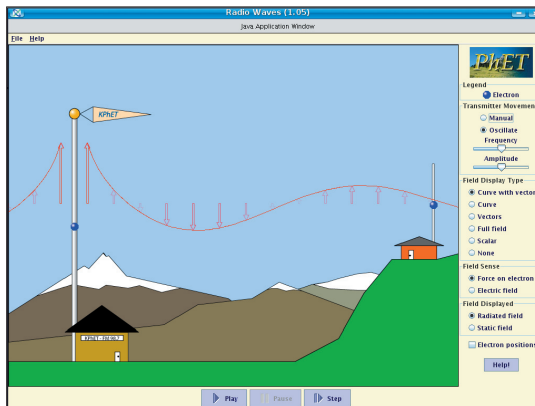




Welcome to our first newsletter!

The PhET project is an ongoing effort to advance science education by producing high-quality interactive simulations and teaching materials and by making them available for FREE. Simulations like *Energy Skate Park*, *Circuit Construction Kit*, and *Lasers* create animated, interactive, game-like environments in which students learn through exploration. They emphasize the connections between real life phenomena and the underlying science, make the invisible visible (e.g. electrons, photons, field vectors), and include the mental, visual models that experts use to aid their thinking – design features which help students build their own understanding and skills. Using research studies at CU-Boulder, the team of scientists, software engineers and science educators optimize the simulations for student engagement and educational effectiveness.



Especially For Teachers

Tips for Teachers

Tips for Teachers are accessed through the linked pdf under “Teaching Ideas” on the individual simulation page. These guides include: non-obvious controls; important modeling notes and simplifications; insights into student use and thinking; and suggestions for use of the simulation. Currently these tips are available for 19 simulations, including many in the Quantum Phenomena category. We will continue to create them for the other simulations.

Teacher Perspective

Do you use PhET at your school? Would you like to be in the next newsletter?

Contact:
phethelp@colorado.edu

How do I use PhET in my classroom?

Because we think what students do with the sims is as important as the simulations themselves, we host a database for teachers and PhET team members to share activities designed to use with the simulations. Our simulations may be used in many different types of activities, but we believe the simulations are most effective when integrated with guided inquiry activities which encourage students to construct their own understanding. To see a description of what this means and see guidelines for creating your own activities go to:

http://phet.colorado.edu/teacher_ideas/contribution-guidelines.php
Currently there are 289 activities in the database. They can be sorted by: simulation, type (lab, homework, demonstration, etc.), or grade level. You can also search for keywords or scroll through and see what looks interesting.

http://phet.colorado.edu/teacher_ideas/browse.php

Want to teach other teachers about PhET?

Check out materials from previous workshops to learn how to organize your own:

http://phet.colorado.edu/teacher_ideas/workshops.php

Fun Facts

Top 5 Simulations

with number of hits in past year

CCK	465,749
Energy Skate Park	383,392
Wave on a String	229,451
My Solar System	194,279
Moving Man	168,609

Research Fact:

We’ve interviewed over 250 students as part of simulation development.

Sim to Check-Out:

Optical Tweezers

Why? Besides teaching about optical tweezers this sim can be used to teach other concepts like Brownian motion, electromagnetic waves, and polarization.

Energy Skate Park

Features:

- (1) Give your skater a jet pack with arrow keys
- (2) Add multiple skaters with “a”

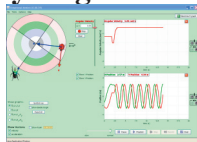
Upgrade:

Upgrade to the latest versions of Java and Flash.

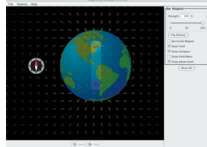


Check Out Our New Simulations!

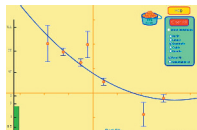
Lady Bug Revolution



Magnet and Compass



Curve Fit



Generator
Magnets & Electromagnets
Molecular Motors
Nuclear Physics
Pendulum
Plinko Probability
Stretching DNA
Torque

Simulations in Progress:

States of Matter
coming October 2008

Glaciers
coming August 2008

Eating and Exercise
coming August 2008

pH Scale
coming July 2008

Have an idea for a new simulation? Send your idea to phethelp@colorado.edu



PhET Goes Global

Workshops in Uganda

In early 2008, Sam McKagan, a PhET team member, ran two 2-day workshops on PhET simulations for high school teachers in Soroti, Uganda. Many schools in rural Uganda cannot afford laboratory equipment, but computers are becoming more widely available, making PhET simulations an ideal tool. The teachers were extremely enthusiastic, and it was amazing to see how quickly they were able to start using and learning from the simulations, even though many had never used computers before.

To see pictures, a video, and an article about the workshops, along with guidelines for others who would like to conduct PhET workshops in developing countries, see <http://phet.colorado.edu/uganda>

Translation Utility

Now you can translate simulations into your native language. Currently, all of our Java simulations can be translated and we anticipate having a similar utility available for our Flash simulations in the near future.

Send us yours!

<http://phet.colorado.edu/simulations/translations.php>

Translations so far:

Lots: Portuguese, Spanish, Greek, Dutch, Slovak

Many: German, Estonian, Russian, French, Ukrainian, Italian

Few: Arabic, Slovenian, Japanese, Lithuanian, Hungarian, Irish, Tswana, Finnish, Hebrew, Serbian, Swedish, Turkish, Czech, Chinese

Expanding into New Disciplines

PhET is collaborating with experts in Chemistry, Biology, Earth Science, and Math to develop new simulations in these disciplines. Please tell your colleagues we are working in these disciplines and remind them there are already 19 simulations applicable to Chemistry and 9 math tools on our site. To find these simply click on "Chemistry" or "Math Tools" under "Simulations."

New Frontiers at PhET

Recent Research Publications

(1) *Photoelectric effect:* We developed a new curriculum on the photoelectric effect that is more effective than traditional or prior research-based curriculum for teaching students how to 1) correctly predict the results of photoelectric effect experiments, and 2) describe how these results lead to the photon model of light. **AAPT Poster: ETLC-Solarium, Tues. 8-9:00 AM.**

(2) *Levels of Guidance that Elicit Engaged Exploration and Learning:* We've conducted interviews using several different levels of guidance and found that the level of guidance influences the amount of student engagement. Minimal but nonzero guidance with many of the simulations creates the optimum engaged exploration and impressive amounts of learning. **AAPT Talk: CF04: Monday 3:15 NRE 1-003.**

Awards/Prizes

- 2007 Oersted Medal awarded to Carl Wieman. This medal is awarded by AAPT and recognizes those who have had an outstanding, widespread, and lasting impact on the teaching of physics.
- 1st Place: NSF and *Science* magazine's 2007 International Science and Engineering Visualization Challenge - Interactive Media Category