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High-precision gravitational wave fluxes from eccentric extreme-mass-ratio binaries and post-Newtonian comparison ERIK FORSETH, CHARLES EVANS, Univ of NC - Chapel Hill, SETH HOPPER, University College Dublin — We describe use of a new arbitrarily high precision gravitational perturbation and self-force method to compute gravitational wave energy fluxes from eccentric extreme-mass-ratio binaries. Fluxes computed over a range of radii and eccentricity allow successive post-Newtonian (PN) terms to be isolated and eccentricity enhancement functions to be determined. For eccentric binaries, the approach can be used to extend PN theory (at lowest order in the mass ratio) to higher orders beyond the present state-of-the-art at 3PN order. We present current results and ongoing progress with these calculations, as well as prospects for future applications.

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