XIV Conference of Young Scientists "Problems of Theoretical Physics"

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Perturbation equations for Schwarzschild geodesics

Tuesday, 16 January 2024 16:45 (20 minutes)

In our work we consider geodesic equations in Schwarzschild space-time with arbitrary external forces and obtain Gaussian perturbation equations for osculating elements in terms of Weierstrass elliptic functions. As an application, we solve the perturbation equations analytically in linear approximation for forces induced by the presence of the cosmological constant in the Schwarzschild-de Sitter metric, which we compared with a known analytical solution. Also, we solve the perturbation equations for hybrid Schwarzschild/post-Newtonian 2.5 order self-forces.

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