

Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Constraints on Neutron Star Masses and Radii in This Era of Multi-Messenger Astronomy MOHAMMAD AL-MAMUN, University of Tennessee, Knoxville — We performed a Bayesian analysis which constrains the neutron star mass-radius relation using observations from quiescent low-mass X-ray binaries, photospheric radius expansion X-ray bursters, merger event GW170817, and J0030+0451 from NICER. This observational data set provides tight constraints on mass-radius relation and the equation of state with a small dependence on the prior choice of equation of state distribution. Analyzing the hidden uncertainties of electromagnetic data, performing intrinsic scattering on the given systematic uncertainties, does not provide a significant change on mass-radius constraints except a slight broadening of the posteriors. Our inferences suggest that both the gravitational wave and the electromagnetic observations of neutron stars are consistent with one another.

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Date submitted: 08 Jan 2021

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