Abstract Submitted
for the APR14 Meeting of
The American Physical Society

A Frequency Hopping Code to calculate gravitational wave fluxes from nearly parabolic equatorial EMRI orbits around Kerr black holes JORDAN STONE, Univ of Arkansas-Fayetteville, SLOAN AHRENS, StackSearch Inc., DANIEL KENNEFICK, Univ of Arkansas-Fayetteville — One of the obstacles for calculating radiation reaction in highly eccentric around Kerr black holes is the broad range of gravitational wave frequencies which radiate away significant energy. A further complication is that the spectrum is assembled from different multipoles (l and m) with the main contributing harmonic (k) being quite different from multipole to multipole. Newtonian-order formulas for the complete spectrum enable us to roughly predict the harmonic k which will contribute most strongly for each multipole. Earlier work for eccentricity of up to 0.9 by various authors demonstrate how the varying harmonic contributions from each multipole go together to complete the full spectrum. We present a Teukolsky-based "frequency hopping" code which identifies the locations of these peaks while efficiently neglecting insignificant values of k. Along with proposed improvements to the Teukolsky-based code itself, we believe this new code will be capable of calculating the flux of energy and angular momentum for nearly parabolic orbits ($e > 0.99$) in extreme-mass-ratio inspirals.

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Date submitted: 10 Jan 2014 Electronic form version 1.4