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Self-forced gravitational waveforms for intermediate mass ratio inspirals: estimating second order effects LIOR M. BURKO, Alabama A&M University — We present the orbit-integrated self force effects on the gravitational waveform for an IMRI source. We consider the quasi-circular motion of a particle in the spacetime of a Schwarzschild black hole and study the dependence of the dephasing of the corresponding gravitational waveforms due to ignoring the conservative piece of the self force or the second order dissipative piece of the self force. First order self forces are modeled by the fully relativistic Barack–Sago self force. Second order effects are approximated by their post Newtonian expressions. This hybrid approach allows us to gain insight into the quantitative aspects of second order self-force effects, although the post Newtonian approximation of the second order effect does not allow us to quantitatively determine the observable quantities of interest. However, when fully relativistic second order effects become known, out method will allow us to refine our analysis by including them. We calculate the cumulative dephasing of the waveforms and their overlap integral, and discuss the importance of the conservative piece of the self force vis-à-vis the second order dissipative effect in detection and parameter estimation. We then study the effects for the parameter space of the problem.

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