

# MAGNETOROTATIONAL PROCESSES IN CORE COLLAPSE SUPERNOVAE.

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The explanation of the mechanism of core collapse supernovae is one of the most interesting and still not completely solved problems of modern astrophysics. We discuss current state of the core collapse supernovae problem and review different mechanisms of such supernovae. Numerical simulations of the bounce shock and neutrino driven supernova mechanisms either do not lead to the explosion or the explosion energy is too small. The Standing Accretion Shock Instability(SASI) mechanism also does not lead to the explosion in self-consistent simulations.

In the talk we plan to review the results of our researches of MagnetoRotational(MR) supernova mechanism in 2D approach. In MR supernova mechanism the rotational energy of the differentially rotating presupernova is partially transformed to the explosion energy by magnetic field. In 2D numerical simulations of the MR supernova. The evolution of the magnetic field leads to the development of the magnetorotational instability leading to the exponential growth both poloidal and toroidal magnetic fields. Our results of our simulations show that the supernova explosion corresponds to the observational data. The explosion energy depends on the initial core mass and initial rotational energy.