

ISPP REMINDER

December 2013

OUR NEXT MEETING ...

...is at
DePaul University
Tuesday December 3
6:30 – 9 pm

Scroll down for a map and directions.

AT OUR LAST MEETING...

...we met at **Illinois Institute of Technology** for the first time in a few years and the meeting was great.

Our hosts at IIT, **Chris White** and **Al Glodowski** began the meeting with a series of demonstrations. The first was the spoon and fork linked and then balanced with a small stick. So simple; yet try drawing the force diagrams. No one wanted to do it without thinking about it for a while.



We then did the balance point of a rod. Ann Brandon did it on her fingers and then Roy Coleman loaned her one of his. He asked “Who’s pushing?” Then they tried it with some IIT microfiber cloths that were one of the night’s giveaways.

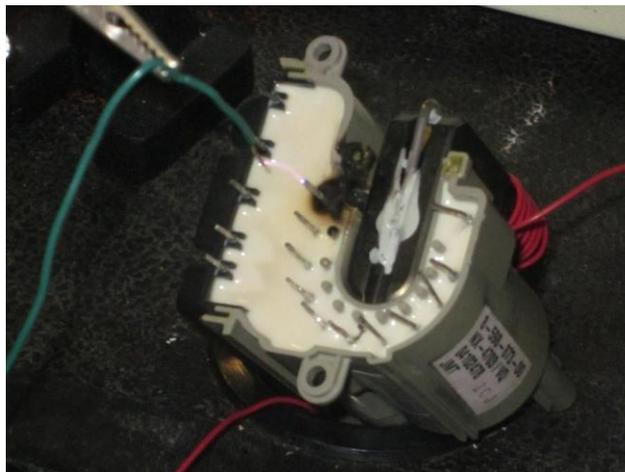
Then our hosts got out a Pasco demonstration with a 2m aluminum tube and a couple slugs to slide down the tube. They also had a small Nb cube they dropped down the tube. As usual the magnets moved slowly. But then we got into a discussion of the eddy currents. I had always assumed they were circular around the axis of the tube. I think I got that idea from the jumping ring. However others insisted the currents were random loops in the aluminum and the experimental results would be the same if the tube were slit vertically from top to bottom. We had an energetic discussion but the tumbling cube made me think again.

Our hosts add liquid nitrogen to the tube and this magnifies the effect. Some of us let the students look down the tube while the magnet is falling (from the top).



Finally, **Al Glodowski** had a student who built an interesting device from a “fly back” transformer (about 40kv) from an old TV. He added a couple high power diodes and an MP3 player. The player sent a signal that ultimately triggered a spark gap. The frequency output of the MP3 player is impressed upon the spark and the spark plays the music. It wasn't hi fi but the music was clearly audible and some of us recognized the groups.

You can see a YouTube presentation at http://youtu.be/RHmeuW7zi_w or email glodowski@iit.edu



John Milton recommended a *Physics Today* article on *Passive Learning in the Electronic Age* at <http://dx.doi.org/10.1063/PT.3.2127> The idea is to get students away from the flat screen and encourage them to take old stuff apart.

Roy Coleman passed out some d vs t and v vs t axes and showed us a small car that he pressed down to the table and then released. The car scooted forward for about 20 or 30cm then turned sharply and rolled another 10 or 20cm. He had another “pull back” car. He challenged the students to draw a d vs t graph and found many students simply draw the motion they saw so that their graph left the origin and then later intersected with the x or y axis.

Roy had boxes of push down cars and bags of back up cars as giveaways for active teachers. Everyone got a whole set of cars for their classes.

Karlene Joseph (Lane Tech High School) brought a “no spill” coffee cup. It was a small pendulum-like device about 25cm long that holds your coffee cup. When the cup was hung from the device Karlene could walk about freely and even swing the cup a little.

This led to a relatively long discussion on how the device was working. Some of us thought the sloshing was a resonance effect between a person's walk and the coffee in the cup. The device changed the frequency impressed upon the cup. Others compared it to the glass of water on a tray that is swung like a pendulum and can be swung in a circle. The force on the liquid is always centripetal and perpendicular to the surface. Perhaps both explanations are correct. What do you think?

Karlene said she also uses questions from the *Force Concept Inventory* with her students. She gives them in sets of 3 questions a day and finds the students view them as interesting and not just as another test. They lead to some good discussions.

Roy Coleman sent a link to add on “The Physics of Slosh.”



<http://physics.aps.org/synopsis-for/10.1103/PhysRevE.85.046117>

To end the meeting **Chris White** passed out some pieces that looked like 25cm pieces of fiber optic. He called them wave shifting fiber and said he got them at Fermilab. They are used in detectors and change pulses that are UV into visible light that is more easily seen by a detector.

Chris directed a red, green and blue laser at the side of his fiber and the end glowed green with the green and blue laser but stayed dark with the red laser.

We each got a piece to take home and play with.

This was a small but really nice meeting. Thanks again **Chris** and **Al**.

See you at DePaul.

Reported by Pete Insley

FUTURE MEETINGS

January	Elmhurst	Wednesday 1/15
February	NEIU	Thursday 2/20
March	Lane Tech	?????
April	Lake Forest College	Wednesday 4/9
May	Northwestern	Monday 5/5
June	MSI	Tuesday 6/3

Chris Goedde from DePaul University asked us to forward this to ISPP:

Colleagues,

Leaves are falling, Bears are charging, and Cubs are hibernating. It's Autumn in Chicago. It is also time to mark your calendar for the annual Physics with a Bang show. This year's show will take place on Saturday December 7th. There will be a special preview for educators on December 4th.

The Physics with a Bang – Special Preview will be on Wednesday Dec. 4th starting at 5:30PM. This is a chance for Chicago area educators to see the exciting demonstrations of Sidney Nagel and Heinrich Jaeger from the University of Chicago. They have been kind enough to open their dress rehearsal up for teachers and science enthusiasts.

If you are interested in attending, please [RSVP Here](#), or paste the URL below into your browser.

RSVP - https://docs.google.com/forms/d/1zYD1V7_Euak67k5XVNT7qDPy862bK88Gm-DxhNLG2W8/viewform

Physics With a Bang! is an annual showcase of amazing Physics demonstrations. This showcase is part of their dry run, and is open for educators. You will get a chance to see how various demonstrations work (and sometimes how they don't).

If you want more information or some samples of their work, check out:

General Website: <http://mrsec.uchicago.edu/events/physics-bang-holiday-lecture-and-open-house>

High Speed Camera Videos: <http://jfi.uchicago.edu/~jaeger/PwaB/PwaB/main/main.html>

Date: Wednesday - Dec. 4th

Time: 5:30PM

Address: Kersten Physics Teaching Center 5720 S. Ellis Ave. Chicago, IL

See you there!

Michael Davis

Interim Vice President

Wilbur Wright College

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To get to DePaul University:

From the north and northwest

From the Kennedy Expressway (I-90/I-94) exit at Fullerton Avenue and turn left (east.) The Lincoln Park campus is approximately two miles from the expressway on Fullerton Avenue at Kenmore Avenue.

From the west

From the Eisenhower Expressway (I-290), turn onto the Kennedy Expressway (I-90/I-94) heading toward Wisconsin. From the Kennedy Expressway (I-90/I-94) exit at Fullerton Avenue and turn right (east.). The Lincoln Park campus is approximately two miles from the expressway on Fullerton Avenue at Kenmore Avenue.

From the south

From the Dan Ryan Expressway (I-90/I-94) continue as the expressway becomes the Kennedy Expressway (I-90/I-94). Exit at Fullerton Avenue and turn right (east.) The Lincoln Park campus is approximately two miles from the expressway on Fullerton Avenue at Kenmore Avenue.

From Lake Shore Drive (north or south)

Exit Lake Shore Drive at Fullerton Avenue. Head west for approximately three miles. The Lincoln Park campus is located at Fullerton Avenue at Kenmore Avenue.

Parking

The lot just north of Byrne hall is not available for parking. Evening on-street parking in much of the area is restricted. If you cannot find on-street parking, use the high-rise building indicated on the map. We will give you forms at the meeting to avoid parking fees.

