

Abstract Submitted
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Mode-Tide Interactions in Binary Neutron Stars¹ XIAO FANG, Ohio State Univ - Columbus, PAULO MONTERO-CAMACHO, CHRISTOPHER HIRATA, The Ohio State University — The recent discovery of the binary neutron star (BNS) merger marks the beginning of the multi-messenger astronomy. Similar to black hole mergers, BNSs can also be used as "standard sirens" to measure distances on cosmological scales. However, systematic errors can be introduced when the binary orbit couples to the internal oscillation modes of neutron stars. As the binary move close, the stars will be deformed by the tidal force. Recent studies have discussed the possibility and conditions for generating an instability during the interactions between tides and certain internal oscillation modes, while the physical nature of the instability has not been understood. The presence of this instability would increase the orbital energy dissipation rate, hence affecting the parameter estimation from gravitational wave template fitting. In this talk, I will show our physical understanding of the instability gained from a simplified, analytically-solvable model, and then discuss the effects of magnetic fields.

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