PHY100S - The Magic of Physics - Class 13

"For us believing physicists, the distinction between past, present, and future is illusion, however persistent."

-- Einstein (1955)

§ 11.1 – Relativity of Space
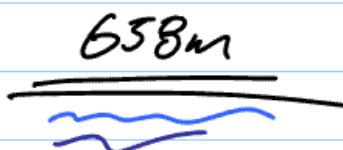
not following text

If no time dilation!
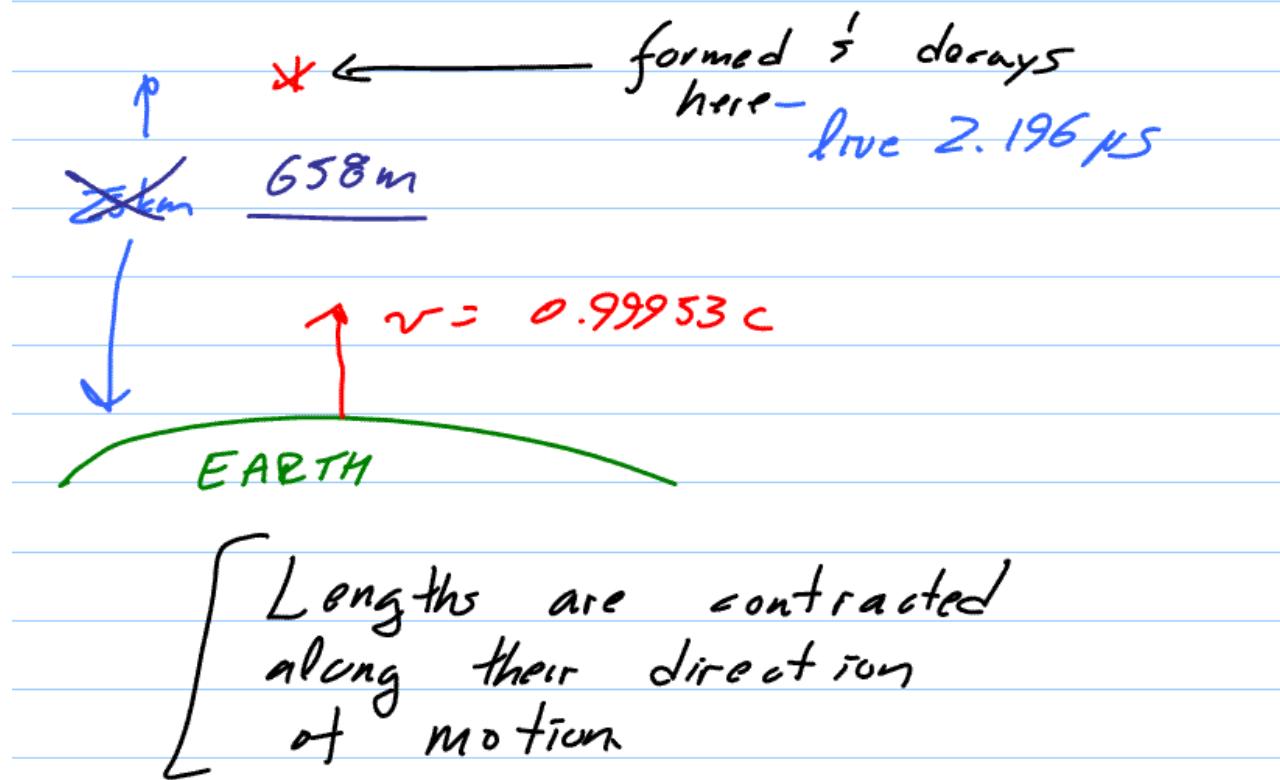
p̶   will travel a distance

"μv"   = speed × time

     = 0.999653 c × 2.196 μs

     658m

In frame where μ stationary

✱ ⟵ ——————— formed $\dot{s}$ decays
here—

live $2.196\,\mu s$

~~10 km~~ 658 m

↑ $v = 0.99953\,c$

EARTH
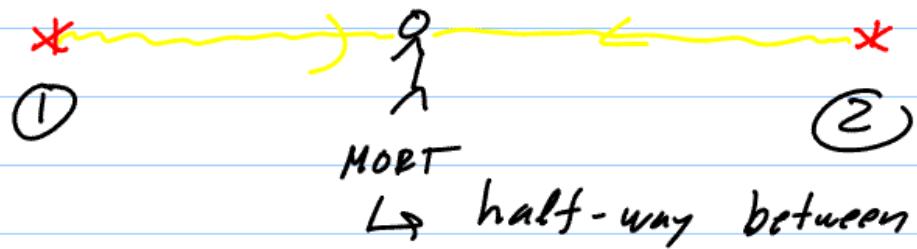
$\begin{bmatrix} \text{Lengths are contracted} \\ \text{along their direction} \\ \text{of motion} \end{bmatrix}$

Prediction! not tested
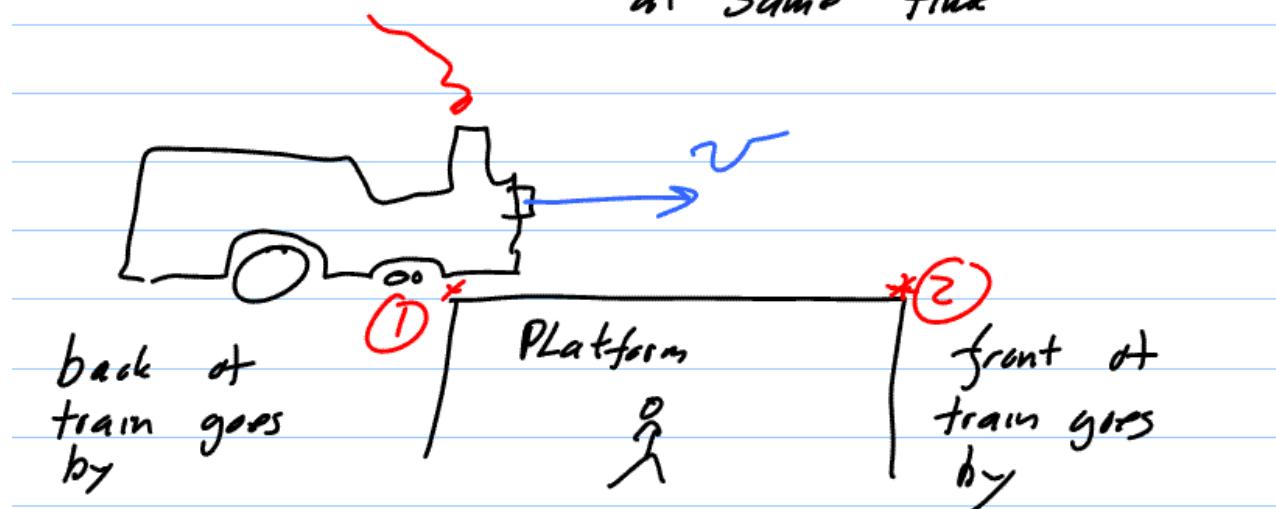
c same number ⟹
time dilation ⟹
length contraction. ⟹

Simultaneity   not in text

2 events! flashes of light

① ————————— 🧍 ————————— ②

MORT
↳ half-way between
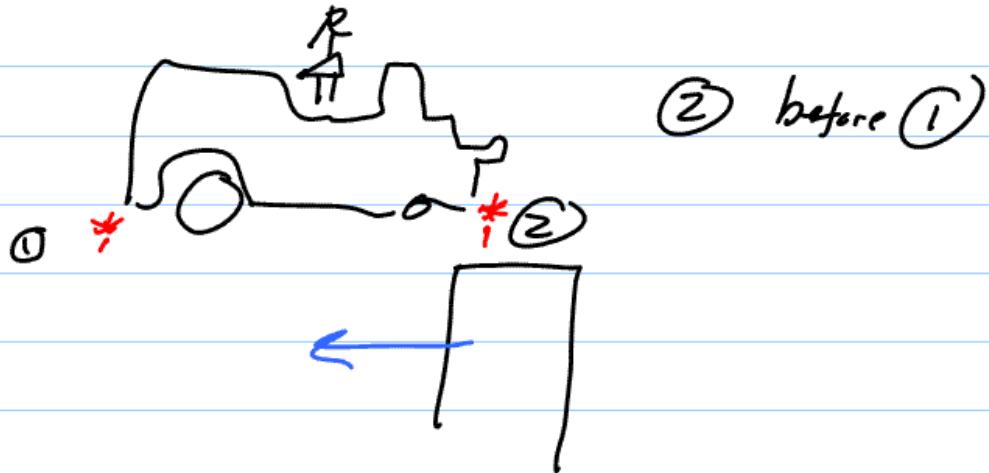
Simultaneous! Mort sees flashes
at same time

back of   Platform   front of
train goes   train goes
by   🧍   by

①①   *②
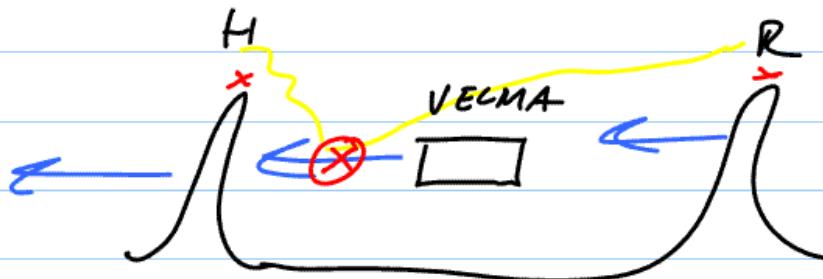
Mort! width of platform =
length of train

Velma riding on and in middle
of train

② before ①

George GAMOW! MR. TOMPKINS
IN PAPERBACK (Cambridge)

$$c = 50 \text{ km/hr}$$

MT. RAINIER EDITED FIRST
FOR MORT