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C. Pasiecznik: Eikonal approximation in black hole dynamics and gravitational wave experiments

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The Eikonal approximation has provided a simple approach to analyze the scattering angle of particles interacting with a large massive object. With the Eikonal approach, it is possible to study the quantum perturbative scattering amplitudes of a binary system interacting through graviton exchanges. We re-view the effective field theory treatment of general relativity and the higher order corrections for the bending of light near a massive object via the Eikonal approximation. We explore various probe-limits of the post-Minkowskian order corrections to the scattering angle and evaluate the testability of such corrections using present and near-future gravitational wave experiments. Moreover, we evaluate the testability of these observables pertinent to gravitational binary systems by looking at possible implications of such scattering events in resulting gravitational waves.

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