

AMERICAN ASSOCIATION OF PHYSICS TEACHERS

Fall 2000 meeting of the Southern California Section

Saturday, November 4, 8:15 AM–4:00 PM

Santa Monica College—1900 Pico Blvd, Santa Monica
Local Contact: Nuria Rodriguez, <nuria_rodriguez@smc.edu>, 310-434-4908



8:15 AM Registration, Refreshments, Exhibits	12:00 Lunch (and “networking”)
8:30 AM Workshops (\$5 registration fee) “Especially for New Teachers” Leaders: Bill Layton and Keith Barker “The Science of Sound” Leaders: Fred Carrington and John Mallinckrodt	1:30 PM “Show and Tell” John Ball, John Mallinckrodt, others?
10:00 AM Welcome and Introductions Dr. Merle Arnold, Chair of Physical Sciences	2:00 PM Invited Talk “Understanding the Brass Instruments: A progress report” Dean Ayers, Cal State University, Long Beach
10:15 AM “Personal Response System: Is it Worth the Effort?” Paul Stanley, California Lutheran University	2:50 PM “LAPTAG: Where we are and where we plan to go” Bill Layton and Walter Gekelman, UCLA
10:30 AM “Is Physics Nothing but Math?” Poovan Murugesan, San Diego City College	3:05 PM “Is There Hope for Articulation? IMPAC: An Intersegmental Major Preparation Articulated Curriculum” Nuria Rodriguez, Santa Monica City College
10:45 AM “Knott’s Physics Day Update” Donnamarie Risse, Fountain Valley High School	3:20 PM “The California High School Cosmic Ray Observatory: CHICO” Jim Patterson, Harvard-Westlake School
11:00 AM Invited Talk “Sonoluminescence: The Star in a Jar” Seth Putterman, UCLA	3:45 PM Order of Magnitude Contest & Door Prizes
11:50 AM Announcements	4:00 PM Closing Remarks/Meeting Adjourns

“Sonoluminescence: The Star in a Jar”

Seth Putterman, UCLA

The passage of sound through a fluid with a trapped bubble leads to the clock-like emission of picosecond flashes of ultra-violet light. Sonoluminescence (or SL) is extremely sensitive to ambient temperature, strength of the acoustic drive and doping with a noble gas. The most basic aspects of SL remain unexplained. Neither the light emitting mechanism, nor the range of acoustic drives at which SL can be achieved are understood. It is also a mystery why water is the friendliest fluid for SL. A reasonable picture of the energy concentrating mechanism starts from Rayleigh’s 1917 work on the high pressure developed in a collapsing bubble. Experiment indicates that the collapse is strongly supersonic and suggests the formation of an imploding shock that further focuses the acoustic field. Measurements find that the flash of SL is emitted at the minimum radius where the acceleration exceeds 10^{11} g.

From an entirely independent perspective medical researchers have used the science of SL to develop new contrast agents for radiology and improved devices for plastic surgery.

“Understanding the Brass Instruments: A progress report”

Dean Ayers, California State University, Long Beach

The column of air contained in a brass instrument provides feedback to the performer’s lips, which inject acoustic energy into the instrument. The linear behavior of the air column is pretty well understood, so this talk will focus on the behavior of the “lip reed” or driver. Simple experiments based on the experiences of brass players disprove Helmholtz’s swinging door model and show good agreement with recent computational results from a two-dimensional model. They also indicate that mode locking does not have a significant role in the operation of these instruments; playing frequencies are most stable very near to each peak in magnitude of the input impedance, with negligible influence from the peaks at higher frequencies. Stroboscopic images of Rayleigh waves on the upper lip suggest that a more advanced model should have at least two masses performing two-dimensional motion. Demonstrations will be included.

What’s the Order of Magnitude Question?

“What is the ‘tread life’ (in meters) of a passenger car tire that continuously ‘peels off’ a monatomically thick layer as it rolls?” 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.

What’s for lunch?

You’re on your own for lunch. Use the time to get acquainted or reacquainted with other physics teachers at the meeting. Nuria Rodriguez will have info about places to eat on and near campus.

Show’n Tell!

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

Thank you to our Exhibitors!

Sargent-Welch/CENCO,
Vernier (literature and door prize),
Texas Instruments (literature and door prize),
Knott’s Berry Farm (literature and door prize)

Future meetings (Mark your calendars)

SCAAPT Spring 2000, (to be announced), ~late April?

AAPT Winter 2001, San Diego, January 6-11

Joint meeting with the AAS

AAPT Summer 2001, Rochester, NY, July 21-25

A. John Mallinckrodt
Physics Department
Cal Poly Pomona
3801 West Temple Avenue
Pomona, CA 91768

ADDRESS CORRECTION REQUESTED

**Saturday
November 4**

**Santa Monica
College**



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Fall 2000 Meeting of the Southern California Section
<http://www.callutheran.edu/scaapt>

How do I get to the meeting?

From the 405 (San Diego fwy), exit to the 10 (Santa Monica fwy) west, exit at Cloverfield Blvd., south 2 blocks to Pico Blvd., west past 20th Street to 1900 Pico Blvd.

See <http://www.smc.edu/campusmap/>

Parking is free on Saturdays and the best place would be in Lot #1 right behind the Science building. You will see it on the map. This lot can be reached most easily from Pearl Street on the SE corner of campus, but it can also be reached from the Pico Blvd main campus entrance.

Where can I stay?

Best Western Gateway Hotel, 1920 Santa Monica Blvd.
(310) 829-9100, 1P/2P: \$84-159.

Doubletree Guest Suites, 1707 4th St.
(310) 395-3332, 1P/2P: \$195-235.

Four Points Sheraton, 530 Pico Blvd.
(310) 399-9344, \$169-181.

Travelodge, 3102 W.

Pico Blvd.
(310) 450-5766, 1P/2P: \$59-69.

Comfort Inn, 2815 Santa Monica Blvd.
(310)828-5517, 1P: \$59-99.

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! Bring a new teacher. Heck, bring an old one! We teach old dogs new tricks! Right, Fred?

Subscribe to the SCAAPT email list

Send a message to

listproc@listproc.csupomona.edu

with the single line:

subscribe scaapt <name>

(replacing "<name>" with your 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/myweb/scaapt/ch_add.html>](http://www.csupomona.edu/~ajm/myweb/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.callutheran.edu/scaapt>](http://www.callutheran.edu/scaapt)

SCAAPT Officers 2000-2001

President:	Mary Mogge	<memogge@csupomona.edu>
Vice President:	Glenn Malin	<gmalin@iusd.k12.ca.us>
Vice President HS:	Forouzan Faridian	<ffaridia@lausd.k12.ca.us>
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Treasurer:	Fernando J. Lopez-Lopez	<fflopezlopez@swc.cc.ca.us>
Secretary	Paul Stanley	<stanley@clunet.edu>
Editor:	John Mallinckrodt	<ajm@csupomona.edu>
Mr. Can Do	Bill Layton	<layton@physics.ucla.edu>

