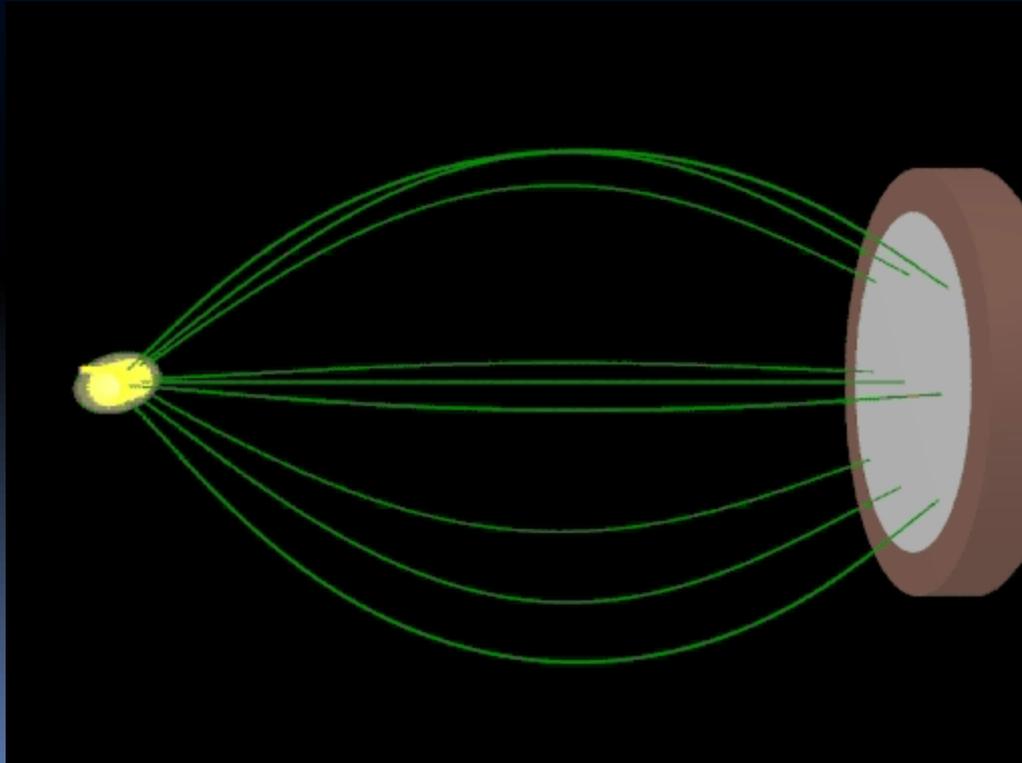
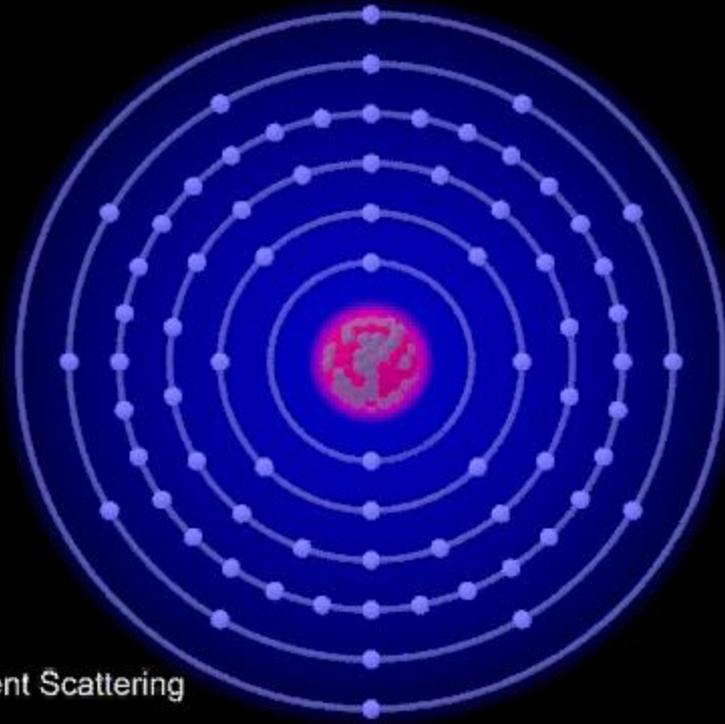




This presentation provides an update to the Animations for Physics and Astronomy Project at Penn State Schuylkill. The animations have been used to portray a variety of dynamical systems and processes for physics and astronomy topics typically presented in the advanced high school through introductory college level. New additions to the collection of approximately 250 animations in the collection will be presented, as well as information on dissemination efforts through the project web site and YouTube Channel. The role of a focus group comprised of High School faculty to revise and enhance the animations as well as develop some curricular materials for the animations will be discussed. Finally, some of the results of project assessments will also be presented.



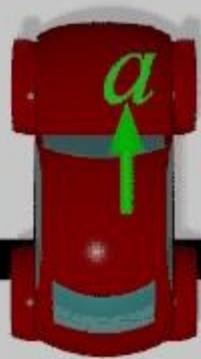
# Why Animations?



Coherent Scattering

Interactions of X-Rays with Matter

- Used in classroom as illustrations
  - Available to students online
  - Links in notes, quizzes
- Easy to use format (.avi)
- Useable on Legacy Systems



Animations for Physics and Astronomy

[http://phys23p.sl.psu.edu/phys\\_anim](http://phys23p.sl.psu.edu/phys_anim)

Searchable CWIS portal

YouTube channel [www.youtube.com/mrg3](http://www.youtube.com/mrg3)

Merlot, Compadre, NEEDS, AMSER

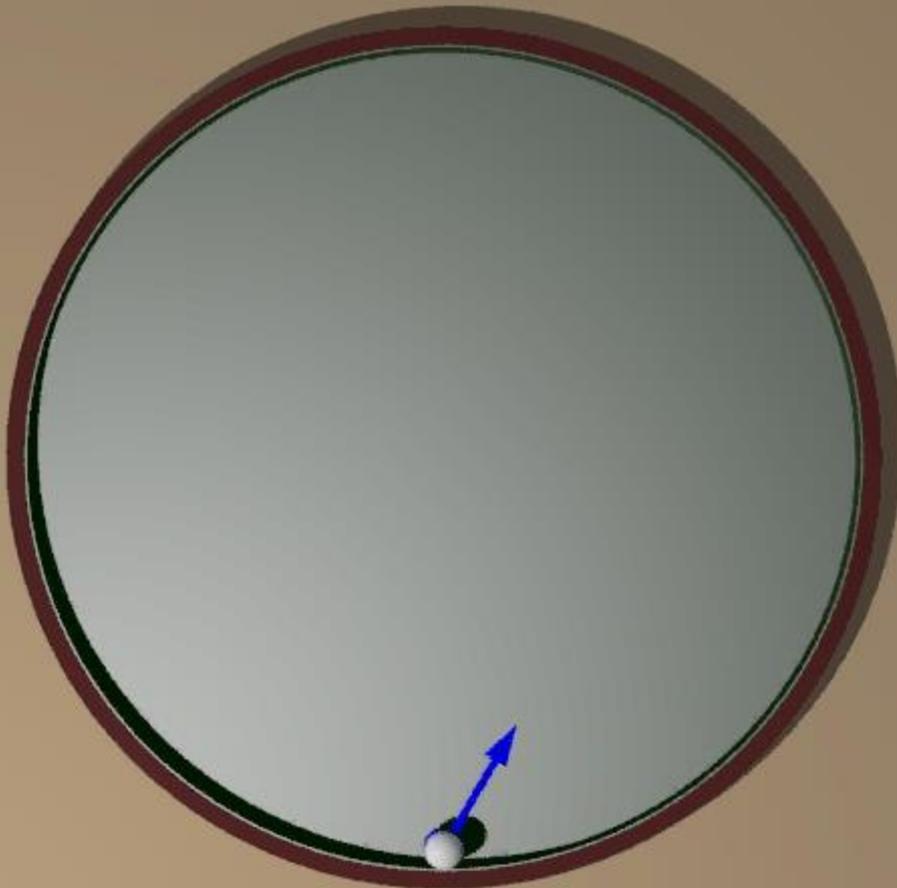
DVD

Find the Animations:

- Creative Commons License
  - BY-NC 3.0
- Created with free software
  - POV-Ray
  - VirtualDub



$$\bar{\mathbf{a}} = \frac{\Delta \mathbf{v}}{\Delta t}$$



**You are free:**

- **to Share** — to copy, distribute and transmit the work
- **to Remix** — to adapt the work

**Under the following conditions:**

- **Attribution** — You must attribute the work in the manner specified by the author or licensor (but not in any way that suggests that they endorse you or your use of the work).
- **Noncommercial** — You may not use this work for commercial purposes.
- **Share Alike** — If you alter, transform, or build upon this work, you may distribute the resulting work only under the same or similar license to this one.

# Education Thematic Initiative Fund award:

## Physics Assets Project

### •Focus Group

- 3 HS Faculty, 2 Curricular Design Specialists and me

- Reviewed/critiqued existing materials

- Identified animations standards-focused topics for additional development

- Animations revised, curricular materials created and linked to standards

teachers'domain Digital Media for the Classroom and Professional Development

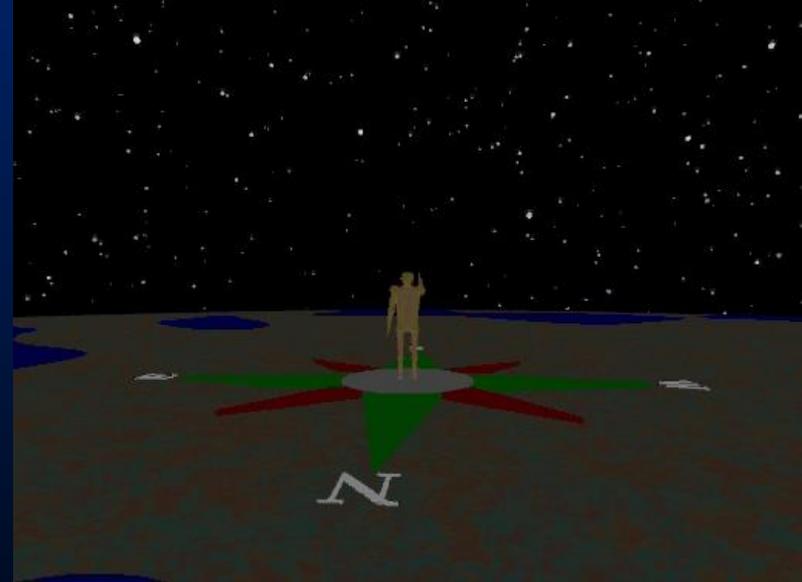
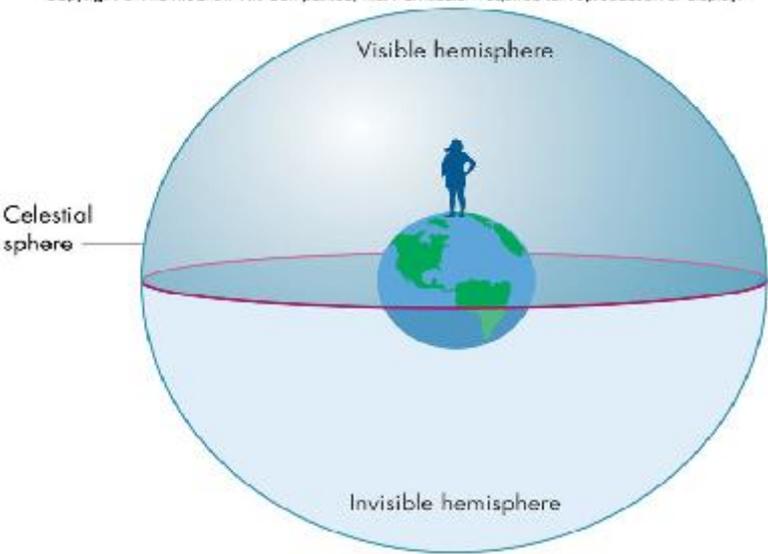
Home → Keystone eMedia Teachers' Domain Collection → Physics

User: Michael Gallis of Penn State Schuylkill

Advanced Search Search My Folders My Groups My Profile Help Sign out

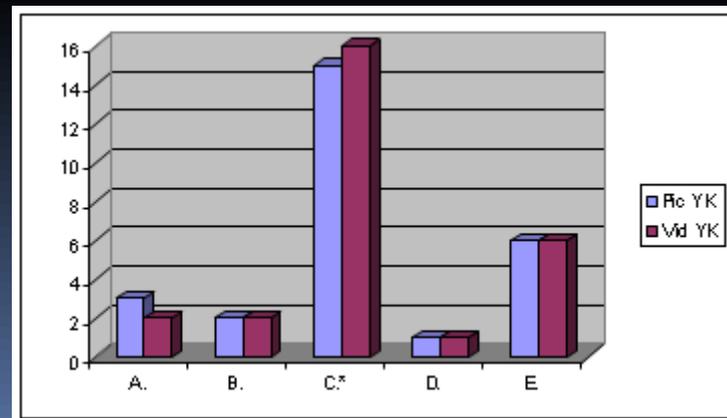
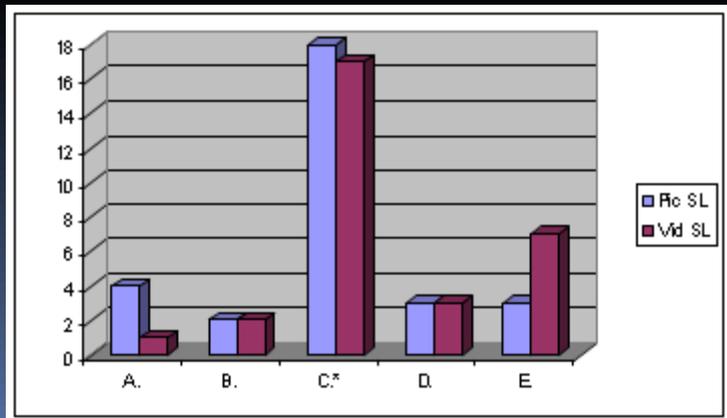
### Science & Technology: Physics

Resource	Grade Level	Media Type
 <a href="#">Celestial Sphere</a> This animation is a simple model of the apparent motion of the stars in the night sky. Ancient people described the motions as if the stars were all attached to a vast globe, or a Celestial Sphere, centered about the Earth.	9-12	MPEG 4 Video <a href="#">View</a>
 <a href="#">Centripetal Force</a> In this animation a ball bounces off the sides of the circle, and the number of sides double, until the circle appears to exert force on a ball that is constant in size and always directed towards the center.	9-12	MPEG 4 Video <a href="#">View</a>
 <a href="#">Conical Pendulum</a> A pendulum that swings in a horizontal circle and sweeps out the shape of a cone with its mass and string is known as a "conical pendulum." In this animation we see the pendulum sweep from several angles with a superimposed equation toward the end.	9-12	MPEG 4 Video <a href="#">View</a>
 <a href="#">Kinematics</a> This overhead view of an animated car illustrates its velocity and acceleration as it starts up, moves in a straight line, and turns.	9-12	QuickTime Video <a href="#">View</a>
 <a href="#">Longitudinal Waves</a> In this silent animation a hand compresses a slinky to start a compression or longitudinal wave, a type of wave where the disturbance lines up with the direction the wave travels.	9-12	QuickTime Video <a href="#">View</a>
 <a href="#">Seasons</a> This video animation illustrates how the combination of the tilt of earth's spin axis and the orbit of the earth about the sun creates the geometry responsible for earth's seasons. There is no sound.	5-12	QuickTime Video <a href="#">View</a>
 <a href="#">Shadows, Lunar Phases and Eclipses</a> This animation shows the rotation of Earth, the orbit of the Moon about Earth, and the orbit of the Earth-Moon about the Sun. The appearance of both the Sun and the Moon can be affected by the shadows cast by the Earth and the Moon in the sunlight.	9-12	MPEG 4 Video <a href="#">View</a>
 <a href="#">Transverse Waves</a> In this silent animation a hand moves a slinky up and down to illustrate a transverse wave, a type of wave where the disturbance is at right angles to the direction the wave travels.	9-12	QuickTime Video <a href="#">View</a>



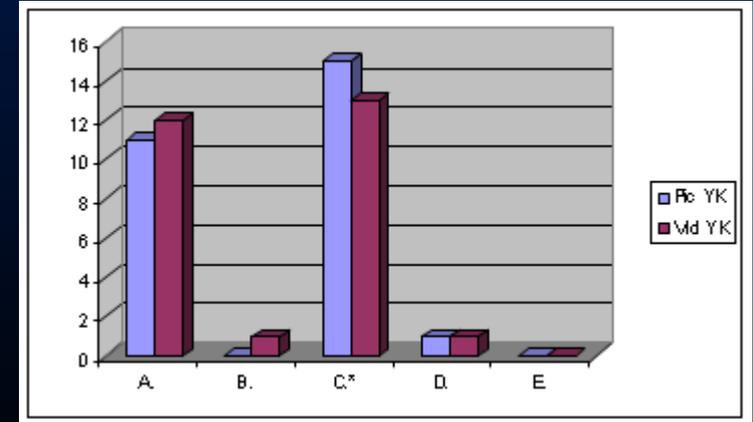
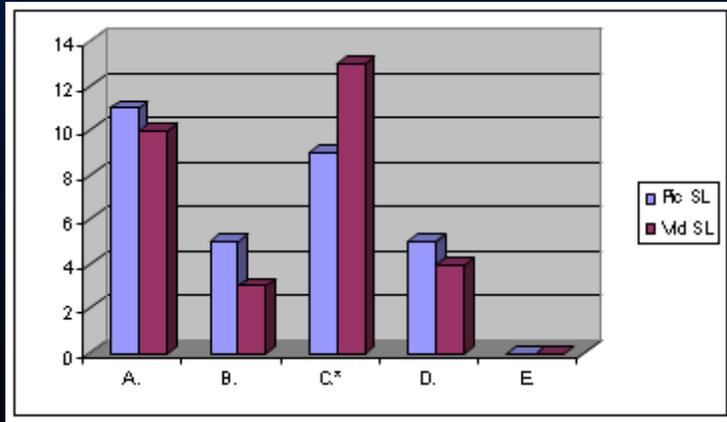
This figure/animation illustrates the concept of the Celestial Sphere. Examine the figure and then answer the questions to the best of your ability. Which of the following statements about the celestial sphere is not true?

- A. From any location on Earth, we can see only half the celestial sphere at any one time.
- B. The Earth is placed at the center of the celestial sphere.
- C. The "celestial sphere" is just another name for our universe.
- D. When we look in the sky, the stars all appear to be located on the celestial sphere.
- E. The celestial sphere does not exist physically.



In a basic geocentric model, the daily motion of the stars is explained by

- A. the rotation of the earth.
- B. all stars moving from west to east.
- C. the rotation of the celestial sphere about the earth.
- D. the orbit of the earth about the sun.

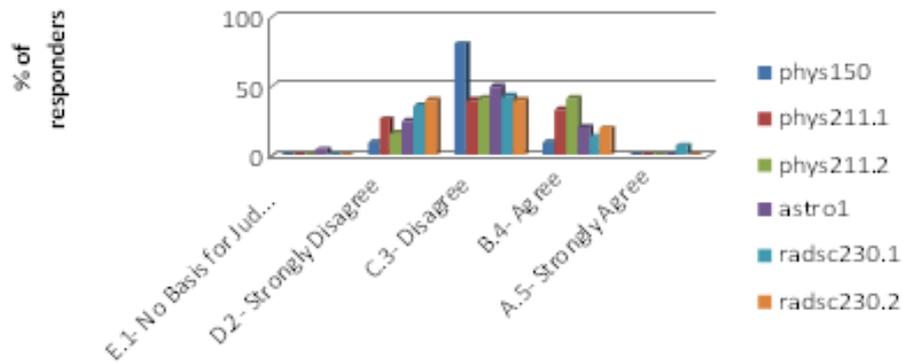


Primum non nocere ?

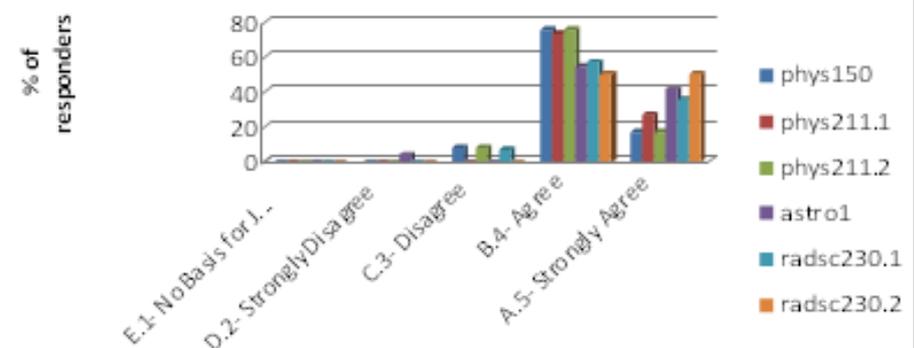
Assessment is difficult!

For Each Question, please circle the letter corresponding to your response.  
 Indicate how strongly you agree or disagree with each of the following statements: Because of the way this course uses multimedia from the Animations for Physics and Astronomy Project at Penn State Schuylkill:

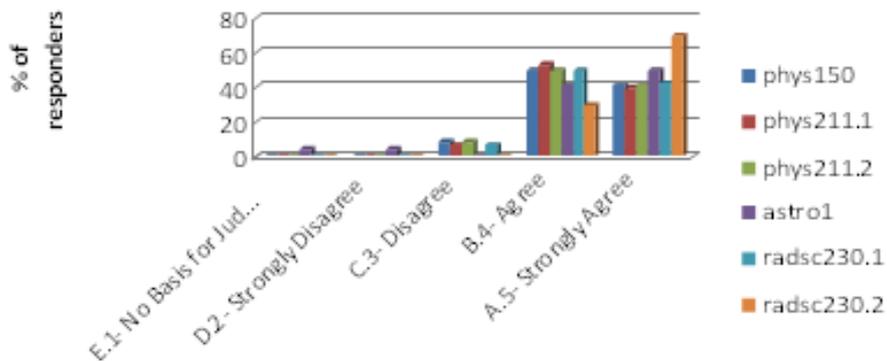
The instructor moved too fast through the course material.



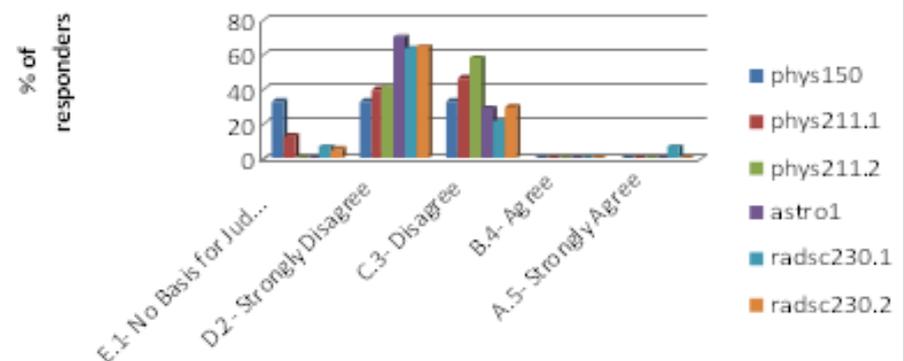
I am better able to understand the ideas and concepts taught in this course.



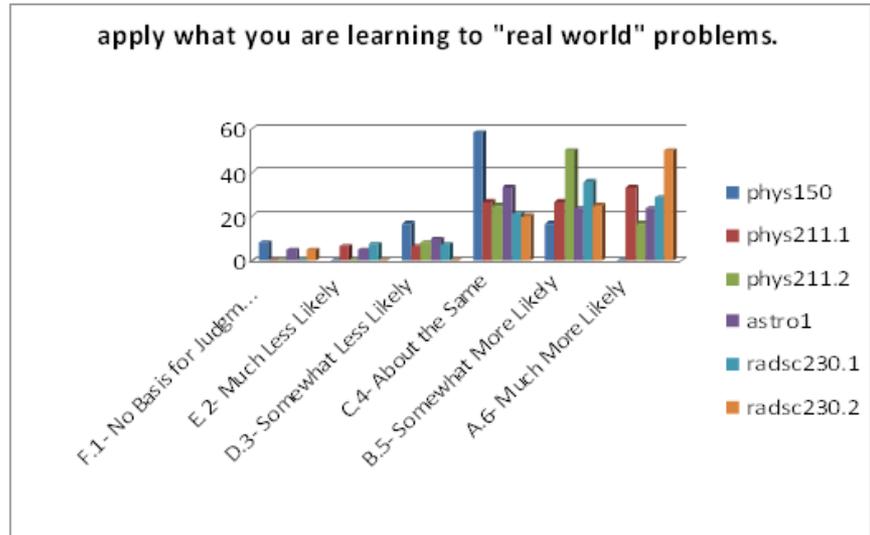
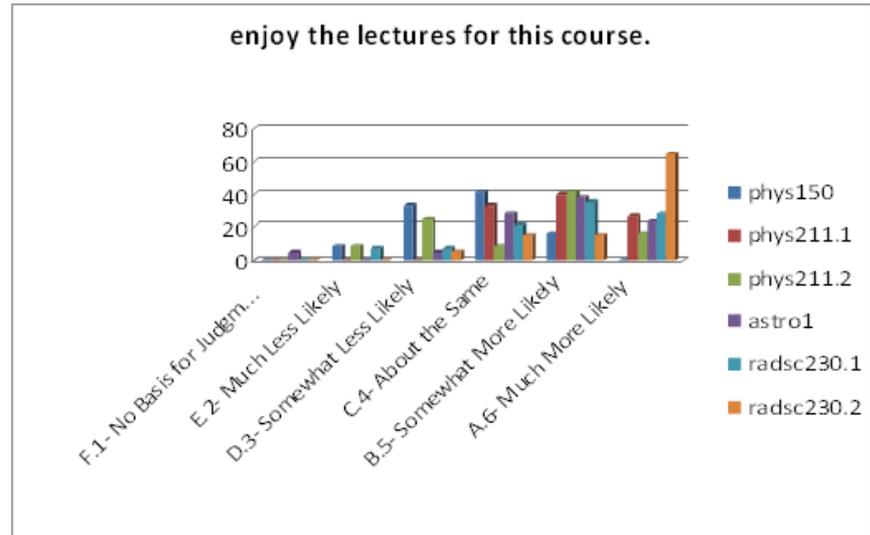
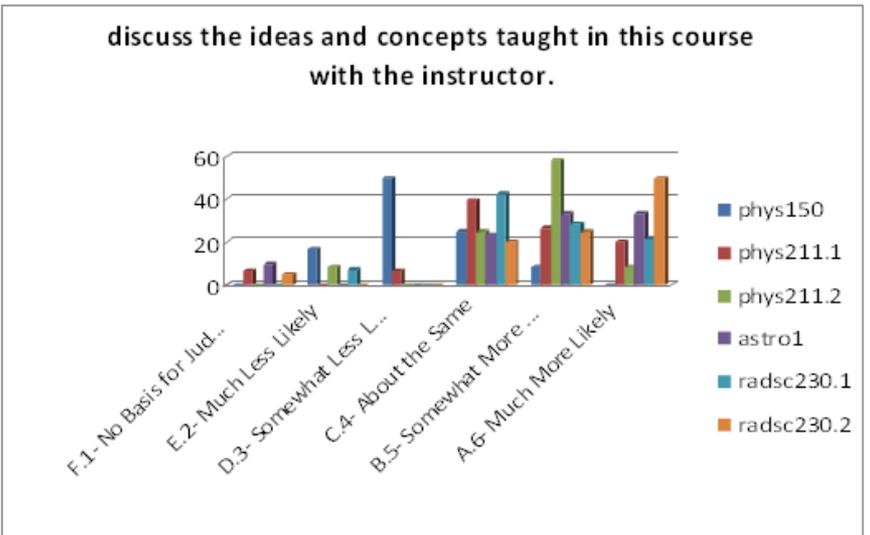
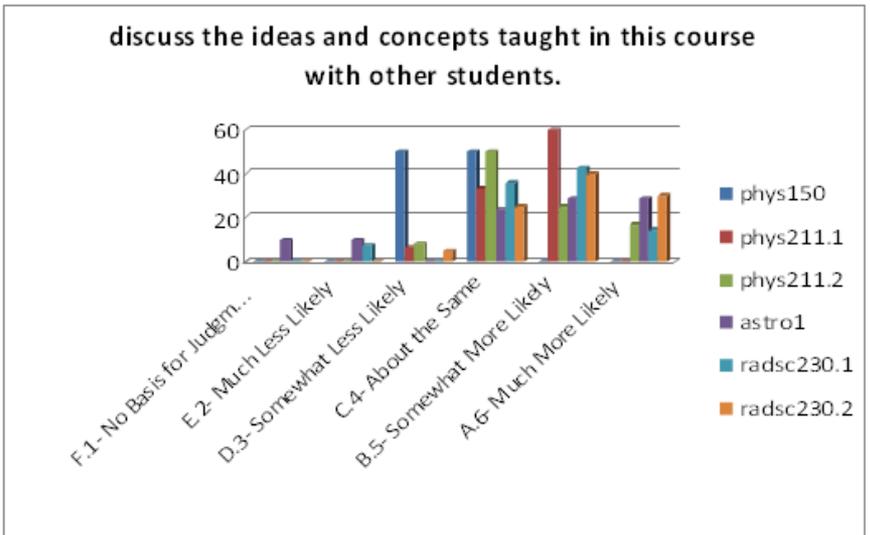
I am better able to visualize the ideas and concepts taught in this course.



I miss important information because the technology doesn't work correctly.



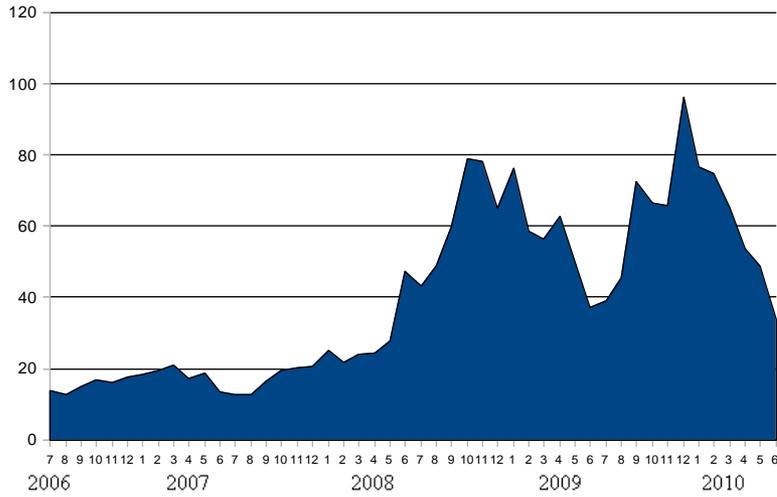
Think about a similar course you have taken that relied primarily on a simple lecture format. Compared with that course, because of the way this course uses Multimedia from the Animations for Physics and Astronomy Project at Penn State Schuylkill: how likely are [were] you to



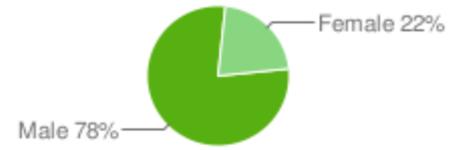
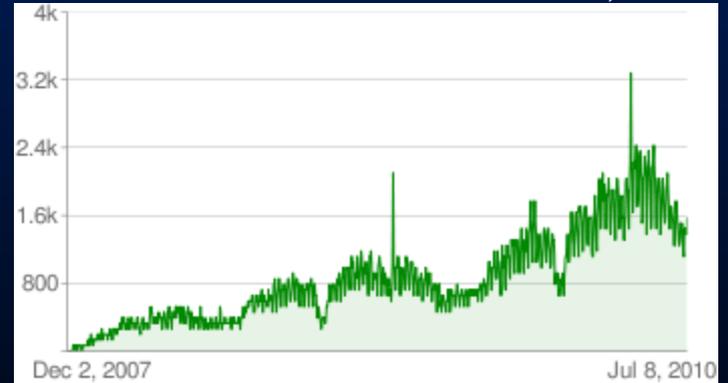
# Dissemination



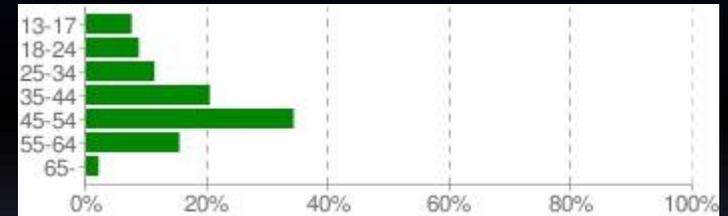
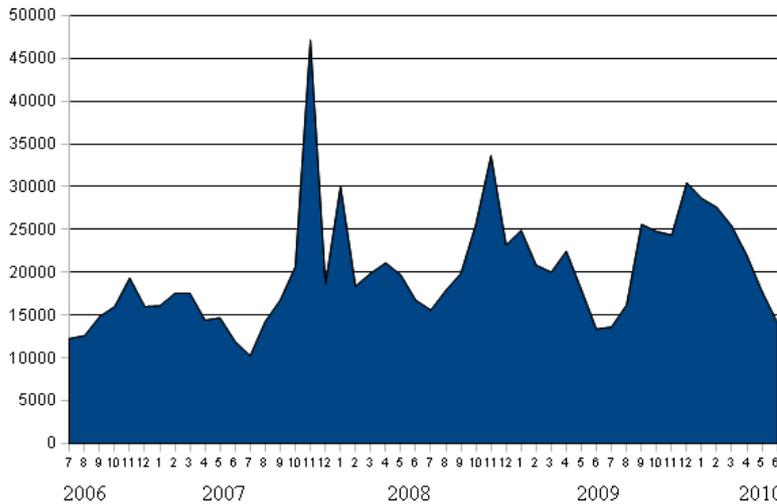
### Monthly .avi Bandwidth (GB)



Total views of all videos: 799,646.

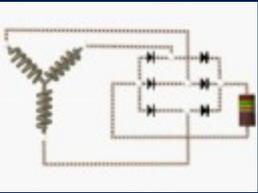


### Monthly .avi Hits





## Comments



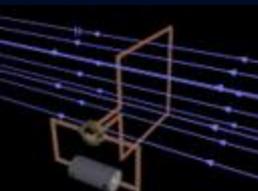
super cool :U i get it now so the 3 coil things are the incoming AC electricity and then the diodes sort it out into DC in quite an amazing way :3 but simple

IT LOOKS..LOOKS LIKE...MAN...yEAH! Flux Capacitor FROM THE movie "the back to the future!!!"



i see the nodal lines!

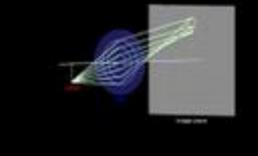
is this a constructive or a destructive wave interference? thanks.



I am a teacher and it is sumtimes very difficult to make the students understand electric motor as it requires a lot of imagination for the students and a great effort to visualise the whole set up. This video is just what i needed. Thank you very much.

everything should be taught with animations, god they're so easy to understand

Yey, you solved my mind\*\*\*\*! Thanks!



thats nice!!i look for information like this for already a long time i need it for school^^ greetings from germany



whoa! thanks so much. exactly what I needed to better understand my physics homework. :-)

this should help with my physics final..thx

I would like to have this video in my presentation. Do you mind if I could borrow? How could I get this video?

As time permits...



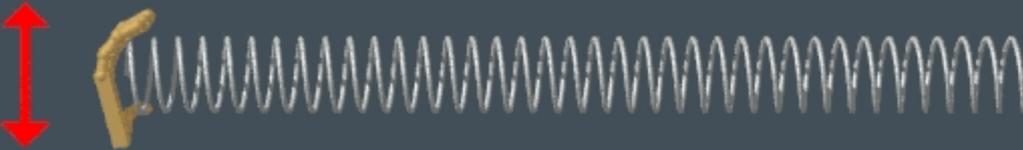
Equatorial System

As time permits...

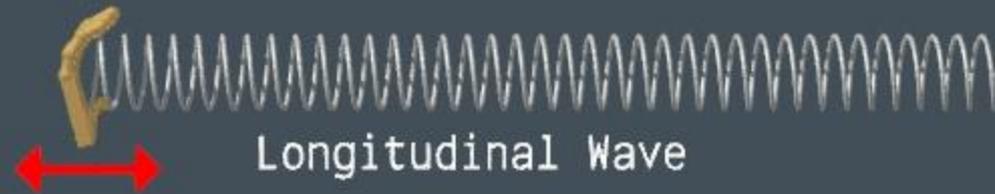


Foucault Pendulum

As time permits...



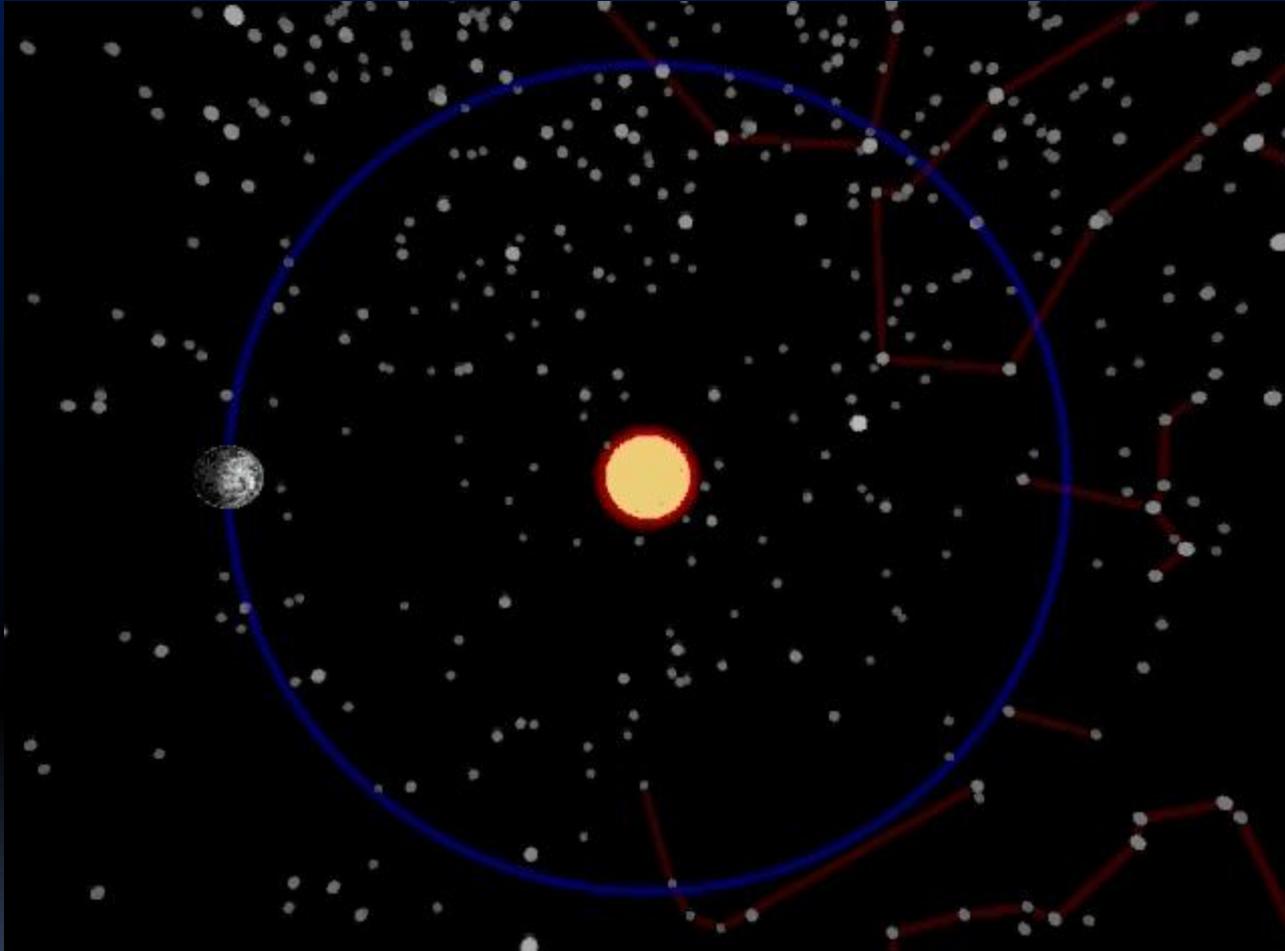
Transverse Wave



Longitudinal Wave

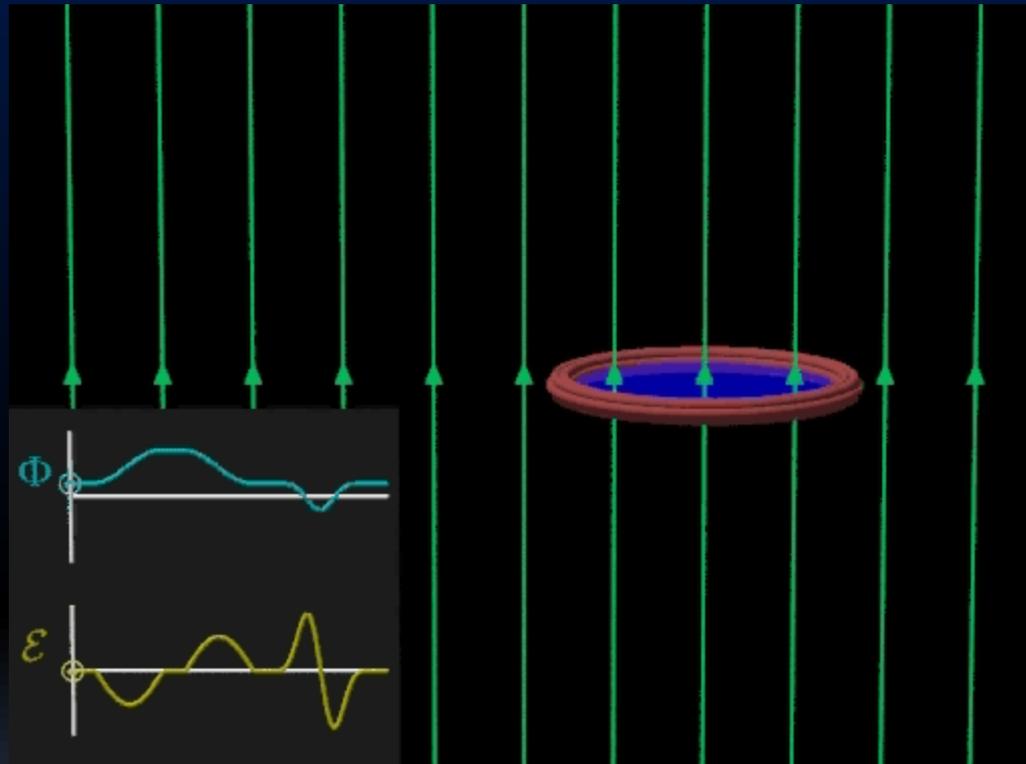
Making waves

As time permits...



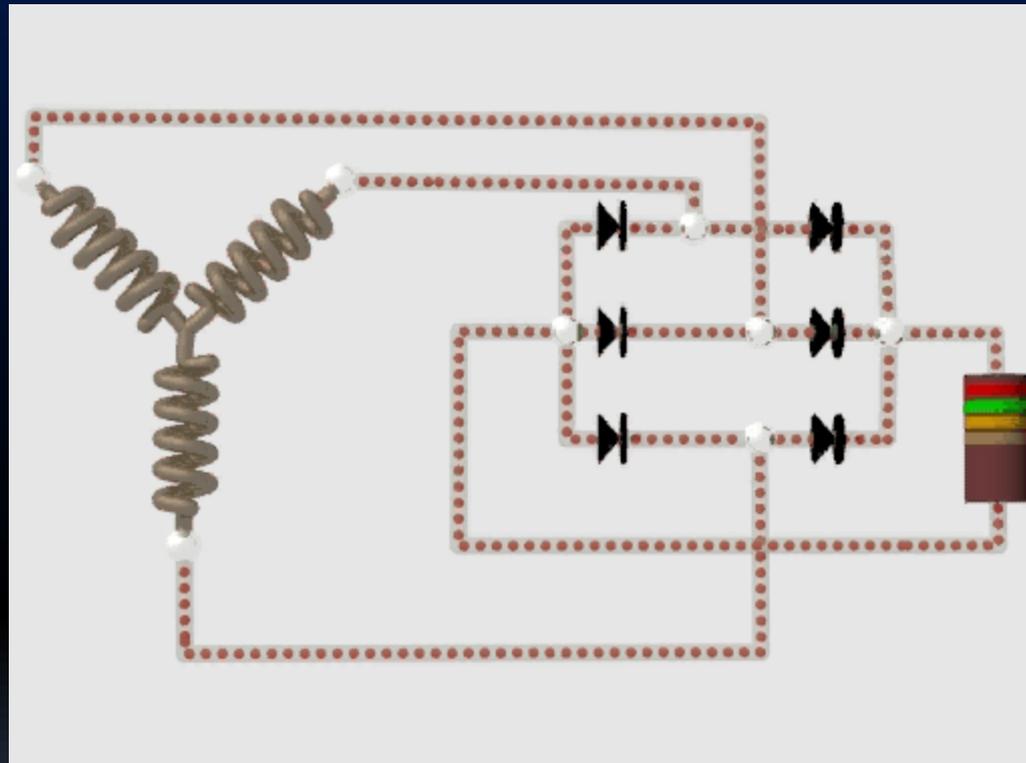
Seasons

As time permits...



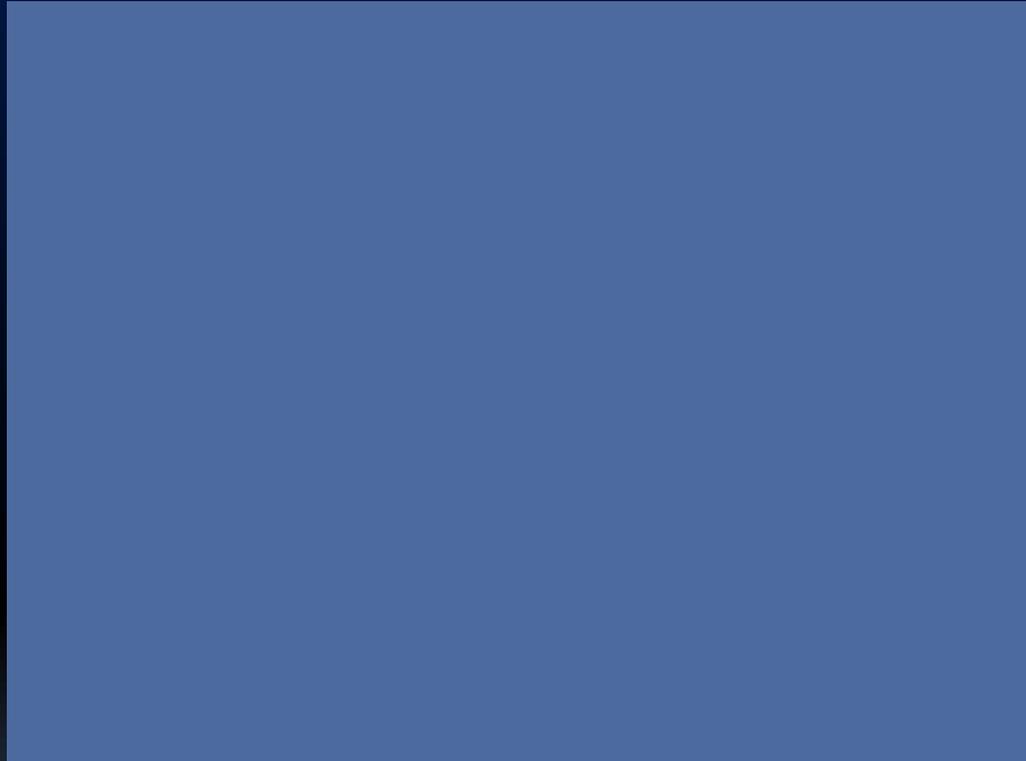
Lenz's Law

As time permits...



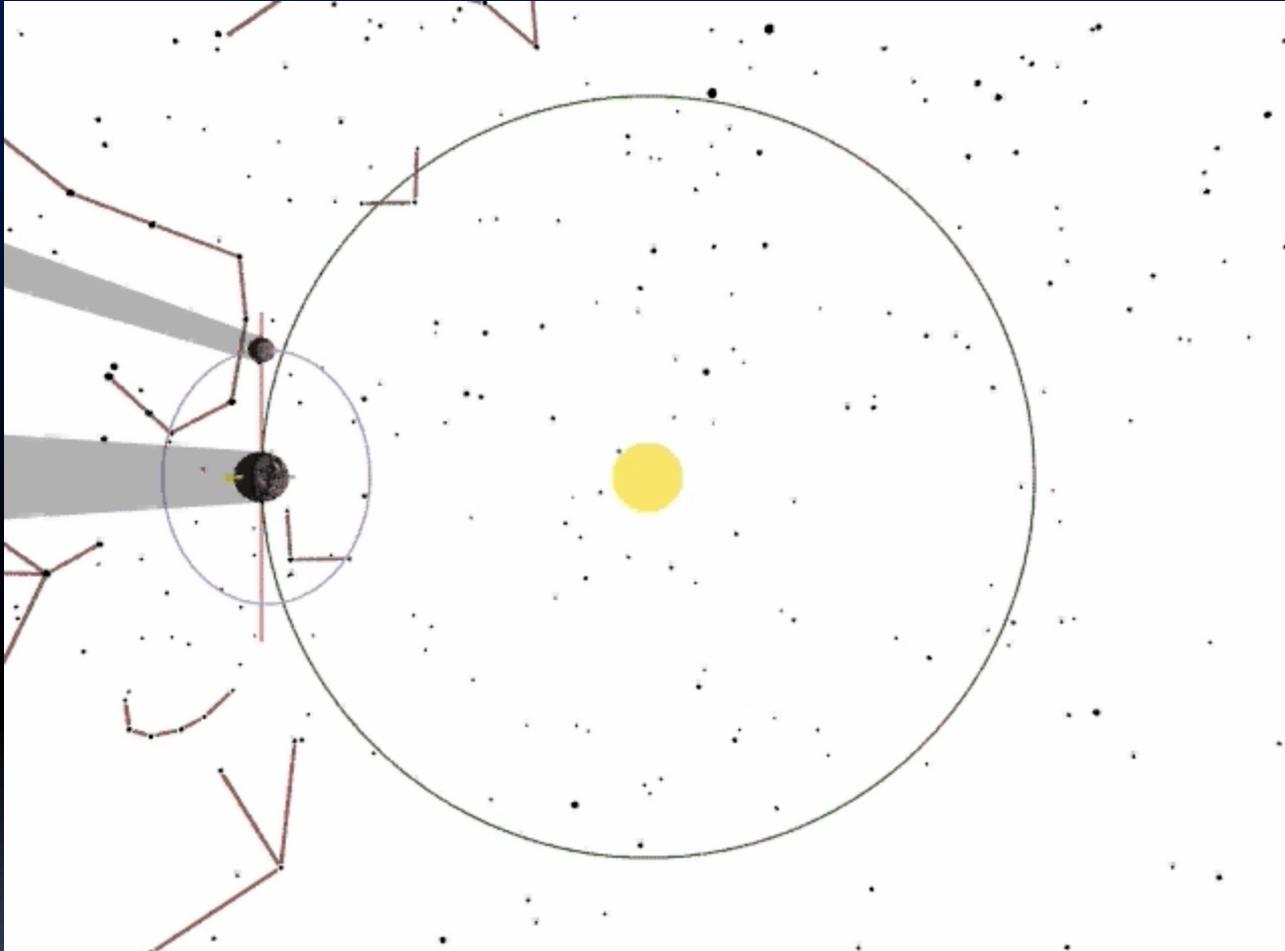
Rectifying Three Phase

As time permits...



Two Source Interference

As time permits...



Eclipses and Shadows