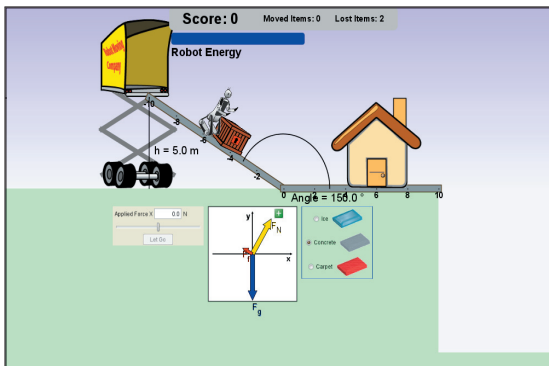
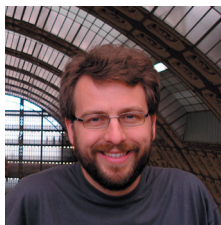


Revamped Motion Suite

We are in the process of revamping the motion sims (Moving Man, Forces in 1D, The Ramp, and Motion in 2D) into a cohesive suite of sims, the “Motion Suite”, where all the sims share similar representations and interactive features. Ladybug Motion 2D is our first complete sim in the suite, now available on the PhET website. This sim builds on Motion in 2D to significantly update the user interface and add important new features such as record / playback controls. Coming soon is a new version of The Ramp, which will now include multiple tabs with each tab focusing on slightly different learning goals. We are also including more game-like features, such as “mystery objects”, and explicit game tabs like a maze game in Ladybug Motion 2D and a Robot Moving Company game in the Ramp and Forces sims.



Words From Our Developers...



Sam Reid

Interview by Nina Zablotonaya

The following is an interview with one of our four professional Software Developers. Each simulation is developed by a team consisting of teachers, scientists, simulation specialists and a software developer. Sam has been with PhET since its beginnings in 2002.

NZ: Since you’ve been here from the beginning, how has PhET changed or evolved over the years?

SR: We’ve grown from a small team of 3 to more than

15 members, and are continually refining our tools and workflow to increase our efficiency. We’ve also started performing interviews and research, which have been essential in improving the effectiveness of our simulations.

NZ: In general, what impact would you like your work to have on PhET and on the larger physics and education communities and what is the most rewarding aspect of being part of PhET?

SR: I’m very excited about PhET’s ability to make scientific topics easier to visualize, more accessible and more exciting to students. I’m also excited that our simulations have been used in so many countries and translated into so many lan-

guages. PhET is at the cutting edge of science education, and promotes the idea that education itself must be studied using scientific principles in order to advance.

NZ: What are some of PhET’s plans for the future?
SR: Our current plans are to increase our coverage of physics, chemistry and math, and to expand to new disciplines such as cell biology. We hope to continue contributing to education research, user interface research and open source communities. We also have the potential to study multi-user interaction and using simulations for assessment. And we’re still growing, and preparing to be used in more classrooms and more countries.

Fun Facts

Top 5 Simulations

run from website in past year

CCK	762,349
Energy Skate Park	647,079
Moving Man	322,044
Faraday EM Lab	261,144
Electric Hockey	253,647

over 7 million simulations run from the website in the past year

Sim to Check-Out:

Natural Selection

Why? Students explore survival of bunnies in the face of wolves, climate, and food supply. If kept unchecked, bunnies can take over the world.

States of Matter

Features:

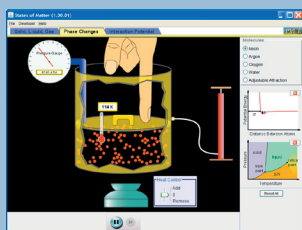
- (1) See why ice is less dense than liquid water
- (2) Change the interaction potential between molecules and see how this affects the states of matter



THE WILLIAM AND FLORA
HEWLETT
FOUNDATION



Check Out Our New Simulations!



Acids & Bases
Alpha Decay
Calculus Grapher
Eating and Exercise
Glaciers
Gravitational Force Lab
Interaction Potential
Lady Bug 2-D
Natural Selection
Nuclear Fission
pH Scale
Radioactive Dating Game
States of Matter

In Progress:

coming August 2009
Ramps

coming Fall 2009
Aphid Maze
Beta Decay
Force Lab Law
Kepler's Laws
Neuron Potential
New Motion Suite
Titration

coming 2010
Cell Membranes
Density
Electrostatic Charges
Electrostatic Force Lab
Human Respiration
Lac Operon
Network:
Regulation of protein
Periodic Table
Photosynthesis

Send your ideas to
phethelp@colorado.edu



Did You Know???

Just a few of the great resources that you can find on the PhET website: <http://phet.colorado.edu>

Activities - Labs, Homework, Demos, and more

Need ideas? Browse materials including homeworks and clicker questions submitted by teachers.

Workshops

See schedule and materials for upcoming and past workshops on use of PhET sims and conducting research with PhET sims.

Research

All of PhET's thirty-one research publications can be found on our website.
<http://phet.colorado.edu/research>

Simulations

A total of eighty-five simulations with many translations into forty different languages.

PhET has a new license option!

The Creative Commons Attribution license allows you to freely use or redistribute PhET as part of your project.

Upcoming Plans

Activity Templates:

We are actively researching features of activities that take advantage of unique characteristics of sims.

Videos of sim use:

Our 4 hour activity creation workshop.
Videos of students engaged with sims.

PhETmania:

New website for 4th - 8th grade teachers and students that is limited to simulations that meet standards for these grades.

Website translation:

By 2010 our website will be internationalized and then all of PhET can be translated!

New Frontiers at PhET

Recent Research Publications

(1) *PhET: Simulations That Enhance Learning* (C.E. Wieman, W.K. Adams, K.K. Perkins)
Science, October 2008

Science Magazine featured PhET simulations in their October Education Forum section! This short article discusses how carefully developed and tested educational simulations can be engaging and effective. They encourage authentic and productive exploration of scientific phenomena, and provide credible animated models that usefully guide students' thinking.

(2) *PhET simulations: Should we show the invisible?* (A. Paulson, W.K. Adams, & K.K. Perkins)

In this study we investigate a feature of computer simulations called "showing the invisible": displaying visual representations of invisible physical phenomena. By comparing the responses of users of two versions of a simulation, we find that seeing these representations can increase student engagement and improve conceptual understanding.

(3) *Computer simulations to classrooms: tools for change* (N.S. Podolefsky, K.K. Perkins, & W.K. Adams)

This paper examines the use of PhET sims in physics laboratory courses, how the culture and history of labs can affect the nature of laboratory environments. We present a model of how historical traditions can prevent optimal use of learning tools, such as PhET sims, but also describe how these tools can change environments to support engaged exploration by students. Data supporting our claims is provided.