About the Gravitation

Peter H. Michalicka
Email: Peter.Michalicka@gmx.at

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Abstract: The curvature of the space is the Gravitational Constant G.

1 The curvature of the space

Einstein's first formula on the General Theory of Relativity was (see [3]):

$$R_{ik} = \frac{8\pi G}{c^4} T_{ik}$$

The tt-Component of above is ($\epsilon = \rho c^2$ = Energydensity):

$$\frac{3}{R^2} = \frac{8\pi G \rho c^2}{c^4} = \frac{8\pi G \epsilon}{c^4}$$

Now we multiply the above equation with $R^4 c^4/(8\pi G)$ and receive (see [1]):

$$\frac{3c^4 R^2}{8\pi G} = \epsilon R^4 \ = constant$$

It follows that $\frac{G}{R^2}$ ist constant (see [2]).

2 Calculation of the Gravitational Constant G

The formula for a Black hole is (M = mass of Universe):

$$\frac{GM}{R} = c^2$$

Now we divide the above equation with MR and receive:

$$\frac{G}{R^2} = \frac{c^2}{MR}$$

The product of MR is given by the adiabatic equation as follows:

$$MR = \frac{4\pi R^4 \rho}{3} = \frac{\tilde{a}T^4 4\pi R^4}{3c^2} = constant$$

3 References

1. Landau.Lifschitz, Klassische Feldtheorie
2. Arbab I. Arbab, Cosmological Models With Variable G an Lambda and Bulk viscosity, arXiv:gr-qc/0105027
3. Einstein, Albert, Zur allgemeinen Relativitaetstheorie, 1915, Sitzungsberichte der Preussischen Akademie der Wissenschaften zu Berlin