

Abstract Submitted
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Higher order self-force effects CHAD GALLEY, University of Maryland — We present recent progress towards understanding the impact and role of higher order self-force corrections on physically relevant quantities in extreme mass ratio inspirals. As an example, we study the motion of a scalar charge interacting with a nonlinear scalar field (that is motivated from general relativity) in a background black hole spacetime. We use the effective field theory (EFT) approach to perturbatively calculate the self-forced motion of the body and the wave generation through second order in the expansion parameter. Also, by including all particle-field interactions consistent with the symmetries of the theory we use the EFT approach to study the effects due to the finite but small size of the body.

Chad Galley
University of Maryland

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