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## AAPT-CPS OFFICERS

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**Abul Hasan;**  
**PSU—York**

### Vice President

**John Reid;**  
**Lock Haven**

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**PSU—Mont Alto**

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**Sardari Khanna;**  
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### Section Representative

**Kelly Kriebel;**  
**Moravian College**

### High School Rep.

**David McCahren;**  
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### Two-year College Rep.

**Gregory Dolise;**  
**Harrisburg Area CC**

### Past President

**David Richards;**  
**Penn College**

# AAPT-CPS Newsletter

Lock Haven University -- Lock Haven, Pa

VOLUME 3

JANUARY 7, 2008

## Dr. Fonash to speak at AAPT-CPS Spring Meeting

*by David Richards,*  
*Past President, AAPT-CPS*

The annual Spring Meeting of the Central Pennsylvania Section of the American Association of Physics Teachers, AAPT-CPS, will be held on Friday, April 4<sup>th</sup>, and Saturday, April 5<sup>th</sup>, 2008 at Lock Haven University of PA, Lock Haven, PA.

The meeting will begin Friday afternoon with registration, poster session, and vendor displays starting at 4 p.m. The reception and banquet on Friday evening will begin at 6 p.m., followed by a keynote address from Dr. Stephen Fonash titled "Nanotechnology: the Nexus of Science Education" at 8 p.m.

Saturday morning will begin with an 8:00 a.m. breakfast, followed by a general business meeting at 8:30 a.m. Invited and contributed talks will follow the general meeting.

Our keynote speaker this year holds the Bayard D. Kunkle Chair in Engineering Sciences at the Pennsylvania State University. His activities at Penn State include serving as the director of Penn State's Center for Nanotechnology Education and Utilization (CNEU), director of the National Science Foundation Advanced Technology Education Center, and director of the Pennsylvania Nano-fabrication Manufacturing Technology Partnership.



**Dr. Stephen Fonash**

Professor Fonash's education contributions focus on nanotechnology post-secondary education and workforce development. His research activities encompass the processing and device physics of micro- and nanostructures including solar cells, sensors, and transistors. He has published over 300 refereed papers in the areas of education, nanotechnology, photovoltaics, micro-electronics devices and processing, sensors, and thin film transistors. His book "Solar Cell Device Physics" has been termed the "bible of solar cell physics" and his solar cell computer modeling code AMPS is used by almost 800 groups around the world.

Prof. Fonash received his Ph.D. from the University of Pennsylvania. He is a Fellow of the Institute of Electrical and Electronics Engineers and a Fellow of the Electrochemical Society.

## **PTRA Workshops Benefit Many Teachers over the past 14 years**

The Physics Teaching Resource Agent (PTRA) of the American Association of Physics Teachers (AAPT) has been and continues to be a very effective program that has helped numerous teachers with professional development, teaching methodology, and physics content knowledge. The Central Pennsylvania Section of AAPT continues to be a great supporter of this project. The first PTRA workshop was held in 1993. Since then, there have been 32 workshops with a total of 351 participants.

In addition, the AAPT-CPS supported and hosted the PTRA Rural Institute. This Institute consisted of a series of workshops that benefitted twenty-five teachers over the course of four summers. The teachers spent thirty hours each summer at the Rural Institute workshops, as well as participating in two Saturday follow-up workshops during the academic year.

The AAPT-CPS section strongly supports the mission of promoting physics through teaching. The number of high school students who have benefitted from their teachers' experience with these PTRA workshops is tremendous!

A Physics Teaching Resource Agents Workshop on "Using Vernier Logger Pro to Analyze Digital Movies" will be held Friday, April 4th, from 8:00 a.m. to 3:30 p.m. Registration 8:00-8:30 a.m., and workshop 8:30 a.m.-3:30 p.m. The cost of the workshop will be \$60.



## **Meet the Current AAPT-CPS Executive Officers**

### **President 2007-2008**



**Abul Hasan**

Abul Hasan is an Associate Professor of Physics at Penn State York. He received his Ph.D. in Experimental High Energy Physics from Lehigh University in 1980. He did his post doctoral research at University of Wisconsin, Madison for five years before joining Penn State York in 1985. His research interest has evolved in time from the Channeling effects of a single crystal on high energy protons to production of jets in high energy interactions to his current interest in the physics of charmed quark particles.

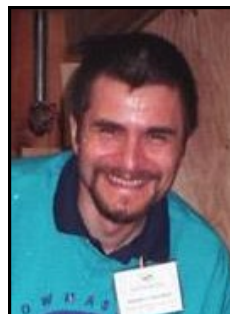
### **Vice President 2007-2008**



**John Reid**

Dr. John D. Reid is an Associate Professor of Physics at Lock Haven University and has taught physics there since 1997. He received his Ph.D. in Experimental High Energy Physics from Penn State. Before teaching at Lock Haven, he did his graduate work on Charmonium Spectroscopy at Fermilab, and postdoctoral work on Strange Matter at Brookhaven Lab.

### **Secretary 2007-2008**

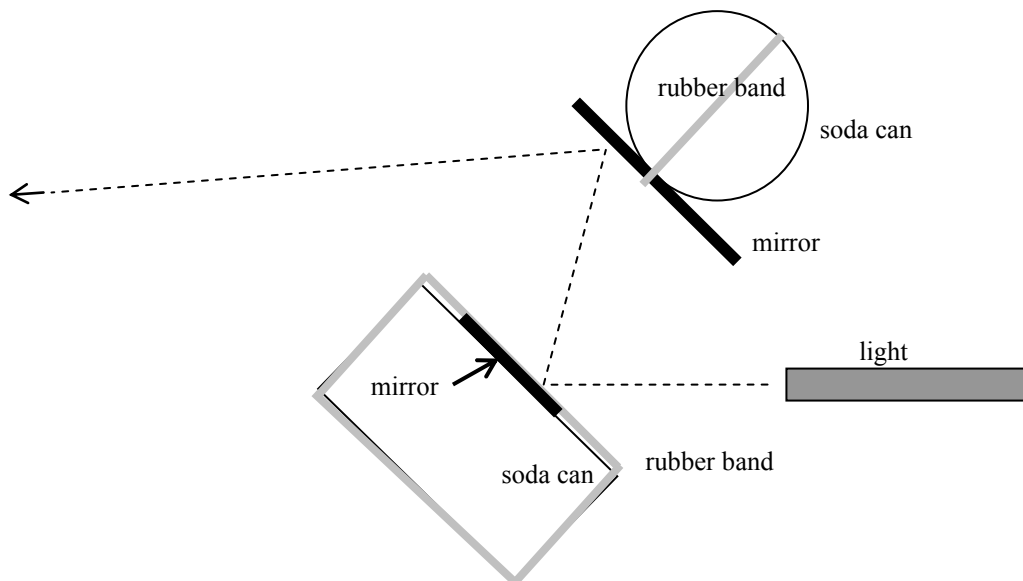


**Mike Doncheski**

Dr. Michael A. Doncheski is a Professor of Physics at Penn State - Mont Alto and has been teaching physics there since 1996. He received his PhD in Theoretical Elementary Particle Physics from Penn State in 1990, and prior to his current position held postdoctoral research appointments at the University of Wisconsin - Madison and Carleton University in Ottawa, Ontario. His research interests include Beyond the Standard Model Physics and Visualization Techniques in Teaching Quantum Mechanics.

## Creating Lissajous Figures

-by Dr. John Reid, Lock Haven University



### Items specific to this demo:

- Two soda cans
- Two rubber bands
- Two mirrors
- Light (a penlight, flashlight or laser pointer will work)

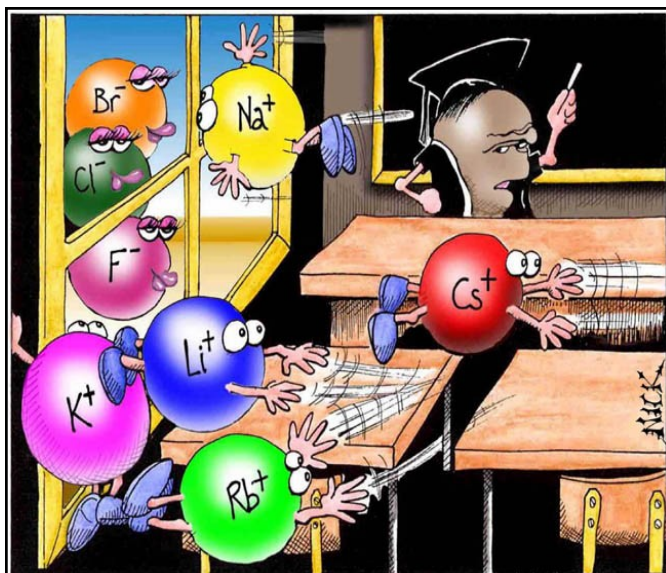
### Procedure:

Fasten the each mirror to a soda using a rubber band. The figure indicates how the rubber band can be placed around the mirror and soda can. Because of the shape of the soda can, if the mirror is flicked it will oscillate (wiggle) for a few seconds. How fast the mirror oscillates will vary depending on the mass of the mirror, how curved the soda can is and how the mirror is positioned in the rubber band.

Shine the light onto one mirror so that it reflects onto the second mirror. Look for the light beam spot as it appears on a wall.

Flick one mirror and watch the beam spot move back and forth. Stop this mirror and flick the second mirror and watch the beam spot move back and forth in a different direction (perpendicular to the first case). It may take a bit of practice to hold the cans at the right angles so that the beam from the light hits both mirrors. One can be placed on a table with liquid added to hold it in place, or perhaps two people can each hold a can.

Next flick both mirrors. The beam spot will move in interesting patterns that are a result of the combination of the each mirror's motion. (These are called *Lissajous Figures*.) By adjusting how fast the mirrors wiggle on can see different patterns on the wall. Try adjusting how fast each mirror wiggles by changing the position of each mirror in the rubber band. Another way to change how fast the mirror wiggles is to attach paper clips to the sides of the mirror to increase its mass.



"Perhaps one of you gentlemen would mind telling me just what it is outside the window that you find so attractive..?"

### AAPT-CPS Section Representative



**Kelly Kriebel**

Kelly Kriebel is an Associate Professor of physics and chairman of the Physics and Earth Science Department at Moravian College. He received his Ph.D. from Lehigh University in 1993 and performed post-doctoral research at Florida State University (1993-1995). His research interests include the hydraulic jump, disordered and chaotic systems, and studying magnetic materials using Mossbauer spectroscopy and the magneto-optic Kerr effect.



### AAPT-CPS Mission

*From the AAPT-CPS Constitution...*

*The objectives of the Central PA Section of the American Association of Physics Teachers (AAPT-CPS) are to:*

- *advance the teaching of physics in the colleges and universities of Central Pennsylvania and environs,*
- *promote a professional spirit and acquaintanceship among the members of the Section, and*
- *encourage instruction in physics in the secondary schools of the region served by the Section.*

### UPCOMING MEETINGS:

- **Gordon Research Conference — Computers in Physics Research and Undergraduate Physics instruction. Bryant University, RI June 8-13, 2008.**
- **National 2008 Summer AAPT Meeting: July 19-23 in Edmonton, Alberta (Passport Required)**
- **National 2009 Winter AAPT Meeting: February 12-16, 2009 with AAAS in Chicago, IL**
- **The 2009 AAPT-CPS Spring meeting will be held at Penn State University—Mont Alto Campus.**

*Newsletter compiled by David Richards. Please direct all comments and submissions to [drichard@pct.edu](mailto:drichard@pct.edu)*