CONVENTIONS

Signature of the metric tensor g_{ab} : (- - - +).

Reimann 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 : $G_{ab} = R_{ab} - \frac{1}{2} R g_{ab}$

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

Einsteins gravitational field equation : $G_{ab} = -\frac{8\pi G}{c^4}\, T_{ab}$.

Units : We consider the centimeter as the unit of length and then choose the units of line 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.

Note :

Skew symmetrization : $A_{[ab]} = 1/2\ (A_{ab} - A_{ba})$

Symmetrization : $A_{(ab)} = 1/2\ (A_{ab} + A_{ba})$.

A semicolon denotes the operation of covariant differentiation. A comma denotes the operation of partial differentiation. Dot denotes the projection of covariant derivative along the flow vector i.e., $U_{a;b} U^{b} = \dot{U}_{a}$.

C.C., denotes the complex conjugate of the preceding term. An overhead bar on a vector (scalar) denotes the complex conjugate of the corresponding vector (scalar).

Greek letters as subscripts or superscripts denote tetrad components, while Latin letters denote the tensor components.

<u>Synonym</u> : Transport, propagation, Invariance.