

PRISMA+ Colloquium

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Lorentz-Raum 05-127, Staudingerweg 7

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Core collapse supernovae as emitter of gravitational waves and neutrinos

After the first direct detection of gravitational waves (GWs) from binary black holes and neutron stars, the next target would be those from core collapse supernova (CCSN) events. In contrast to the binary system, the GW emission mechanism from CCSN is still not fully understood because of its complicated hydrodynamics. After gravitational collapse of stellar core, the proto-neutron star (PNS) shows many fluid instabilities and some of them aid the CCSN explosion. Therefore if we can "observe" those fluid motions through detecting and deciphering the GW, we might be able to unveil the CCSN explosion mechanism. Additionally to the GW, neutrino observation can also be another important way to understand the explosion physics, since neutrinos emerge from the PNS surface and convey us information on the hydrodynamics. In this talk, I will briefly summarize recent progress in CCSN simulation and GW and neutrino signal as its outcomes.