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Second-order self-force for eccentric EMRIs in Schwarzschild spacetime

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The second order self-force (2SF) effect should be considered in the waveform modelling Extreme Mass Ratio Inspirals (EMRIs). Up to now, the waveform of EMRI including the 2SF effect is only achieved for the circular orbit on Schwarzschild background. In this work, we generalized the calculation of the 2SF to the eccentric orbits on Schwarzschild spacetime. We calculated the puncture field, and give the form of two timescale expansion for the equations of motion.

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