NYU physics I — 2016-11-29

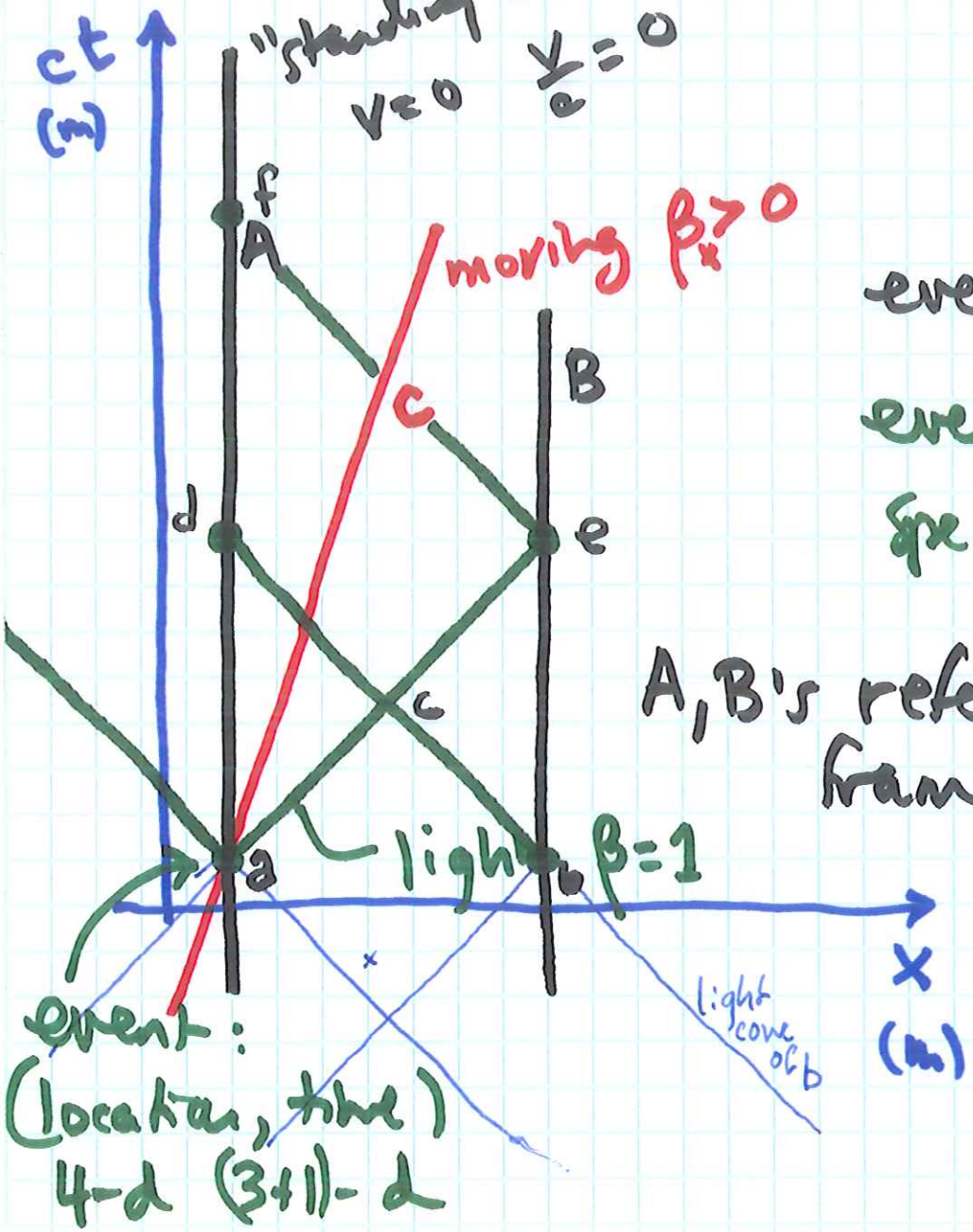
Agenda:- Read: http://cosmo.nyu.edu/hogg/sr/sr/ (Ch1), Ch 2, Ch 3.

- Final Exam
- QS
- Interval, Lorentz Transform, spacetime, speed of light, event, simultaneity

Spacetime diagram

$\frac{v}{c} \equiv \beta$

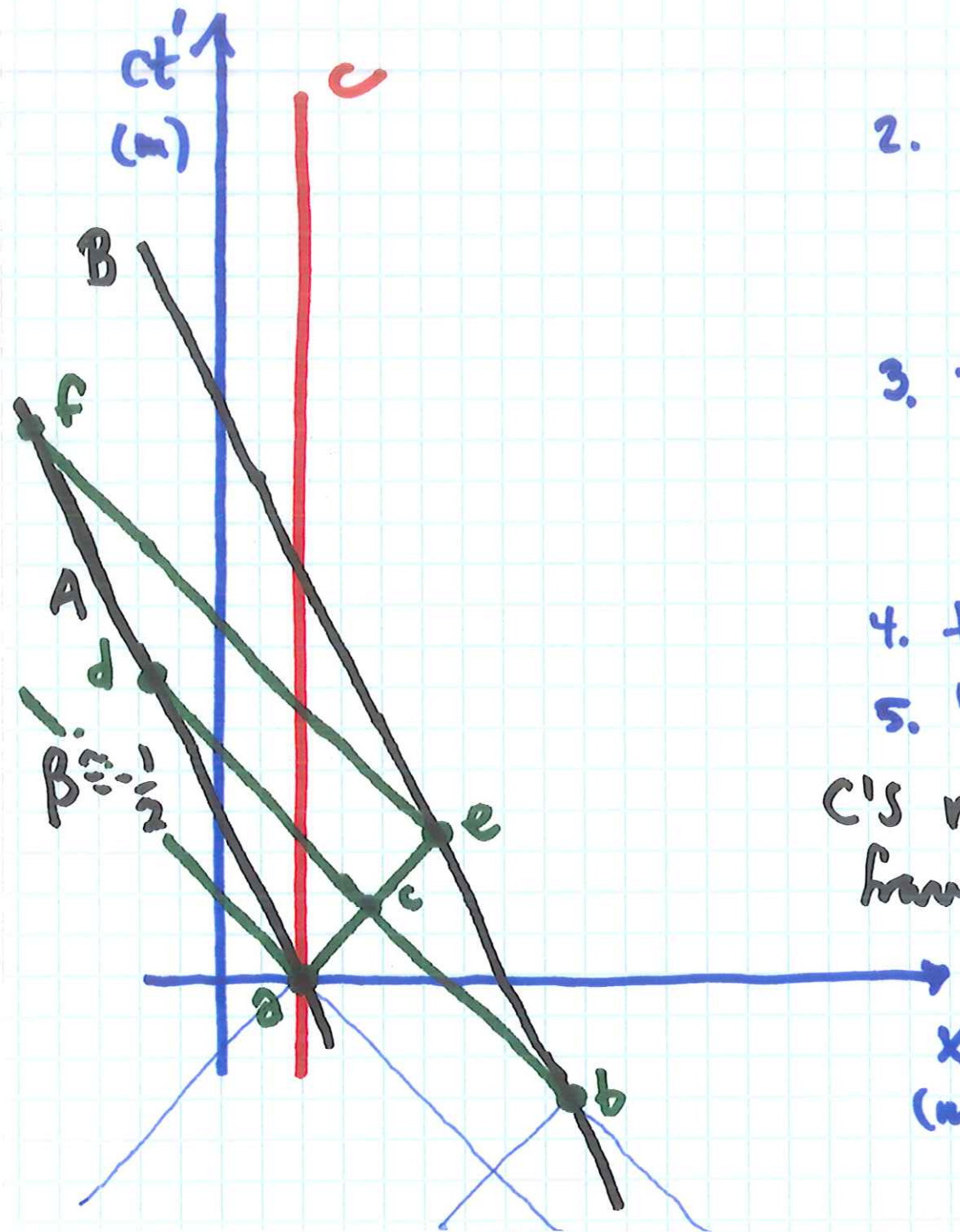
c: conversion from space to time + v.v.



events: a, b, c, d, e, f

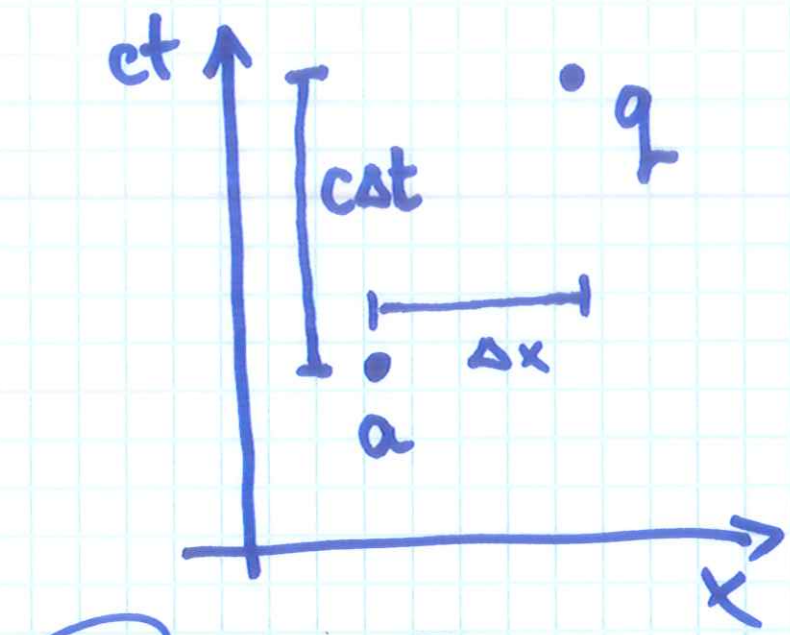
events are the objects of special relativity.

A, B's reference frame ct, x



1. a, b are no longer simultaneous.
2. a, d do not have a time ordering because a can cause d
3. transformation is a shear-Lorentz Transformation.
4. the intervals are preserved.
5. "boost"

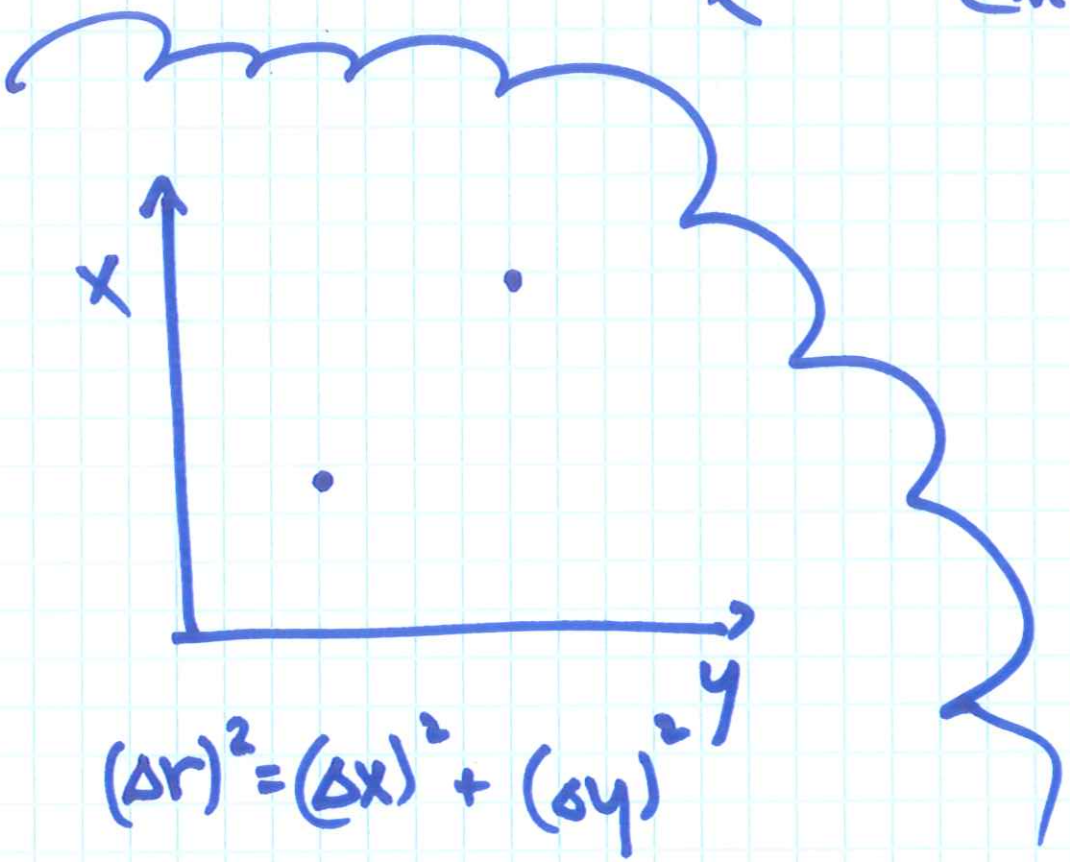
C's reference frame ct', x'



interval (or metric) between a & q is

$$\Delta s^2 = (c\Delta t)^2 - (\Delta x)^2 - (\Delta y)^2 - (\Delta z)^2$$

Δs^2 = interval. (m^2)



$$(\Delta r)^2 = (\Delta x)^2 + (\Delta y)^2$$