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Shipov's Equation for the Vacuum Propeller

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Application of Shipov's Theory

Gennady Shipov's theory of the induced contortion field deforms the Poincare group P of flat space time from the locally trivial fiber bundle

$$P = T(1,3) \times SO(1,3) \tag{1.1}$$

to a locally nontrivial extended bundle. The 3 total angular momentum rotation and 3 Lorentz boost generators of the special relativity group fiber SO(1,3) no longer commute with the 4 generators of center of mass energy and linear momentum of the translation group T(1,3).

The failure of two physical generators to commute means that they interfere with each other. Newton's Third Law of

Action-Reaction in 3D space breaks down in this case. Its generalized form is, of course, restored at the level of higher symmetry in, for example, the 11D hyperspace of M-theory.[1]

We are used to higher level symmetries being broken down to lower level sub-symmetries. For the vacuum propeller, we have restoration of the higher symmetry from the breaking of the lower level sub-symmetries with the violation of their associated conservation laws.

Shipov's equation for the vacuum propeller is

$$d\chi_{ij} = K_{ij\mu} dx^{\mu} \tag{1.2}$$

The indices i, j are in the 6D SO(1,3) fiber. The index μ is in 4D spacetime. The 6 anholonomic fiber coordinates, canonically conjugate to the SO(1,3) generators are the 3 angles of rotation $\theta_1, \theta_2, \theta_3$ about the axes normal to the 23, 13, and 12 planes of tetrad base vectors of the local tangent space fiber attached to each spacetime event E, and the 3 rapidities $\vartheta_1, \vartheta_2, \vartheta_3$ of the three Lorentz transformations along the local tetrad space directions 1, 2, 3. Specifically

[1] August 2000, Scientific American, Unseen Dimensions of the Universe.

$$
\begin{aligned}
d\chi_{12} &= -d\chi_{21} = d\theta_3 \\
d\chi_{31} &= -d\chi_{13} = d\theta_2 \\
d\chi_{23} &= -d\chi_{32} = d\theta_1 \\
d\chi_{01} &= -d\chi_{10} = d\vartheta_1 \\
d\chi_{02} &= -d\chi_{20} = d\vartheta_2 \\
d\chi_{03} &= -d\chi_{30} = d\vartheta_3
\end{aligned} \tag{1.3}
$$

Reversing the order of the indices on the LHS of (1.3) adds a – sign on the RHS. These formulas connect to supersymmetry[2] via anti-commuting Grassmann numbers η_i, quaternions and the "Dirac trick."

$$
\begin{aligned}
d\chi_{12} &= -d\chi_{21} = \eta_1\eta_2 |d\theta_3| \\
d\chi_{31} &= -d\chi_{13} = \eta_1\eta_3 |d\theta_2| \\
d\chi_{23} &= -d\chi_{32} = \eta_2\eta_3 |d\theta_1| \\
d\chi_{01} &= -d\chi_{10} = \eta_0\eta_1 |d\vartheta_1| \\
d\chi_{02} &= -d\chi_{20} = \eta_0\eta_2 |d\vartheta_2| \\
d\chi_{03} &= -d\chi_{30} = \eta_0\eta_3 |d\vartheta_3|
\end{aligned} \tag{1.4}
$$

$$
\eta_i\eta_j + \eta_j\eta_i = 0 \tag{1.5}
$$

$$
\begin{aligned}
d\theta_1 = d\chi_{23} &= K_{230}dx^0 + K_{231}dx^1 + K_{232}dx^2 + K_{233}dx^3 \\
d\theta_2 = d\chi_{31} &= K_{310}dx^0 + K_{311}dx^1 + K_{312}dx^2 + K_{313}dx^3 \\
d\theta_3 = d\chi_{12} &= K_{120}dx^0 + K_{121}dx^1 + K_{122}dx^2 + K_{123}dx^3 \\
d\vartheta_1 = d\chi_{01} &= K_{010}dx^0 + K_{011}dx^1 + K_{012}dx^2 + K_{013}dx^3 \\
d\vartheta_2 = d\chi_{02} &= K_{020}dx^0 + K_{021}dx^1 + K_{022}dx^2 + K_{023}dx^3 \\
d\vartheta_3 = d\chi_{03} &= K_{030}dx^0 + K_{031}dx^1 + K_{032}dx^2 + K_{033}dx^3
\end{aligned} \tag{1.6}
$$

[2] Discussions with Saul-Paul Sirag.

Note that we have a singular linear transformation with rectangular 6x4 and 4x6 matrices. Think of $d\chi_{ij}$ as a set of 6 control parameters, turning knobs[3] through small angles at spacetime event E. We also suppose that an advanced civilization is able to control the components of the contortion tensor field in a small neighborhood of E.
The first term on the RHS of (1.4) is a time distortion effect on the local tangent Minkowski tangent space induced and amplified by the local contortion field. The next 3 terms are the space-displacement "teleportation" effect [4] experienced by the body-fixed observers in the local tangent space relative to the outside observers where the contortion field is zero. Imagine that the contortion field is large only in the immediate neighborhood of the local tangent frame attached to the ship.

Toy Model 1
Assume all components of the contortion field tensor are zero accept for the first row of (1.6). Divide by the coordinate frame time $dx^o = cdt$

$$\frac{d\theta_1}{cdt} = K_{230}\frac{dx^0}{cdt} + K_{231}\frac{dx^1}{cdt} + K_{232}\frac{dx^2}{cdt} + K_{233}\frac{dx^3}{cdt} \qquad (1.7)$$

$$dx^0 = \gamma_{eff} ds \qquad (1.8)$$

Where ds is the frame invariant proper time so that (1.8) is time dilation.

[3] A 6-fingered ET would find it easier to use the hand panels described by Colonel Phillip J. Corson in "The Day After Roswell". But, of course, we don't believe in the literal truth of all those stories. ☺ Do we?
[4] Philadelphia Experiment, 1943?

Since the LHS has a representation in terms of fermionic anticommuting Grassmann numbers. Think of (1.8) as a quaternion equation. That is

$$\begin{aligned}&\frac{d\theta_1}{cdt}\gamma_2\gamma_3 = K_{230}\frac{dx^0}{cdt}\gamma_0 + K_{231}\frac{dx^1}{cdt}\gamma_1 + K_{232}\frac{dx^2}{cdt}\gamma_2 + K_{233}\frac{dx^3}{cdt}\gamma_3 \\ &= K_{230}\gamma_0 + K_{231}\frac{dx^1}{cdt}\gamma_1 + K_{232}\frac{dx^2}{cdt}\gamma_2 + K_{233}\frac{dx^3}{cdt}\gamma_3\end{aligned} \quad (1.9)$$

where γ_i are the Dirac matrices.

Therefore, from the Dirac trick that the γ_i form a basis in global supersymmetry space consistent with special relativity, the effective mass of the ship in the simple case, modified by its contortion cloaking field is then

$$m_{eff} = m_0\gamma_{eff} = \frac{m_0}{\sqrt{1-\left(\frac{K_{231}dx^1}{K_{230}cdt}\right)^2-\left(\frac{K_{232}dx^2}{K_{230}cdt}\right)^2-\left(\frac{K_{233}dx^3}{K_{230}cdt}\right)^2}} \quad (1.10)$$

The supersymmetry-type formulation of Shipov's "vacuum propeller" equation, that expresses the local nontrivial mixing of the internal symmetries of the tangent space fiber spanned by tetrads with the spacetime symmetries of the base space, is then

$$
\begin{aligned}
d\theta_1 &= d\chi_{23}\gamma_2\gamma_3 = K_{230}dx^0\gamma_0 + K_{231}dx^1\gamma_1 + K_{232}dx^2\gamma_2 + K_{233}dx^3\gamma_3 \\
d\theta_2 &= d\chi_{31}\gamma_3\gamma_1 = K_{310}dx^0\gamma_0 + K_{311}dx^1\gamma_1 + K_{312}dx^2\gamma_2 + K_{313}dx^3\gamma_3 \\
d\theta_3 &= d\chi_{12}\gamma_1\gamma_2 = K_{120}dx^0\gamma_0 + K_{121}dx^1\gamma_1 + K_{122}dx^2\gamma_2 + K_{123}dx^3\gamma_3 \\
d\vartheta_1 &= d\chi_{01}\gamma_0\gamma_1 = K_{010}dx^0\gamma_0 + K_{011}dx^1\gamma_1 + K_{012}dx^2\gamma_2 + K_{013}dx^3\gamma_3 \\
d\vartheta_2 &= d\chi_{02}\gamma_0\gamma_1 = K_{020}dx^0\gamma_0 + K_{021}dx^1\gamma_1 + K_{022}dx^2\gamma_2 + K_{023}dx^3\gamma_3 \\
d\vartheta_3 &= d\chi_{03}\gamma_0\gamma_3 = K_{030}dx^0\gamma_0 + K_{031}dx^1\gamma_1 + K_{032}dx^2\gamma_2 + K_{033}dx^3\gamma_3
\end{aligned}
\tag{1.11}
$$

Therefore, it appears that Gennady Shipov's propellantless propulsion equation (1.2) is based upon the deformation of the 10 parameter flat spacetime group P=R(1,3)xSO(1,3) to the 14 parameter graded Poincare super-group gP.

"The cosets of SO(1,3) in gP is an 8D superspace gP/SO(1,3) with both fermionic F and bosonic B parameters." Saul-Paul Sirag[5]

Repeated supersymmetry transformations in the F sector of gP/SO(1,3) superspace yield space-time translations in the B sector where we live. Gennady Shipov's vacuum propeller equation (1.2) appears to be the more pedestrian torsion field theory representation of this supersymmetry phenomenon of the Elegant Intelligent Universe.

"This is a torsion that moves particles though ordinary bosonic B space by 'pushing' on fermionic F space." Sirag, ibid

This is what I meant in my initial remarks that I repeat here:

[5] This meeting ISSO Torsion Conference, August, 2000

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