Examples of using PhET sims in Lecture

Visual Aids
Lecture Demo Complement
Interactive lecture demo
Concept Tests

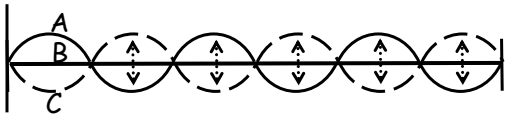
Lecture – Visual Aid

Show wave on a string

Violin string and harmonics:

- Good visualization of a standing wave on a string

Follow-up Concept Test:



snapshots at different times.

When the string is in position B, instantaneously flat, the velocity of points of the string is...
A: zero everywhere. B: positive everywhere.
C: negative everywhere. **D: depends on the position.**

Correct :
2002 demo: 27%
2003 sim: 71%

Follow up question: At position C, the velocity of points of the string is...
A: zero everywhere. B: positive everywhere.
C: negative everywhere. D: depends on the position.

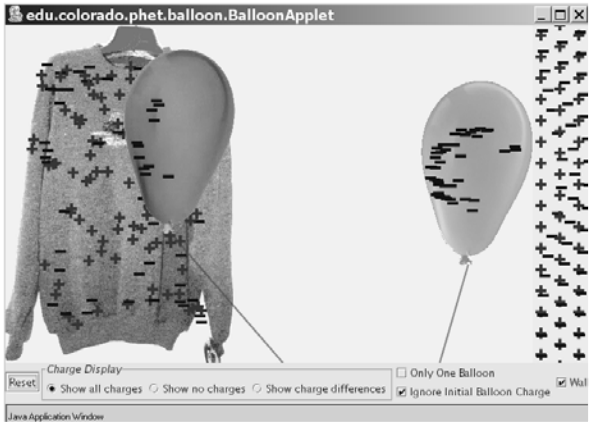
Correct :
2002 demo: 23 %
2003 sim: 84%

Lecture – Demo complement

Electrostatics – Traditional balloon demos

Show balloons

- Charge transfer, Coulomb attraction, Polarization

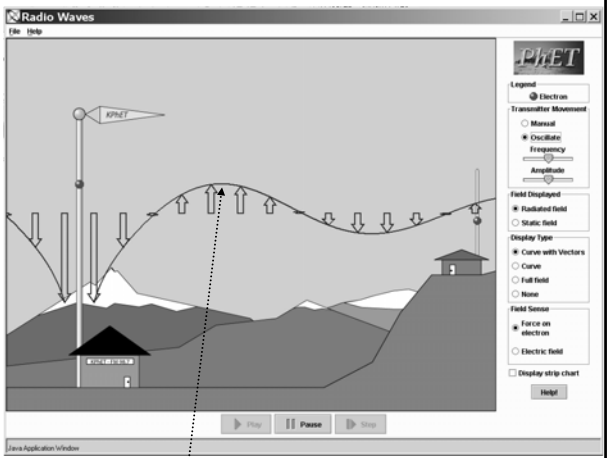


Simple,
but effective

Lecture – Concept tests

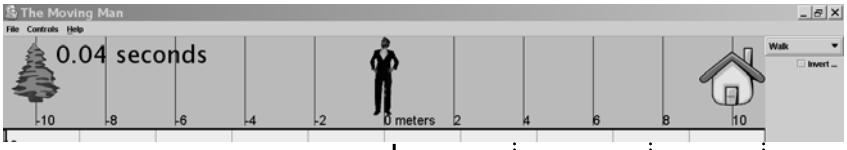
Electromagnetic waves:
Radio Waves sim

Concept Tests and
Peer Instruction

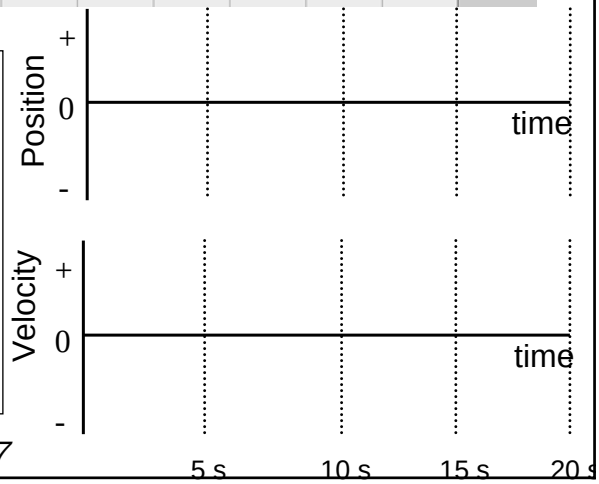


The speed of the wave (signal) is measured as…
a.how fast this peak moves to the right.
b.how fast this peak moves up and down.
c.could be a or b

Lecture – Interactive Lecture Demos



Demo 4:
Sketch **position vs time** and **velocity vs time** graphs for when Moving Man:
walks steadily towards the tree for 6 seconds,
then stands still for 6 seconds, and
then towards the house twice as fast as before for 6 seconds.



Thorton and Sokoloff, 1997