

SPH simulations of the Induced Gravitational Collapse

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In the IGC paradigm, a carbon-oxygen star (COcore) collapses and explodes in a supernova (SN), the material ejected in the explosion is gravitationally attracted by its companion, a neutron star (NS), taking place a hyper-critical accretion process onto it. For compact systems, the accretion rate could be enough high to lead the NS to reach its critical mass, collapse in a black hole (BH) and emitted a gamma ray burst (GRB). With the aim to identify the separatrix of systems in which a BH is formed and characterize the observational signatures of each process, we have performed 3D-SPH numerical simulations of the SN expansion under the presence of the NS companion and explored a wide range of the initial parameter space.

I will outline the consequences in the observation of long gamma-ray bursts (GRBs).

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