

SOUTHERN ATLANTIC COAST SECTION

AMERICAN ASSOCIATION OF PHYSICS TEACHERS (SACS-AAPT)

ANNUAL FALL MEETING

OCTOBER 12-13, 2001

Coastal Georgia Community College, Brunswick, GA

PROGRAM AbstractsF01_files

Friday, October 12, 2001

7:00 P.M.

Using WebAssign for grading physics homework, quizzes and tests

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WebAssign is an online homework, quizzing, and testing system that allows physics teachers to distribute, collect, grade and record assignments quickly and accurately over the Internet. WebAssign eliminates the drudgery of grading papers and recording scores, leaving more free time to meet with students and prepare class presentations. Instructors can offer homework more frequently to help students identify areas that they need help in. Students like the immediate feedback and the wide array of questions that can be presented. In this talk, I will review some of the special features of WebAssign that I regularly use in my introductory calculus-based physics class.

Saturday, October 13, 2001

9:00AM

14th International Young Physicists Tournament, Espoo Finland 2001

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The IYPT is, after the Olympiad, the most prestigious international physics competition for students. Through the prodigious efforts of their teacher, Don Franklin, assisted by his wife, the US sent a team from Battery Creek Highschool in Beaufort South Carolina, who challenged nineteen other national teams. The team members were Lanetta Sova, Herman Steiniger, Richard Parker and Christine Reed, captained by Jeremy Speaks. I went along as a juror, and also helped the team. I wish to thank the members of the Southern Atlantic Coast Section for their assistance. An important part of the tournament was the international interaction in getting to know the members of the other teams. The tournament began on Thursday May 24 and the US team was adjudged to have made an excellent presentation, although we did not get an award.

Next year the tournament will be in Odessa, in the Ukraine. The US would benefit by sending a team. How should this be done?

9:15 AM

The Use of EXCEL in teaching Calculus-based Physics Course

Kailash S. Chandra, Savannah State University, P.O. Box. 20207, Savannah, GA 31404
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Programs such as DERIVE, MathCAD, and MAPLE are usually used in Calculus-based Physics course for solving problems. I recently found it more practical to use EXCEL in solving a problem concerning projectile motion with air resistance. The advantage and limitations of the use of EXCEL in solving such problems is discussed.

9:30 AM

BACK TO THE BASICS

Donna J. Mullenax, Armstrong Atlantic State University, 11935 Abercorn St., Savannah, GA 31419-1997
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In the past two years, the astronomy courses at Armstrong Atlantic State University have been changed for a variety of reasons. The main reason has been to make sure the education majors are receiving the proper education in the basics of astronomy. This talk will discuss these changes and a survey I have been giving at the beginning and end of each semester for several semesters to learn what knowledge the students are coming into the courses with and what they have learned throughout the semester.

9:45 AM

USING GROUP MATH QUIZES IN INTRODUCTORY COLLEGE PHYSICS

Don Franklin, University of South Carolina- Beaufort and Salkehatchie, 811 Locust Street West, Hampton, SC 29924; 803-943-5674; dgfrank1@aol.com

Using a group quiz in my physics class allows me to teach what they need, not spend time on math skills they know, and forget to cover math skills they need for the tests. I first developed it as a way of improving attendance. Then I refined it to the concept of Just In Time Teaching. Now I can show where the formula comes from, who developed the concept, how the units are developed. Then when I give the students the quiz, they can work in their groups to determine the correct answer. Students who explain to someone how to get an answer, have a better idea of how they got the answer. If the class is stuck on a problem, then it is my turn to teach what is needed, not what I think they need!

10:00 AM

ˆThe Visible Computerˆ

Jessica Kennedy, Mercer University, Department of Physics, 1400 Coleman Ave., Macon, GA 31207

The ˆVisible Computerˆ project is a work in progress aimed towards stimulating student interest in physics. The primary goal of this project is to create a functioning computer demonstration that will expose students to the physics involved in the workings of the personal computer. Currently, the project is focusing on detailed demonstrations with such peripherals as the mouse and the keyboard. In the future, more demonstrations and explanations will be included, describing how other components (processor, drives, printer, etc.) function both as single units and as parts of a complete system. Visual and tangible demonstrations will be included in order to gain understanding by students of most learning types and levels. Ultimately, the ˆVisible Computerˆ will demonstrate that the physical concepts learned in class have real world applications and relevance in everyday life, thus, promoting further interest and knowledge.

10:15 AM

Spintronics

Matthew J. Marone, Mercer University, Department of Physics, Macon, GA 31207,
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Electronics is now based on the charge of carriers. The emerging science of spintronics is based on the spin. Many see spintronics as providing the next generation of electronic devices. Sound futuristic? If you own a hard disk made in the last five years, with a capacity of 1Gb or more, then you probably have a spintronic device.

Magnetostrictive (MR) heads are now standard equipment in hard drives. MR heads are spin sensitive devices and are sometimes known as spin valves. The operation of these devices will be discussed and demonstrated. This talk, is presented with the hope that physics teachers can motivate their students by revealing the physics of everyday life.

11:00 AM

Physics Lab with Flavor

Mikhail M. Agrest, Physics and Astronomy Department, College of Charleston,
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This work is dedicated to improving the effectiveness of the teaching-learning process. Objectives of the hands-on experience are discussed. An excited electron emits light. Eyes of an excited student shine when knowledge is acquired. Is there a more valuable reward for a teacher's efforts? Remember the old joke about science demonstrations: If the result of your experiment doesn't smell pleasant - it's Chemistry; if the subject is not alive - it's Biology; if it doesn't work, it's Physics. To make it work and to have students be able to predict the results is to guarantee success. This method was tested in Introductory Physics labs at the College of Charleston. The teaching-learning effectiveness has been increased and positive feedback was received from students and faculty at the College and at other universities. Learn how to bring flavor into any lab by making it a shoot for your grade type of lab. Cars, Vector Racing, and Other Activities for Teaching Kinematics

11:15 AM

Introductory Physics Curriculum as a Function of Classroom Design

J.B. Sharma, Gainesville College, Gainesville, Georgia 30504; 770 718 3812; jsharma@gc.peachnet.edu

Gainesville College has just acquired a new science building which is the culmination of a design process that began a few years ago. Science faculty attended the 'Project Kaleidoscope' workshops on both science facilities design and novel pedagogical approaches. The new physics flex classroom/laboratory is the result of this process. The flexible design of the facility allows for labs, lectures and activities in the same space. This has allowed for integrating the labs and lectures together allowing for a more frequent closing of the loop between theory and experiment than in a traditional course. Technology like 'smartboards', real-time sensors, classroom polling systems, and software like Interactive Physics, PAS, Videopoint, Webassign etc allow for greater interactivity and personalization of teaching/learning. The new format of the physics courses will be presented along with a virtual tour of the new facility.

11:30 AM

Cars, Vector Racing, and Other Activities for Teaching Kinematics

Joan Dutter, Walton High School, Marietta, GA 30062, (770)509-6125 x277, jdutter@att.net
Phyllis Boudreaux, Shannon Causby, and Chris Neill, Lassiter High School, Marietta, GA 30066
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Software, student activities, and teaching strategies will be discussed and demonstrated. These activities and strategies are perennial favorites of teachers. They continue to be interesting and useful to new groups of students.

11:45 AM

Vector Addition Made Easier for Students

Phyllis Boudreaux, Lassiter H.S./Southern Polytechnic State University,
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Chris Neill (Lassiter H.S.); Shannon Causby (Lassiter H.S.)
Joan Dutter (Walton H.S./Southern Polytechnic State University)

A handy apparatus for showing vector addition will be presented. Data gathered is then used to build a spreadsheet with Graphical Analysis software. Other ideas for teaching vectors will also be shown.

1:30 PM

PHYSICS FUN WITH MAGNETIC TOYS

Dr. Ray Turner, Clemson University, Department of Physics, Clemson, SC 29634-0978, traymon@clemson.edu

Teachers know that physics is fun. But perhaps we can also convince our students of this through the use of ordinary children's toys as physics demonstration devices. There are a variety of magnetic toys available that can be used to demonstrate the simplest magnetic forces as well as more sophisticated applications of Maxwell's Equations. Some old toys and some new ones will be shown including a Giant Horseshoe Magnet, a Magna-Trix floating

magnet, a Rainbow Spinning Wheel, Robby the Circus Seal, a Snake and Top, a Revolution, a Magna Swing, a Levitron, and several Kinetic Toys. Physics can be fun with toys.

1:45 PM

Transient Behavior of Simple RC Circuits

Dr. Norris Preyer, College of Charleston, Dept. of Physics and Astronomy, Charleston, SC 29424
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I report on simulations of the time-evolution of surface charges and the retarded electric potential and electric field in a simple resistor-capacitor (RC) circuit and in an RC circuit with a switch. These simulations illustrate effects due to propagation delays in circuits and should be useful in teaching students how circuits respond to changes.

2:00 PM

Summer PTRA Workshop for High School Physics Teachers

Teresa Burns, Coastal Carolina University, PO Box 261954, Conway, SC 29528-6054, (843) 349 2225
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The Physics department at Coastal Carolina University played host this summer to 26 high school teachers for the first AAPT/PTRA Summer Workshop. This weeklong workshop was sponsored by the PTRA Rural Initiative, an effort to bring the resources of the PTRA to rural school districts. The high school teachers came from the Pee Dee and Low Country, and spent a week in residence at CCU learning about Kinematics, Radioactivity, and Physics Demos. This talk will outline the programs that supported the workshop, and discuss the details of the workshop, including participant reaction.

2:15 PM

Fictitious Forces and Circular Motion: A Simple Demonstration

Roy C. Wood, Armstrong Atlantic State University, 11935 Abercorn St., Savannah, GA 31419-1997
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A skill that students must master in studying physics is the ability to identify forces acting on an object. Students have a particularly difficult time identifying forces involved in circular motion. They typically include forces that are not there (e.g., centrifugal force). This talk will present a simple demonstration to help students identify the forces involved in circular motion, and the effects of these forces.