
GRAVITATIONAL WAVE ASTRONOMY AND NUCLEAR AND NEUTRINO PHYSICS

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The tremendous success of LIGO marks the advent of gravitational wave astronomy. Gravitational radiation signatures of collapsing or merging compact objects could give key insights into fundamental issues in nuclear and neutrino physics. For example, when LIGO attains its peak sensitivity it could give us the rate of binary neutron star mergers. In turn, that may tell us whether these merger events make a significant fraction of r-process nucleosynthesis. also, the gravitational wave signatures of these merger events can give us insights into the equation of state of ultra-dense nuclear matter and the role of neutrino radiation and neutrino interactions.

[2] V. Somà, A. Cipollone, *et al.*, *Phys. Rev. C* **89**, 061301(R) (2014).

[3] C. Barbieri and the HALQCD collaboration, in preparation.