PHYS 2D DISCUSSION SESSION

2012/4/4

Info

- Bor-Yuan Jiang
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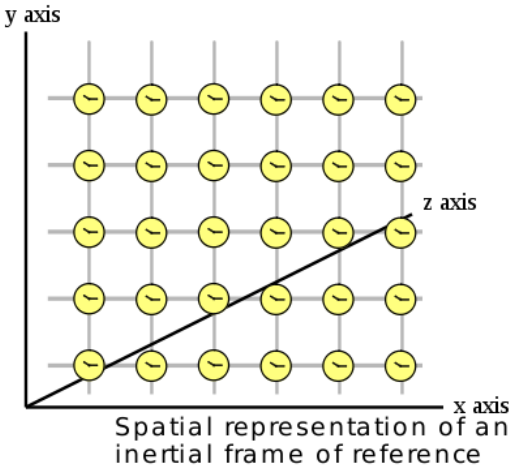
- Office Hour: Tue. 2-3 pm, MH-A 2701
- Discussion Session: Wed. 3-4 pm, Peterson 110
  - ½ concepts/math review, ½ questions
- Problem Session: Thu. 8-10 pm, Pepper Canyon 109
  - Go over homework problems
- More questions: email/appointment
- 1st Quiz next Friday

For Today

- Review of Galilean relativity
- Review of the postulates of special relativity

Inertial Reference Frame

- Event & Measurement of event (coordinate & time)
- Reference frame: Imagine an invisible 3D grid, with synchronized clocks at each grid point



Spatial representation of an inertial frame of reference

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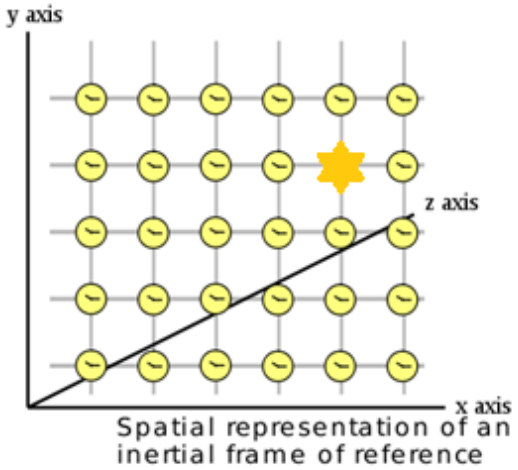

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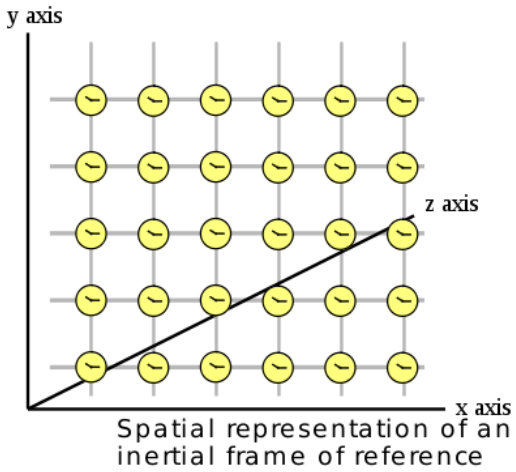

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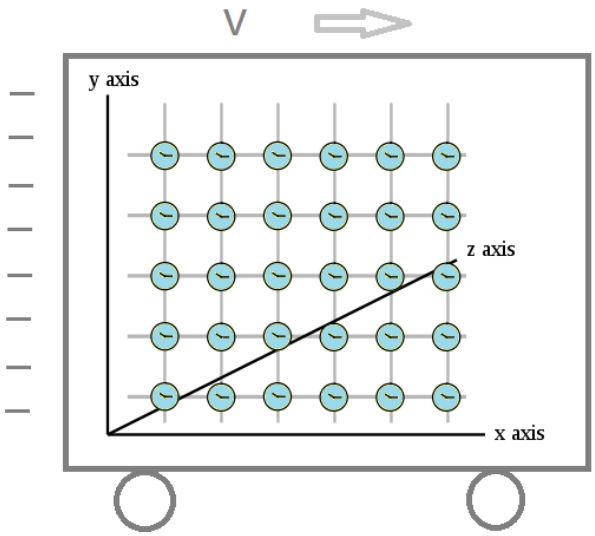
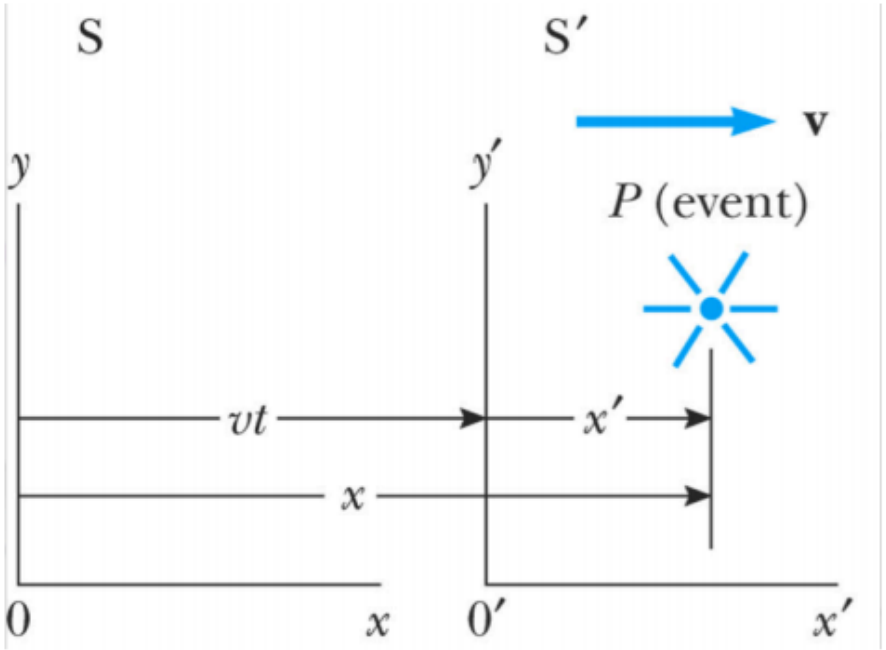


- Example: a set of grid & clocks on moving train, a set on platform
- "Inertial": whole frame is moving at constant speed

Galilean Relativity

- Laws of physics are the same on train & platform
- Intuitive but (sadly) wrong
- Universal time: t = t' (clocks tick at the same rate)



$$x' = x - vt$$

$$y' = y$$

$$z' = z$$

$$t' = t$$

Special Relativity

- Postulates:
- 1. Laws of physics is the same in every inertial reference frame
- 2. Speed of light (c) is constant in every inertial reference frame

- Unpleasant consequences:
  Time dilation, length contraction, non-intuitive things

- Check out the Web Game on the course website