

NJAAPT NEWSLETTER NOVEMBER, 2007

PRESIDENT'S MESSAGE

Were you there at the NJ Science Convention? If you were, thank you for stopping by at our table and the Demo Dens. The NJSC provides us with the opportunity to meet many new faces who may not be able to make our other events during the year and to talk to them about what we can do for you. The DEMO DENS organized this year by Borislav Bilash attracted over 500 participants during the four hours of demonstrations. A summary of our activities at the NJSC will appear in the next newsletter.

In this edition are three items of interest – one a summary of a workshop, the second a demonstration, and the last something that has not only to do with physics but also serves a purpose in assisting the less fortunate members of society.

The contributions to the newsletter are important to disseminating information to the entire membership. Do you have something to share with the rest of us? Why not let write up an article on an activity you do in class or a lab that you can share or maybe you read a good article or book and can synopsise it? It can be your contribution to our section.

Ray Polonski

Fast (and slow) Food Physics (Playing with your food)

The following was submitted by Frank Oleksy as an activity he has done with his classes over the years. The purpose is to have students learn the concepts of angular momentum using various types of canned foods. The cans of food are then donated to a local food bank for distribution to the needy. It is a great teaching approach and the results are often surprising. Why not give it a try?

Fast (and slow) Food Physics

(Playing with your food)

Submitted by: Frank Oleksy

Name _____

The objective of this activity is to provide reinforcement to your understanding of accelerated motion.

You must bring in a canned food item and time it as it rolls down an incline. The can must be in its original unaltered condition.

Method: an incline of fixed length and slope will be constructed in the classroom. Your canned food item will be started from rest and timed as it rolls down the incline.

Data: What kind of canned food did you bring?

Length of Incline _____ meters

Time for your can to roll down incline _____ seconds

Calculations: Using the measured data for distance and time and showing all work you will compute:

- A) The average velocity of the can.
- B) The acceleration of the can.
- C) The final velocity of the can.

Bonus credit will be awarded to the student in each class who brings the can that has the highest or lowest average velocity on the incline. You may enter as many cans as you like.

A final round of the competition will be conducted on the incline on the ground floor of our school to determine the fastest and slowest can among all classes. *There are usually some surprising results.*

You may choose to donate the food item after you have completed the activity. All donated items will be contributed to a food bank for the needy.

Seat of Nails Workshop

By Nancy Michaelson

The Seat of Nails workshop was held on Sept 30, 2006, at Monmouth Regional HS. This was a fun opportunity for Physics teachers to build their own smaller version of the classic “Bed of Nails” demonstration. The workshop was organized by John Valente, Jessie Blair, and Rich Urban. Attendees included teachers from North, Central, and South Jersey.

Starting with wood, pegboard, masonite, foamboard, and nails, the group of teachers divided up the labor—cutting, drilling, and of course, nailing. Working with the precision of a drill team, the teachers quickly galvanized into an assembly line of, well, seat of nails assemblers. The project looks simple, but it took quite a bit of work to put together. The teamwork paid off---in the end, everyone completed their own “Seat of Nails”, and tried it out, some declaring it to be rather comfortable. OK, so maybe Physics teachers have different standards than most of what is ‘comfortable’...! Note: No Physics teachers were harmed in the making or testing of the “Seat of Nails”.

The workshop was a fun opportunity to make a great demonstration, to meet other Physics teachers, and to share teaching ideas. Anthony Lipinski demonstrated a toy radar gun, which he used to measure various objects’ speeds in the lab (radar gun available from Target).

Many thanks to John, Jessie, and Rich, whose planning and efforts made the day a success---you guys nailed it!

Fred Pregger’s Demo Corner

It is easy to give students a real physical sense of torque or moment of force. We teach that torque is defined as the vector product of a force and the lever arm, the perpendicular distance from the center of rotation to the line of action of the force, i.e., $L = Fx \sin \Theta$. Here I won't deal with the vector product and the direction of the torque vector, only the magnitude of the torque.

Clamp a movable weight hanger near one end of a strong meter stick. Hang a kilogram mass, 9.8 Newton weight, on the clamp. Have a student hold the stick horizontally with one hand at the end of the stick nearest the weight to feel the torque. Slide the weight to a new position farther along on the stick. The torque will increase noticeably. Do this in several positions and note the effect. It will take a student with a very strong set of muscles to hold the stick horizontally when the weight is at the far end of the stick.

With the weight at the far end, have the student hold the stick at several angles above the horizontal up to the vertical position. The torque decreases until when the stick is vertical the only effort necessary is to support the actual weight of the stick, clamp and Kg mass. The lever arm has decreased to 0 and so has the torque as one can see from the equation. When you do this be sure that the clamp and weight are securely fastened and not held over feet or head.



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Calendar 2006 - 07

Nov. 18 –Make n’ Take – Waves and Light

Dec. 2 – Holiday Treats – Rutgers University

Jan. 13, 2007 – Physics Olympics – Monmouth Regional HS

Feb. 9, 2007 – Dave’s Dazzling Demo Night – Rutgers University

Mar. 16-17, 2007 Sectional Meeting – Princeton University

Mar. 31, 2007 – Electrostatics Workshop – Chatham HS

Please visit www.njaapt.org for further information
and updates relating to events for the rest of this school
year and for the next school year.

