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Gravitational Waves from Convection, the Standing-Accretion-Shock Instability and the Onset of Explosion in Core-Collapse Supernovae[1] CHRISTIAN D. OTT, TAPIR, Caltech, JEREMIAH W. MURPHY, Astronomy Dept., University of Washington, ADAM BURROWS, Dept. of Astrophysical Sciences, Princeton University — We present new results on the gravitational wave (GW) emission in the postbounce phase of nonrotating or slowly rotating core-collapse supernovae obtained from an extensive set of simulations with the 2D code BETHE/Hydro. Our calculations include the most recent presupernova stellar models, a finite-temperature nuclear equation of state and a prescription for neutrino cooling and heating. Investigating the postbounce evolution of progenitors of 12, 15, 20, and 40 solar masses with multiple parametrized neutrino luminosities, we for the first time establish the systematics with progenitor star mass and neutrino luminosity of the GW signal emitted by neutrino-driven convection and the standing-accretion-shock instability. In addition, we identify the GW signal associated with the onset of a neutrino-driven core-collapse supernova explosion.

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