
MARC DE MONTIGNY, University of Alberta

The Dirac oscillator in a non-commutative cosmic string spacetime

We examine the non-inertial effects on a Dirac oscillator of a rotating frame in a cosmic string spacetime with non-commutative geometry. We discuss the bound states solutions of the Dirac equation and the corresponding energies. We observe, in some limits, a coupling between the angular momentum and the angular velocity, and between the spin and the angular velocity. For the non-relativistic limit, we notice the existence of a degeneracy frequency given a specific relation between the oscillator frequency and the rotating frequency, for which the energy levels become degenerate.