

Magnetorotational supernovae and gravitational waves

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We consider magnetorotational(MR) core-collapse supernova explosion mechanism. Numerical simulations show that the shape of the MR explosion depends on the initial configuration of the magnetic field. The explosion can develop preferably near equatorial plane (quadrupole-like field) or as a mildly collimated jet (dipole-like field). We have estimated the dimensionless amplitude of the gravitational wave with a frequency ~ 1300 Hz, radiated during the collapse of the rotating core of a pre-supernova with a mass of $1.2M_{\text{sun}}$. This estimate agrees well with many other calculations that have been done in 2D and 3D settings and which rely on more exact and sophisticated calculations of the gravitational wave amplitude.

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