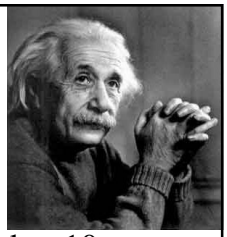
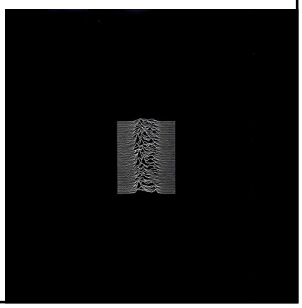



Monday, September 10

Thorne pgs.: 1-104

Agenda

- Announce:
  - No class Wednesday
  - Read up to Ch. 5
- Why study modern physics?
- Sample Project Idea
- Sample Test questions
- Prologue
- Ch. 1
- Ch. 2



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Why Study [Modern] Physics?

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- Important for an informed citizen(ry):
  - Weapons development
  - Public Financing of research & space exploration
  - Energy/Environmental policy
  - Risk assessment

Sample Project Idea

- The Role of Modern Physics in WWII
  - Called the "Physicist's War"
  - The fission bomb
  - Development of radar
  - Cryptography/Enigma machine (related to quantum information theory)

Sample Question

- What aspects of physics differentiate it from the other natural sciences (bio/chem):
  A. Fundamental
  B. Universal
  C. Motion
  D. Predictive
  E. A & B

Sample Question

- Part of physics' role is to explain natural phenomena (e.g. why is the sky blue?). However, along with explanation, one also wants to
  A. guess
  B. hypothesize
  C. theorize
  D. predict

Sample Question

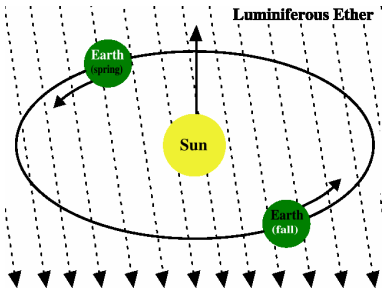
- Which famous scientist is credited with ushering in the "modern" era of physics?
  A. Newton
  B. Einstein
  C. Galileo
  D. Archimedes

Prologue

- Possible features of our Universe
- Important questions:
  - Nature of a black hole
  - Nature of space travel
  - Nature of time travel
  - "The End is Near!"

Ch. 1—The Relativity of Space and Time

- What physics was pre-Einstein?
- Why would one (pre-Einstein) expect the speed of light to depend on one's motion?
- What is the aether?
- What was relative and what was absolute in Newton's view and Einstein's view?
- What's a reference frame?



Ch. 2—The Warping of Space and Time

- Mixing of space and time (via mixing of space)
- Generalizing special relativity to gravity
- What does the equivalence principle say about gravity? How was that key?
- Doppler Shift & Gravitational Time Dilation