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Eikonal Green function of the Kerr spacetime AARON ZIMMERMAN, CITA, HUAN YANG, Perimeter Institute, FAN ZHANG, University of West Virginia, YANBEI CHEN, Caltech — The Green function of a black hole spacetime determines its response to small perturbations. The Green function can be used to calculate the self-force correction to the motion of a small mass about the black hole. We have constructed the part of the Green function arising from perturbations which are partially trapped at the light ring, in the eikonal (high-frequency) limit. This "quasinormal mode" part of the Green function is important at early and intermediate response times. In the eikonal limit, it diverges where null geodesics connect a response point to the source point, and it exhibits a four-fold singularity structure. I will discuss our results, future applications of our work, and open questions.

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