

Comparison of post-Minkowskian and self-force expansions: Scattering in a scalar charge toy model

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The asymptotic nature of hyperbolic orbits provides a clean environment for comparisons between different methods of calculating scattering observables. In this talk, we present details of a (numerical) calculation of the scalar self-force correction to the scattering angle and compare with analytical expressions up to fourth post-Minkowskian order obtained using scattering-amplitude methods. This example provides a nontrivial, high-precision test of both calculation methods, and illustrates the complementarity of the two approaches in the context of the program to provide high-precision models of gravitational two-body dynamics.

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