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TORQUE AND COROLOIS FORCE ADDITIONS TO EINSTEIN'S FIELD EQUATIONS AS RELATED TO THE UNIFIED FIELD

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Abstract.

The inclusion of torque and Coriolis forces as dynamic properties of the spacetime metric and the stress-energy tensor in Einstein's field equations may lead to significant advances in describing novae and supernovae structures, galactic formations, their central super-massive black holes, polar jets, accretion disks, spiral arms, galactic halo formations and in unification theory in general. We formulate these additional torque and Coriolis force terms to amend Einstein's field equations and solve for a modified Kerr-Newman metric. Lorentz invariance conditions are reconciled by utilizing a modified metrical space, not the usual Minkowski space, but a U_4 space which is a consequence of the Coriolis force acting as a secondary effect generated from the torque terms. The equivalence principle is preserved using an unsymmetric affine connection. Further, the U_1 Weyl gauge is associated with the electromagnetic field, where the U_4 space is four copies of U_1. Thus, the metric generates a dual torus as two copies of U_1 x U_1, which we demonstrate through an S^3 spherical space related to the SU_2 group and other Lie groups. This space also seems to make correspondence to the Calabi-Yau conditions of superstring theory. The S^4 octahedral group and the cubeoctahedron group of GUT (Grand Unification Theory) may be related to our U_4 space in which we formulate solutions to Einstein's field equations with the inclusion of torque and Coriolis forces. Of particular interest is the dynamics of the plasma media, the structure of the vacuum, and the coupling of electromagnetic and gravitational phenomena, which may give insight on how to formalize a background independent string vacuum in complex dimensions.