1) 109(4): Computer Algebra Demonstration of the Flaws in Einstein Hilbert Theory.

We start the demonstration with the computer algebra result:

$$R^{\kappa}{}_{\mu}{}^{\mu\nu} \neq 0 \quad -(1)$$

of pages 93. If the particular index

$$\nu = 0 \quad -(2)$$

is chosen, then:

$$R^{\kappa}{}_{1}{}^{10} + R^{\kappa}{}_{2}{}^{20} + R^{\kappa}{}_{3}{}^{30} \neq 0 \quad -(3)$$

for example. Similar results were obtained for other ν indices.

Now use:

$$R^{\kappa}{}_{1}{}^{01} = -R^{\kappa}{}_{1}{}^{10} = \frac{\|g\|^{1/2}}{2} \epsilon^{01\mu\nu} \tilde{R}^{\kappa}{}_{1\mu\nu}$$

$$= \|g\|^{1/2} \tilde{R}^{\kappa}{}_{123}$$

$$R^{\kappa}{}_{2}{}^{02} = -R^{\kappa}{}_{2}{}^{20} = \|g\|^{1/2} \tilde{R}^{\kappa}{}_{231}$$

$$R^{\kappa}{}_{3}{}^{03} = -R^{\kappa}{}_{3}{}^{30} = \|g\|^{1/2} \tilde{R}^{\kappa}{}_{312}$$

Therefore:

$$\tilde{R}^{\kappa}{}_{123} + \tilde{R}^{\kappa}{}_{231} + \tilde{R}^{\kappa}{}_{312} \neq 0 \quad -(4)$$

This is an example of:

$$\boxed{\tilde{R}^{\kappa}{}_{\mu\nu\sigma} + \tilde{R}^{\kappa}{}_{\sigma\mu\nu} + \tilde{R}^{\kappa}{}_{\nu\sigma\mu} \neq 0} \quad -(5)$$

for the Christoffel symbol and for exact

2)

solutions of the Einstein Hilbert equation (see paper 93 and extra-plots on www.aias.us).

As in previous notes for paper 103:

$$[D_\mu, D_\nu]_{HD} V^\kappa = \tilde{R}^\kappa{}_{\sigma\mu\nu} V^\sigma - \tilde{T}^\lambda{}_{\mu\nu} D_\lambda V^\kappa \quad -(6)$$

and this implies:

$$D_\mu \tilde{T}^\kappa{}_{\nu\sigma} + D_\sigma \tilde{T}^\kappa{}_{\mu\nu} + D_\nu \tilde{T}^\kappa{}_{\sigma\mu}$$
$$= \tilde{R}^\kappa{}_{\mu\nu\sigma} + \tilde{R}^\kappa{}_{\sigma\mu\nu} + \tilde{R}^\kappa{}_{\nu\sigma\mu} \quad -(7).$$

i.e

$$\boxed{D_\mu T^{\kappa\mu\nu} = R^{\kappa}{}_{\mu}{}^{\mu\nu}} \quad -(8)$$

In eq. (8):

$$R^{\kappa}{}_{\mu}{}^{\mu\nu} \neq 0, \quad T^{\kappa\mu\nu} = 0 \quad -(9)$$

and so the Einstein Hilbert equation is not a solution of eq. (8). The Christoffel connection is not a self-consistent solution of eq. (8), because for ~~this~~ connection we obtain eq. (9).

3)

Discussion

The result (1) is highly non-trivial, and was not known until 2007, when it was discovered by computer algebra by the AIAS group. We intend to systematically investigate eq. (1) for classes of exact solutions of the EH equation in order to demonstrate beyond doubt that EH is geometrically incorrect. Eq. (6) shows that if $\tilde{R}^{\kappa}{}_{\mu\nu\sigma}$ exists then $\tilde{T}^{\kappa}{}_{\nu\sigma}$ also exists. The two tensors are always related by eq. (7), which can be rewritten as eq. (8).

This work has major implications in the theory of gravitation and in cosmology. The correct field equation (e.g. paper 103) must be based on the correct geometry of eq. (8), and its Hodge dual:

$$D_\mu \tilde{T}^{\kappa\mu\nu} = \tilde{R}^{\kappa}{}_{\mu}{}^{\mu\nu} \quad -(9)$$

Eqs. (8) and (9) must be solved simultaneously.