C O N V E N T I O N S

Signature of the metric tensor : $(- - - +)$.

Rieman curvature tensor

$$R^a_{bcd} = \Gamma^a_{bd,c} - \Gamma^a_{bc,d} + \Gamma^k_{bd}\Gamma^a_{ck} - \Gamma^k_{bc}\Gamma^a_{dk} .$$

Ricci Tensor :

$$R_{bc} = R^a_{bca} = R_{abcd}g^{ad} .$$

Scalar Curvature :

$$R = R^a_a = g^{ad}R_{ad}$$

Einstein Tensor :

$$G_{ab} = R_{ab} - \tfrac{1}{2} Rg_{ab}$$

Stress-energy-momentum tensor of
gravitational matter : T_{ab} .

Einstein's gravitational field
equation :

$$G_{ab} = - \frac{8\pi G}{c^4} T_{ab} .$$

Latin indices : Space-time 4-dimensional.

Greek letters : Spin coefficients.

Units : We consider the centimetre as the unit of length
and then choose the units of time and mass so as to give the
velocity of light in free-space c, and the constant of
gravitation $\frac{8\pi G}{c^4}$ the value unity.