

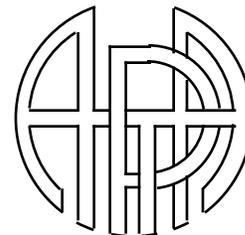
AMERICAN ASSOCIATION OF PHYSICS TEACHERS

Fall 2003 meeting of the Southern California Section

Saturday, October 25, 8:15 AM–4:15 PM

California Institute of Technology, 1200 E. California Blvd., Pasadena, CA 91125

Local contact: Dr. Kenneth Libbrecht, kgl@caltech.edu



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| 8:15 AM Registration, Refreshments, Exhibits | 11:50 AM Announcements, business meeting, elections |
| 8:30 AM Workshops/Tours <ul style="list-style-type: none">"Laboratory physics for big classes in poorly equipped, poorly funded high school classrooms" Bill Layton, UCLA and Gary Reynolds"What's New at Vernier Software" Clarence Bakken, Louisville HSTour of Quantum Optics labTour of Laser Interferometer Gravitational Wave Observatory lab | 12:10 PM Lunch Greek Feast, \$13.00 per person |
| 10:00 AM Welcome and Introductions | 1:30 PM "Show and Tell" Gary Reynolds, Daniel Duncan, Ron Armale, Jonathan Stamper, Dean Papadakis, Glenn Malin, and Forouzan Faridian |
| 10:15 AM "Do they get It" George Kuck, CSULB | 2:00 PM Invited talk "Science and the law" David Goodstein, Caltech |
| 10:35 AM "Ultra-High Energy Cosmic Rays in Classrooms: The CHICOS Research Project" Theresa Lynn, Caltech; Bob Coutts, CSUN | 2:50 PM "Derivation of universal gravitation force by Newton", Rafael Enfiadjian, Santa Monica College |
| 11:00 AM Invited talk "Morphogenesis on Ice: A Close Look at the Physics of Snowflakes" Kenneth Libbrecht, Caltech | 3:05 PM Invited Talk "The Universe: Where it's been and where it's going" Marc Kamionkowski, Caltech |
| | 3:55 PM Order of Magnitude Contest and Door Prizes |
| | 4:15 PM Closing Remarks, Meeting Adjourns |

"What's New at Vernier Software" Clarence Bakken

Our physics teacher friend from Northern California, will be here to demonstrate a combination of basic and advanced features of Vernier's new Logger Pro 3.2. In addition to perhaps the deepest set of graphical analysis tools, they have added the ability to use over 30 different sensors, to connect to computers, calculators and Palm devices, to import a wide assortment of digital objects and to do video analysis. Limited hands-on opportunity during the demonstration, but time will be available to work with the equipment afterwards.

"Laboratory physics for big classes in poorly equipped, poorly funded high school classrooms" Bill Layton and Gary Reynolds.

Participants will work through four high school laboratory lessons in mechanics, optics, and electrostatics giving hands-on experience for all students in big classrooms, and be able to take home some of the equipment to run each lab.

"Morphogenesis on Ice: A Close Look at the Physics of Snowflakes" Kenneth Libbrecht, Caltech

This talk will be about the growth of ice crystals from the vapor phase, which we have been examining as a case study of the non-equilibrium dynamical processes governing crystal growth in general. Ice is particularly interesting because the growth rates of both the basal and prism facets vary strongly and non-monotonically with temperature. Much of this behavior is thought to be related to the onset of surface melting at approximately -15C, although many theoretical uncertainties remain. In addition to normal growth, we have also been examining the effects of strong electric fields on diffusion-limited needle crystal growth, again using ice as a case study. Both theory and experiments show the onset of an unusual growth instability at high voltages, leading to the rapid growth of thin needle crystals.

Election of New Officers

An election will be held at the Fall meeting for *all* SCAAPT officers. It's not too late to run (and there will be no recall later!) Contact Glenn Malin (gmalin@iusd.k12.ca.us)

What's for lunch?

Lunch will be catered by Burger Continental a Pasadena legend.

"Science and the Law" David Goodstein, Caltech

A 1993 decision of the U.S. Supreme Court makes judges responsible for deciding the validity of scientific expert testimony. This talk is based on a chapter I wrote for the Reference Manual on Scientific Evidence, a book published by the judicial branch of the federal government that guides all federal judges and many state judges in applying that decision. I'll review some history, discuss a number of theories of how science works, describe what a career in science is like, explode a number of myths about science, compare science and the law, and, finally, give a scientist's evaluation of the 1993 Supreme Court decision.

"The Universe: Where its been and where its going"

Marc Kamionkowski, Caltech

Remarkable advances in detector technologies have allowed precise new measurements of the cosmic microwave background, a gas of electromagnetic radiation left over from the big bang. These measurements have allowed us to determine the contents and the largest scale structure of the Universe. The results include confirmation that most of the matter in galaxies is in the form of some mysterious "dark matter". The results also provide unanticipated evidence for the existence of some sort of negative-pressure "dark energy" that pushes galaxy apart from each other. Although the observations answer many questions, they raise almost as many new ones. I will discuss the results, the new questions, and speculate on some possible answers.

The Order of Magnitude Contest Question

"How long a line would be formed by setting the atoms in a grain of sand side-by-side"

As always, you are free to interpret the question any way you like, but remember: The winner—i.e., the person with the median answer—gets first pick of the door prizes! Must be a member and must be present to win.

Show'n Tell!

There's still time available. Share a favorite demo with your friends.

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ADDRESS CORRECTION REQUESTED



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Saturday, October 25—Caltech—www.caltech.edu

How do I get to Caltech?

Caltech is in Pasadena. Take Lake or Hill south from the 210 freeway about a mile to California Blvd. For better directions see <http://www.caltech.edu/map/>

Where do I park?

See the campus map at <http://www.caltech.edu/map/Caltech-map-2003-01-27.pdf> On Saturday we can park at no charge in the lot next to the tennis courts directly across California Blvd. from the Bridge building where the meeting will be held. (This parking area is called the "Tournament Lot.") Park anywhere except the spaces marked for gym parking. We can also park at no charge in the South and North Wilson parking structures on the west side of campus.

Where are the meetings?

The general meeting is in 201 E. Bridge.
Vendors will be in 108 E. Bridge
The Vernier Workshop will be in 351 W. Bridge
The New Teachers' workshop will be in 114 E. Bridge

Where do I pay?

Section dues are just \$10/year and are our primary source of support; we receive nothing from the national organization. Members get final programs before the meeting and are eligible for great door prizes. See the SCAAPT website for how to sign up by mail or do it at the meeting. We need your support! Please help introduce us to your school or district colleagues. Bring a new teacher; bring an old one!

Subscribe to the SCAAPT email list

For members *and* nonmembers. (We think you'll join eventually!)
Send a message to

listproc@listproc.csupomona.edu

with the single line:

`subscribe scaapt <name>`

(replacing "<name>" with your first and last name!)

Submit a Change of Address Online

You may submit changes of address using the online form available via a link from the section website or directly using

http://www.csupomona.edu/~ajm/scaapt/ch_add.html

Visit the SCAAPT website for meeting information, a list of section officers and contacts, link to the national AAPT, etc.

<http://www.csupomona.edu/~scaapt>

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|--------------------|-------------------------|--|
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