

Exploring collapsar scenarios in numerical relativity

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By performing longterm magneto/viscous radiation hydrodynamics simulations in general relativity for the collapse of rapidly rotating massive stars, we explore the collapsar scenarios. I will first show that stellar explosion with the explosion energy of 10^{51} – 10^{52} erg can be induced even after the formation of a black hole if a massive torus surrounding the black hole, which becomes the engine of the energy injection, is formed. I then show results of magnetohydrodynamics simulations and a condition for jet generation during the stellar collapse via the Blandford-Znajek mechanism. An issue of this jet generation mechanism, over-energy production problem, is pointed out and then I suggest an acceptable scenario.

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Classification de Session: Invited talks