

## ISPP REMINDER

June 2014

### Our next meeting...

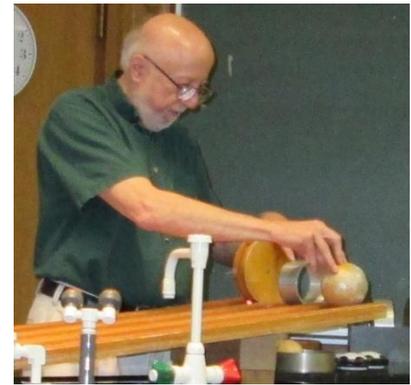
is Thursday, September 18  
at IIT  
6:30-9:00 pm

See below for directions.

### At our last meeting...



**Art Schmidt** welcomed us to Northwestern University in May and began the meeting with a large ramp and three wooden balls with different diameters. “Which is the fastest?” he asked. Then he raced them down the ramp. Surprise! They reached the end of the ramp together (more or less). Art repeated the demonstration with discs and rings.



Then he raced the ball against the disc and ring. (The ball won). Then he raced the ball against a small (10cm diameter) air puck and the puck won handily.

Art said he then derives the equations for time down the ramp and shows how “R” and “M” cancel out. So the races between shapes should be ties. The air puck wins because it doesn’t rotate. We all wished we had one. Art got lots of suggestions from the audience including hot wheel car, Campbell soups (cream of chicken vs. chicken broth), and pop cans (one frozen fresh from the freezer). Art said the air puck was \$6 from Arbor Scientific.



**Tom Senior** described a challenge between a compact fluorescent light bulb (CFL) and an incandescent bulb. They were both rated as equally bright. The power ratio was 75/13.5 watts. Tom took a wax sandwich comprised of two pieces of wax with a piece of aluminum foil between them. (This was a giveaway from

Martha Lietz a couple years ago). When placed near a light the side nearer the light is clearly lighter.

Tom put the bulbs in sockets and placed the block between them. When the bulbs were 80cm apart the CFL was 36cm from the center of the block and the fluorescent bulb was 44cm when we all decided the block was equally lit. I noticed that people in the center of the classroom saw the illumination as equal while those on the sides thought their side was slightly brighter. Tom said the CFL was slightly bluer. He repeated the contest at various distances but the fluorescent always won.

**Paul Dolan** (Northeastern Illinois University) brought his Easter peeps and some food saver devices. One was a vacuum pump and the other a pressure pump for storing open pop bottles (that's soda for those outside the Chicago area). Paul pumped the air out and expanded the peeps as the atmospheric pressure air inside the peep pressed against the lower pressure outside. When he let the air back in the peep shrunk. I couldn't see much difference when he used the pressure pump.



**John Lewis** brought a small audio amplifier and speaker from Radio Shack and any music playing device with headphones. He replaced the phones with an electromagnet made up of 30m of magnet wire wound on a large metal bolt. He made another identical electromagnet and used it on the input to the audio amp. When he turned on the music and brought the electromagnets near each other you could hear the music from the amp.

**Kevin McCarron** passed out a sheet describing a CME which is a solar flare that hits the earth. We were missed two years ago and hit in 1859. Such a hit today would ruin much of our electric infrastructure.

**Brent Barker** (Roosevelt University) brought a floating globe device that can be bought from science supply houses from \$50 to \$400. A globe floats between a disc base and a small electromagnet above the sphere. Brent asked if anyone knew how it worked.

We searched around with a bar magnet and John Lewis got out his audio amplifier. We didn't get much from the bar magnet but the audio amp buzzed near the top of the apparatus when it was on and the sphere floated. When he raised the sphere the amp buzzed louder showing a larger power surge. There was no stable point for the sphere when the device was unplugged. We could all think about this a little more.



**Art** ended the meeting using his small air puck. He tied a string to it and looked at uniform circular motion. Then he lifted one side of the surface and made a pendulum. How does the angle of the ramp affect the period of the pendulum? He got out another disc and collided them. Art had velcroed the discs and they stuck together and spun about the center of mass conserving angular momentum.

Art was showing how many things could be done with the discs. We are only limited by our imaginations. And then, surprise, we each got a pair of discs as the giveaway for the night. Nice! I rushed home to try mine. They went through the supplied batteries but fresh AAAs worked great. Thanks Art!

**Parking Information for IIT.** Park in the A4 Visitors lot, east side of State Street, a little south of 31st St. Meeting will be in the **Life Sciences Building**, 31st and State, southwest corner. Room number will be posted

