse supernovae with CHIMERA O.E.B. MESSER, Oak Ridge National Laboratory, ERIC J. LENTZ, University of Tennessee, Knoxville, STEPHEN W. BRUENN, Florida Atlantic University, J.A. HARRIS, University of Tennessee, Knoxville, W. RAPHAEL HIX, Oak Ridge National Laboratory, ANTHONY MEZZACAPPA, University of Tennessee, Knoxville, JOHN M. BLONDIN, North Carolina State University, EIRIK ENDEVE, Oak Ridge National Laboratory, PEDRO MARRONETTI, National Science Foundation, KONSTANTIN YAKUNIN, University of Tennessee, Knoxville — Core-collapse supernovae are driven by a multidimensional neutrino radiation hydrodynamic (RHD) engine, and full simulation ultimately requires symmetry-free three-dimensional (3D) RHD simulation. We present ongoing 3D simulation with our multidimensional RHD supernova code CHIMERA that includes all of the most important physical components. The 3D simulation will be compared to completed axisymmetric (2D) simulations that have shown robust explosions in agreement with observational measurements. The impact of symmetry (dimension) and its consequences for our understanding of the explosion mechanism will be discussed in the context of current simulations.

Eric J. Lentz
University of Tennessee, Knoxville

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