

Coordinate System

$$(t, x, y, z)$$

Metric Tensor

$$g = \begin{pmatrix} \omega^2 (x^2 + y^2) - 1 & \omega y & -\omega x & 0 \\ \omega y & 1 & 0 & 0 \\ -\omega x & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$$

Geodesic Equations

$$\begin{aligned} \ddot{t} &= 0 \\ \ddot{x} - \omega^2 x t^2 + 2\omega t \dot{y} &= 0 \\ \ddot{y} - \omega^2 y t^2 - 2\omega t \dot{x} &= 0 \\ \ddot{z} &= 0 \end{aligned}$$

Christoffel Symbols (non-zero)

$$\begin{aligned} \Gamma_{tt}^x &= -\omega^2 x \\ \Gamma_{ty}^x &= \omega \\ \Gamma_{yt}^x &= \omega \\ \Gamma_{tt}^y &= -\omega^2 y \\ \Gamma_{tx}^y &= -\omega \\ \Gamma_{xt}^y &= -\omega \end{aligned}$$

Riemann Curvature Tensor (non-zero components)

none

Ricci Tensor (non-zero components)

none

Ricci Scalar

$$R = 0$$

Einstein Tensor (non-zero components)

none