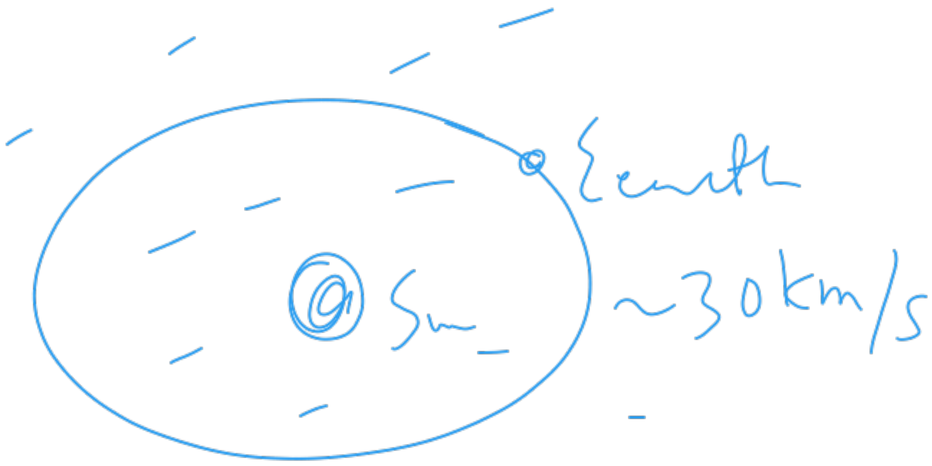
$$\frac{\partial^2 E}{\partial t^2} = \frac{1}{c^2}\frac{\partial^2 E}{\partial x^2}$$

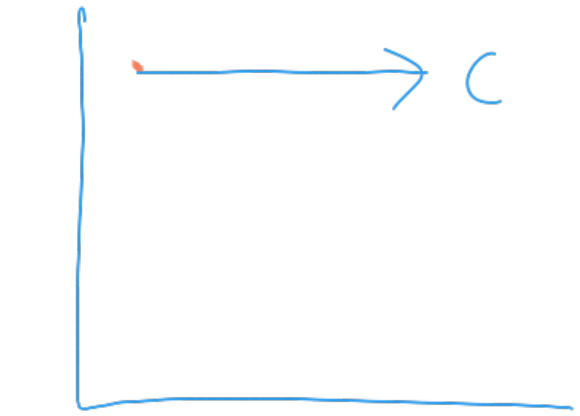


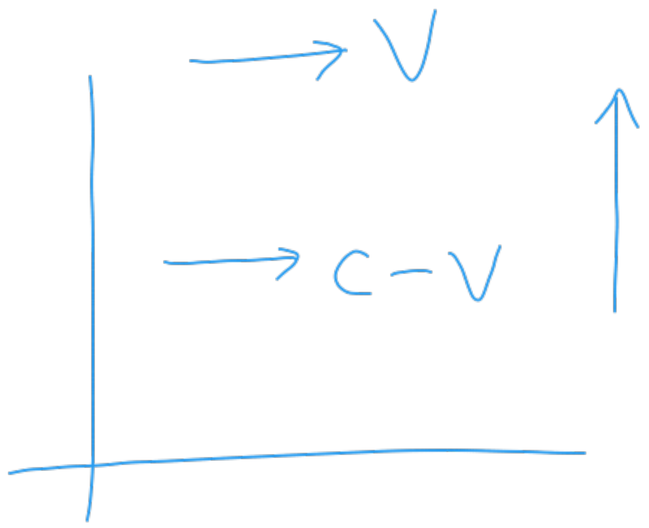
$$\bar{F} = m\bar{a} \longrightarrow$$ Asolute Inertial frame

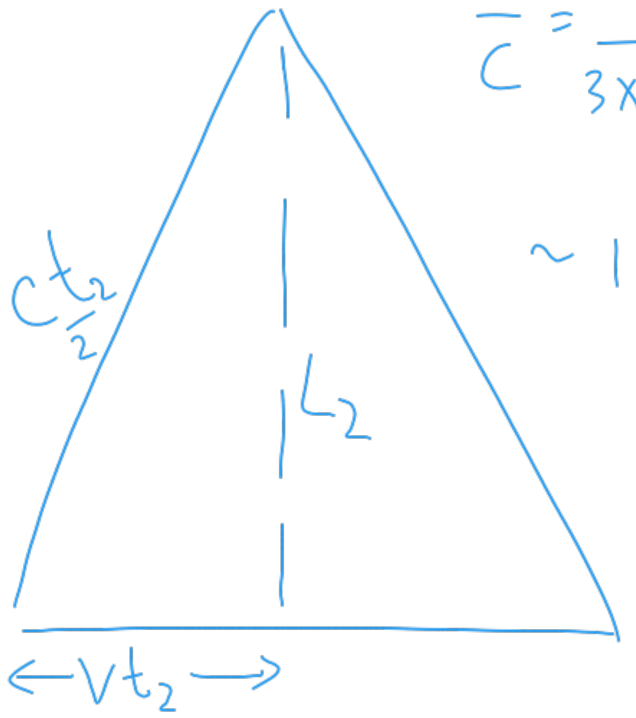
speed of light is $C = 3\times10^5$ m/s in absolute frame

this absolute frame is where ether is rest

S: Ether frame

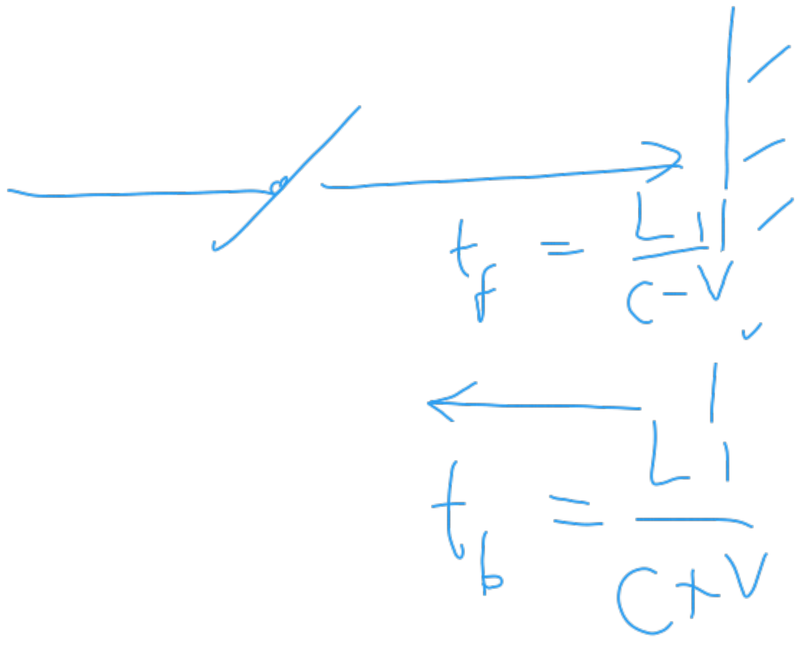






$$\frac{V}{C} = \frac{30\,km/h}{3\times10^5\,\frac{km}{s}}$$

$$\sim 10^{-4}$$



$$t_f = \frac{L_1}{c-V}$$

$$t_b = \frac{L_1}{c+V}$$

$$t_1 = \frac{L_1}{c-V} + \frac{L_1}{c+V}$$

$$2(L_1+L_2)\left[\frac{c}{c^2-v^2}-\frac{1}{(c^2-v^2)^{1/2}}\right]$$

$$-\left[\frac{c}{c^2\left(1-\frac{v^2}{c^2}\right)}-\frac{1}{c\left(1-\frac{v^2}{c^2}\right)^{1/2}}\right]$$

$$\simeq -\frac{1}{c}\left[1+\frac{v^2}{c^2}-\left(1+\frac{v^2}{2c^2}\right)\right]$$

$$\Delta T=\frac{2(L_1+L_2)}{c}\frac{v^2}{c^2}$$

$v/c \sim 10^{-4}$

$$\Delta T = \Delta t - \Delta t'$$

$$T=\frac{1}{\nu} \equiv \lambda \qquad \lambda\nu=c$$

$$\frac{\Delta T}{T}=\frac{\Delta T\, c}{\lambda}$$

$$\left(\frac{v}{c}\right)^2\frac{(L_1+L_2)}{c}\frac{c}{\lambda}$$

$$10^{-4}\left(\frac{22\text{ m}}{500\text{ nm}}\right)\sim 0.4$$

$v \longrightarrow c$

$$\frac{a}{\sqrt{1 - v^2/c^2}} = a'$$

1960

10 MeV = KE ⟶ Speed 0.9988c

↓ $KE = \frac{1}{2} m v^2$

40 MeV ⟶ 0.9999 c