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Gravitational and neutrino signatures from core-collapse supernovae KONSTANTIN YAKUNIN, University of Tennessee, Knoxville, BRONSON MESSER, ORNL, University of Tennessee, Knoxville, PEDRO MARRONETTI, National Science Foundation, ANTHONY MEZZACAPPA, ORNL, University of Tennessee, Knoxville, ERIC LENTZ, University of Tennessee, Knoxville, STEPHEN BRUENN, Florida Atlantic University, WILLIAM RAPHAEL HIX, ORNL, University of Tennessee, Knoxville, JAMES AUSTIN HARRIS, University of Tennessee, Knoxville, JOHN BLONDIN, North Carolina State University — Core-collapse supernovae (CCSNe) as powerful sources of gravitational and neutrino radiation are among the prime candidates for multimessenger astronomy. Simultaneous detection of both gravitational and neutrino signals will provide invaluable information about dynamics of the supernova core and reveal details of the CCSN mechanism. We present the gravitational and neutrino signatures from the series of 2D and 3D *ab initio* CCSN simulations performed with Chimera code. Chimera is a radiation hydrodynamics code that is developed specifically for simulation of CCSNe. It combines hydrodynamics, neutrino transport, and nuclear reaction network in one computational infrastructure that allows to model the evolution of supernova from first principles. I will compare gravitational waveforms and neutrino signals obtained in the 2D and 3D simulations with different progenitor masses and provide an estimation of their detectability by gravitational wave and neutrino observatories.

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