Abstract Submitted
for the APR13 Meeting of
The American Physical Society

Eccentric compact object mergers FRANS PRETORIUS, WILLIAM EAST, Princeton University, JANNA LEVIN, Columbia University, SEAN MCWILLIAMS, KAI SHENG TAI, Princeton University — Stellar mass compact object mergers are one of the primary sources of gravitational wave emission that the ground-based gravitational wave detection effort is targeting. Furthermore, if one or both of the compact objects are neutron stars there is promise for coincident electromagnetic emission. Detection, and more importantly extracting properties of the merging system from observations requires theoretical knowledge of the characteristics of the emission. An interesting though possibly rare class of merger events are binaries that merge with large eccentricity. They could occur in close encounters in dense cluster environments, or in a hierarchical triple system subject to Kozai resonance. The gravitational wave signals are markedly different from quasi-circular inspirals, and template-based analysis strategies may not be ideal for eccentric mergers. I will describe ongoing numerical simulations of eccentric binary black hole, black hole-neutron star and binary neutron star systems highlighting some of the interesting dynamics, as well as early results of the efficacy of a stacked, excess power search strategy.

Frans Pretorius
Princeton University

Date submitted: 11 Jan 2013 Electronic form version 1.4