

Abstract Submitted
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Intrinsic vacuum motions and the GR – spin-connection RONALD

BRUNER, Retired — When the vacuum is assumed to have uniform non-zero energy density, and the spatial coordinates are time-dependent, general relativity describes intrinsic motions, relative to a stationary observer, that depend on the sign of the vacuum energy density. For example, intrinsic motions associated with a positive energy density vacuum (or a positive cosmological constant) are the well-known outward-accelerating motions of the cosmic expansion. We find that the intrinsic vacuum motions associated with a negative energy density vacuum are circular in spacetime, and can be interpreted as describing the intrinsic motions of spin-particles. When the angular frequency of these motions is equated to the angular frequency of the quantum of mass of the negative energy density vacuum field these results imply a clear connection between general relativity and quantum theory at the Planck length scale.

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