

Abstract Submitted
for the APR18 Meeting of
The American Physical Society

Eccentric, Spinning Black Hole Binaries in the Inspiral Regime

BRENNAN IRELAND, Rochester Inst of Tech, ERIC WEST, University of Minnesota Duluth, HIROYUKI NAKANO, Ryukoku University, MANUELA CAMPANELLI, Rochester Inst of Tech — In this talk, I present a method for developing and calculating the gravitational waveforms from generically spinning, eccentric black hole binaries. I use the Lagrangian formulation of the post-Newtonian equations of motion in the harmonic gauge for the generation of precessing, eccentric gravitational wave signatures. The equations of motion describing the black hole binary system are also of utmost importance to our understanding of fundamental relativity, for both the context of supermassive black holes, and also stellar mass systems. If LIGO is able to measure a non-negligible eccentricity from the binary, this may point to a unique formation model through relativistic 3-body interactions in dense stellar fields, which will impart occasionally significant eccentricity. This tells us something about the formation history of the binary, and explicitly about the last dynamical effect the binary experienced before merging. While it is not expected that LIGO sources have significant eccentricity in band, there may be some residual eccentricity from dynamical interactions prior to merger.

Brennan Ireland
Rochester Inst of Tech

Date submitted: 11 Jan 2018

Electronic form version 1.4