



CNS Institute for Physics Teachers

Spring Workshop

“Modern Physics”

Saturday, March 31, 2007

Schedule

8:30 – 9:00 a.m.	Registration and Continental Breakfast
9:00 – 10:00 a.m.	Prof. Rachel Bean, “ Dark Matter and Dark Energy ”
10:15 – 11:45 a.m.	Dr. Phil Krasicky, Lecture Demos
11:45 – 12:45 p.m.	Lunch
12:45 – 1:45 p.m.	Hands-on Activity I (see below)
2:00 – 3:00 p.m.	Hands-on Activity II (see below)
3:00 – 3:15 p.m.	Evaluation and Closing

Activities

- **“Particle in a Box – Electron Energy Level Transitions”** – This series of activities is designed to develop students’ understanding of electron energy level transitions within an atom. Students explore electron energy level transitions with a mechanical analogy that involves launching a ball up a ramp with horizontal grooves representing energy levels. Students use their understanding to generate a partial energy level diagram (in the visible light spectrum) for hydrogen. Concepts are reinforced with enrichment activities involving the generation of characteristic X-rays.
- **“2-D Scattering”** – This lab is a 2-D analog to the materials characterization technique of Rutherford backscattering (RBS). It introduces the concept of looking at the angular distribution of scattered particles to characterize the scattering target. In RBS, the scattering targets are the atoms, and the scattered particles are alpha-particles. In this experiment, students launch ball bearings at a metal target, which then scatter into bins. By plotting and analyzing the data, students can learn about 2-D scattering (and by analogy, 3-D scattering).

The workshop is limited to the first 40 teachers who register (\$20 refundable deposit is required).

Continental breakfast and lunch are provided.

A certificate for five contact hours will be awarded for participation.

