

## NMMA: A nuclear-physics and multi-messenger astrophysics framework to analyze binary neutron star mergers

The multi-messenger detection of the gravitational-wave signal GW170817, the corresponding kilonova AT2017gfo and the short gamma-ray burst GRB170817A, as well as the observed afterglow has delivered a scientific breakthrough. For an accurate interpretation of the emitted gravitational-wave and electromagnetic emission, one requires robust theoretical models and efficient computational tools to enable Bayesian inference of observational or synthetic data. For this purpose, we have developed the Nuclear-physics and Multi-Messenger Astrophysics framework, NMMA. We demonstrate that NMMA allows to simultaneously analyze multi-messenger observational data, constrain the equation of state of supranuclear dense matter, classify electromagnetic observations, perform model selection and to measure the Hubble constant.

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