

Abstract Submitted
for the APR07 Meeting of
The American Physical Society

Motion of a scalar charge around a Schwarzschild black hole IAN VEGA, University of Florida — We report on recent progress made towards the implementation of a fully-consistent, time-domain simulation of the motion of a scalar charge around a Schwarzschild black hole. Scalar charge dynamics in a curved background is influenced by the backreaction of scalar radiation on the charge producing it. This makes the calculation of the self-force a prerequisite to any consistent evolution code. A recently found decomposition of the Green's function for the scalar wave equation, in principle, affords us the capability of calculating this scalar self-force in time-domain, as opposed to mode-sum regularization schemes implemented in the frequency-domain. In this talk, we outline this alternative method and, as a check, examine its practicability for the simple case of circular orbits around Schwarzschild, for which reliable frequency-domain calculations exist and may be used for comparison.

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Date submitted: 14 Jan 2007

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