

# On M.W. Evans' claim of antisymmetric connections in relativity

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(our comments in **blue**, quotations from Evans' texts in **black**)

M.W. Evans' web paper 122 [1] opens with the following Abstract:

*"It is shown that the connection in relativity theory must always be antisymmetric and that relativity theory must be based on a non-zero space-time torsion as in the Einstein Cartan Evans (ECE) field theory. These results follow straightforwardly from the action of the commutator of covariant derivatives on any tensor in any space-time. The commutator is anti-symmetric by construction and generates the torsion and curvature tensors with anti-symmetric connection. The assumption of a symmetric connection as used in the standard model is irretrievably incorrect, meaning that the Einsteinian era in gravitational theory and cosmology is over. The ECE equations are geometrically correct and provide new cosmologies and technologies".*

And in Section 2

## "2. ANTI-SYMMETRY OF THE CONNECTION"

we find a very curious conclusion:

*"The torsion is defined as:*

$$[D_\mu, D_\nu] V^\rho = -T_{\mu\nu}^\lambda D_\lambda V^\rho + \dots = -(\Gamma_{\mu\nu}^\lambda - \Gamma_{\nu\mu}^\lambda) D_\lambda V^\rho + \dots \quad (15)$$

*and is anti-symmetric, and it follows that:*

$$\Gamma_{\mu\nu}^\lambda = -\Gamma_{\nu\mu}^\lambda \quad (16)$$

*The connection in the theory of relativity must be anti-symmetric whenever it occurs, Q.E.D."*

Since the phrase Q.E.D. is no substitute of a missing proof we must state here that the above "conclusion" is a flaw of thinking merely:

Let the upper index  $\lambda$  be fixed and suppressed here. Then  $(T_{\mu\nu}) = (\Gamma_{\mu\nu} - \Gamma_{\nu\mu})$  is an antisymmetric matrix for arbitrary matrices  $(\Gamma_{\mu\nu})$ . Therefore, the matrix  $(\Gamma_{\mu\nu})$  is not necessarily antisymmetric; only *non*-symmetric in case of non-vanishing matrix  $(T_{\mu\nu})$ . But '*non*-symmetric' cannot be mixed up with '*anti*-symmetric' as Evans evidently did.

However, this is not a slip, but a flaw with *serious* consequences on Evans' conclusions: His great words of the Abstract are based on **nothing but a simple fallacy**:

**The assumption of a symmetric connection as used in the standard model is irretrievably incorrect, meaning that the Einsteinian era in gravitational theory and cosmology is over.**

## References

- [1] M.W. Evans, *ON THE SYMMETRY OF THE CONNECTION IN RELATIVITY AND ECE THEORY*,  
<http://www.aias.us/documents/uft/a122ndpaper.pdf>
- [2] S.M. Carroll, *Lecture Notes on General Relativity*, [Chapter 3](#)
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