

Abstract Submitted
for the APR09 Meeting of
The American Physical Society

Detection templates for extreme mass ratio inspirals: Is the radiative approximation sufficient? EANNA FLANAGAN, Cornell University, TANJA HINDERER, Caltech — Gravitational waveform templates for generic extreme mass ratio inspirals, in the radiative approximation, are now nearly in hand. There has been some debate about whether such templates will suffice for signal detection. We describe computations of templates for general equatorial inspirals of a compact object into a Schwarzschild black hole, using as a toy model the geodesic equations supplemented with self-force terms taken from the Kidder-Will-Wiseman hybrid equations of motion. We compute the maximum phase error incurred by the omission of conservative self force terms during the last year of inspiral, as a function of initial eccentricity and of the binaries masses, including optimizing over initial conditions, extending earlier work of Pound and Poisson. The phase errors are less than three cycles in all cases. Nevertheless, it is not clear that the radiative approximation will be sufficient for detection templates, for reasons which we describe.

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Date submitted: 09 Jan 2009

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