$$\Gamma^a_{bc} = \tfrac{1}{2} g^{ad} \left(\partial_b g_{dc} + \partial_c g_{bd} - \partial_d g_{bc} \right)$$

$$\frac{d^2 x^a}{du^2} + \Gamma^a_{bc} \frac{dx^b}{du} \frac{dx^c}{du} = 0$$

$$\frac{d}{du} \left(\frac{\partial L}{\partial \dot{x}^c} \right) - \frac{\partial L}{\partial x^c} = 0, \qquad L\left(\dot{x}^c, x^c \right) \equiv \tfrac{1}{2} g_{ab}\left(x^c \right) \dot{x}^a \dot{x}^b$$

$$\frac{D\lambda^a}{du} = \frac{d\lambda^\alpha}{du} + \Gamma^a_{bc} \lambda^b \frac{dx^c}{du}$$

$$\tau^a_{b;c} = \partial_c \tau^a_b + \Gamma^a_{dc} \tau^d_b - \Gamma^d_{bc} \tau^a_d$$

$$\lambda_{a;bc} - \lambda_{a;cb} = R^d{}_{abc} \lambda_d$$

$$R^d{}_{abc} = \partial_b \Gamma^d_{ac} - \partial_c \Gamma^d_{ab} + \Gamma^e_{ac} \Gamma^d_{eb} - \Gamma^e_{ab} \Gamma^d_{ec}$$

$$R_{abcd} = -R_{bacd} = -R_{abdc} = R_{cdab}$$

$$R^a{}_{bcd} + R^a{}_{cdb} + R^a{}_{dbc} = 0$$

$$R_{ab} = R^c{}_{abc} \qquad R = g^{ab} R_{ab} \qquad G_{ab} = R_{ab} - \tfrac{1}{2} R g_{ab}$$

$$R^{\mu\nu} - \tfrac{1}{2} R g^{\mu\nu} = \kappa T^{\mu\nu}, \qquad \kappa = -\frac{8\pi G}{c^4}$$

$$T^{\mu\nu} = (\rho + \frac{p}{c^2}) u^\mu u^\nu - p g^{\mu\nu}$$

$$c^2 d\tau^2 = \left(1 - \frac{2m}{r} \right) c^2 dt^2 - \frac{dr^2}{1 - \frac{2m}{r}} - r^2 d\theta^2 - r^2 \sin^2 \theta d\phi^2, \quad m = \frac{GM}{c^2}$$

$$d\tau^2 = dt^2 - R(t)^2 \left(\frac{dr^2}{1 - kr^2} + r^2 d\theta^2 + r^2 \sin^2 \theta d\phi^2 \right), \qquad c = 1$$