

A prospective method for calculating the second-order gravitational self-force in a Kerr background spacetime to model EMRIs.

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Abstract

If the Laser Interferometer Space Antenna (LISA) is successful in tracking a complete extreme mass ratio inspiral (EMRI), this will test General Relativity to one or more orders of magnitude better than any other proposed experiment. EMRI models use a gravitational self-force approach; it has been demonstrated that it is necessary to calculate the gravitational self-force to second-order in a Kerr background metric in order to model an inspiral sufficiently accurately for complete inspiral tracking. In this talk I will discuss the second-order Teukolsky equation and how it may yield methods for calculating the second-order gravitational self-force for a Kerr metric background.