

## **Effects of High Density Phase Transitions on Neutron Star Dynamics**

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Various theoretical arguments motivate an expectation of a phase transition in matter at extreme densities above nuclear density, accompanied by hopes that gravitational wave observations may reveal the properties of such a transition. Instead of adopting a particular theory, we consider here a generic form of first order phase transition using a piecewise polytropic equation of state, and evolve both isolated neutron stars and neutron star binaries, including unequal mass binaries and, in some cases, magnetic field, looking at dynamical effects. Of particular interest are effects that may be observable either via gravitational waves or electromagnetic observations.