

Modified Dirac equation in schwarzschild metric

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Heisenberg's uncertainty principle at the Planck scale leads to extensions of Dirac equations. In this paper, the generalized uncertainty problem (GUP) theory is used as an extension of the Dirac equation with the mass term $m_1 + i\gamma^5 m_2$ (tachyonic) in the Schwarzschild metric. Its eigenvalue problem for a particle in a gravitational field created by a central mass is also solved. The fundamental spinor solution for the tachyonic Dirac equation is found on a helicity basis. This study shows that it is impossible with current theories to formulate a covariant equation that could be repulsed by gravity in the framework of space-like particles.

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