

Abstract Submitted
for the APR17 Meeting of
The American Physical Society

Modeling the Schwarzschild Green's function ZACHARY MARK, Caltech, AARON ZIMMERMAN, CITA, YANBEI CHEN, Caltech — At sufficiently late times, gravitational waveforms from extreme mass ratio inspirals consist of a sum of quasinormal modes, power law tails, and modes related to the matter source, such as the horizon mode (Zimmerman and Chen 2011). Due to the complexity of the exact curved spacetime Green function, making precise predictions about each component is difficult. We discuss the validity of a simple model for the scalar Schwarzschild Green's function. For observers at future null infinity, we model the Green's function as a simple function describing the direct radiation that matches to a single quasinormal mode at a retarded time related to the light ring location. As applications of the model, we describe the excitation process of the single quasinormal mode and the horizon mode, showing that waveform from the inspiralling object is in precise correspondence to the response of driven, damped harmonic oscillator.

Zachary Mark
Caltech

Date submitted: 30 Sep 2016

Electronic form version 1.4