

PHAROS Conference 2020: The multi-messenger physics and astrophysics of neutron stars



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Modelling multimessenger signals from compact binary mergers (Invited)

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Compact binary mergers are multi-dimensional, multi-physics, multi-scale phenomena that possibly produce a large variety of signals, including gravitational, electromagnetic and neutrino radiations. Moreover, they are major sites for the synthesis of heavy elements through the so called r-process nucleosynthesis. The outcome and the observables associated to these events have a non-trivial dependence on detailed microphysics, including for example the nuclear equation of state and the role of weak interactions. In this talk, I will present some recent results concerning the status of compact binary merger modelling with a special emphasis on the microphysics input. In particular, I will stress the potential impact of detailed microphysics and of the intrinsic astrophysical variability on the observables (like the kilonova signal), on the properties of the remnant, as well as on the nucleosynthesis outcome. Differences between neutron star-black hole and double neutron star mergers will also be considered.

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