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Full asymptotic expansion of the relativistic orbit of a test particle under the exact Schwarzschild metric. (English) Zbl 0937.83004


Summary: The perturbation method of Lindstedt and Poincaré has been used for the derivation of the asymptotic expression of the relativistic orbit of a test particle influenced by the exact Schwarzschild metric, from which the perihelion advance of a test particle is expressed as a rapidly convergent power series. Numerical results show the convergence characteristics of the modified Newtonian orbital expression.

MSC:

83C10 Equations of motion in general relativity and gravitational theory
83C25 Approximation procedures, weak fields in general relativity and gravitational theory

Keywords:

asymptotic expansion; relativistic orbit; test particle; modified Newtonian orbital expression

Full Text: DOI

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