

$$1=\cosh^2\beta-\sinh^2\beta$$

$$\frac{v}{c}=\tanh\beta$$

$$dx^2-dt^2=d\rho^2-\rho^2d\alpha^2$$

$$-\left(1-\frac{2m}{r}\right)\,dt^2+\frac{dr^2}{1-\frac{2m}{r}}=-dT^2+\left(dr+\sqrt{\frac{2m}{r}}\,dT\right)^2=-\frac{32m^3}{r}e^{-r/2m}\,dU\,dV$$

$$\dot{\phi}=\frac{\ell}{r^2}$$

$$\dot{t}=e\Big/\left(1-\frac{2m}{r}\right)$$

$$\dot{r}^2=\begin{cases} e^2-\left(1+\frac{\ell^2}{r^2}\right)\left(1-\frac{2m}{r}\right) & \text{(timelike)} \\ e^2-\left(1-\frac{2m}{r}\right)\frac{\ell^2}{r^2} & \text{(null)} \end{cases}$$