1) 112(9): Detailed Results of the Computer Algebra of Paper 93.

For all metrics with:

$$T_{\mu\nu} \neq 0 \qquad -(1)$$

it was found that:

$$R^{\kappa}{}_{\mu}{}^{\mu\nu} \neq 0 \qquad -(2)$$

For example:

$$\boxed{R^{0}{}_{1}{}^{01} + R^{0}{}_{2}{}^{02} + R^{0}{}_{3}{}^{03} \neq 0} \qquad -(3)$$

with the use of the Christoffel symbol. The latter implies that:

$$T^{001} = T^{002} = T^{003} = 0 \qquad -(4)$$

so:

$$D_1 T^{001} + D_2 T^{002} + D_3 T^{003} = 0 \qquad -(5)$$

Therefore:

$$\boxed{D_1 T^{001} + D_2 T^{002} + D_3 T^{003} \neq R^{0}{}_{1}{}^{01} + R^{0}{}_{2}{}^{02} + R^{0}{}_{3}{}^{03}} \qquad -(6)$$

for the Einstein field equation in general. The Einstein field equation violates the Bianchi identity.

Using the Hodge duals:

$$\tilde{R}^{0}{}_{123} = \epsilon_{0123} R^{0}{}_{1}{}^{01} \qquad -(7)$$

$$\tilde{R}^{0}{}_{312} = \epsilon_{0312} R^{0}{}_{3}{}^{03} \qquad -(8)$$

$$\tilde{R}^{0}{}_{231} = \epsilon_{0231} R^{0}{}_{2}{}^{02} \qquad -(9)$$

2) it is found that:

$$\boxed{\tilde{R}^{0}{}_{123} + \tilde{R}^{0}{}_{312} + \tilde{R}^{0}{}_{231} \neq 0} \quad \text{— (10)}$$

for solutions of the Einstein field equation.

However, the solutions of the Einstein field equation obey:

$$\boxed{R^{0}{}_{123} + R^{0}{}_{312} + R^{0}{}_{231} = 0} \quad \text{— (11)}$$

The Hodge dual expression of eq. (11) is:

$$\boxed{\tilde{R}^{0}{}_{1}{}^{01} + \tilde{R}^{0}{}_{2}{}^{02} + \tilde{R}^{0}{}_{3}{}^{03} = 0} \quad \text{— (12)}$$

The Bianchi identity:

$$D_\mu \tilde{T}^{\kappa\mu\nu} := \tilde{R}_{\mu}{}^{\kappa\mu\nu} \quad \text{— (13)}$$

is obeyed, fortuitously, but the Hodge dual identity:

$$D_\mu T^{\kappa\mu\nu} := R_{\mu}{}^{\kappa\mu\nu} \quad \text{— (14)}$$

is not obeyed.

This result was found to be true for all metrics with eq (1), including big bang metrics.