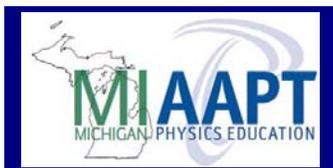


Michigan Section of the American Association of Physics Teachers

Winter 2008
Volume 3, Number 1

<http://www.miaapt.org>

Michael C. Faleski
2007-2008 President



Join us for the Spring MIAAPT meeting at Western Michigan University, Rood Hall on Saturday, April 12!

Spring 2008 Meeting

Contents

Spring 2008 Meeting	1
Fall '07 Meeting Summary	1
Spring Meeting Feature	2
MIAAPT Awards	2
We Hear That...	3
Community Service	3
Resources for Teachers	3
Spring '07 Meeting Summary	4
Serving AAPT...	4

April 12, 2008

The Spring Meeting of MIAAPT will take place on April 12, 2008 at

Western Michigan University's Rood Hall.

We are happy to announce that string theorist Jim Gates (U. of Maryland) is the Keynote Speaker! He has been featured on the PBS NOVA series *The Elegant Universe: Viewpoints on String Theory*.

This meeting should be very exciting for teachers of physics at all levels. We have a special astronomy strand organized by Mike LoPresto (Henry Ford CC) including 3 mini-workshops.

Drew Isola (MIAAPT 2nd V.P.) and Kathy Mirakovits (MIAAPT Past-Pres.) will lead a workshop for high school physics teachers to develop resources for the new MDE content expectations!

Additionally, we will have our usual invited talks, a poster session, and the opportunity to tour the WMU tandem Van de Graaff accelerator.

There will also be door prizes and a contest (for another door prize).

The meeting fee is \$10, lunch is ~\$7.50, and the festivities begin at 8:30 AM. We hope to see you there!

Go to the MIAAPT website (www.miaapt.org) for full meeting details.

Fall 2007 Meeting Summary

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

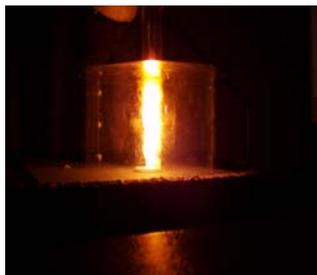
The day was organized through the tireless efforts of Al Gibson (Adams HS, ret.). Several MIAAPT members contributed to the day. Brad Ambrose (GVSU) and Charles Henderson (WMU) presented on "How Can Physics Education Research Help Me Teach More Effectively?" In the early afternoon, Ernie Behringer (EMU) 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.

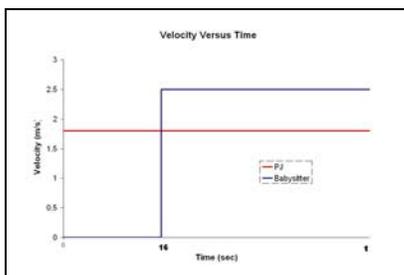
In addition, there was a presentation by Lindsay Brooke (SAE International) discussing hybrids, hydrogen, and diesel engines.



The Fire Tornado photos by Matt Ludwig (West. Mich. U.)

"...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.



Scott Schultz (Delta College)



Mandy Frantti with her MIAAPT Distinguished Service Award.

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.

Through my participation in an ISLE workshop session led by Dwain Desbien, I now use graphs for solving problems. I find that graphs not only are useful for students to gain a more visual understanding of kinematics, but also are useful for solving the same one-dimensional problems traditionally. Many times the solutions using graphs are more straightforward and understandable than using the equations. This method also makes a connection between the HW and the lab, reinforcing the importance of the activity.

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.

Scott Schultz of Delta College, which is located in University Center, Michigan, is a long-time MIAAPT member and contributor at its meetings.

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 Instruction-

al 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



Steve Dickie (Divine Child H.S.), Don Pata, and Amanda Pata (Grosse Pointe North H.S.) prepare for the Make and Take at the Physics Strand Day. Photo by Al Gibson

Community Service

MIAAPT Past President Kathy Mirakovits led, 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.



Kevin Dehne (Delta College) "Making a Comet" during the Physics Strand Day in Detroit, Oct. 18, 2007. Photo from NSTA website.

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).

Teaching Introductory Physics, by Arnold B. Arons (Wiley).

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.

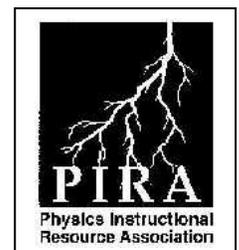
psrc.aapt.org, the Physical Science Resource Center website of the AAPT. Contains ideas for lessons, assessment, and more.

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.

www.physics.ncsu.edu/pira/, the Physics Instructional Resource Association web index of physics demonstrations.



Physical Sciences Resource Center





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The American Association of
Physics Teachers

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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!

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.

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Special Thanks to
Ernie Behringer
Eastern Michigan University



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