

APR11-2011-000400

Abstract for an Invited Paper  
for the APR11 Meeting of  
the American Physical Society

**Measuring the neutron-star equation of state using gravitational waves from binary observations**

JOCELYN READ, University of Mississippi

Learning about the size and structure of neutron stars is a challenging problem in astrophysics. These properties are related to the uncertain equation of state for matter above nuclear density. For most of the inspiral of a binary neutron star system, matter effects are unmeasurable, and the stars are well-modeled by point particles. However, as the neutron stars approach each other, an equation-of-state dependent tidal deformation modifies their orbits, changing the late inspiral waveform. This may be measurable in advanced ground-based detectors. I will discuss the size of these effects for realistic equations of state, using waveform estimates based on post-Newtonian and based on high-accuracy numerical simulations of binary neutron stars.