

## **Let there be light: Illuminating neutron star mergers with radiative transfer simulations**

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The detection of an electromagnetic counterpart to the gravitational-wave source GW170817 marked year zero of the multi-messenger gravitational-wave era. This event was generated by the merger of two neutron stars and gave rise to an electromagnetic transient, dubbed a “kilonova”, which was intensively monitored with all the main ground-based and space-borne facilities. In this talk, I will show how radiative transfer simulations can illuminate neutron star mergers and provide a natural connection between models and observational data. I will highlight how kilonova synthetic observables - as light curves, spectra and polarization - can be used to interpret data, place constraints on models and guide future follow-up campaigns of gravitational-wave events.

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