

Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Gravitational Wave Physics with Binary Love Relations KENT YAGI, Princeton Univ, NICOLAS YUNES, Montana State University — Gravitational waves from the late inspiral of neutron star binaries encode rich information about their internal structure at supranuclear densities through their tidal deformabilities. However, extracting the individual tidal deformabilities of the components of a binary is challenging with future ground-based gravitational wave interferometers due to degeneracies between them. We overcome this difficulty by finding new, approximate universal relations between the individual tidal deformabilities that depend on the mass ratio of the two stars and are insensitive to their internal structure. Such relations have applications not only to gravitational wave astrophysics, but also to nuclear physics as they improve the measurement accuracy of tidal parameters. Moreover, the relations improve our ability to test extreme gravity and perform cosmology with gravitational waves emitted from neutron star binaries.

Kent Yagi
Princeton Univ

Date submitted: 11 Dec 2015

Electronic form version 1.4