

## ISPP REMINDER

December 2014

### OUR NEXT MEETING...

..is the 31<sup>st</sup> Annual Tri-Physics Meeting  
Elmhurst College  
Wednesday, January 14, 2014  
5:30 for pizza; 6:30 for meeting  
Earl Swallow, Brian Wilhite and Venkatesh Gopal

**John Milton** welcomed us and started the meeting with a phenomenon. He demonstrated an LED necklace that would blink on and off, then steadily, etc. There was much speculation as to what was in the necklace to make it blink: possibly a mini 555 timer chip, or some other programmable computer chip.

**Dr. Jesus Pando**, the chair of the De Paul physics department, welcomed us and provided us with delicious treats. Eric Landahl would have liked to have been with us, but he was setting up a beam line in Korea. Dr. Pando gave us an overview of the wonderful new labs in the physics classroom: they provide seating for 54 students at six tables of 9 students each. This provides for a much more interactive classroom experience for the students who work in three groups of three on various activities. There are no separate lab and lecture sections: all the work is integrated in to the 90-minute classes. The room gives the classes a smaller feeling and the students are much more engaged in the learning. So far, Dr. Pando and his colleagues have found it to be a very positive change in the teaching and learning.

This was followed by several announcements:

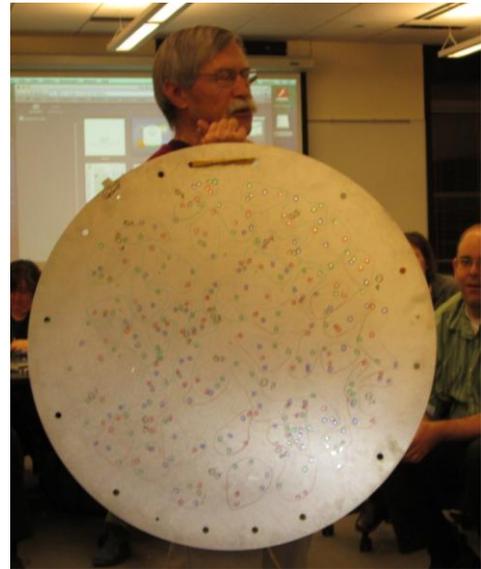
- AAPT Winter meeting is January 3-6 in San Diego
- The next ISPP is at Elmhurst College on Wednesday, January 14<sup>th</sup>.
- Paul Dolan collapsed in early November while teaching and was taken to the hospital in Joliet. He is still in serious condition, but he is recovering at a hospital closer to his home. He is on extended medical leave from Northeastern Illinois University for the remainder of this term and the spring term. Good wishes and cards can be sent directly to the Physics Department at NEIU, 5500 N. St. Louis, Chicago, Illinois 60625. The department will make sure that Paul gets them.
- The physics department at Northeastern is short-handed now, and asked to be relieved of its hosting duties for ISPP this year. Details about the location and date of the February meeting will be made available as soon as they are known.

- Martha Lietz informed us that the CPDU Provider status of CSAAPT and ISPP will expire at the end of this year (2014). There is a fairly lengthy process for becoming a new provider, involving lots of writing and aligning to standards. We are currently investigating the least painful way of providing CPDUs in the future.
- We welcomed new teacher Kelly Reimer (Glenbrook North) and presented her with a new teacher bag.



- **Nate Unterman** (Glenbrook North) told us that he and the staff at Great America have re-written the Physics Day manual to be aligned with the new NGSS standards. If you contact him at Glenbrook North, he can email you a copy. It will be soon posted on the Great America web site for teachers to download. Physics Day this year will be on April 30<sup>th</sup>.

**Rich DeCoster** (retired, Niles West) showed us the latest edition of the CERN Courier (<http://cerncourier.com/cws/latest/cern>) which had an article about the electron collider which was recently moved to Fermilab. He also showed us a survey plate which he had obtained from Yerkes: it was originally used by the Sloan Digital Sky Survey to hold optical fibers used to take spectra from various galaxies. He also showed us the SDSS web site <http://skyserver.sdss.org/dr7/sp/tools/chart/navi.asp> which can be used to search for spectra of millions of galaxies that are stored on the SDSS data base. He demonstrated for us how to use the red shift data to learn about the expansion of the universe. <http://skyserver.sdss.org/dr7/en/tools/search/radial.asp>



**Pete Insley** (Columbia College) gave us some sections of plastic he cut from the display screen of discarded laptop. One of them is merely frosted and looks like it simply disperses the light from the LEDs. The other looks initially like it could be a diffraction grating as it produces spectra when used to look at light sources. But on closer look, the spectra are backwards: the red light is where the violet light would be for a diffraction grating. So perhaps it is acting like a Fresnel lens? It also appears to have some birefringent effects. Stay tuned as Pete and his son Alan continue to investigate this mystery...

**Bill Blunk** (retired, Joliet Central) brought some prism bed spectacles he ordered from Edmund Scientifics for an injured friend. <http://www.scientificsonline.com/product/bed-prism-spectacles> These allow a person to look forward and read a book held on one's lap, or lie in bed and watch TV without straining one's neck. He told us that the pair he received needed to be collimated by softening and bending the nose piece with a hair dryer. He then showed us how the 30-60-90 prisms cause incident light rays to be refracted and totally internally reflected so the image seen by the wearer was right-side up. Really neat!



**Susan Fischer** (DePaul University) shared with us some of the "embodied learning" techniques she is using with her students. She showed us the double bicycle wheel (<http://scitation.aip.org/content/aapt/journal/tpt/43/9/10.1119/1.2136463>) that Gerry Lietz made and how it was used to teach the students about torque and angular momentum. Gerry had a giveaway many years ago at DePaul that connected two bicycle wheels on the same axis. They can then be rotated in the same or opposite directions to see how angular momentum vectors add.



Susan and her colleagues did FMRI studies of students who learned about torque and angular momentum both actively (with the double wheel) and as observers. The FMRI studies showed that the students who were active learners accessed parts of their brains associated with movement when answering questions about torque, and did better on the subsequent quiz. As Dr. Fischer said, this is nothing truly unexpected, but it is nice to see our teaching instincts verified by FMRI studies.

**John Milton** closed the meeting by demonstrating the giveaway: Eric Landahl used the 3D printer to make plastic gravitational potential wells. They wells have a ramp that allows the user to launch a small steel marble into the well and observe all of Kepler's Laws in action. Thanks, Eric.

Thanks, everyone, for a great meeting and see you in Elmhurst!

Respectfully submitted,  
Martha Lietz

### Directions to Elmhurst College

Directions: <http://public.elmhurst.edu/about/location/1260852.html>  
Campus Map: <http://public.elmhurst.edu/about/location/113234904.html>

#### By way of Interstate 290 (Eisenhower Expressway)

- \* Exit at St. Charles Road, just west of I-294
- \* Travel West on St. Charles, past York Road, to Prospect Avenue
- \* Turn right onto Prospect for two long blocks, past the front of the campus on your left, to Alexander Boulevard
- \* Turn left onto Alexander Boulevard, then right again, into the main parking lot

#### By way of Interstate 294 (Tri-State Tollway)

- \* From the south, exit at I-290
- \* From the north, exit at I-290 West, then exit again immediately at Illinois Route 64 West (North Avenue)
- \* Follow North Avenue about a half mile, past York Road, to Maple Avenue
- \* Turn left. Follow Maple Avenue another half-mile, two blocks past railroad tracks to Alexander Boulevard. (Maple Avenue becomes Prospect Avenue after the tracks)
- \* Turn right onto Alexander Boulevard, then right, into the main parking lot

#### By way of Interstate 88 (East-West Tollway)

- \* Exit at York Road, just west of I-294. (Take ramp marked I-294 South)
- \* Travel north on York for about two-and-a-half miles to St. Charles Road
- \* Turn left on St. Charles to Prospect Avenue
- \* Turn right on Prospect for two long blocks, past the front of the campus to your left, to Alexander Boulevard
- \* Turn left onto Alexander Boulevard, then right again, into the main parking lot

