

AAPT-CPS Newsletter

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Prof. Francis Halzen, Keynote Speaker Annual Conference, PSU-Mont Alto

Professor Francis Halzen will be the keynote speaker at the Annual Conference of AAPT-CPS to be held on March 27th and 28th this year. He is the Hilldale Professor and the Gregory Breit Distinguished Professor in the Department of Physics, University of Wisconsin—Madison. He is also the Director of the Institute for Elementary Particle Physics Research at the University.



Dr. Francis Halzen

Prof. Halzen is a theoretician studying problems at the interface of particle physics, astrophysics and cosmology. Since 1987, he has been working on the AMANDA experiment, a first-generation neutrino telescope at the South Pole. AMANDA observations represent a proof of concept for Ice Cube, a kilometer-scale observatory now under construction.

His areas of interest in teaching includes:

- Physics in the Arts: a hands-on laboratory course for non-science majors covering acoustics and musical instruments, optics and color.
- Astronomy in the Ice: masters program for high school teachers at University of Wisconsin, River Falls. Course is built upon the science related to the AMANDA project.
- Presented numerous lectures reaching scientists, students and the general public.
- Wrote several articles for popular science magazines in the US and Europe.

Prof. Halzen has been a recipient of the following awards: 2007 Helmholtz-Humboldt Research Award (Germany), 2005 Doctor of Philosophy Honoris Causa, Uppsala University (Sweden), 2000 Best American Science Writing 2000 for the essay Antarctic Dreams, published in The Sciences, New York Academy of Sciences (1999), 1999 University of Wisconsin Sesquicentennial Awards: 3 faculty positions given for AMANDA NSF Project, 1998 Korean Research Foundation: Collaborative Research with Foreign Distinguished Scholars, 1997

The Science Coalition award, Great Advances of 1996 for the AMANDA experiment (Washington, DC), 1995 Fellow of the American Physical Society.

The title of Prof. Halzen's keynote presentation is '**Ice fishing for neutrinos.**' He will describe how scientists are melting holes in the bottom of the world! They have melted half of the eighty holes over two km deep in the Antarctic icecap to be used as astronomical observatories. Into each hole is lowered a string knotted with basketball-sized light detectors which are sensitive to the shimmering blue light emitted in the surrounding clear ice when ghostly particles called neutrinos pass through the Earth. These neutrinos are cosmic messengers from the most violent processes in the universe, for example giant black holes gobbling up stars in the heart of quasars, and gamma-ray bursts which are the biggest explosions since the Big Bang. Neutrinos will tell us if there are dark matter particles trapped in the heart of the Sun, and perhaps even reveal if there are additional dimensions in space.

Meet the Current AAPT-CPS Executive Officers

President



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.

Vice-President



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.

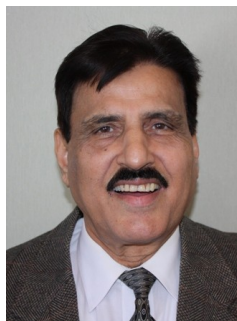
Secretary



Kip Trout

Kip Trout is an Associate Professor of Physics at Lock Haven University and has taught physics there since 1997. He received his B.S. in Physics from Penn State. He received his M.S. in Physics from Penn State. He worked on Residual Gas Analyzers and Vacuum Physics. Since then his research interests have been varied, including physics education, relativistic thermal physics, and most recently ultra-sensitive bubble levels.

Treasurer



Sardari Khanna

Dr. Sardari Khanna is Professor of Physics at York College, Pennsylvania since 1965. He received his Ph.D. from Saugar University, India. His thesis was in the area of Solid State Physics. He has been on the E-Board of the Academic Senate as a Treasurer for the last 32 years. The York College has set up an Academic Senate Scholarship last year in his name to honor him for his long and distinguished service.

Past President



Abul Hasan 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

Section Representative



Kelly Kriebel

Kelly Kriebel is an Assistant Professor in the Department of Physics and Earth Science at Moravian College and has taught physics courses there since 1999. 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.

Meet the Current AAPT-CPS Executive Officers

High School Representative



David McCachren

Two-Year College Representative



Gregory Dolise

56th Annual Conference Report

The 56th Annual Conference of American Association of Physics Teachers, Central Pennsylvania Section (AAPT-CPS) was held on Friday the 4th and Saturday the 5th of April 2008 at Lock Haven University, Pennsylvania. Dr. John Reid, from Lock Haven University, was responsible for organizing the conference.

There was an all day workshop on Friday run by the Physics Teachers Resource Agents (PTRA) for physics teachers. The workshop taught people how to use a software program called Vernier Logger Pro, which allows students to understand physics principles by analyzing digital movies. Dave McCachren of Indian Valley High School in Lewiston conducted the workshop.

The poster session was held Friday afternoon. At the same time as the poster session, several vendors had displays set up and were available to talk to the conference attendees. The vendors included publishers Pearson, Prentice Hall, John Wiley & Sons, and McGraw-Hill and equipment vendors CPO Science, and PASCO.

From 6:00-7:30pm, there was a reception and banquet dinner in Lock Haven University's Bentley Dining Hall. After the banquet dinner there was a public keynote address in Ulmer Planetarium on nanotechnology by Dr. Stephen Fonash from Penn State University. In his address Dr. Fonash talked about how nanotechnology is revolutionizing a wide variety of areas including engineering, computer technology and medicine.

The General Meeting of the AAPT-CPS was held Saturday morning. The president of AAPT-CPS, Dr. Abul Hasan

conducted the meeting. Dr. Keith Miller, the president of Lock Haven University, gave a welcoming address where he stressed the importance of such organizations as AAPT-CPS, in fostering collaborative efforts between high schools and colleges to strengthen science education.

Dr. Hasan gave a Service Recognition Award to Past President Professor Dave Richards from Penn College in Williamsport for his many contributions to AAPT-CPS over the years. Dr. Michael Cullin from LHU presented two awards. An Outstanding High School Physics Teacher Award went to Lawrence Flint who teaches at Williamsport Area High School. An award for outstanding work by a high school student was given to Andrew Strickler, a student of Lawrence Flint's at Williamsport Area School. The general meeting ended with election of the executive officers of AAPT-CPS. Dr. John Reid of Lock Haven University was elected President. Dr. Michael Doncheski from Penn State Mont Alto was elected Vice President, and Karl Trout of Penn State York was elected Secretary.

The General Meeting was followed by morning and afternoon plenary sessions with an hour and a half lunch break. There were 14 oral presentations, each of twenty minutes duration on a variety of topics and these were very well attended. Participants had the option to go on a campus tour during the lunch break. The conference ended with award of certificates to student presenters. Door prizes were also handed out. The prizes were supplied by the vendors and included the complete hardbound edition of the Feynman Lectures on Physics (supplied by Pearson), and a PASCO interface box. Many other books were also offered as door prizes.

PTRA Workshop—March 27, 2009

Moving Physics Education Research into the Classroom

The PTRA workshop this spring will be a sharing of methods and ideas for physics or physical science teachers of all experience levels. There has been and continues to be investigations into how students learn and particularly into how students learn Physics. This PTRA workshop will share some of the findings of this Physics Education Research as well as how to incorporate these findings into your classroom. Different methods and best practices will be demonstrated and discussed. Topics discussed will be: order for teaching Newton's Laws, using displacement and velocity graphs to solve uniformly accelerated motion problems, cooperative learning, discovery experiments, physics practicum, and an introduction to video analysis (taking and analyzing movies).

Physics is much more than a body of knowledge. It embodies habits of thought, philosophical attitudes, broad concepts, and basic skills that can be developed slowly all year and can last a lifetime. Please bring to the workshop a "best" practice that you have found to be effective that you would be willing to share with the other participants. These exchanges of ideas are valuable to all of us as we practice the art of teaching physics.



AAPT-CPS

From the AAPT-CPS Constitution...

The objectives of the Central Pennsylvania 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.

2009 Year of Science



The **Coalition on the Public Understanding of Science (COPUS)** and participants in the US based COPUS Network as well as colleagues from around the world are celebrating 2009 as the Year of Science, a national year-long celebration of science to engage the public in science and improve public understanding about how science works, why it matters, and who scientists are.

Newsletter compiled by Abul Hasan. Please direct all comments and submissions to aqh@psu.edu