

Fall 2014 Meeting of the Western Pennsylvania Section of the AAPT, 18.October.2014
Thiel College, Greenville, PA

Agenda (*may be modified at the discretion of the Executive Committee*)

8:30-9:15 Registration. *Continental breakfast provided.*

9:15-9:30 Opening and Welcome Remarks

9:30-9:45 Criswell, Keeley (Thiel) **Lab Characterization of the LISA Pathfinder Optical Metrology System**

LISA Pathfinder (LPF), set to launch in 2015, is designed to test technologies that can be used in future space-based, gravitational-wave observatories. LPF contains an Optical Metrology System (OMS) that is used to measure the relative distance between the test masses. The OMS of the LISA Pathfinder currently has a ground model in Hannover, Germany for testing of the system and system controls. This past summer, Keeley Criswell spent two months working to improve the ground model and make the change to a digital system.

9:45-10:00 Wagner, DJ (Grove City): **What can SPS do for you?**

The Society of Physics Students (SPS) is *the* professional society for physics students and their mentors. That audience encompasses nearly everyone attending this talk. Most attendees have probably heard of SPS and may have participated in some of its activities as an undergraduate. But do you know what SPS is doing now? And what resources are available through SPS? I will speak about just a few of the exciting things SPS is doing. Visit the website <http://www.spsnational.org> for more detailed information and access to a myriad of resources.

10:00-11:00 *Invited Speaker:* Nagel, Megan (Penn State Allegheny): **Potential Energy: Perspectives from a Chemist**

Recently, the topic of energy has been receiving increased attention in science education research literature, highlighting an interdisciplinary approach to the topic. In chemistry courses alone, the topic of energy is introduced in numerous contexts including bond enthalpies, quantized energy, lattice energy, intermolecular forces, and nuclear energy. The basis for many of these topics begins with an understanding of potential energy and electrostatic interactions which goes beyond that reached in a typical first-semester physics course. So while students have not been exposed to the relevant content in physics, chemistry faculty operate under the assumption that a foundation is present for describing processes involving electrostatically interacting particles and their associated energies. Our recent work has found that even after the appropriate instruction

in both chemistry and physics, the majority of students still struggle to describe the basic relationship between particle position and electrostatic potential energy. In particular, students do not spontaneously draw on concepts from physics when asked about energy in chemical contexts. We are researching the efficacy of an instructional sequence of scaffolded questions to help guide students to make relevant connections between their existing knowledge of gravitational potential energy and the required knowledge of electrostatic potential energy necessary for understanding countless chemical interactions.

11:00-11:15 Break

11:15-11:30 Mukherjee, Krishna (Slippery Rock) **Benefits of Student Grants to Physics Majors**

Undergraduate research funded by student grants enhances a student's education. Slippery Rock University's student grant offers a modest sum of money to a student to pay for equipment to do research for a short period of time. As a faculty advisor to many of these research projects I have seen the benefit these can provide to students who are unable to do extensive research due to time and financial constraints. Physics or Pre-Engineering majors typically are academically ill-equipped to do research before their junior year; opportunities like these are ideal for them.

11:30-11:45 Torigoe, Eugene (Thiel): **Using Psychological Research to Guide the Teaching of Physics**

"Make it Stick: the Science of Successful Learning" by Peter Brown et al. describes the cognitive psychology research on how people, like our students, learn most effectively. It describes the importance of spaced recall, interleaved practice, and other learning strategies. This book has revolutionized the way I teach my courses. In this talk I will summarize the important findings of the book, and discuss how I have tried to implement them into my classes.

11:45-12:00 *Additional talks submitted after schedule printing.*

12:00-1:30 Lunch

1:30-1:45 *Additional talks submitted after schedule printing*

1:45-2:00 Business Meeting, drawings, giveaways and other fun stuff.

Have a safe drive home!