

NJAAPT NEWSLETTER – WINTER 2005-06

PRESIDENT'S MESSAGE

From the entire executive board of the NJAAPT, best wishes for a Happy and successful 2006. Our calendar is once again filled with opportunities for the membership to explore new methods of teaching physics. We have workshops and meetings schedules for each month of the year and, in some cases, more than one.

We have completed a very ambitious last half of 2005 with our presence at the New Jersey Science Convention (See the article), presenting workshops at Great Adventure, Anchor Scientific, and Monmouth Regional High School. Those attending the Holiday Treats were really in for a surprise with the materials taken home and the door prizes were fantastic (See article). Try planning on being there next year – it is well worth the investment of your time.

Now, as we enter 2006 we look forward to the Physics Olympics, Dave's Dazzling Demos, and our sectional meeting. A word on the sectional – this year is the 300th anniversary of the birth of Benjamin Franklin. To honor this event, we have a special program set for March 17-18 at Princeton University. The time and effort that goes into the planning of this meeting by the executive board is tremendous and we certainly hope that as many of you will take advantage of the opportunity to celebrate this occasion with the members of the NJAAPT. As another note regarding the meeting, it is also the 75th anniversary of the founding of the AAPT and this will give us a double reason to celebrate. Come and enjoy the meeting, it will have something for everyone.

Ray Polomski

AAPT Summer Meeting is Coming to Syracuse

Here's a chance that occurs once in maybe a decade. The AAPT Summer Meeting is scheduled for Syracuse University July 22 – 26, 2006. This is an opportunity that you should think seriously about since the location is well within driving distance of anywhere in NJ. It also will mark the celebration of the 75th anniversary of the founding of the AAPT. There are programs of interest to every level of physics teaching and the days are packed with activities. If you want to attend workshops, whether half or full day, then the weekend of July 22-23 is a must. The workshops are fantastic and provide you with so much information at a very reasonable cost.

Amusement Park Physics Workshop

October 22, 2005

The rain and wind did not deter the adventurous group of thirteen teachers and eight Rutgers students attending the workshop on amusement park physics. Led by Ray Polomski, Jessie Blair, and John Valente, the participants were given an introduction to the rides at Great Adventure, the planning and organizing a field trip, and use of data collection equipment on the rides. Vernier Software and Technology provided 15 data vests, LabPros, barometric sensors, low "g" and 3D accelerometers.

After a breakfast that warmed everyone, an introduction to the workshop activities was presented. Copies of the present workbook were distributed and the concepts of some of the rides were explained. John Valente brought along his demonstration model of the Flying Wave that is easily constructed from a child's phonograph that is shown in the workbook.

Once the preliminaries were completed, the attendees were turned loose on the park to collect data on as many rides as they cared to do. With the LabPro and the accelerometers, they were able to download the data to a TI programmable calculator and from there the data could be transferred to a computer for analysis. They had a lot of fun on the various roller coasters and using the common method of obtaining information – the horizontal and vertical accelerometers - they were able to collect sufficient data to complete the workbook exercises.

The students from Rutgers' Society of Physics Students had a great time interacting with the teachers and collecting as much data as possible. They are to be complimented on their enthusiasm in assisting us in revising the current workbook. They are adding new rides, questions, and activities to make the book more user friendly and eventually the entire workbook will be available on a CD and distributed by Six Flags Great Adventure. Our thanks to the management of SFGA and especially to Kat Winter who has acted as our liaison with the engineering department of the park to provide us with the ride data that is incorporated in the work. The workshop is the prime example of why we can say "Physics is Fun."

Sectional Meeting Planned

The Sectional Meeting of the NJAAPT is scheduled for March 17 – 18, 2006 at Princeton University. Friday night will feature a buffet dinner and the appearance of Thomas B. Greenslade, Jr, of Kenyon College and an expert in the field of antique physics equipment. Saturday will be our celebration of Ben Franklin's 300th birthday and we plan to celebrate in style. Come join us – look to our website, www.njaapt.org, and mailings for further information.

Bergen County Sharing Session

The Bergen County Sharing Session held its latest meeting on Nov. 17 at Northern Valley Regional HS in Old Tappan. With eleven in attendance, including some new faces, **Ray Polomski** began by sharing a handout on Newton's Second Law. Included in the material were how to determine the apparent weight when in an elevator moving with an accelerated motion and how to determine the acceleration of a system in which two masses are connected either over a pulley or with one on a horizontal surface and the other hanging over a pulley. He followed this up with another handout, this time on static electricity.

Bill Koenig of Pascack Valley Regional HS in Hillsdale began with responses to a question raised at the last session about the shape of lightning rods in an effort to understand why they are pointed and not rounded. He then demonstrated a simple motor which ran off the charge acquired by two soda bottles which had aluminum foil covering their surface. The bottles had a coat hanger wire attached to them and between them was a bottle that could spin. Charging himself on a Van de Graaff generator and holding his arm out with a closed fist produced no results. But as he pointed toward the apparatus, the charge leaked to a metal screen and the bottles causing the center bottle to rotate. **Borislaw Bilash** also of Pascack Valley demonstrated a static electricity detector. It was made from a plastic film can to which two copper pennies were attached at the top and bottom. One of the pennies was connected to a neon bulb inside the can and the other was attached to a ground. In the presence of an electrostatic field, the bulb lights.

John Johnston of the Faraday Center in Livingston Manor, NY showed how a neodymium magnet could be made to float above a rotating aluminum disk. The disk was attached to a drill and the rotational speed was controlled by a Variac. As the plate rotated under the magnet, eddy currents were set up and the magnet floated above the surface of the plate. It is a simple demonstration of Lenz's Law. John then began a series of electrostatic demonstrations associated with Benjamin Franklin. First discussing how lightning is produced in thunderstorms, he showed a device that Franklin used to indicate a strong electrostatic field consisting of two bells and a clapper suspended between them. As the charge builds up, the clapper is attracted to one, acquiring a charge and the repelling to the oppositely charged bell. It continues to ring until all the charge has leaked off and it also shows the decay of the charge with time. The second demonstration was one that was popular in Europe in Franklin's time -- igniting alcohol. With alcohol heated in a spoon, the electrostatic charge from a Wimshurst generator, a spark jumps from the electrode to the liquid and the alcohol ignites. This ability of a charge to ignite a flammable material is the precursor to the spark plug. The last demonstration involved two parallel aluminum plates connected to the Wimshurst generator. With a pith ball placed on the lower plate, the plates are oppositely charged and eventually the pith ball rises to the top place because of the repulsive force between the bottom plate and itself after it has acquired the same charge as the bottom plate. This continues until all the charge has been dissipated. It illustrates the concept of the electric field strength between the plates and it also demonstrates what is known as Volta's hailstorm since it simulates the development of hailstones in a severe thunderstorm.

Holiday Treats Workshop

Imagine getting presents early in December and being able to share your joy with others in the warm setting of the Serin Physics Lecture Hall at Rutgers in Piscataway. That's exactly what happened on Saturday, December 3 for thirty-five of our members who signed up for the annual event. Not only were they treated to a box load of materials, but the pizzas, desserts, and beverages were a bonus for them and their families. Holiday Treats is a time when our members can bring guests along to partake in the festivities.

Traditionally, the attendees receive a box filled with materials that have been made by members of the section, donated by vendors, or purchased from physics suppliers. This year was no exception. We have had a good working relationship with the individuals and companies that donate their materials to our Holiday Treats.

In the boxes this year the materials ranged from posters to physics texts on CD. Kinetic Books donated their textbook and also their Interactive Labs CDs. John Wiley and Sons Publishers provided copies of *Teaching Physics with Physics Suite* and Holt Reinhart, and Winston Publishing supplied us with their Physics Interactive Tutor CD. The Department of Energy, Jefferson Labs, and General Atomics all provided materials for the classroom. Cynmar Corp. provided magnets, EZ-Graders, catalogs, and a door prize. Teacher's Discovery sent tote bags, Fingerboiler pens, and a great door prize. Our friends at Vernier Software gave us train whistles to distribute and Learning Technologies sent holographic diffraction grating.

The door prizes were fantastic this year with Pasco donating 2 sets of their PasCars, Teacher's Discovery sending the Newton Car Jr., BearEdu Technologies sent a copy of their BearEdu Physics -1 CD, and the grand prize, a 50 seat license for the Atomic Microscope from Stark Software which was worth \$1195.

The time and effort expended on the part of the committee to provide the items cannot be compensated adequately. I would like to personally thank Rich Urban, Jessie Blair, John Valente, Dave Bandel, Joe Spaccavento, and Dave Maiullo and his students for all their work. These individuals made some of the items that were distributed and provided the muscle to make the evening a success.

Ray Polomski

Address Changes

Just a brief reminder to let us know about a change of address. With our mailings during the year, newsletters and announcements are returned due to an incorrect address and a second mailing has to be sent. Please send all changes of address to: Dave Bandel

NJAAPT Treasurer
41 Deer Path Drive
Flanders, NJ 07836

This will ensure the delivery of the mailings and help to reduce our mailing expenses.

***Electricity Workshop – at Edmund Scientific
November 19, 2005***

It couldn't be better! The weather was great, the presenters were there and excited, and we had 21 teachers attend. One new member attended. The famous Harry Rheam planned the workshop, harnessed us in, and even had food for us. He even had the materials and know how for us to make a transmitter/receiver for radio waves. Rob Shanne and John Valente had various materials for us to do static electric experiments and also gave various ideas on how to present the materials. Rich Urban did some work with motors and also experiments with copper tubes. Each individual who registered received a set of copper tubes. Jessie Blair main purpose was to keep the food going, make coffee etc, and then help get everything cleaned up. She agreed to run it next year. Harry gave a great suggestion: How about next year's theme on Toys?? Is it a go. Plan now. To show what a great time we had, it was 2 o'clock before we were ready to leave. Why don't you join us for the next one?? It will be held at Monmouth Regional High School in Tinton Falls, N.J. Theme : Waves, Sound, and..."

SAVE THE DATE: FEBRUARY 4, 2006

What? Make-n-take Workshop on Waves, Sound, and some extras!

**Where? Monmouth Regional High School
One Norman J Field Way
Tinton Falls, N.J. 07724
Tel# 1-732-542-1170 X 150**

Time : 8:30 a.m. to 11:30 a.m.

Breakfast provided. Bring a bag to carry things home.

Cost: \$10

Want to share an idea?? That is great. Let Jessie know. Harry Rheam has a bunch of things ready as well as John Valente, Jessie Blair and Also tell Intermediate School teachers and others who are not members. Please register by Feb 1.

**For Details – Call Jessie Blair at school or at night at home –
732-531-4569**

Register by mail or email Jessie at jessieblair1228@hotmail.com. She must have your home number in case of bad weather. That day she will have her cell phone on: 732-915-4875. See you there!!

Physics Workshop

Using Weakly Electric Fish In The Physics Lab

Sponsored by: the New Jersey Section of AAPT

Presenters: Tom Lawrence and John Valente

Date: Sat, March 4th, 2006

Time: 9:30- 12:00

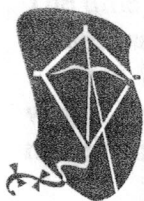
Place: West Morris Regional H.S, Long Valley, NJ



Cost: \$20, which includes a weakly electric fish (elephant nose) and an amplifier to detect the fish's electric signal and a video on electric fish. Breakfast (coffee and bagels) provided.

What you need at home or school: At least a five-gallon filtered and heated fresh water aquarium. Water temperature around 74° F. Tank will need gravel and some artificial plants. The elephant nose fish can coexist with other nonaggressive community tank fish.

Program: Tom Lawrence will show you how he uses weakly electric fish to demonstrate how these fish sense their environment and hunt for food using electric fields. He will demonstrate how the electric signals can be "heard" using an inexpensive amplifier. You will receive one elephant nose fish (in a plastic bag with sufficient water and air enabling the fish to survive for a few hours), one amplifier, wire leads, and a video about electric fish.



Note: You will need to put your fish into its tank a few hours after you receive it.

Registration: E-mail John Valente at...John_Valente@mast.mcvsd.org or call 732-291-0995 by February 18, 2006. Limited to 15 participants. When registering, let us know if you want a fish.

Workshop Registration Form

Name _____

Address _____

Home Phone _____

School _____

School Address _____

School Phone _____

email Address _____

Are you a member of NJAAPT? _____

Title of Workshop _____

Amount Enclosed _____

RETURN THIS FORM TO: **Jessie Blair**
Monmouth Regional High School
One Norman J. Field Way
Tinton Falls, NJ 07724

A CERTIFICATE OF PARTICIPATION WILL BE GIVEN AT THE COMPLETION OF THE WORKSHOP. NJAAPT IS A CERTIFIED NJ PROVIDER AND THE HOURS CAN BE APPLIED TO THE 100 HOUR REQUIREMENT.

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