

SOS/AAPT Spring Meeting 2006

On Saturday, 8 April, 2006, the Ohio College of Applied Sciences (University of Cincinnati), Cincinnati, OH, hosted the Spring 2006 Meeting of the American Association of Physics Teachers -- Southern Ohio Section. Many thanks go to Lee Widmer, Ken Metz, and Jim Sullivan for organizing and conducting this meeting, especially since they only found out they were hosting the meeting in February of this year. Twenty-two physics teachers, professors, researchers, and the President of AAPT enjoyed a day of contributed presentations on various topics in physics teaching followed by three invited lectures. The section is very grateful to AAPT for supporting Ken Heller's visit to our meeting.

The meeting began with a time for socializing over continental breakfast. This was followed by an hour of contributed papers. The titles and brief descriptions of the papers are:

The Mathematics-Physics Learning Center – a Supportive Service for Mathematics and Physics Students,
Sandy Franz, University of Cincinnati

To meet a need for academic support in the fields of physics and mathematics for increased collegiate success and to increase retention, the Mathematics-Physics Learning Center was developed by the College of Applied Science at the University of Cincinnati as a tutoring and academic support center. The programs, physical setup, personnel staffing, "soft" support and student usage are all factors that affect the success of the Mathematics-Physics Learning Center. A detailed description of the learning center followed.

An important aspect of the Center is that Physics and Mathematics professors help staff the center as volunteer tutors. In addition, upper-level students work as paid tutors at the Center, representing all technical disciplines offered at the college. Many physical and "soft" support services contribute to the success of the program. These include computers with internet access, printers, calculators for student usage, and DVDs with tutorials. Tutorial software, reference textbooks, course textbooks, and course specific review packets, along with practice exams for departmental courses, are also available for student use. The director's office is located in the Learning Center to ensure a consistent presence for the students.

The Mathematics-Physics Learning Center is a positive contribution to the success of math and physics students. The programs offered, the dedication of the Learning Center staff, and the physical setup are all factors that have created an academic support system in Mathematics and Physics that contributes to the success of students at the College of Applied Science.

Promoting Useful Interdisciplinary Faculty Problem-solving Discussion
Kathleen A. Harper, John T. Demel, Richard J. Freuler, The Ohio State University

Faculty teaching Physics, Mathematics, and Engineering Courses as part of the Fundamental of Engineering for Honors (FEH) Program at The Ohio State University meet on a weekly basis to discuss ways in which they might better coordinate their classes. Recently we began an effort to coordinate ways in which problems and problem-solving are discussed in FEH courses, with the hope of making students more effective at approaching and solving problems. A first step was faculty interviews, which revealed differences in the ways individual instructors describe problems and problem-solving. We describe these differences, as well as some steps we have taken to develop a common language for future interdisciplinary faculty discussions.

A Pre-/Post-Course Test in First-Term Physics
James F. Sullivan, University of Cincinnati

The College of Applied Science of the University of Cincinnati primarily offers accelerated degrees in engineering technologies. Most of these programs are accredited by the Accreditation Board for Engineering and Technology (ABET). The first year Physics for Technology courses serve as service courses for these majors and therefore must participate in the accreditation process. ABET has recently changed its processes to emphasize assessment and the author is presently developing a short pre-/post-course test to aid in the assessment process. The test for the first term (of our three-term sequence) will be shared along with results of pilot testing that is being done during the 2005-2006 academic year in anticipation of the accreditation visit in the autumn of 2006.

Using LabVIEW to Connect Physics with Engineering
Fred Thomas, Math Machines, Ltd

The goal of Physics is understanding, while the goal of engineering and technology is action. Action-oriented Physics tasks can help students to learn more Physics and to transfer that Physics into likely career activities. The presenter will demonstrate classroom tasks in which students use *LabView* computer software to control acceleration, to perform specified quantities of work, and to apply wave functions in mixing colors.

The first invited talk was given by Dr. Ken Heller, Professor of Physics, University of Minnesota, and President of AAPT. Ken's talk was titled *What Do They Want Their Students to Learn in Introductory Physics*. Ken described an ongoing effort by members of the physics department at UMN to find out more about what various disciplines and target audiences of the physics service courses are looking for in the physics courses. These disciplines include engineering and biology, for example. The members of the task force developed a survey that asked what topics should be emphasized in addition to what skills should be developed through the physics courses. This effort has been ongoing for over twenty years at UMN and has resulted in some changes in the physics curricula. More information can be obtained at the web site www.physics.umn.edu/research/education.html.

After a break for lunch, the second invited talk was presented by Dr. Heidrun Schmitzer, Xavier University, Cincinnati, OH. Her title was *Opto-Mechanical Micro Machines And The Angular Momentum of Light*.

At the beginning of the last century John Poynting realized that light has a spin angular momentum which is associated with circular polarization. And approximately 10 years ago it was proposed that light can also carry an orbital angular momentum independent of its polarization state. Since then (angular) momentum transfer from light to particles is investigated as a means to drive the rotation of small micrometer sized objects. I will present my own studies on this interesting subject and discuss some possible applications in Physics and Biology.

The third invited talk was given by Dr. Mark Fischer, College of Mount St. Joseph, Cincinnati, OH. His title was *VideoPoint Motion Analysis*.

VideoPoint is a software package that allows the detailed analysis of digital video clips to explore the physics underlying all motion. The software will be introduced with a brief walkthrough. Typical applications will be discussed including specially shot, single-concept clips, analysis of clips from Hollywood movies, and student-directed homemade movies.

At the end of the meeting, section President Elizabeth George conducted the election of new officers. The results are

President elect:	Stephen Yerian, Xavier University
Secretary:	Fred Reuter, St. Xavier High School
Treasurer:	Gordon Aubrecht, The Ohio State University
Vice president for 2 year Colleges:	Darwin Church, Clermont College
Dialog Editors:	Elizabeth George and Paul Voytas, Wittenberg University
Member at Large:	William Kuhlman, St. Xavier High School

Terms of these officers began that afternoon and will end following the next election at the Spring, 2007 meeting.

Several announcements of interest to members present and not present and to other interested physics teachers include

- 1.) Fall 2006 meeting will be with the Appalachian Section on November 3-4 at the University of West Virginia, Morgantown, WV.
- 2.) Fall 2006 meeting of Ohio Section/ APS will be at the University of Akron, Wayne College, on October 13-14.
- 3.) New web page for the Southern Ohio Section is at SOSAAPT.ORG. Members are asked to send input to secretary@sosaapt.org.
- 4.) Tri-State Physics Teachers Meeting will be at Summit Country Day School in Cincinnati in the Fall of 2006.

Thanks were expressed by Elizabeth George on behalf of SOS/ AAPT to the Ohio College of Applied Science for hosting this excellent meeting. Elizabeth then passed the torch to the incoming president Frank Huss and the meeting was adjourned.

Respectfully submitted,
Stephen Yerian
Section Representative