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Computing the dissipative part of the gravitational self force: II. Numerical implementation and preliminary results SCOTT HUGHES, Massachusetts Institute of Technology, EANNA FLANAGAN, Cornell University, TANJA HINDERER, Albert Einstein Institute, UCHUPOL RUANGSRI, Massachusetts Institute of Technology — We describe how we have modified a frequency-domain Teukolsky-equation solver, previously used for computing orbit-averaged dissipation, in order to compute the dissipative piece of the gravitational self force on orbits of Kerr black holes. This calculation involves summing over a large number of harmonics. Each harmonic is independent of all others, so it is well suited to parallel computation. We show preliminary results for equatorial eccentric orbits and circular inclined orbits, demonstrating convergence of the harmonic expansion, as well as interesting phenomenology of the self force's behavior in the strong field. We conclude by discussing plans for using this force to study generic orbits, with a focus on the behavior of orbital resonances.

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