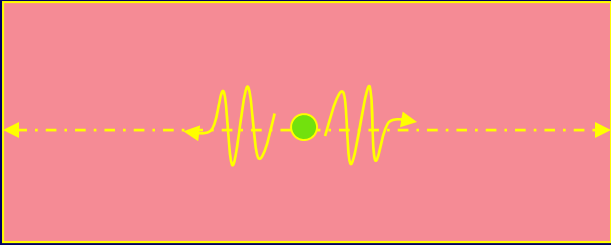


Consequence: Simultaneity depends on reference frame

(i) Aboard train

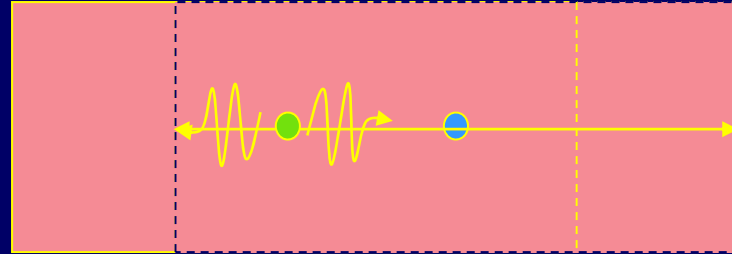


Light is turned on and arrives at the front and back of the train at the same time.

The two events,

- 1) light arriving at the front of the train and
 - 2) light arriving at the back of the train,
- are simultaneous.

(ii) Train traveling to right with speed v



the observer on the ground sees :

Light arrives first at back of the train and then at the front of the train, because light travels at the same speed in all reference frames.

The same two events,

- 1) light arriving at the front of the train and
 - 2) light arriving at the back of the train,
- are NOT simultaneous.