**Fall 2007 Meeting Summary**

This fall, MIAAPT teamed with NSTA to present a Strand Day at the NSTA meeting in Detroit.

The day was organized through the tireless efforts of Al Gibson (Adams HS, ret.). Several MIAAPT members contributed to the day. Brad Ambrose (GVSU) and Charles Henderson (WMU) presented on “How Can Physics Education Research Help Me Teach More Effectively?” In the early afternoon, Ernie Behringer (EMU) presented a workshop for teachers on energy titled “Energy Use in the 21st Century: Bringing It Home.”

During the afternoon session, MIAAPT put on a Demonstration Show as its members gave several interesting presentations: Warren Smith (U of M) demonstrated a “hoot tube”; Kevin Dehne (Delta College) gave a lively demonstration of how to “Make a Comet” in the classroom; Dave Cinabro (Wayne St.) discussed cosmology on a table top; and Walt Kauppila (Wayne St.) finished the show with the impressive “Fire Tornado.” The MIAAPT website has links to instructions from some of the presentations.

The day concluded with a Make and Take organized with Beth Kubitskey (U of M and DMAPT). Both the demo show and the Make and Take were extremely well attended with almost 100 physics teachers.

In addition, there was a presentation by Lindsay Brooke (SAE International) discussing hybrids, hydrogen, and diesel engines.
“...just when students are beginning to gain a conceptual foothold on...basic kinematic concepts, instructors all too often abandon graphs in favor of a traditional approach...”

-Scott Schultz

Graph of velocity versus time for the example described by Scott Schultz.

**Spring ’07 Meeting Feature: Scott Schultz**

Of all the teaching strategies that physics education research has promoted over the years, one of the most highly adopted has been the use of microcomputer-based labs (MBL). MBL has captured the hearts of physics instructors, and the motion detector (sonic ranger) is the probe most widely used.

As at other institutions, my students perform experiments and examine real-time graphs of position, velocity, and acceleration versus time. Through a series of conversations with their peers and a set of probing questions, students develop a working framework for the concepts of position, velocity, and acceleration and the relationships between them. However, just when students are beginning to gain a conceptual foothold on these basic kinematics concepts, instructors all too often abandon the graphs in favor of a traditional approach to solving problems involving constant acceleration.

Consider the following example. To earn extra cash, or maybe brownie points, you agree to baby-sit my kids. PJ can run at a speed of 1.80 m/s, while you can run at 2.50 m/s. PJ runs by you and is headed straight for a busy road. Despite your pleas for him to stop, he keeps running. If PJ has a 16.0 second head start, how long will it take you to catch him and how far will you need to run?

This problem can be solved using either a position versus time graph or a velocity versus time graph. By the end of the MBL experiment using the sonic ranger we would expect our students to be able to draw either graph. The velocity versus time graph is shown on the left side of this page.

The distance traveled is the area under the curve. The area of PJ’s graph is a simple rectangle of area 1.8t. The babysitter’s graph is a rectangle of height 2.5 and length (t-16), giving an area of 2.5(t-16). Setting the two areas equal, 1.8t=2.5(t-16), and solving for t yields t=57.1 sec. Using this time, the area of either rectangle can be calculated as 103 m. Since the babysitter didn’t run the first 16 seconds, we subtract off 16 to find the time the babysitter ran is 41.1 sec.

The best way to understand the usefulness of this approach is to try it in class and see how the students respond.

**Distinguished Service Award: Mandy Frantti**

Mandy Frantti has taught at Munising High School, in the upper peninsula of Michigan, since 1993. In 2001, she received the Presidential Award for Excellence in Science Teaching from President Bush. She is a NASA Astrophysics Educator Ambassador. Because of her exemplary involvement in physics education in Michigan, Mandy was presented the 2007 MIAAPT Distinguished Service to Physics Education Award at the Spring Meeting that was held at Grand Rapids Community College on March 17.

The MIAAPT gratefully acknowledges Arbor Scientific for its sponsorship of the Distinguished Service Award.
We Hear That...

Mike LoPresto of Henry Ford Community College published “A First Glimpse of Student Attitudes About Pluto’s ‘Demotion’” in the Astronomy Education Review.

Charles Henderson of Western Michigan University received a National Science Foundation Grant with 3 colleagues for a proposal entitled “Facilitating Change in Higher Education: A Multidisciplinary Effort to Bridge the Individual Actor and System Perspectives”, which will result in a national conference in SW Michigan in Summer 2008. Charles also published “Framework for Articulating Instructional Practices and Conceptions” in Physical Review Special Topics: Physics Education.

Delta College will be hosting the “New Faculty Training Conference for Two-Year College Physics Faculty” from March 6-8. Scott Schultz is the local host of this first-time conference sponsored by the ATE Program for Physics Faculty (a National Science Foundation sponsored program), Delta College, Lee College, Estrella Mountain Community College, and the American Association of Physics Teachers.

Community Service

MIAAPT Past President Kathy Mirakovits, and MIAAPT Second V.P. Drew Isola assisted, in the development of the Physics HSSCE Companion Document that is being distributed statewide to high schools by MDE to provide clarification to teachers of physics on implementing the new MI physics content standards.

MIAAPT members delivered a PTRA Summer Institute for Teachers in Rural Schools from June 21 - 25 at Saginaw Valley State University (SVSU). Keith Forton (Traverse City HS) and Al Gibson (Adams Rochester HS, ret.), who are PTRA agents, worked with Al Menard and Walter Rathkamp of SVSU to provide an intensive workshop.

Several MIAAPT members participated as judges or event supervisors for regional science fairs or Science Olympiad Tournaments during the Spring of 2007.

Resources for Teachers

Are you starting out as a physics teacher? If so, consider becoming a member of the MIAAPT by attending one of our meetings. The next meeting will be Saturday, April 12th at Western Michigan University. For more information, see http://www.miaapt.org!

For New Physics Teachers:

*Used Math*, by Clifford E. Swartz (AAPT).


For the New Teacher, column in The Physics Teacher edited by Patricia Blanton.

compadre.org/portal/index.cfm, Digital Resources for Physics and Astronomy Education. Contains information for K-12 and college faculty.

psrc.aapt.org, the Physical Science Resource Center website of the AAPT. Contains ideas for lessons, assessment, and more.

www.physicscentral.com, the Physics Central website. Contains up-to-date physics-related news, stories of general interest, and an excellent collection of web links.

Spring 2007 Meeting Summary

We had a great Spring Meeting at Grand Rapids Community College. The 2007 MIAAPT Spring Meeting was held on March 14 at Grand Rapids Community College (GRCC). The MIAAPT thanks Jared Johnson and the other members of the GRCC community that made the local room and food arrangements. Thank you!

The final program of the meeting is available at, www.miaapt.org. The Spring Meeting consisted of eight contributed talks, an invited talk entitled “What is Entropy” by AAPT President Harvey Leff (Cal Poly Pomona), a crackerbarrel discussion of AAPT also with Harvey Leff, two workshops by Mandy Frantti (Munising HS and NASA Astrophysics Educator Ambassador), and a workshop by Brad Ambrose (GVSU).

At the Business Meeting, Drew Isola, the Teacher-in-Residence at Western Michigan U, was elected Second Vice-President. Congratulations, Drew!

Ernie Behringer (EMU) as the Chair of the Committee on Physics in Undergraduate Education
Mandy Frantti and Mike LoPresto as members of the Committee on Space Science and Astronomy
Michael Faleski as the Academic Coordinator for the PhysicsBowl.

Serving AAPT...

In 2007-2008, several MIAAPT members are serving the AAPT:

Al Gibson (Adams HS, ret.) as the Chair of the Section Representatives on the AAPT Executive Board
Charles Henderson (WMU) as the Chair of the Committee on Research in Physics Education

Ernie Behringer (EMU) as the Chair of the Committee on Physics in Undergraduate Education
Mandy Frantti and Mike LoPresto as members of the Committee on Space Science and Astronomy
Michael Faleski as the Academic Coordinator for the PhysicsBowl.