

High-energy neutrinos and photons from neutron star mergers

Thursday, August 30, 2018 6:10 PM (0:15)

Abstract content

Last year, LIGO-VIRGO collaborations reported detection of the first neutron star merger event, GW170817, which accompanied with observations of electromagnetic counterparts from radio to gamma rays. High-energy gamma rays and neutrinos were not observed. However, the mergers of neutron stars are expected to produce these high-energy particles. In this talk, I will discuss the prospects for coincident detection of these high-energy particles with gravitational waves. Relativistic jets are expected to be launched when the neutron stars merge, which can be a source of high-energy neutrinos. I discuss the neutrino emission from choked jets (Kimura et al. arXiv:1805.1613) and from successful jets including late-time activities (Kimura et al. 2017 ApJL, 848, 4). I also talk about the high-energy photon emissions due to the activity of the central remnant object after the merger event, either a black hole or a neutron star (Murase et al. 2018 ApJL, 854, 60).

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Session Classification : Gravitational Waves

Track Classification : GW and followup