

## Modeling gravitational-waves from binary neutron stars

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The era of multi-messenger astronomy has started with the first observation of gravitational and electromagnetic radiation from a likely binary neutron star inspiral event. A single event delivered information about the unknown equation of state of matter at supranuclear densities, about the connection between mergers and short-gamma ray burst, about the site of production (via r-process nucleosynthesis) of heavy elements in the Universe, and about cosmography (independent measure of the Hubble constant). A crucial and necessary ingredient for LIGO and Virgo observations is the precise knowledge of the dynamics of the sources and of the emitted waveforms. I will talk about recent developments on the modeling of gravitational waves from neutron star mergers that use numerical simulations in general relativity.

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