



## Meeting Announcement and Program Schedule

### 2010 Fall Meeting October 1 & 2, 2010 University of Michigan Dearborn

#### Meeting Update

We regret to announce that **David Sokoloff** (University of Oregon), President-Elect of AAPT, has canceled his plans to join us as workshop presenter and featured speaker for the Fall 2010 meeting. He regretfully needed to change his plans due to a family medical emergency.

#### Meeting Overview

Location: Most sessions and workshops will take place in the Science Learning & Research Center (SLRC) and Computing Wing (CW) of the Science Building on the UM-Dearborn campus. (Exceptions include the UM-Dearborn observatory and Henry Ford Community College.)

For campus maps and directions to the campus, visit the UM-Dearborn website at:  
[http://www.umd.umich.edu/maps\\_directions/](http://www.umd.umich.edu/maps_directions/).

Parking: Friday and Saturday: Parking is free for visitors in the Monteith Parking Structure (MPS) located ~100 yards north of SLRC. (See campus map on last page of this program.)

Saturday only: Parking is free in lot A, directly adjacent to SLRC on the southwest side.

Sat. lunch: Box lunches (Jimmy John's) can be purchased for \$9.00 at the time of registration (Sat. morning). They will be delivered to the atrium of SLRC for the lunch hour.

Alternatively, conferees may purchase lunch in the food court of Fairlane Mall, which is located within walking distance across Evergreen Road from the UM-Dearborn campus.

Hotels: For those who wish to stay overnight for the meeting, some nearby hotels (within a 5-minute drive from campus) include the following:

Hyatt-Dearborn: (313) 593-1234, <http://dearborn.hyatt.com/hyatt/hotels/index.jsp>

Dearborn Bed & Breakfast: (313) 563-2200, <http://dearbornbb.com/>

Dearborn West Village Inn (formerly Hampton Inn): (313) 436-9600, 20061 Michigan Ave., Dearborn, MI 48124.

## Friday, Oct. 1: Workshops

### **6:00 – 8:00 pm Astronomy Hands-On Activities**

2238 Computer Wing (CW)

Kevin Dehne, Delta College ([ktdehne@delta.edu](mailto:ktdehne@delta.edu))

Note: Max 24 participants. Please pre-register by e-mailing Kevin on or before Sept. 27.

Registration fee: \$7.00

Many hands on activities relating to astronomical concept will be presented. These activities include: moon phases, solar viewing, eclipses, star & constellations finder, and reading star maps. A more detailed look at observing the movement of the sun with the Solar Motion Demonstrator will be explored. Participants will learn how to map the geocentric position of the planets on a star map to study planetary motion over a period of months relative to the background stars. Participants will also map the heliocentric position of the planets over a period of several months to study how the planets move relative to each other in the solar system. Most of these activities can be used for middle school, high school, and college level science classes. Activity work sheet handouts as well as star maps, Solar Motion Demonstrator, and solar viewer will be provided.

### **8:30 pm Observation Session at the University of Michigan-Dearborn Observatory**

Carrie Swift and Eric Rasmussen, University of Michigan-Dearborn

No pre-registration required. *Rain date: Sat., Oct. 2, 8:30 pm.*

## Saturday, October 2: Main Program

### **8:00 – 8:30 am Registration/Morning refreshments**

Atrium, Science Learning and Research Center (SLRC)

Meeting fee: \$10.00

Box lunch (must be ordered at time of registration): \$8.00

### **8:30 – 8:45 am Call to order and opening remarks**

SLRC Room 1010

Michael Faleski, Delta College – MIAAPT President

### **8:45 – 10:30 am Contributed Presentations I**

Room 1010, Science Learning and Research Center (SLRC)

8:45 – 9:00 The Past is Everywhere: Teaching Geology on an Urban Campus

Brian Kirchner, Henry Ford Community College ([bkirchner@hfcc.edu](mailto:bkirchner@hfcc.edu))

9:00 – 9:15 Building an Astronomy Public-Outreach Program With Very Little Time, Some Money and Lots of Energy

Michael LoPresto, Henry Ford Community College

Steve Murrell and Brian Kirchner, Henry Ford Community College

Don Bord, Carrie Swift, Eric Rasmussen, University of Michigan-Dearborn

9:15 – 9:30 Spectromicroscopy of Mundrabilla Meteorite

Chandler Benjamin, Saginaw Valley State University ([ccbenjam@svsu.edu](mailto:cabenjam@svsu.edu))

9:30 – 9:45 Video Analysis of Motion and Model Creation with Tracker

Steve Dickie, Divine Child High School ([falconphysics@gmail.com](mailto:falconphysics@gmail.com))

9:45 – 10:00 Understanding de Broglie Waves through Special Relativity  
Robert Hipple, Lansing Community College (*hippler@lcc.edu*)

10:00–10:15 A “Simple” Circuit with Capacitors  
Michael Faleski, Delta College (*michaelfaleski@delta.edu*)

10:15–10:30 “*My Favorite Demonstrations*” and *Physics Puzzlers* (5 min each)

- Extraordinary Discharge of an Ordinary Rubber Band  
Mark Olson, Oakland University (*olson2@oakland.edu*)
- ...any others?...

**10:30 – 10:45 Break**

**10:45 – 11:45 Contributed Presentations II**  
Room 1010, Science Learning and Research Center (SLRC)

10:45–11:00 Invention as a Pedagogic Strategy  
Jeff Whittaker, DCMST Dearborn Public Schools (*jbwhittaker@hfcc.edu*)

11:00–11:15 Modeling Method in Physics in the High School Classroom  
Laura Ritter, Troy High School (*lritter77@gmail.com*)  
Don Pata, Grosse Pointe North High School

11:15–11:30 Variables that Correlate with Faculty Use of Research-Based Instructional Strategies  
Charles Henderson, Western Michigan University  
Melissa Dancy, Johnson C. Smith University  
Magdalena Niewiadomska-Bugaj and Chandra Turpen, Western Michigan Univ.

11:30–11:45 Challenges in Evidence-Based Reasoning: The Case of Ordinary Magnets  
Mark Olson, Oakland University (*olson2@oakland.edu*)

**12:00 – 1:00 pm Lunch**

**1:00 – 2:00 pm MIAAPT Business Meeting**  
Room 1010, Science Learning and Research Center (SLRC)  
Michael Faleski, Delta College – MIAAPT President

## **Saturday, Oct. 2: Workshops**

**2:00 – 4:00 pm Workshop/Tour of UMD/HFCC Astronomy Public Outreach Facilities**  
University of Michigan-Dearborn Observatory  
Michael LoPresto, Steve Murrell, Brian Kirchner, Henry Ford Community College  
Don Bord, Carrie Swift, Eric Rasmussen, University of Michigan-Dearborn

Participants will meet at the UM-D Observatory for a tour of the facilities and then be guided on a short walk to HFCC to see the planetarium and a show and then receive a guided tour through the HFCC –Solar System Scale Model. Various aspects of the outreach program will be discussed during the tours.

**2:00 – 4:00 pm    The Henry Ford: OnInnovation and the Physics of Auto Racing**

2238 Computer Wing (CW)

Mary Wyatt, Associate Curator of Education, The Henry Ford ([marywy@thehenryford.org](mailto:marywy@thehenryford.org))

*Part One:* Join Physics Teacher/Consultant Jim Crosby in exploring Racing in America “digikits,” new online, classroom-ready units from The Henry Ford. Aimed at elementary, middle, and high schools, these digital kits use science, technology, and engineering of race cars to engage students *and* teachers!

*Part Two:* Explore the new OnInnovation website. Get up close and personal with Apple Computer co-founder Steve Wozniak, race car driver Lyn St. James, entrepreneur Elon Musk, and a dozen other visionaries, thinking out loud.

**8:30 pm**

**Observation Session at the University of Michigan-Dearborn Observatory**

Carrie Swift and Eric Rasmussen, University of Michigan-Dearborn

*(Note: This observation will run, weather permitting, only if the Friday, Oct. 1 session is rained out.)*

**Abstracts for contributed oral presentations**

**8:45 – 9:00    The Past is Everywhere: Teaching Geology on an Urban Campus**

Brian Kirchner, Henry Ford Community College ([bkirchner@hfcc.edu](mailto:bkirchner@hfcc.edu))

The best way to teach geology is to have students go into the field and look at real-life examples. At first glance, this would seem to be difficult, if not impossible, on an urban campus. But the Detroit metro area is rich with traces of Michigan’s geologic past, particularly the (geologically) recent presence of large glaciers. This presentation discusses several local sites that illustrate Michigan geology and are interesting, safe, and easily accessible.

**9:00 – 9:15    Building an Astronomy Public-Outreach Program With Very Little Time, Some Money and Lots of Energy**

Michael LoPresto, Henry Ford Community College

Steve Murrell and Brian Kirchner, Henry Ford Community College

Don Bord, Carrie Swift, Eric Rasmussen, University of Michigan-Dearborn

Henry Ford Community College and the University of Michigan-Dearborn are partners in a thriving astronomy public-outreach program that includes planetarium shows, telescopic observing sessions and a walk through a scale model of the solar system for both field trip groups and the general public. The program was not built in a single step or by any individual, but rather gradually, in phases over a number of years, through the time and efforts of many individuals. The initiative involved not only employees of the two institutions but also the efforts of enthusiastic volunteers from the community, without whom much of the program would not be sustainable. The talk will outline a description of the development of the program to its current state that may perhaps serve as a model for other institutions with similar challenges and constraints that wish to begin or expand to an astronomy public-outreach program.

**9:15 – 9:30    Spectromicroscopy of Mundrabilla Meteorite**

Chandler Benjamin, Saginaw Valley State University ([ccbenjam@svsu.edu](mailto:cabenjam@svsu.edu))

For the first time X-ray Photoemission Electron Microscopy (X-PEEM) is used to analyze the L2 and L3 edges for Iron, Nickel, Chromium, Phosphorus, Sulfur and Gallium and the K-edge for O. The progression of the oxidation of Iron was mapped in the sub-micro level. The presence of Iron, Nickel and Chromium was detected. Phosphorus, Sulfur and Gallium were not present in sufficient enough quantities to be detected with X-PEEM.

**9:30 – 9:45    Video Analysis of Motion and Model Creation with Tracker**

Steve Dickie, Divine Child High School ([falconphysics@gmail.com](mailto:falconphysics@gmail.com))

Tracker is a free video analysis program that runs in Java, so will work in multiple operating systems. It has some cool features that are not present in LoggerPro, the most common student used software used for video analysis. Among

these features includes the ability to dynamically calculate and track an object's center of mass and the ability to create mathematical models of motion that can be superimposed on the video as it plays. Tracker can be downloaded from: <http://www.cabrillo.edu/~dbrown/tracker/>.

9:45 – 10:00 Understanding de Broglie Waves through Special Relativity  
Robert Hipple, Lansing Community College ([hippler@lcc.edu](mailto:hippler@lcc.edu))

Historically, Louis de Broglie explained the phenomena of matter waves in terms of Special Relativity. His intuitive explanation is no longer emphasized in the typical introduction to quantum mechanics. We demonstrate how such an approach introduces the concepts of phase velocity, group velocity, and relativistic simultaneity in a satisfying and logical manner.

10:00–10:15 A “Simple” Circuit with Capacitors  
Michael Faleski, Delta College ([michaelfaleski@delta.edu](mailto:michaelfaleski@delta.edu))

Circuits consisting of only a few capacitors or a few resistors are presented in most physics courses and represent the most basic electrical circuits. Sometimes, these “simple” circuits produce “surprising” results, even to the experts. This presentation will discuss the physics of one such “simple” circuit and the confusion it can produce in both students and faculty.

10:15–10:20 Extraordinary Discharge of an Ordinary Rubber Band  
Mark Olson, Oakland University ([olson2@oakland.edu](mailto:olson2@oakland.edu))

A technique for shooting rubber bands will be demonstrated that accomplishes dramatically increased velocity, accuracy, and distance over more conventional methods. Instructional applications will be briefly discussed.

10:45–11:00 Invention as a Pedagogic Strategy  
Jeff Whittaker, DCMST Dearborn Public Schools ([jbwhittaker@hfcc.edu](mailto:jbwhittaker@hfcc.edu))

Classroom benefits of school-business partnerships will be explored via the educational philosophy known as technogenesis. Examples from Jeff Whittaker's physics teaching practice will be highlighted.

11:00–11:15 Modeling Method in Physics in the High School Classroom  
Laura Ritter, Troy High School ([lritter77@gmail.com](mailto:lritter77@gmail.com))  
Don Pata, Grosse Pointe North High School

Don Pata and Laura Ritter will share their experiences with the Modeling Method of physics instruction. This summer they held a Modeling workshop in the metro-Detroit area. The presentation will include highlights from this summer's workshop as well as future plans for physics professional development in Michigan.

11:15– 1:30 Variables that Correlate with Faculty Use of Research-Based Instructional Strategies  
Charles Henderson, Western Michigan University  
Melissa Dancy, Johnson C. Smith University  
Magdalena Niewiadomska-Bugaj and Chandra Turpen, Western Michigan Univ.

During the Fall of 2008 a web survey was used to collect information about pedagogical knowledge and practices from a representative sample of 722 U.S. physics faculty. This talk examines how 20 predictor variables correlate with faculty knowledge about and use of research-based instructional strategies (RBIS). Profiles were developed for each of four faculty levels of knowledge about and use of RBIS. Logistic regression analysis was used to identify five significant predictor variables. High research productivity and large class sizes were not found to be barriers to use of at least some RBIS. (Supported by NSF #0715698.)

11:30–11:45 Challenges in Evidence-Based Reasoning: The Case of Ordinary Magnets  
Mark Olson, Oakland University ([olson2@oakland.edu](mailto:olson2@oakland.edu))

Mapping the field lines of an ordinary bar magnet is a typical investigation in high school physics and physical science classes. Such “hands-on” work is aimed at providing physical evidence for the existence of magnetic fields and provides opportunities for students to explain their data. The question is: Does it work? This presentation will illustrate some of the dangers of trying to explain ordinary magnets and the new opportunities for learning ordinary magnets might provide.