

2010 AAPT UT/ID Section Meeting

ISU- Pocatello, April 30 - May 1, 2010

Friday April 30

- 5:30 - 7:00 pm Registration, Physical Science Building Foyer
- 6:00 pm Welcome and Opening Remarks, Dr. Scott Hughes, Dean, ISU
 College of Arts and Sciences
- 6:00 - 7:00 pm Banquet, Physical Science Building Foyer
- 7:00 - 9:00 pm Demonstration Share-A-Thon, PS 140

Adam Behler, U of U, Standing Waves on a Whadayacallit Cord

Standard demonstrations can be done very effectively with the cord. Some interesting nonstandard demonstrations can be done when a weight is placed at the center.

Richard Hills, Weber State

Ron Galli, Weber State, Atmospheric Pressure/Rotational Motion/Cat Twist

Wayne Peterson, BYU, Standing Waves On Pan Lids, a Lamp Cover, and a Juicer

Duane Merrell / Harold Stokes, BYU, The Ping Pong Ball Canon (the you tube story)

We will discuss the use of a high speed camera and its use in calculating the speed of the ping pong ball that maybe Dr. Harold Stokes last demonstration of the cannon in class. He says that it hurts!

Westen Barnes, Pocatello High School, Jacob's Ladder

James Coburn, USU, Various demonstrations

Steve Shropshire, ISU, Water Light Pipe, Shifting Rainbow, Infra Red Demos

Bryan Pyper, BYUI, Misc. Physics Fun

Saturday March 25, 2006

- 9:00 - 10:00 am Registration, Physical Science Building Foyer
- 9:00 - 9:30 am Poster session, morning donuts, juice, coffee, PS 144

Brian Wieland, ISU, Photomultiplier Tube Magnetic Shielding for the CLAS12
Central Time of Flight Counter

Ariel Conn, ISU, Optimization of a Linearly Polarized Photon Beam Experiment

Andrew Harmon, ISU, Exploitation of laboratory exercises in university physics
relative to instruction time

Cody Womack, ISU, Calculations Related to a Measurement of Atmospheric
Absorption of Solar Radiation

9:30 - 10:30 am Contributed Session I, Physical Science Room 140

Lawrence Rees, BYU, Virtual Labs for an Independent Study E&M Course

A challenge for independent study physics courses is to make laboratory exercises that are at least somewhat realistic. In conjunction with the BYU Dept. of Independent Study, we have created a series of 12 virtual lab exercises for an introductory calculus-based E&M course. I will present some demonstrations of the labs and discuss how they will be implemented in the course.

David Allred, BYU, The Cost of a Photon

I show a demo which relates voltage need to for an LED to turn on with the color of the light. Physical Science 100 is a required GE class at BYU. We are always looking for good demonstrations to represent the principles taught. This is being developed for Chapter 21: "Metals, alloys, and semiconductor" to illustrate the idea of a band gap. I will show the effects with traffic light and UV flash light LEDs. I will relate what is seen back to quantum mechanics and the photoelectric effect.

Richard Hills, Weber State, Vibration of the Prepared Guitar String

The prepared guitar is one that has various objects placed on and between the strings altering the sound's timbre. Players have been experimenting and performing since the late 1960's. I'm considering only the case of a string with single small weight attached at the center. This talk relates to the demonstration I'll be doing at the share-athon.

Farhang Amiri, Weber State, Using Camtasia and pc tablets in creating lecture notes

Two years ago, during the summer meeting in Edmonton, Canada, I learned about the use of pc tablets in teaching. Since then, with the aide of the computer program "Camtasia", I have created short lecture notes that supplement some of the courses that I teach. In this talk, I present examples of the work that I have done, and I will explain how we can make these audio/video lectures to be more effective teaching tools.

10:30 - 10:45 am Break

10:45 - 12:00 pm Contributed Session II, Physical Science Room 140

Martin Hackworth, ISU, Peer Instruction and Peer Evaluation in Introductory Physics Courses

Over the past 10 years the majority of introductory physics courses offered at Idaho State University, including Introductory Astronomy, General and University Physics and all accompanying labs, have incorporated an effort driven, point based grading system along with a good deal of peer instruction and peer evaluation. The outcomes of this paradigm, some quite unanticipated, will be presented and discussed.

London Jenks, KSTF and BYU-I, Developing the IPIS and Future Use in the Physics High School Classroom

Presentation of the development and first results of the Introductory Physics Interactivity Survey (IPIS) by the Brigham Young University – Idaho (BYU-I) Research In Science Education (RISE) group. The IPIS was developed to provide a diagnostic tool for gauging the level of interactive engagement methods utilized in introductory physics courses and provides a more easily administered tool than others currently available. Methods of development and testing, along with influences will be discussed. Correlations between the IPIS and scores on the Force Concept Inventory (FCI), Epistemological Beliefs Assessment for Physics Science (EBAPS), and the Lawson test of scientific reasoning will also be presented. Further work and refining and possible applications will be discussed.

Ron Galli, Weber State, Atmospheric Pressure in a Partially Filled Inverted Glass of Water

A well-known demonstration of the force due to atmospheric pressure is to fill a container (drinking glass, for example) with water then place a flat lightweight plate (thin cardboard, for example) on top so as to trap the water when inverted. Atmospheric pressure can support the entire weight of the water so long as the plate is kept horizontal and no water leaks out or no air leaks in. Surprising experiments and calculations will be done to show that this can also work even when the glass is not completely filled and contains a significant quantity of trapped air at atmospheric pressure on top of the water.

Brad Carroll, Weber State, Physics with an Underwater Firecracker

What happens when an underwater firecracker explodes in a plastic tumbler filled with water? Is this related to what happens when you heat soup in a microwave? The (perhaps surprising) results of our (definitely illegal) experiments will be revealed in the video that accompanies this talk.

12:00 - 1:00 pm Working lunch: section business, elections, book raffle

1:00 - 1:50 pm Invited Talk: Dr. Doug Wells, ISU, "Physics at the Idaho Accelerator Center"

1:50 - 2:00 pm Break

2:00 - 3:15 pm Contributed Session II, Physical Science Room 140

John Sohl, Weber State, Community Based Learning in Upper Division Physics Courses

Community based learning typically has students working outside of the classroom doing public service. This type of activity is not uncommon in social science courses but is rare in the classic sciences such as physics. I will report on my experiences in requiring physics majors to do hands-on science activities in primary and secondary schools to address issues in the science core curriculum or with science fair. I have done this with three different courses and the success has been very good.

Carolyn Bunker, BYUI, Effects of wind direction and speed on turbulence and wind shear

Turbulence and wind shear are important effects of wind in general and can provide clues to the behavior of wind itself. By studying how terrain, direction and speed affect turbulence and wind shear it is possible to install wind turbines in particular areas to harness wind energy. Comparison of different locations with different terrain and elevation can help us to understand what types of areas are ideal for wind turbine siting. The data gathered from each location will show what ranges of turbulence and wind shear can be expected from similar locations in the future. Comparisons are made between elevation and direction to understand the variability of the Hellmann coefficient in the wind shear equation and what affects it. The issue of turbulence is discussed as well by focusing on the wind speeds from various directions to see a trend in wind behavior vs. direction.

Harold Stokes, BYU, Designing an independent study physics course

Our department was asked to design introductory physics courses for Independent Study at BYU. I volunteered to design one of them. Students throughout the world enroll in this course, and they work over the internet at their own pace. We will discuss the structure of the course and some of the internet tools we developed to deal with the problems encountered with distance learning.

Bryan Pyper, BYUI, The PER-friendly Classroom

Much of what PER researchers are discovering about how people learn physics has direct implications for how we teach. I'll show some fun and easy ways to bring notable results from Physics Education Research into your classroom.

Jaren Olsen, BYUI, What is the relationship between the force concept inventory and Lawson's classroom test of scientific reasoning?

3:15 pm adjourn

3:30 - 4:30 Optional Tour of the Idaho Accelerator Center