

Refutation of comment by Jadczyk et al

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Elementary errors in an arXiv document by Jadczyk et al. are corrected in a straightforward manner. The method used by these authors is to deliberately attempt to contrive "errors" where none exist.

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1 Introduction

Recently [1] a note was posted on arXiv without the knowledge of the present author, a note that yet again attempts to give the false impression of mathematical errors in ECE theory [1] where none exist. This conduct is a corruption of the scientific method and has been recognized as such by essentially the entire profession [2]. However it is important to point out precisely how this conduct is perpetrated by attempting to set up false arguments. A reader with a knowledge of mathematics ought to be able to follow this and other refutations [3], so that no shadow of doubt is left as to the unscientific motivation of this small group of people. It is inconceivable that professional mathematicians could produce numerous trivial errors and disseminate them throughout the scientific world, so it is overwhelmingly likely that this is an unethical campaign of personal animosity. Legitimate refutations of this conduct are ignored by the perpetrators, even though the refutations have been accepted by the entire profession [2]. The net result is that the perpetrators must be recognized for what they are, disciplined and ignored.

A simple example of a trivial error which was forced into print is described in appendices 2 and 10 of paper 89 of www.aias.us. These appendices show, using elementary mathematics, that the well known B Cyclic Theorem [1] reduces to the basic cyclic relations between unit vectors in three dimensional space. This basic cyclic relation is Lorentz invariant. If a vector field is defined as the unit vector \mathbf{k} for example, the complete vector field is the number 1 multiplied by \mathbf{k} . Under the general coordinate transformation [4] the number 1 is invariant, i.e.

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does not change. This implies that the unit vector k does not change under the general coordinate transformation because the complete vector field is invariant as is well known [4]. So the B Cyclic Theorem is invariant, Q.E.D. Despite this, a paper was forced into "Physica Scripta" by one of the perpetrators of this campaign. The same paper is about to be forced into "Foundations of Physics", so the deliberate corruption of coordinate transformation is to be doubly published. This is a process where referees and editors did not do their basic duty in science. The net result is a degeneration of the scientific method and a devaluation of some scientific journals to the point where they become meaningless and must be ignored. In other words it has become clear that they have published a campaign of animosity.

2 Some detailed points of refutation

There are no errors of any consequence in ECE theory, which is standard Cartan geometry, as defined [4] in numerous textbooks. The methods of ECE have been checked by colleagues other than the present author, and where relevant, by computer algebra. The theory has been compared with data and found to be a great improvement on Maxwell Heaviside field theory. To assert otherwise is by now futile, the theory has not been "dis-proven" in any way, mathematically or experimentally, and has gone from strength to strength. The perpetrators assert that Cartan geometry is "undefined". This alone is enough to arouse suspicion, because Cartan geometry is standard textbook material [4].

There is a basic error in Eq. (6), it has been shown in paper 88 of www.aias.us that the Bianchi identity is, in indexless notation [1]:

$$D \wedge T := R \wedge q \tag{1}$$

and

$$D \wedge (D \wedge T) := D \wedge (R \wedge q). \tag{2}$$

The traditional second Bianchi identity [4]:

$$D \wedge R = 0 \tag{3}$$

is a special case of Eq. (2). The authors of this pseudo-mathematical note now seem to accept the fact that:

$$d \wedge R_b^a = R_c^a \wedge \omega_b^c - \omega_c^a \wedge R_b^c \tag{4}$$

is a rewriting of Eq. (3) in the form:

$$d \wedge R_b^a = j_b^a. \tag{5}$$

We must be grateful for a ray of enlightenment. The second basic error made by the authors is to assert that Eq. (4) does not imply:

$$d \wedge \tilde{R}_b^a = \tilde{R}_c^a \wedge \omega_b^c - \omega_c^a \wedge \tilde{R}_b^c. \tag{6}$$

This error has already been refuted in all detail in paper 89 of www.aias.us but here the authors try to force it once more upon their long suffering scientific colleagues. So here their error is once more corrected. First write out Eq. (4) in full:

$$(d \wedge R_b^a)_{\mu\nu\rho} = R_{c\mu\nu}^a \wedge \omega_{\rho b}^c - \omega_{\rho c}^a \wedge R_{b\mu\nu}^c. \tag{7}$$

The Hodge dual of R_b^a is defined as (4):

$$\tilde{R}_{b\mu\nu}^a = \frac{1}{2} |g|^{\frac{1}{2}} \bar{\epsilon}^{\mu\nu\rho\sigma} R_{b\rho\sigma}^a \tag{8}$$

where

$$\epsilon_{\mu_1\mu_2\dots\mu_n} = |g|^{\frac{1}{2}} \bar{\epsilon}_{\mu_1\mu_2\dots\mu_n} \tag{9}$$

is defined by (4):

$$|g| = \|\mathbf{g}_{\mu\nu}\|. \tag{10}$$

Apply the Hodge dual (8) to both sides of Eq. (4):

$$d \wedge (\epsilon R) = (\epsilon R) \wedge \omega - \omega \wedge (\epsilon R). \tag{11}$$

Use the metric compatibility condition [4]:

$$D_\mu \mathbf{g}_{\nu\rho} = 0 \tag{12}$$

to find that:

$$d \wedge (\epsilon R) = \epsilon d \wedge R. \quad (13)$$

Therefore:

$$d \wedge \tilde{R} = \tilde{R} \wedge \omega - \omega \wedge \tilde{R} \quad (14)$$

Q.E.D.

So the perpetrators of this animosity campaign have tried and failed to give the impression of an error where none exists. This is always their method, which is why they should be both ignored and disciplined by the profession.

The authors cannot even get the numbering of their equations right, there is a gap between (18) and (20). All their remarks concerning the index a have already been refuted repeatedly, notably in paper 89 of www.aias.us. We know from feedback software that all the present author's refutations are read intensely and have been accepted by the entire profession. It is very strange therefore that the perpetrators of this animosity campaign are able to force their machinations into print. This means that the editor/referee system is not working, and it is well known that editors have been harassed by the perpetrators. Such a corrupted system is no longer being accepted by the profession. This is clearly indicated by the unprecedented professional interest in www.aias.us over four years. The meaning of the a index was first made clear as far back as 1992 [5], and published material on the index is available in approximately 25 properly refereed journals (Omnia Opera section of www.aias.us). The arXiv authors' writings about a are deliberately garbled, as indeed is this entire animosity campaign.

We are apparently told next that the traditional Bianchi identity [4]:

$$D \wedge R = 0 \quad (15)$$

is not the same as its own tensor formulation:

$$D_{\sigma} R_{\mu\nu\rho}^{\kappa} + D_{\sigma} R_{\rho\mu\nu}^{\kappa} + D_{\sigma} R_{\nu\rho\mu}^{\kappa} = 0. \quad (16)$$

If there are any readers left who continue to take these perpetrators seriously, the present author points out the textbooks again, the form equations of Cartan geometry all have their tensor equivalents. The tensor formulation (16) can be rewritten as [4]:

$$D^{\mu} G_{\rho\mu} = 0 \quad (17)$$

where $G_{\rho\mu}$ is the Einstein tensor. The Einstein field equation is then:

$$D^\mu G_{\rho\mu} = kD^\mu T_{\rho\mu} \tag{18}$$

where:

$$T_{\rho\mu} = T_{\mu\rho} \tag{19}$$

is the symmetric canonical energy - momentum tensor of Noether and where k is the Einstein constant. Thus Eq. (18) can equally well be written as:

$$\begin{aligned} (D_\sigma R^\kappa_{\mu\nu\rho} + D_\sigma R^\kappa_{\rho\mu\nu} + D_\sigma R^\kappa_{\nu\rho\mu}) \\ = k(D_\sigma N^\kappa_{\mu\nu\rho} + D_\sigma N^\kappa_{\rho\mu\nu} + D_\sigma N^\kappa_{\nu\rho\mu}) \end{aligned} \tag{20}$$

which is:

$$D \wedge R_b^a = kD \wedge N_b^a \tag{21}$$

Q.E.D.

We are next told that "... the metric component g^{00} of the Minkowski metric is not a constant function (sic) of x^i (sic)." On the contrary, the Minkowski metric is:

$$g^{\mu\nu} = g_{\mu\nu} = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & -1 & 0 & 0 \\ 0 & 0 & -1 & 0 \\ 0 & 0 & 0 & -1 \end{bmatrix} \tag{22}$$

and so:

$$g^{00} = 1. \tag{23}$$

This is a number, (i.e. 1), and as such is independent of x^i , a component of a complete vector field. The perpetrators have again contrived an "error" where none exists. This is unethical and unprofessional conduct. They have disseminated literally thousands of e mails with such contrivances, so have seriously corrupted the scientific method.

Finally we are told that there exist no resonance solutions to the equation:

$$\frac{d^2\phi}{dr^2} + \frac{1}{r} \frac{d\phi}{dr} - \frac{1}{r} \phi = -\frac{\rho}{\epsilon_0}, \tag{24}$$

$$\rho = \rho(0) \cos(\kappa_r r). \quad (25)$$

On the contrary, if we make the change of variable [1]:

$$\kappa_r r = \exp(i\kappa_r R). \quad (26)$$

Eq. (2 .24) becomes:

$$\frac{d^2\phi}{dR^2} + \kappa_r^2 \phi = \frac{\rho(0)}{\epsilon_0} \operatorname{Re}\left(e^{2i\kappa_r R} \cos(e^{i\kappa_r R})\right), \quad (27)$$

which has resonance solutions, Q.E.D. Note that the equation of ECE that leads to Eq. (24) is (1)

$$\frac{\partial^2\phi}{\partial r^2} + \left(\frac{2}{r} + \omega_r\right) \frac{\partial\phi}{\partial r} + \frac{\phi}{r^2} \left(2r\omega_r + r^2 \frac{\partial\omega_r}{\partial r}\right) = -\frac{\rho}{\epsilon_0} \quad (28)$$

and when the spin connection is defined as:

$$\omega_r = \omega_{0r}^2 - 4\beta \log_e r - \frac{4}{r} \quad (29)$$

Eq. (28) takes the form:

$$\frac{\partial^2\phi}{\partial r^2} + 2\beta \frac{\partial\phi}{\partial r} + \omega_0^2 \phi = -\frac{\rho}{\epsilon_0} \quad (30)$$

which is a resonance equation, Q.E.D.

So in conclusion, this arXiv note is mathematical nonsense contrived to give the impression of "errors" in ECE theory where none exist. This is a serious corruption of the scientific method and professional condemnation of the perpetrators is needed.

References

- [1] M. W Evans, "Generally Covariant Unified Field Theory" (Abramis Academic, 2005 to 2009), volumes 1 to 5, consisting of papers 1-89 on www.aiaa.us.
- [2] Feedback software, monitored over more than three years daily to www.aiaa.us, generating several million hits from all leading establishments in physics.
- [3] Numerous detailed refutations on www.aiaa.us, notably paper 89.
- [4] S. P. Carroll, "Space-time and Geometry, an Introduction to General Relativity" (Addison Wesley, New York, 2004, 1997 notes available freely on the web), chapter three.
- [5] M. W. Evans, *Physica B*, **182**, 227, 237 (1992).