

# AMERICAN ASSOCIATION OF PHYSICS TEACHERS

Spring 2000 meeting of the Southern California Section

Saturday, May 6, 8:00 AM–4:00 PM

Warren Lecture Hall—University of California, San Diego

Local Contact: Patti Hey, plhey@ucsd.edu, 858-822-1468



8:00 AM	Registration, Refreshments, Exhibits	1:30 PM	<b>“Show and Tell”</b> Gary Reynolds, Paul Stanley, Glenn Malin, others?
	<b>Workshop</b> “Make and Take Demos” (New teachers particularly encouraged to attend.) Leaders: Forouzan Faridian and Edward Lever	2:00 PM	<b>Invited Talk</b> “Dark Matter and the Ultimate Fate of the Universe” Kim Griest, UCSD
10:00 AM	<b>Welcome and Introductions</b>	2:50 PM	“Some Reasons Why Tuning Forks are Monotonic” Ed Lulofs, Azusa Pacific University
10:15 AM	“Low Pressure Flames” Alison Hill, Nicole Imhof, and Paul Stanley California Lutheran University	3:05 PM	“Growth of the AP Program and the Decline of the C Exam” Fred Carrington, Grant High School
10:30 AM	“Lasers in the Classroom” Gareth Williams, San Jose State University	3:20 PM	“Simultaneous Equations to Provide Parallel Processing” William Harvie, Torrey Pines High School
10:50 AM	“Stopping Distance for Cars” Dick Kenealy, San Juan Capistrano Research Inst.	3:35 PM	Business Meeting <b>Order of Magnitude Contest</b> <b>Door Prizes</b>
11:00 AM	<b>Invited Talk</b> “The Physics of Protein Folding” Jose Nelson Onuchic, UCSD	4:00 PM	Meeting Adjourns
11:50 AM	Announcements		
12:00-1:30	Lunch		

## “The Physics of Protein Folding”

Jose Nelson Onuchic, UCSD Physics Department

The folding mechanisms for several fast folding proteins can be quantitatively described using an energy landscape theory. Using simulations together with analytical theory, we can learn about good (minimally frustrated) folding sequences and non-folding (frustrated) sequences. An important idea that emerges from the energy landscape theory is that subtle features of the protein landscape can profoundly affect the apparent mechanism of folding. In addition to the need to minimize energetic frustration, the topology of the native fold also plays a major role in the folding mechanism. Some folding motifs are easier to design than others suggesting the possibility that evolution not only selected sequences with sufficiently small energetic frustration but also selected more easily designable native structures.

## “Dark Matter and the Ultimate Fate of the Universe”

Kim Griest, Professor of Physics and Vice-Chair for Education of the UCSD Physics Department

It is surprising that we still do not know what the most common substance in the Universe is. This mysterious "dark matter" is far more common than stars, and dominates the Universe on large scales, controlling the motion of stars and galaxies and in part determining the fate of the Universe. There are many searches underway for dark matter, and I will describe a successful search for MACHO dark matter using gravitational lensing. MACHOs (Massive astrophysical compact halo objects) include black holes, brown or white dwarf stars, and planetary mass objects. I will also discuss how the newly discovered cosmological constant impacts our understanding of the ultimate fate of our Universe.

## What's the Order of Magnitude Question?

“What is the continental drift kinetic energy of North America?”  
The winner is the person with the median answer and gets first pick of the door prizes! Must be a member and must be present to win.

**Where do I eat?** Food is available at Price Center, about a two minute walk from the Warren Lecture Halls. It has a food court with several fast-food restaurants.

**Show'n Tell** There's still some time available. Share a favorite demo with your friends.

**Thank you to our Exhibitors!** Laser Light Lab (+door prize!), PASCO Scientific (door prize) Sargent Welch/CENCO, Texas Instruments (+door prize!), Vernier (+door prize!)

## Future meetings (Mark your calendars)

AAPT Summer 2000, University of Guelph, Ontario, 7/29-8/2

SCAAPT Fall 2000, (to be announced), ~early November?

AAPT Winter 2001, San Diego (!) 1/6-1/11  
Joint meeting with the AAS

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

Nonprofit Organization  
U.S. Postage Paid  
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**ADDRESS CORRECTION REQUESTED**

**Saturday  
May 6**

**UC San  
Diego**



**AMERICAN ASSOCIATION OF PHYSICS TEACHERS**  
Spring 2000 Meeting of the Southern California Section  
<http://www.callutheran.edu/scaapt>

**How do I get to the meeting?** Take the Genesee exit from I-5 and head east. Watch for a large sign for the UCSD Medical Center and turn right onto Campus Point Drive. Go one short block and turn right on Voigt Drive. Pass Scripps Hospital on your right and park either in Lot 701 on your left just after the baseball field or in Lot 510 on your right beyond the freeway overpass just after the four way stop.

Continue walking along Voigt Drive until it ends at an intersection with Mathews Lane. Walk across the street and continue straight ahead, staying on the sidewalk between the Literature Building on your left and the Engineering Building on your right. Warren Lecture Hall is the second building on the left, just past the Literature Building.

Further directions and maps are available at

<http://www.ucsd.edu/visit/directions.html>

**Where do I stay?** Lodging information is available on the SCAAPT website. <http://www.callutheran.edu/scaapt>

**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?

**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>

**Subscribe to the SCAAPT email list**

Send a message to

[listproc@csupomona.edu](mailto:listproc@csupomona.edu)

with the single line:

subscribe scaapt <name>

(replacing "<name>" with your name!)