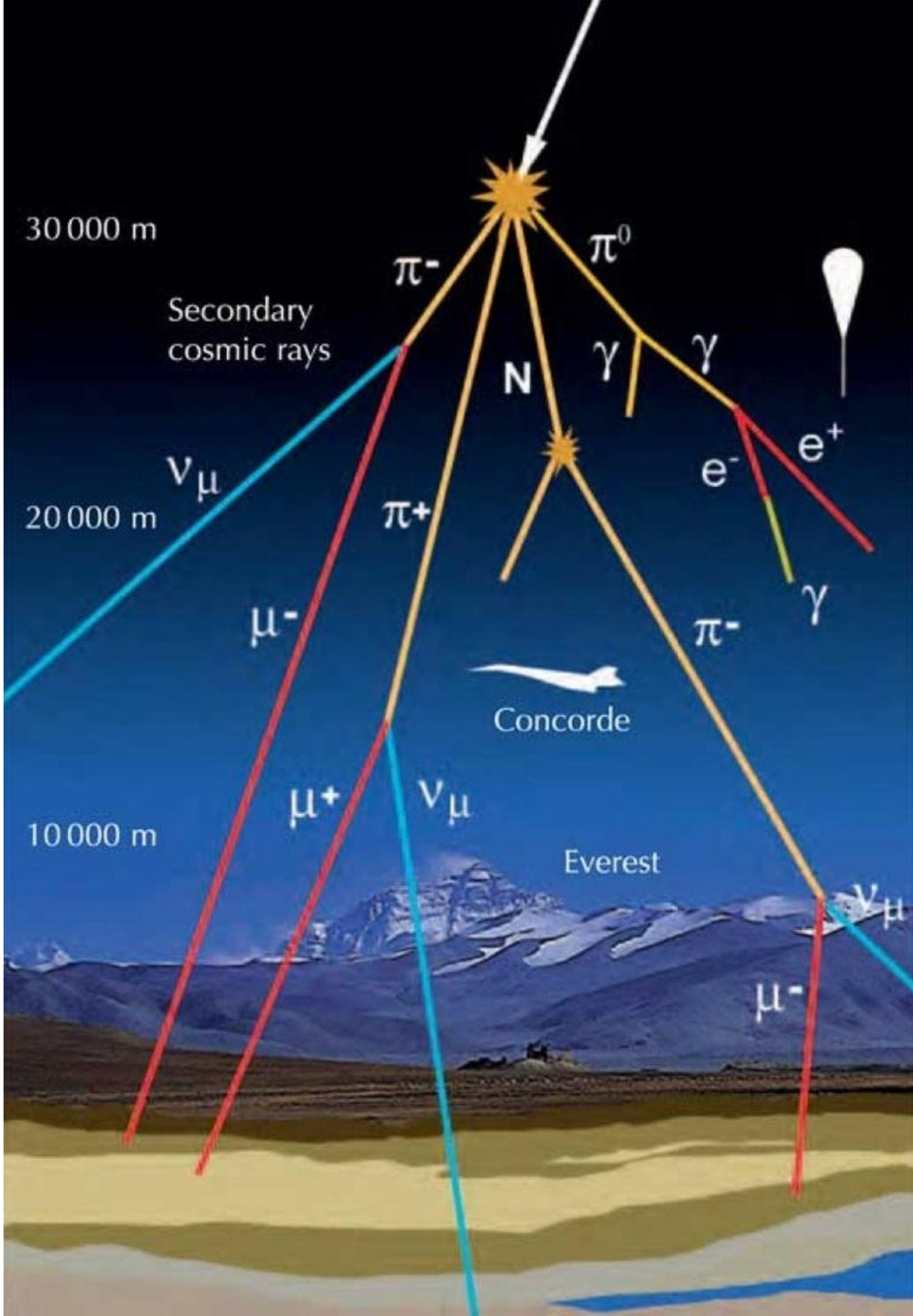
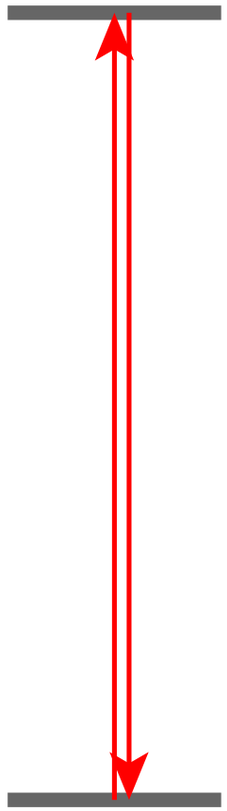
Relativity

Atmospheric muons



Light clock

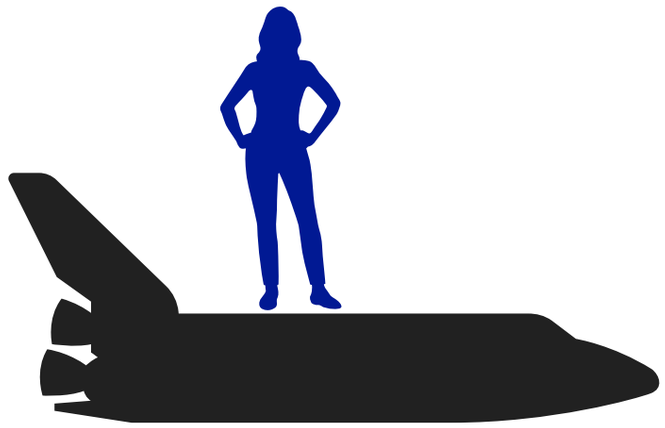


tick, tick, tick

Speed of light is ***constant***

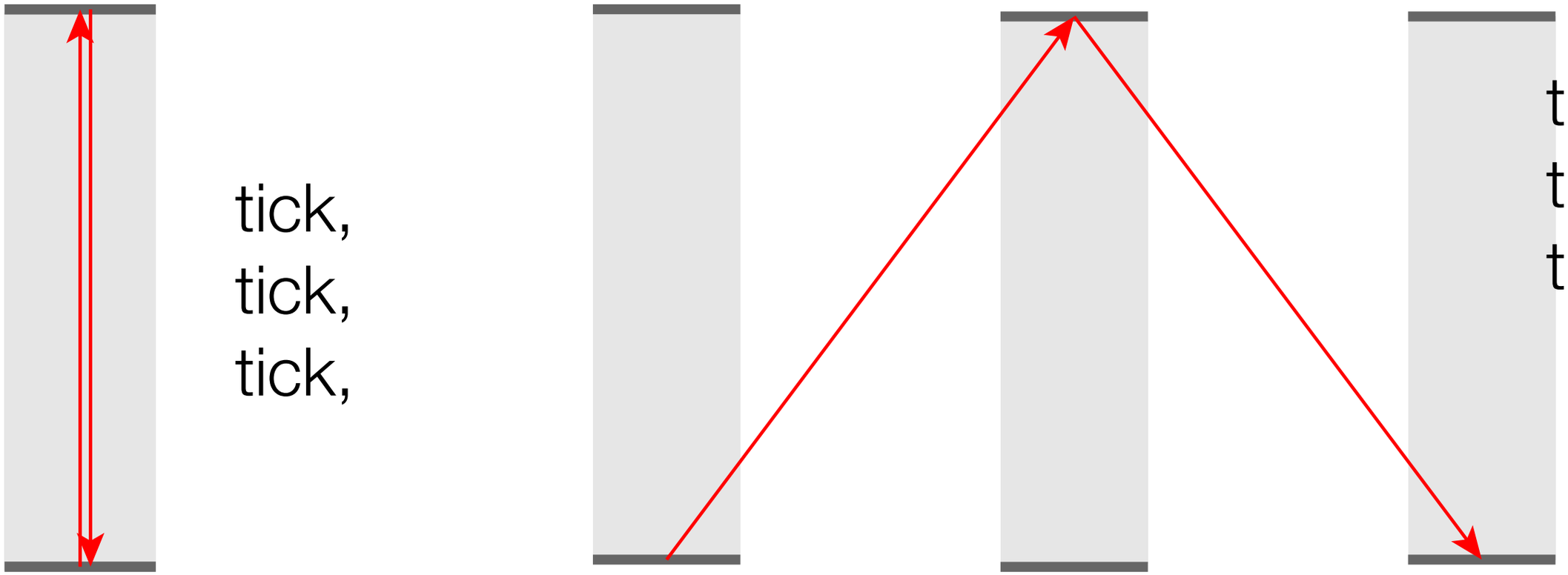
Online course of the future

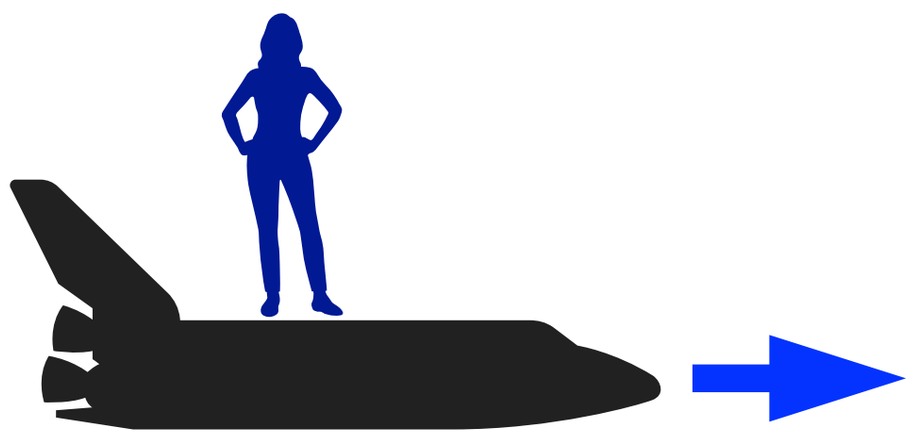
Student A



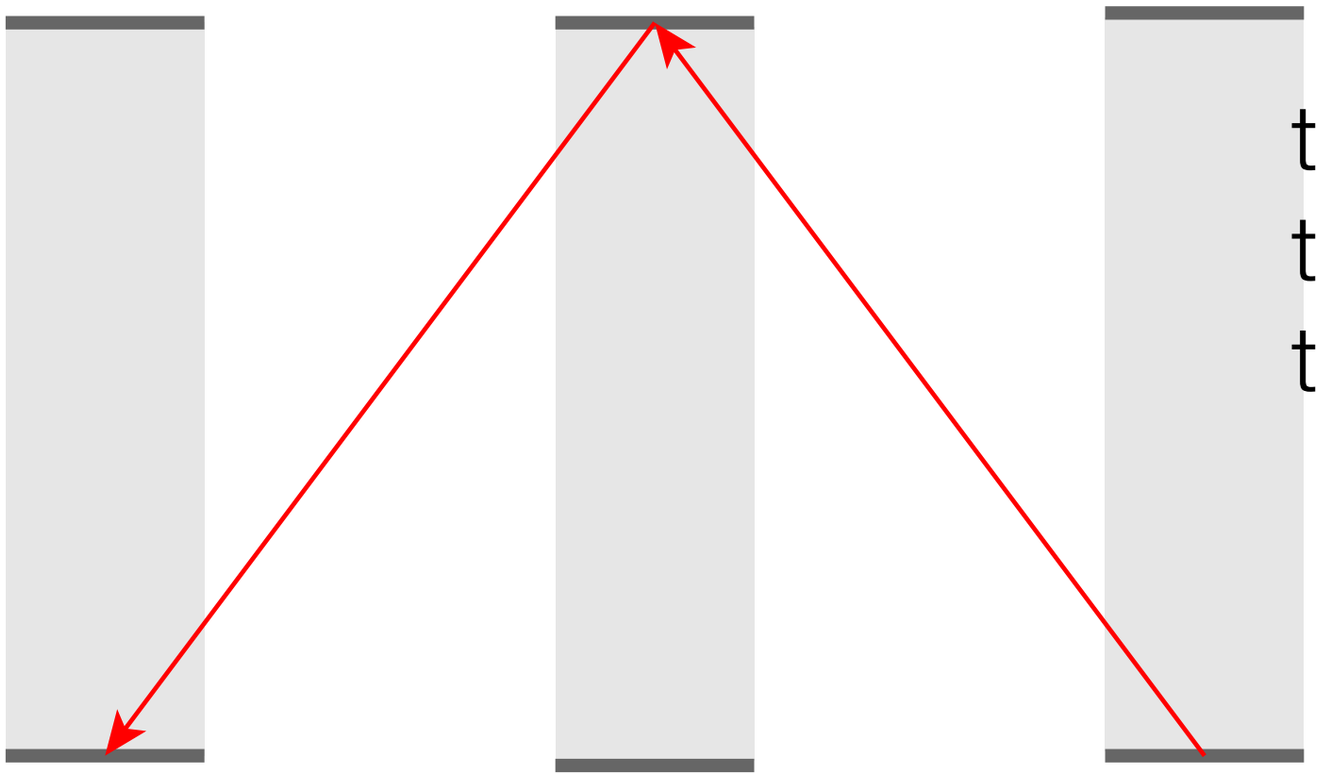
Student B

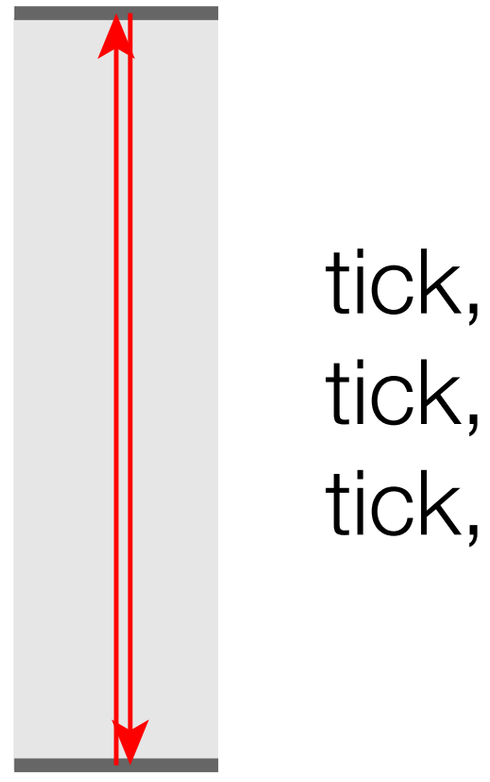
Light clock (student A homework)

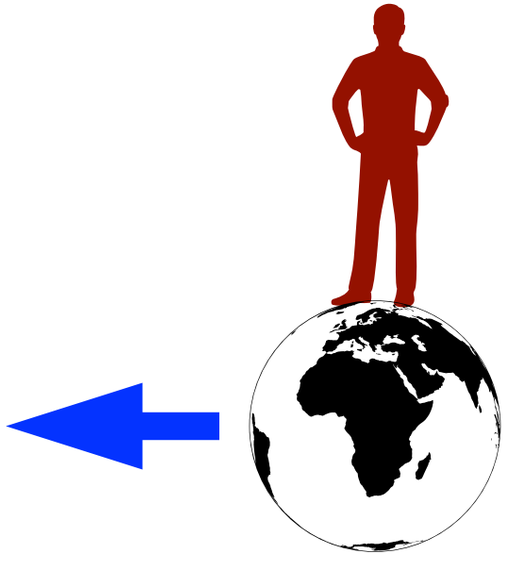


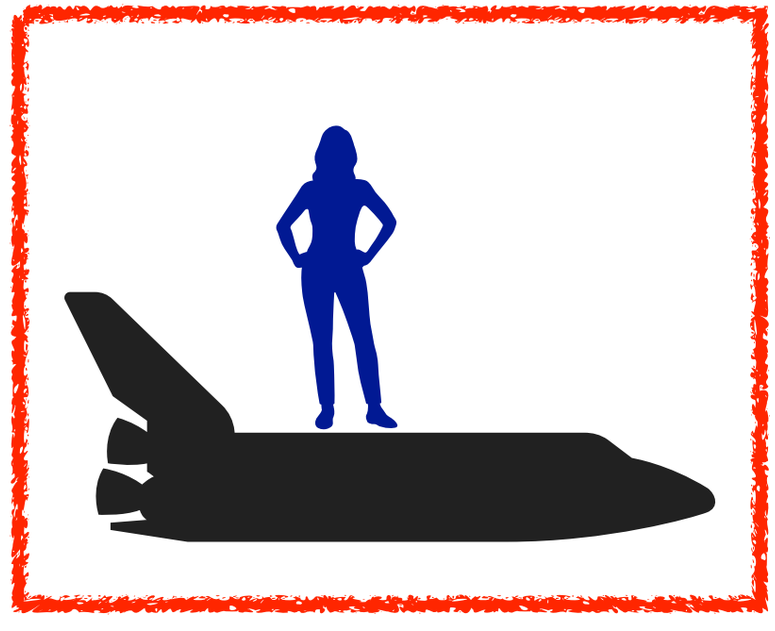


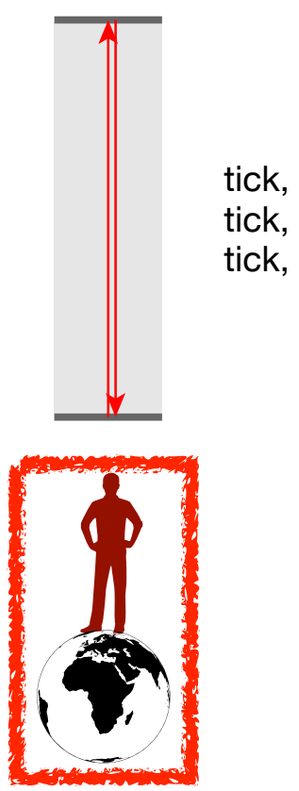
Light clock (student B homework)







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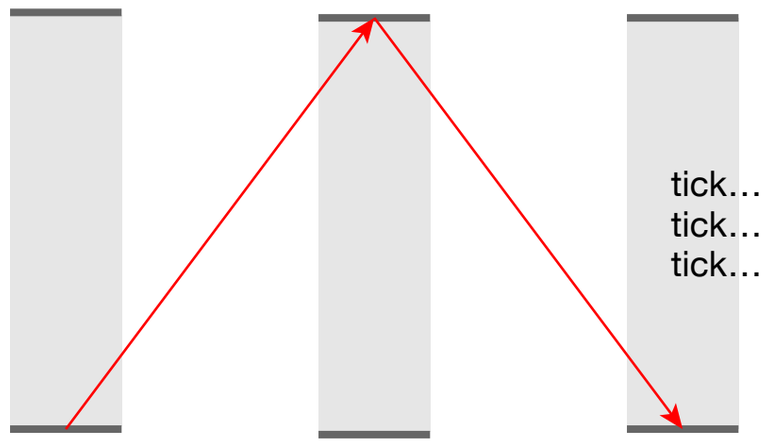
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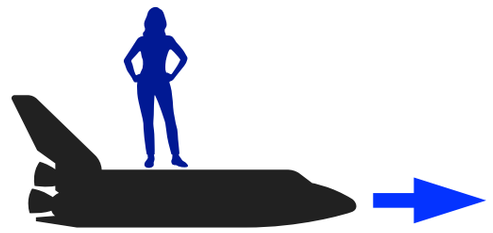

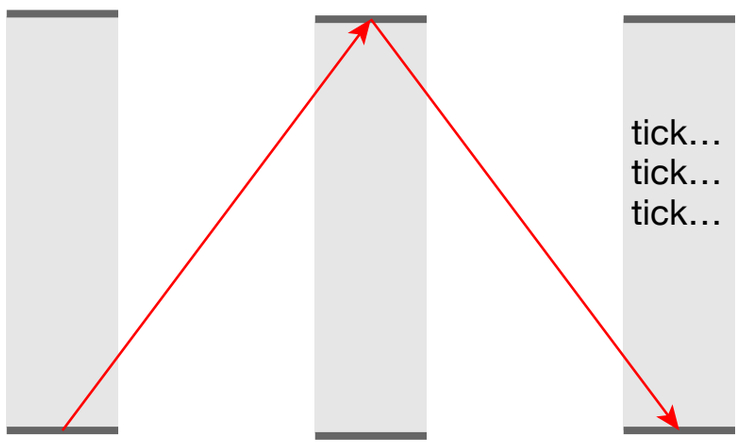
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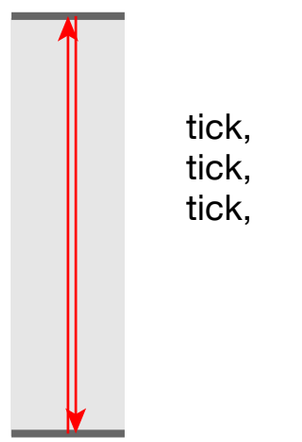
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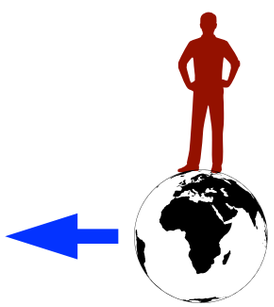
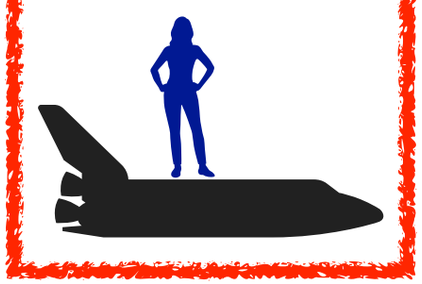
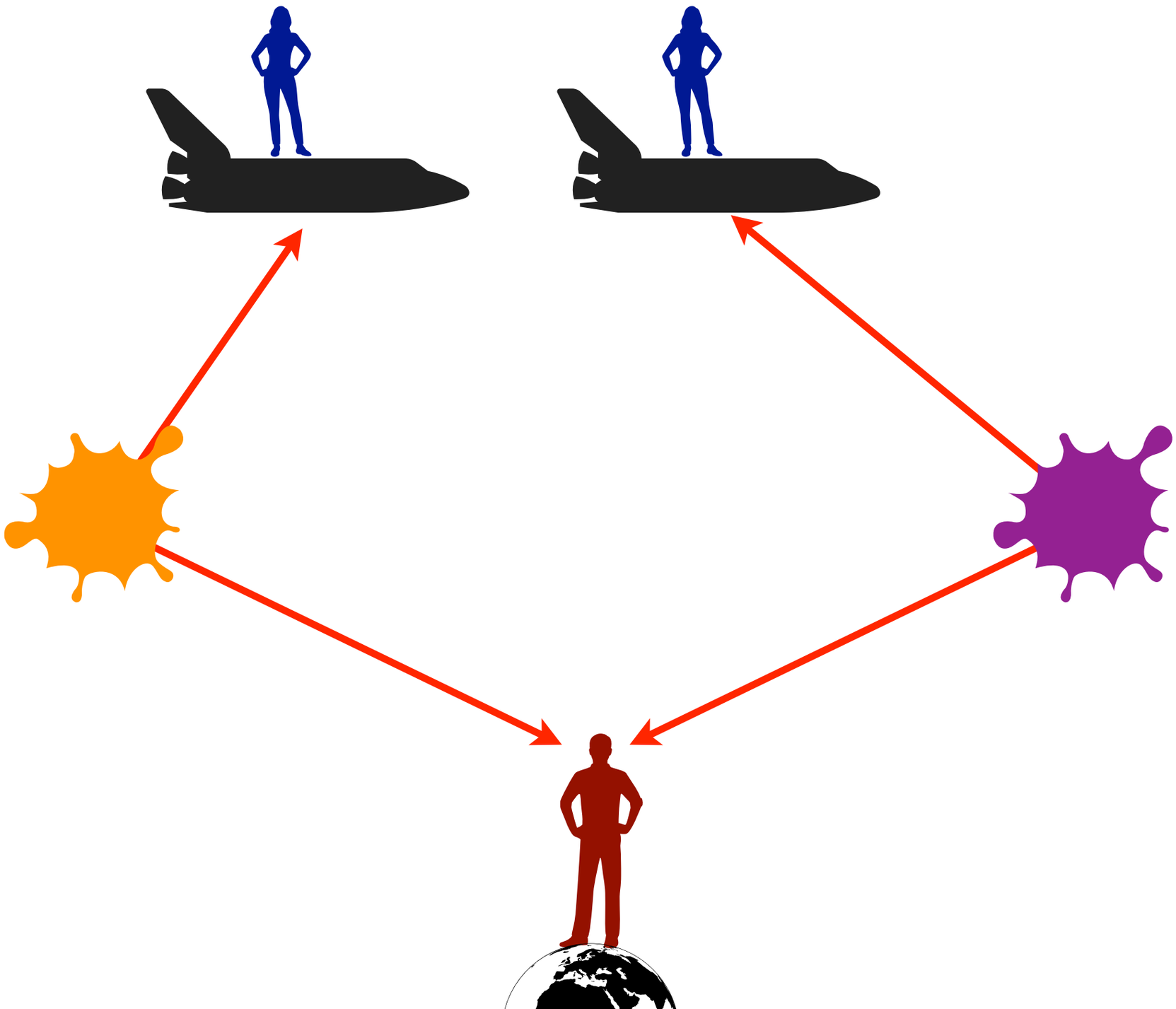




Takeaways

- Everyone see's their clock (time) as normal
- Everyone else's clock is running slow (if there is relative motion)
- They're ***both*** right

Simultaneity

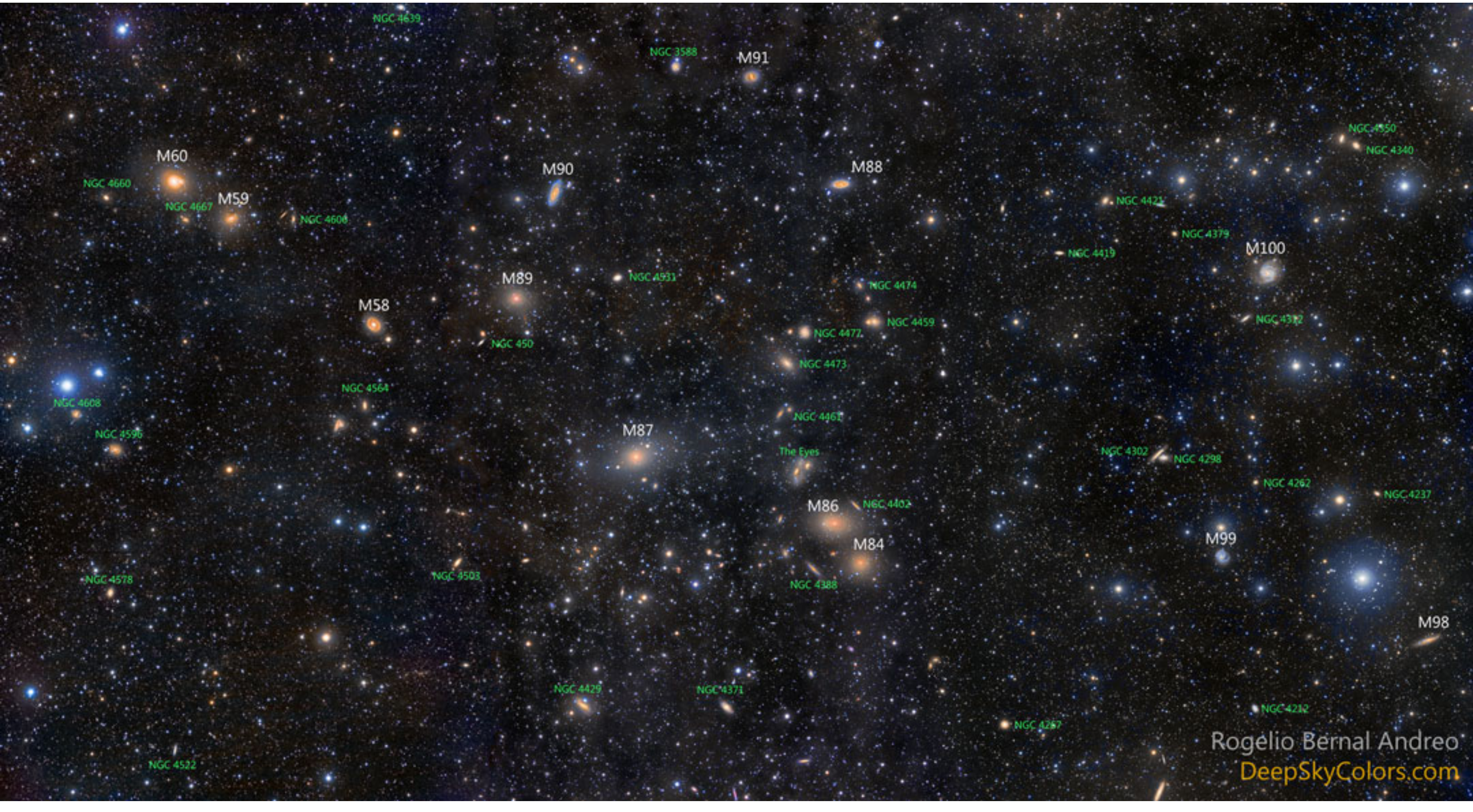


Simultaneity

- Different observers will disagree on which event happened first
- No such thing as absolute time everyone agrees on

Doppler shift

Looking back in time



Special relativity review

- Speed of light is constant… which means
- You see other's clock as running slow
- Different observers disagree on which events happened first, so no absolute time
- Light color can doppler shift (blue coming towards you, red going away)
- We see distant objects as they appear in the past

Measuring distance with light