

if  $\gamma' = t$ ,  $\gamma^z = c$ , const then

$$\frac{d^2}{dt^2}(t) + \Gamma_{zz}^z \left( \frac{d}{dt} c \right)^2 = 0 \text{ automatically.}$$

$$\frac{d^2}{dt^2}(c) + 2\Gamma_{tz}^z \left( \frac{d}{dt}(t) \cdot \frac{d}{dt}(c) \right) + \Gamma_{zz}^z \left( \frac{d}{dt}(c) \right)^2 = 0$$

also  $\Rightarrow (t, c)$  are geodesics.

