



PhET

-the real physics simulation for better teaching-

Pelatihan MGMP Fisika SMA/MA Kab. Kulon Progo
Nov 2009

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Apa itu PhET?



Physics Education Technology

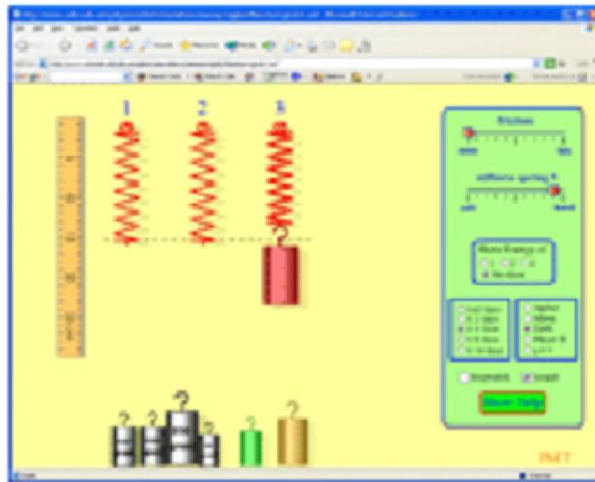
UNIVERSITY OF COLORADO AT BOULDER

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Interactive Physics Simulations

Fun, interactive simulations of physical phenomena from the Physics Education Technology project at the University of Colorado.

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- ▶ Partial Installation

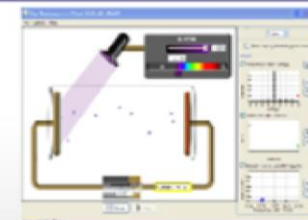
▶ Teacher Ideas & Activities

- ▶ Search for lesson plans and activities that were created by teachers to use with the PhET simulations

▶ Contribute

- ▶ Provide ideas you've used in class
- ▶ Other contributions

▶ Search Simulations



Apa itu PhET?



Akibat jika menjejalkan pelajaran



Maaf Pak, kepala saya dah overload



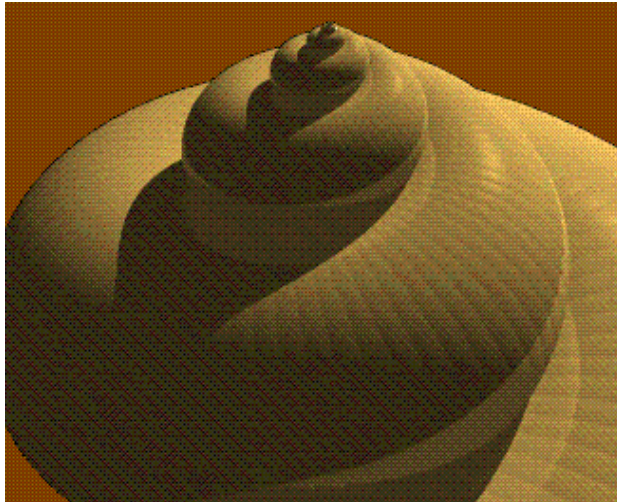
Bagaimana cara mengajarkan sains yang baik dan benar?



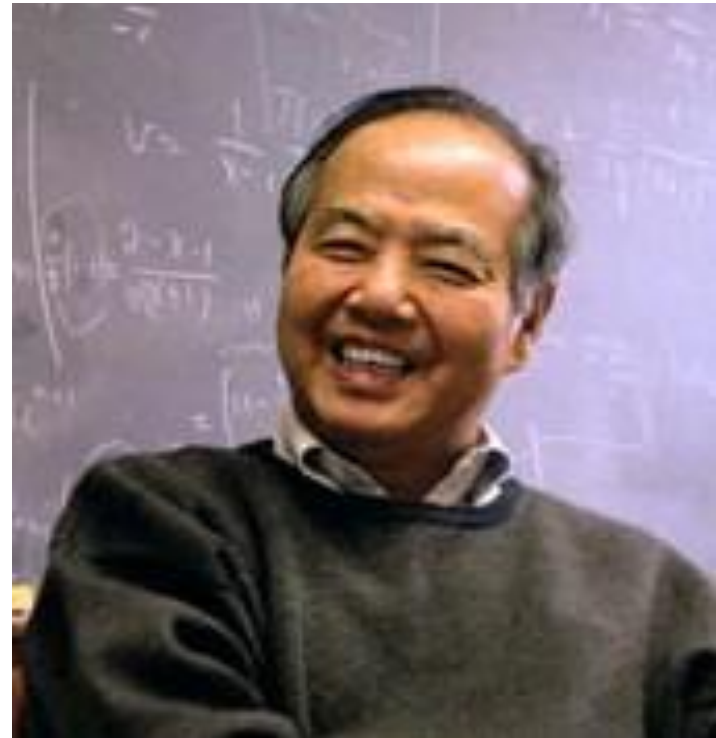
Betapa Indahnya Fisika



Betapa Indahnnya Fisika



Betapa Indahnya Fisika

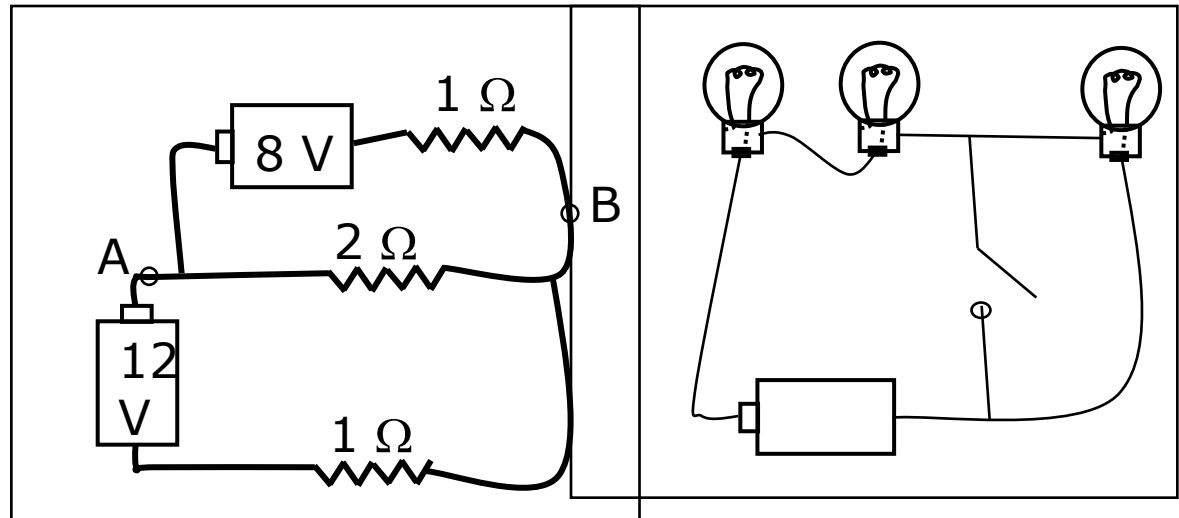


Betapa Indahnya Fisika

Sikap dan perilaku ilmiah:

- 1. Rasa ingin tahu**
- 2. Menyangsikan dan bertanya**
- 3. Mampu menyusun dugaan ilmiah**
- 4. Menuntut pembuktian**
- 5. Menarik kesimpulan berdasarkan fakta-fakta ilmiah**
- 6. Taat logika**

Uji konseptual



Ada 70% murid
dapat menghitung

Hanya 40% murid yang
dapat menghitung

Penggunaan PhET

- **Pelajaran/kelas**

bantuan visual, demo, pelajaran interaktif, uji konsep

- **Lab dan resitasi**

aktivitas kelompok, eksplorasi & diskoveri

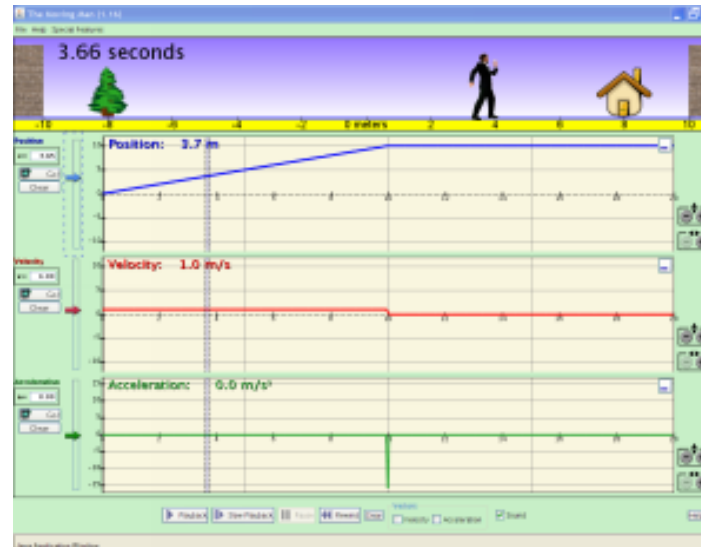
- **Pekerjaan rumah**

tugas pra-kelas, pengenalan ide baru, tugas pasca-kelas, membangun konsep

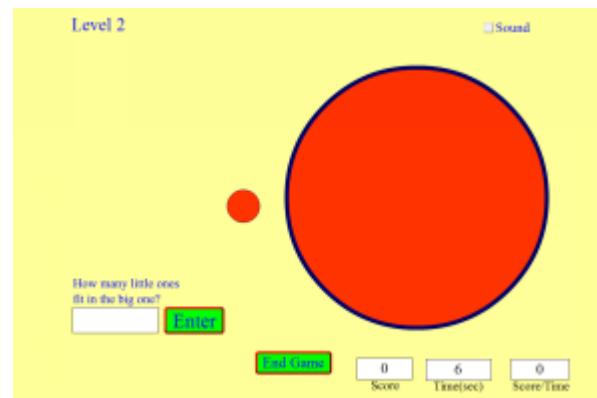
PhET untuk Fisika SMA

Unit 1: Pengenalan tentang gerak

- Sim : Moving Man



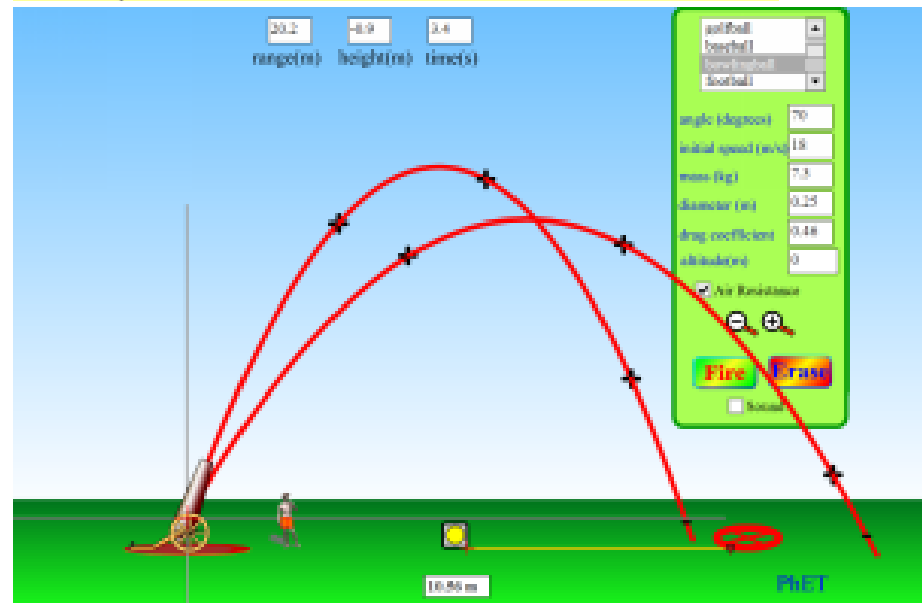
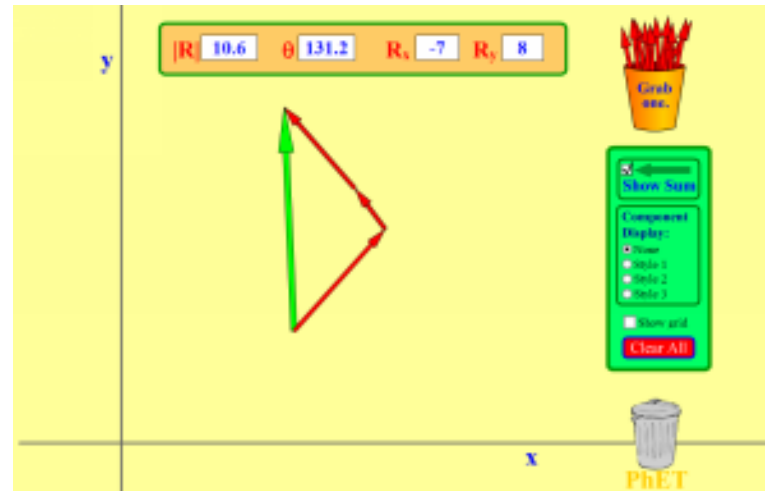
- Game : Estimation



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Unit 2: Gerak lanjutan

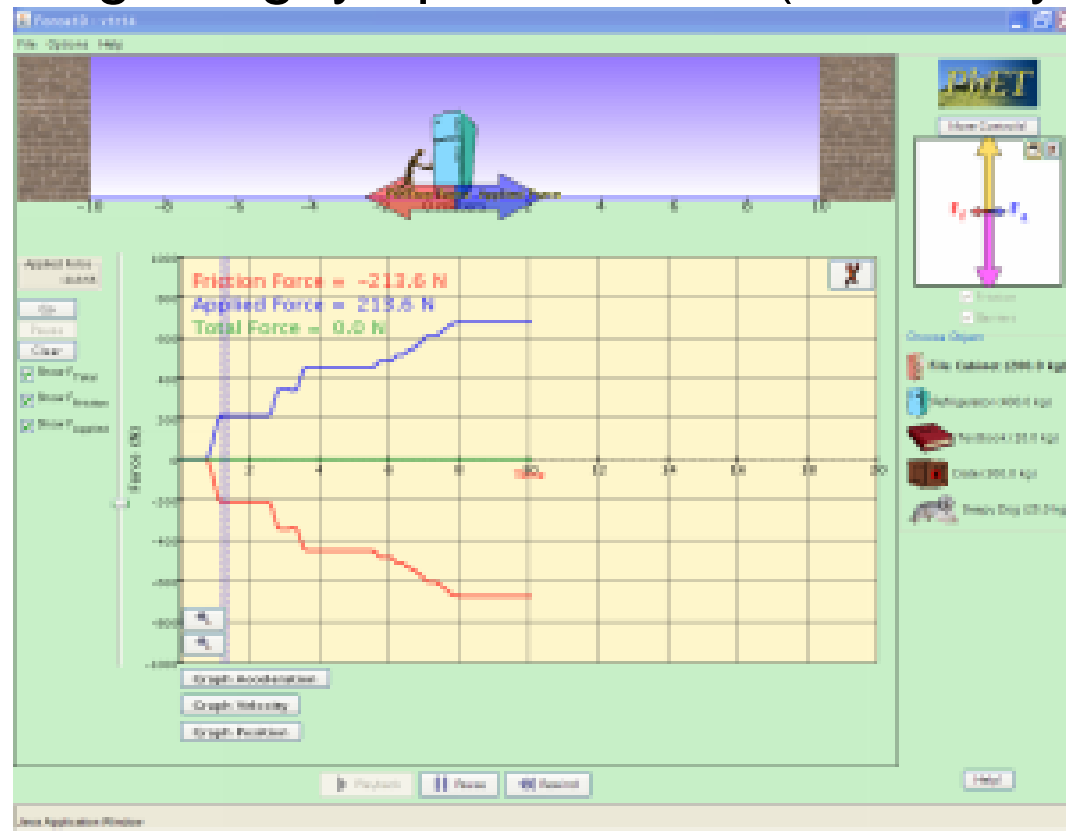
- Sim : Vector Addition
- Sim : Projectile Motion



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Unit 3: Kakas/gaya dan Hukum Gerak

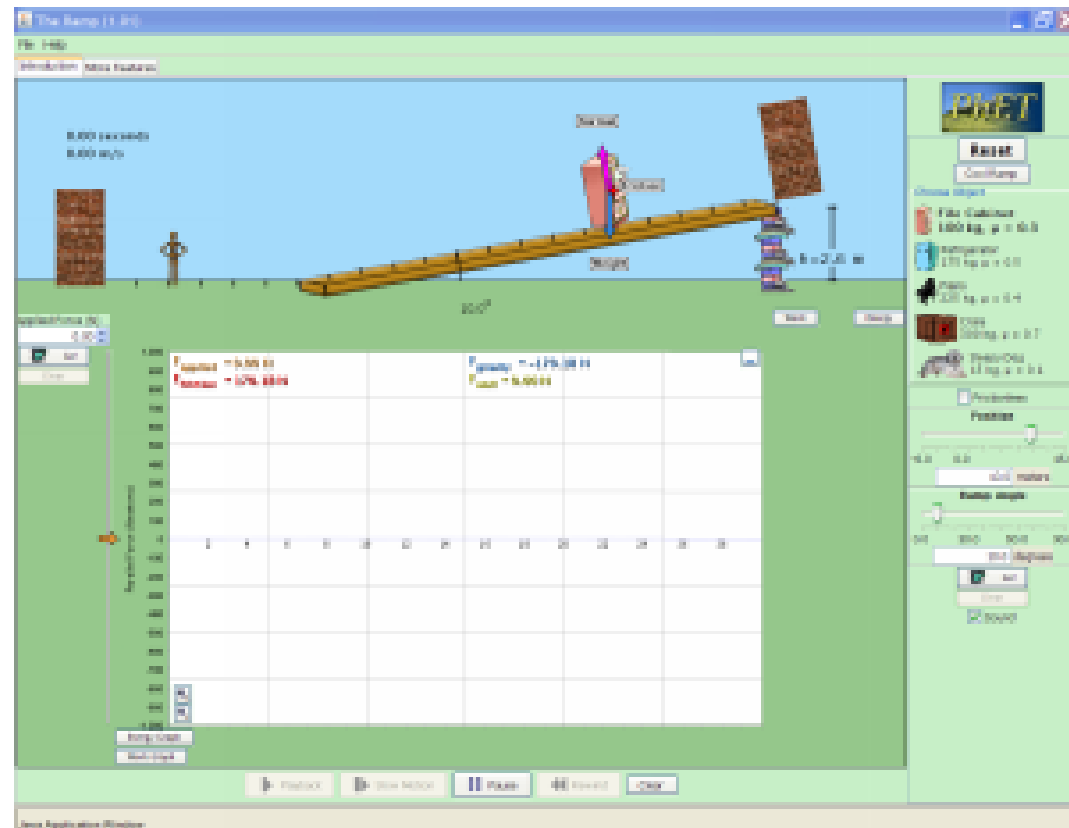
- Sim : Forces in 1 Dimension
 - (1) pendugaan/prediksi kecepatan dan perubahan arah
 - (2) grafik dan diagram gaya pada benda (free body diagrams)



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Unit 3: Kakas/gaya dan Hukum Gerak

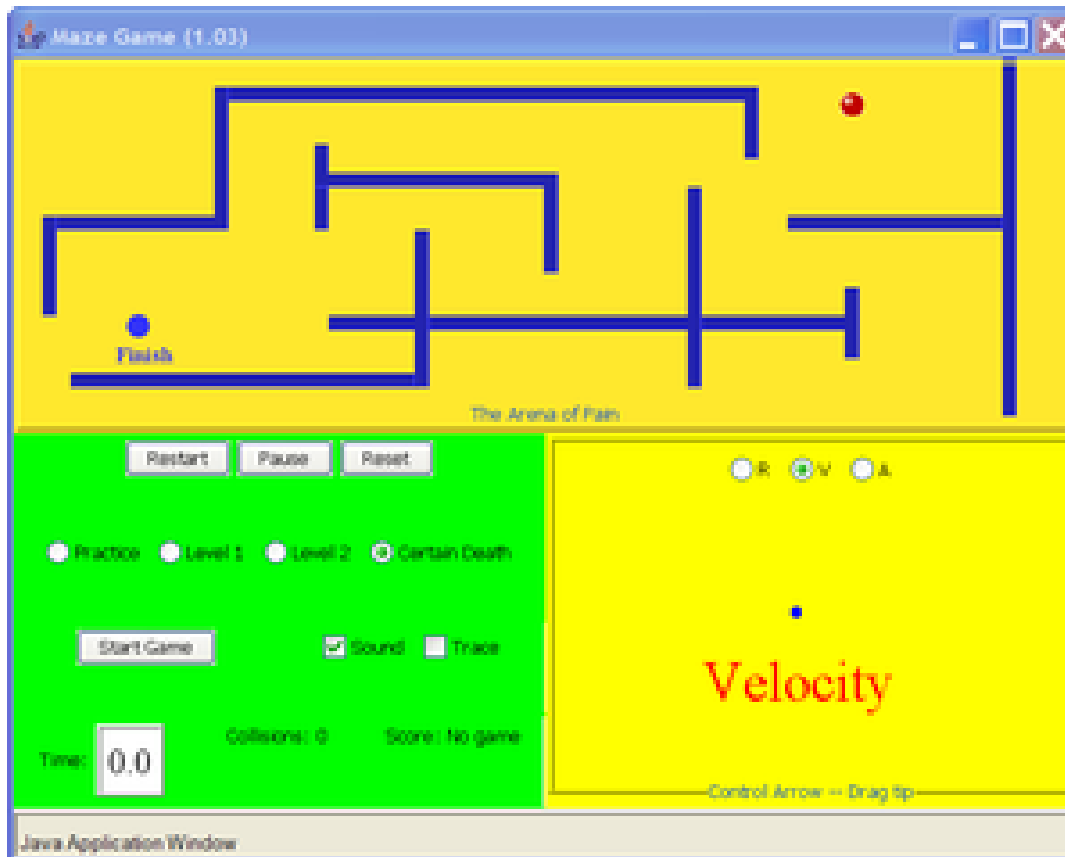
- Sim: The Ramp
 - (1) penggunaan diagram gaya
 - (2) kegiatan kuantitatif



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Unit 3: Kakas/gaya dan Hukum Gerak

- Sim: Maze Game
(1) penggunaan vektor

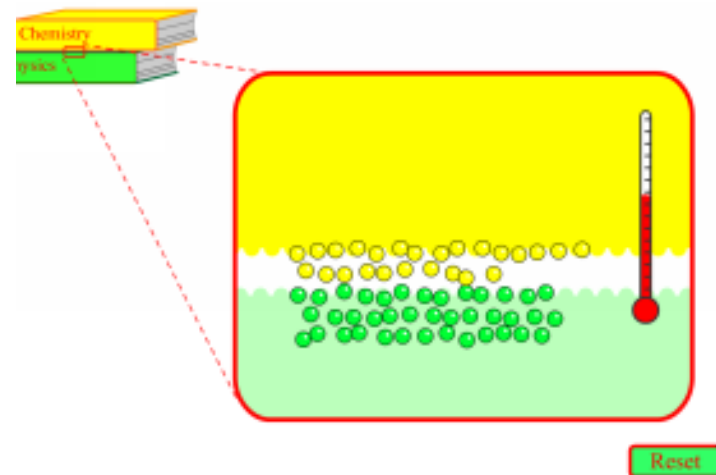
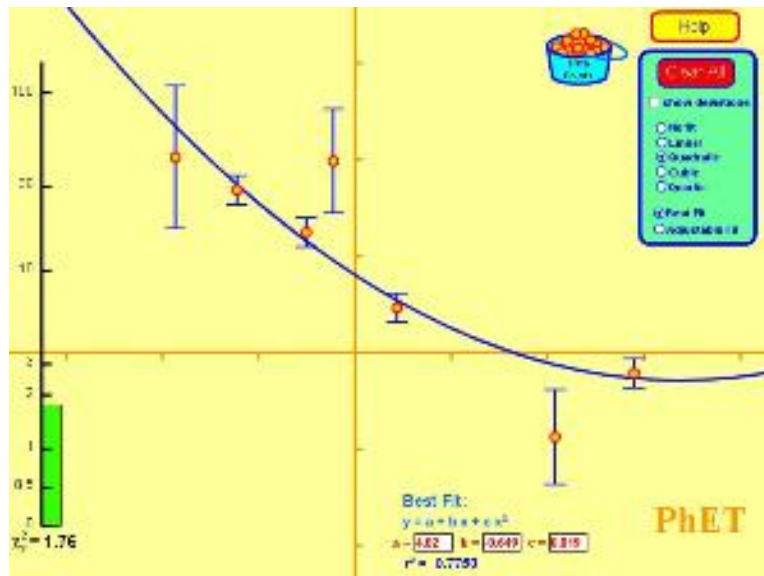


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Unit 3: Kakas/gaya dan Hukum Gerak

- Sim : Curve Fitting

Bagaimana kurva/grafik dapat menjelaskan data?

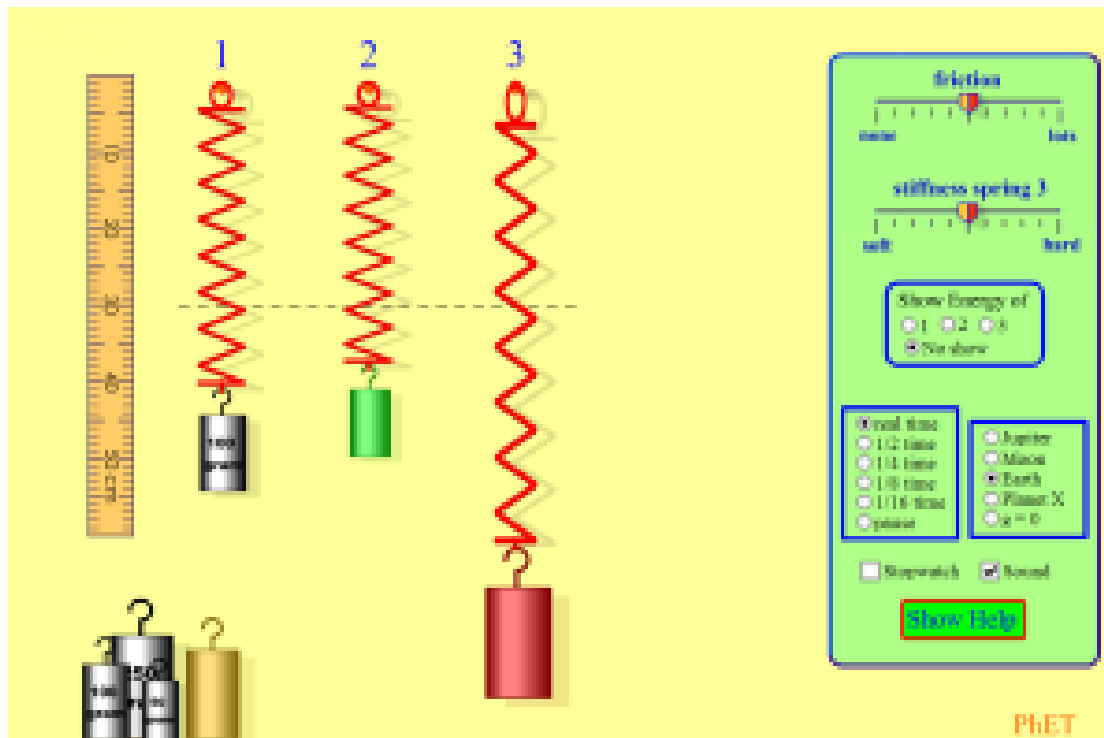


- Demo : Friction

Penggunaan PhET

Unit 4: Kerja, tenaga, pusa/momentum, dan tumbukan

- Sim: Masses & Springs
 - (1) kegiatan tugas/PR
 - (2) kelestarian tenaga



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Unit 4: Kerja, tenaga, pusa/momentum, dan tumbukan

- Sim : Energy Skate Park

(1) pengenalan kelestarian tenaga mekanik

(2) hubungan grafik, posisi dan kelajuan

(3) menghitung kelajuan dan tinggi

(4) menghitung kelestarian tenaga mekanik

menggunakan grafik waktu

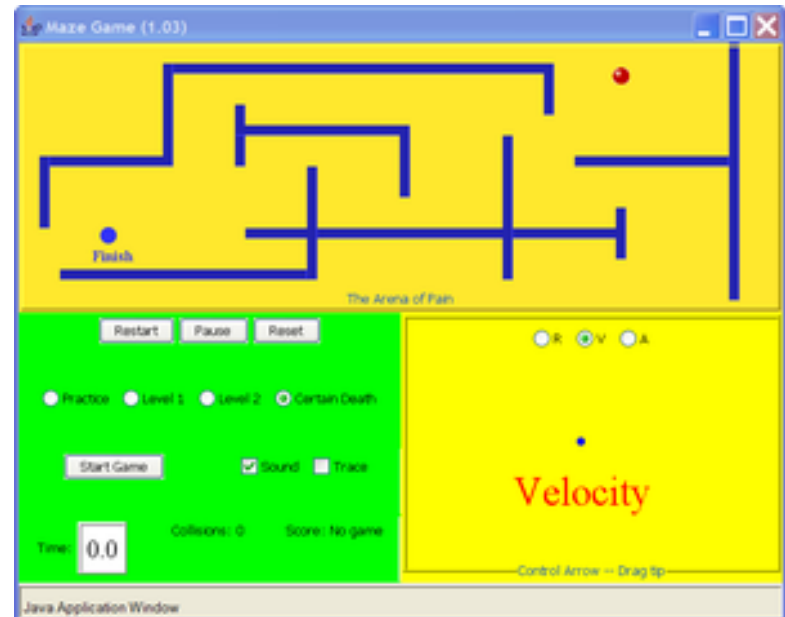
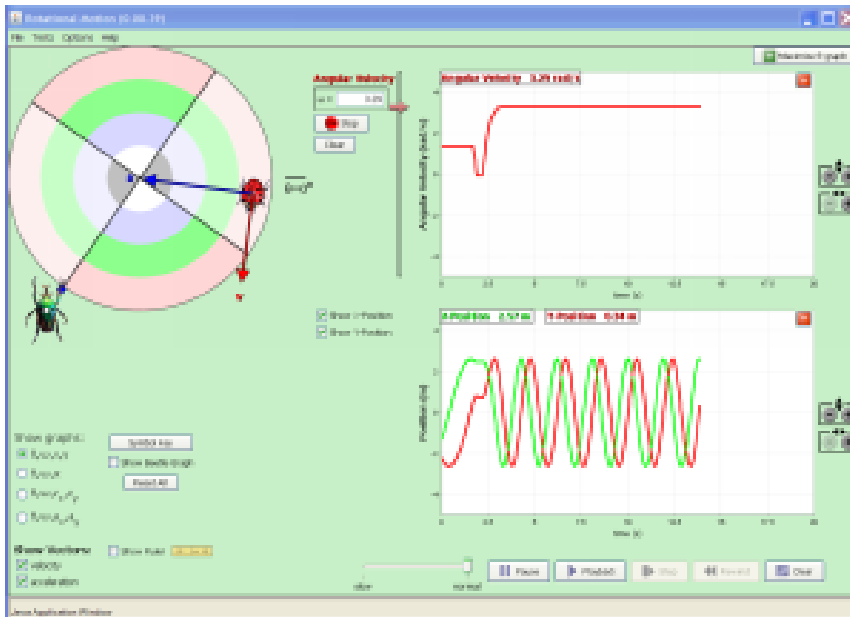


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Unit 5: Gerak Melingkar

- Sim : Ladybug Revolution
- Sim : Maze Game

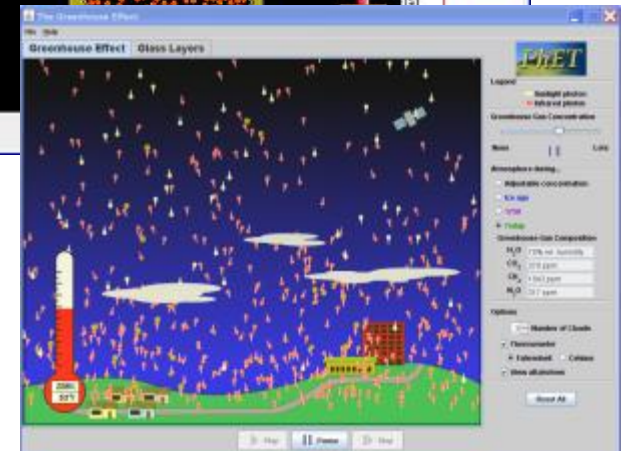
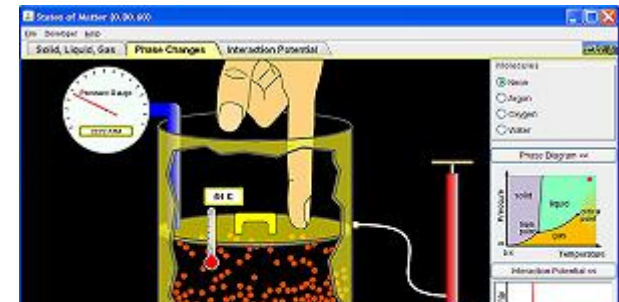
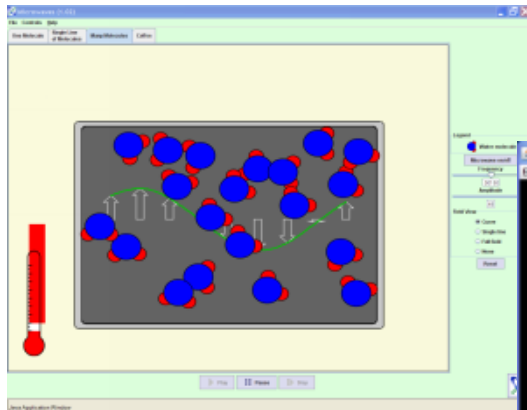
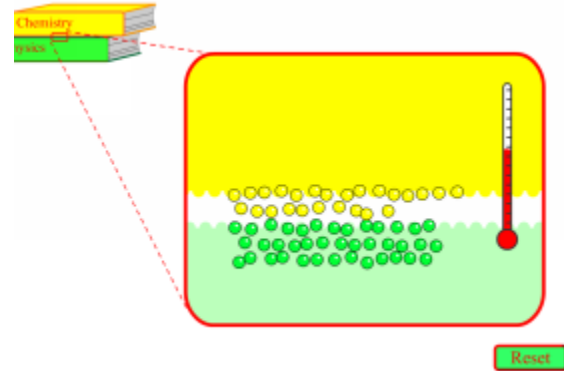
(1) kendali vektor untuk gerak melingkar



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Unit 6: Panas dan termodinamika

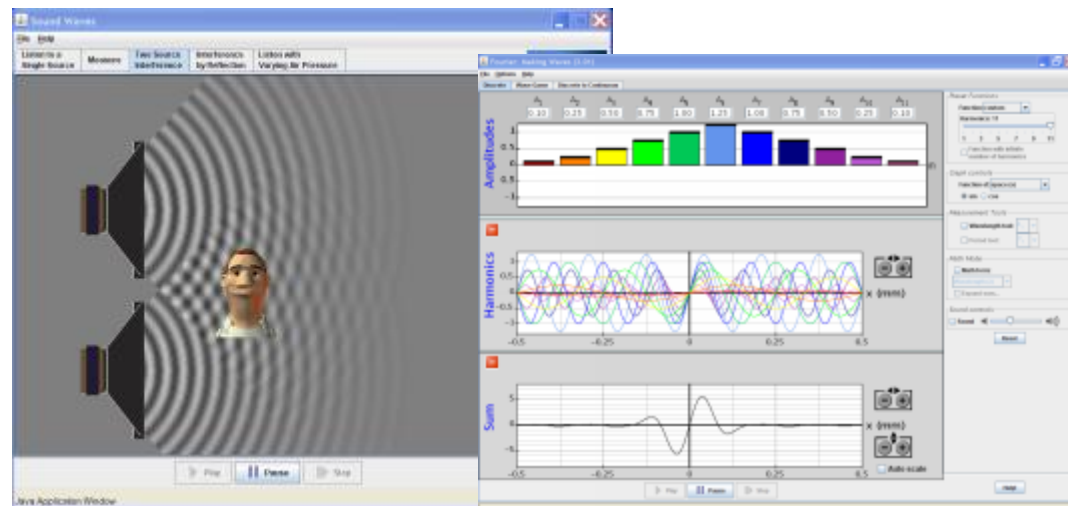
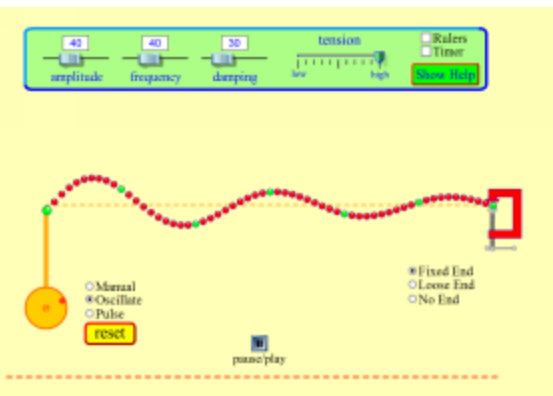
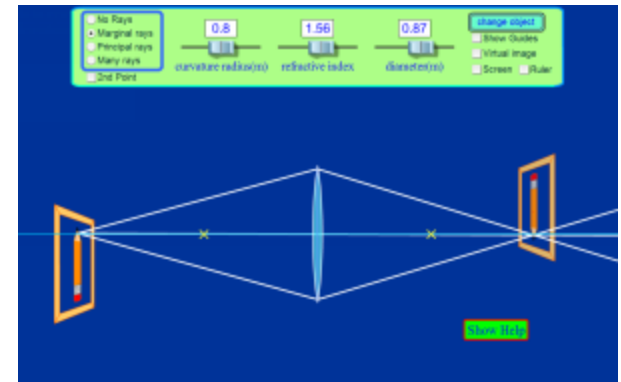
- Demo: Friction
- Sim : Microwaves
- Gas Properties
- Sim : States of Matter
- Sim : The Greenhouse Effect



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Unit 7: Gelombang: Cahaya dan bunyi

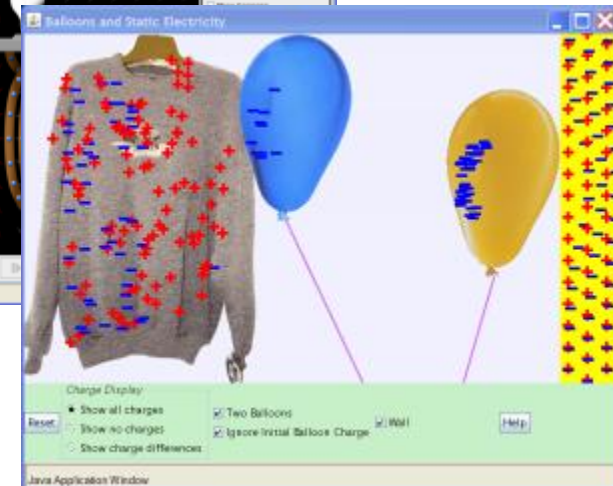
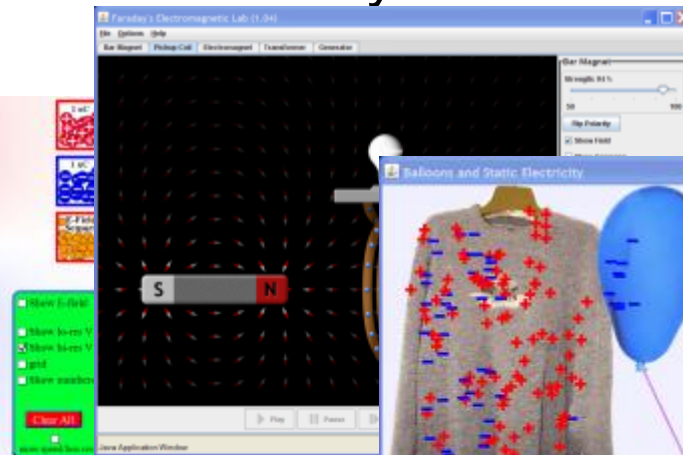
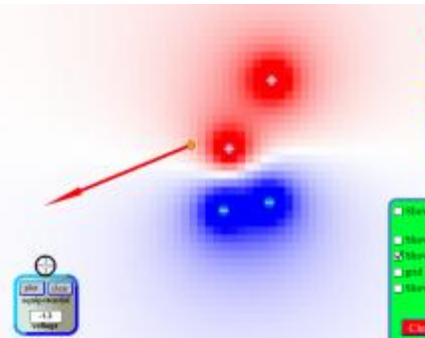
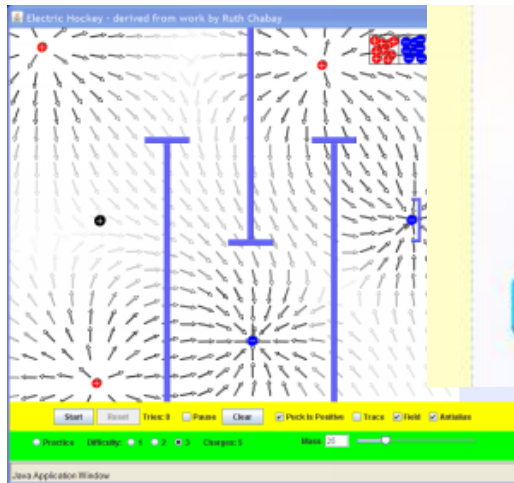
- Sim : Waves on a String
- Sim : Sound
- Sim : Fourier: Making Waves
(1) representasi gelombang
(2) superposisi gelombang
- Sim : Geometric Optics



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Unit 8: Listrik dan magnet (gaya dan medan)

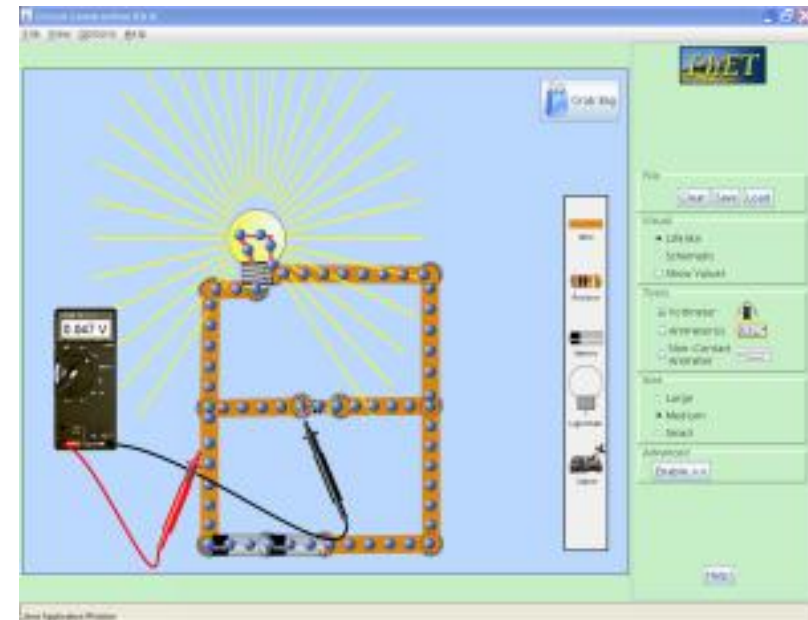
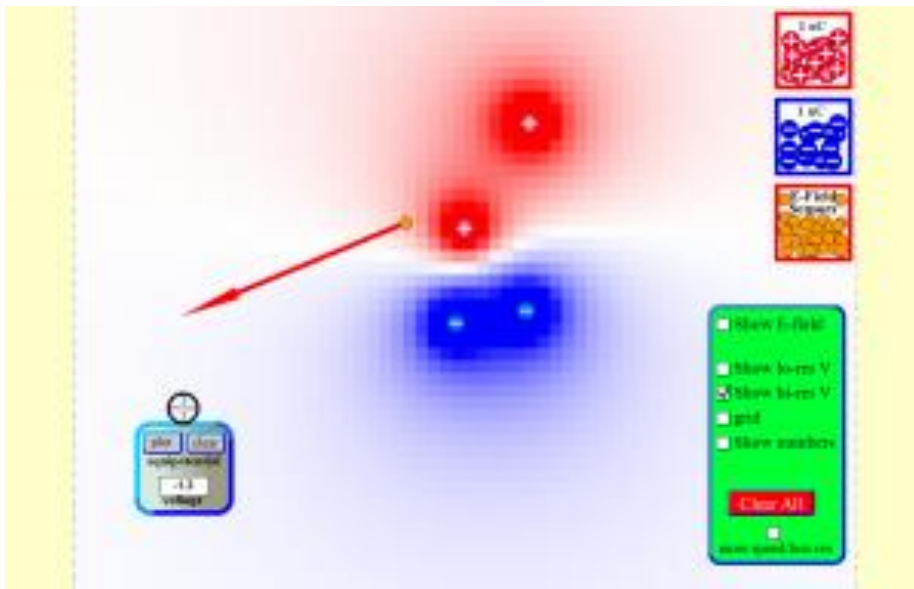
- Sim : Introduction to Electric Fields: Electric Field Hockey Charges dan Fields
- Sim : Faraday's Electromagnet Lab
- Game : Electric Field Hockey
- Demo : Balloons & Static Electricity dan John Travoltage



Penggunaan PhET

Unit 9: Arus, tahanan, sirkuit

- Demo : Introduction to Electric Fields: Charges dan Fields
- Sim : Circuit Construction CCK



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Unit 5: Induksi, Arus AC, elektronika modern

- Sim : Faraday's Electromagnet Lab 2 Induction
- Demo: Conductivity, Semiconductors, Photoelectric effect

