

GW detections from neutron star mergers in the ET era

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The advent of third generation GW detectors, including the Einstein Telescope, will enable the detection of GW signals not only from the inspiral phase, but also from the post-merger phase of two coalescing neutron stars. The post-merger signal is potentially extremely rich and can shed light on the fate of the remnant, as well as on properties of matter at the highest densities reached in nature. In this talk, I will present some of the most recent results obtained by detailed simulations in Numerical Relativity including detailed microphysics, focusing on the impact and scientific outcome of GW as well as multimessenger detections. I will in particular focus on the so-called prompt collapse scenario, discussing the ring-down signal, as well as the possibility of measuring nuclear properties at the highest densities. In addition, I will also discuss the most urgent issues in merger modelling and multimessenger signal analysis.

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