



**American
Association of
Physics
Teachers**

**Northern California
and Northern Nevada
Section**

Fall Meeting

**Friday, November 4, 2011
Saturday, November 5, 2011**

**University of California
Berkeley
Berkeley, CA**

Local Host: Tom Colton

email: tcolton@berkeley.edu

www.ncnaapt.org

~ Friday Evening Social ~

No Host Dinner

5:30-6:15

Euclid Street

Optional no-host dinner at one of Berkeley's Northside neighborhood restaurants (just a short walk from Le Conte Hall). RSVP on our website if you'd like to attend the dinner. www.ncnaapt.org

Welcome Gathering and Social

6:30 - 7:30 PM

LeConte Hall Lobby

*Complimentary Sodas
and Beer*

~ Lecture Demo Show ~

7:30 – 8:30 PM

LeConte Hall Room 1, UC Berkeley

Come join us for munchies and a brew or two and get in the mood for some entertaining physics. Berkeley lecturer and lab coordinator Terry Buehler will show us the best of the demos from Berkeley's 600+ collection, including some you won't see anywhere else.

~ Program ~

SATURDAY, November 5, 2011

Morning Session, LeConte Hall Room 1

8:00 Registration, Coffee, & Donuts

9:00 Welcome and Announcements

9:15 Show & Tell

Share your favorite demonstration or teaching tip. Since new teachers and section members will be at this meeting, you are encouraged to dust off some of your oldies but goodies. If you have hand-outs, please bring 75 copies. *Time limit is 5 minutes per person or you risk the dreaded GONG by referee David Kagan!*



10:15 Break

**10:30 "Physics for Future Presidents
-- A new approach for the non-science student"**

Invited Speaker: Richard Muller

Professor of Physics, U. C. Berkeley

Faculty Senior Scientist, Lawrence Berkeley National Laboratory

"Physics for Future Presidents" is the informal title of the course I have taught at Berkeley for ten years. For the last two it was voted by a poll taken by the student newspaper as the "best class at Berkeley." The approach of the course is immersion in high tech issues of vital importance. These include energy, nukes, terrorism and counter-terrorism, satellites, remote sensing, climate change, and current events such as the tsunami and nuclear accident at Fukushima. The course is designed to attract students from liberal arts and business, but is sometimes taken by physics and math majors too. Enrollment grew from an initial 34 students (in 2001) to over 500, filling the largest lecture hall at Berkeley. The textbook (under \$50) is now used at 20 universities in the US. I'll discuss the content of the course and the pedagogy, and how to make physics phobes love the subject.

11:30 Group Photo

11:45 Lunch

12:45 Business Meeting

1:00 Tours of Physics Research Labs

Guided tours of physics faculty labs in Astrophysics, Condensed Matter & Materials Science, and Atomic, Molecular, and Optical Physics, led by graduate students and researchers.

Frances Hellman Lab: Thin-film magnetism and heat capacity

Led by Chloe Baldasseroni and Cory Antonakos

Irfan Siddiqi Lab: Quantum nanoelectronics

Led by Daniel Slichter and R.Vijay

Dan Stamper-Kurn Lab: Ultracold atomic physics

Led by Ed Marti

Dmitry Budker Lab: Atomic magnetometry and applications

Led by Eric Corsini

Bernard Sadoulet Lab: Searching for Dark Matter

Led by Julie Rolla

Zi Qiang Qiu Lab: Growth of Magnetic Nanostructure using MolecularBeam Epitaxy (MBE)

Led by Ali Tan

Hartmut Haeffner Lab: Quantum optics and quantum information research with trapped ions

Led by Sonke Moller

1:00 Roundtable Discussion LeConte 215

Moderator: Bree Barnett Dreyfuss, Amador Valley High School

Having a rough year? Or two or three? *You're not alone!* Come participate in a discussion with other high school teachers (veterans and new teachers) to discuss common problems and solutions. Even if you feel like you need a lot of help, you probably have a trick or two up your sleeve that will help another teacher. Feel free to bring specific concerns, general questions and solutions! We will try to address as many concerns as possible as time permits but will at least touch on the following common issues:

1. *Knowing your audience:* Suggestions for making your lessons age and level appropriate.
2. *Getting the best bang for your buck:* How to ease the grading load and make assessments purposeful for students.
3. *How to handle adjustments & learning curves:* So you realize you have to make some major changes to your pedagogy, how do you do it smoothly?
4. *Discipline:* Hear horror stories, veteran's suggestions, learn how to stick to your own discipline plan, etc.

Some materials on the preceding topics will be available. Other materials that are introduced can be shared on the NCNAAPT website after the round table.

2:15 Break

2:30 Hands-On Physics Workshops

Three concurrent workshops featuring labs and lecture demonstrations from Berkeley and other schools (contributions welcome). Spend the full period in one or circulate among the labs to see them all.

Workshop 1: Lecture Demonstrations

LeConte 1 and 72

Try out lecture demonstrations from the Berkeley collection and any that participants bring, including many that can be built or acquired cheaply. If there are demos you particularly want to try, let Tom Colton know. (see <http://www.mip.berkeley.edu/physics/>)

Workshop 2: Introductory Labs

LeConte 245 and 248

Experiment with freshman/sophomore course labs from Berkeley and other schools covering mechanics, electricity, magnetism, optics, and modern physics.

Workshop 3: Advanced Labs

LeConte 282 and 286

Perform experiments from the Berkeley Advanced lab course, such as optical pumping, atom trapping, laser tweezers, chaos and non-linear dynamics.

2:30 Modeling Workshop LeConte 215

Presenter: Lee Trampleasure, Carondelet High School

Have you been interested in the Modeling Instruction curriculum? Next summer there will be a three-week intensive workshop in Concord, CA. Come to today's mini-workshop to get your hands on some of the activities, have some of your questions answered, and perhaps whet your appetite for signing up for next summer's complete workshop. Modeling Instruction, maturing in the last 20 years, cultivates physics teachers as experts on effective use of guided inquiry in physics teaching. Modeling instruction corrects many weaknesses of the traditional lecture-demonstration method, including fragmentation of knowledge, student passivity, and persistence of naive beliefs about the physical world. Come join us for an introduction to the pedagogy and some hands-on activities that demonstrate the strength of Modeling Instruction.

4:00 End of Meeting

REGISTRATION FREE*—*What a deal!*

\$20 for NCNAAPT members (includes one lunch ticket)

* Free for first-time attendees and students (Lunch tickets will be available for \$10.)

Lunch will be beef, turkey or veggie sandwiches from “**Stuffed Inn**”.

A bargain at twice the price!

Proof of attendance certificates will be available for download on the website documenting attendance for any teacher who needs one for their district/professional development purposes.

Please pre-register online if you know you are coming:
www.NCNAAPT.org/register. We aren't collecting money online, but it helps us to know about how many people are coming.

Attention New Physics Teachers! PTSOS is here to help you!

PTSOS is an NCN-AAPT-sponsored project funded by a donation from the Karl Brown Foundation that assists physics teachers in their vulnerable first years of teaching. **PTSOS has expanded** and now offers two sets of three workshops; one at Los Gatos High School hosted by **Paul Robinson, Dan Burns, and Stephanie Finander**, and the other at Rio Americano High School hosted by **Dean Baird and Steve Keith**. The next round of workshops have not yet been set. Please check the web site www.ptsos.org for the latest information. New teachers should email Stephanie Finander at sfinander@sbcglobal.net for more information on how to get signed up.



~ Directions to UC Berkeley Physics ~

By Public Transit

Check 511.org for options from your location. The most common access to campus is from the Downtown Berkeley BART station. If you exit the station up the escalator, cross Shattuck (the big street) and continue east on Center street one block to campus. Cross Oxford and take the path straight ahead through the woods, continuing up hill towards the Campanile (large clock tower). LeConte Hall is just beyond the Campanile.

By Car

Exit 80/580 at University Ave. in Berkeley. Take University Ave. east to the edge of campus at Oxford St. Turn left on Oxford, then right at the 2nd light on Hearst. On Friday evening, you may find free street parking on the streets north of campus off Hearst. On Saturday, some street parking may be found IF the 2-hour restrictions don't apply to Saturdays (check signs). Campus lots and garages off Hearst and Gayley allow public parking after 5:00 and on weekends, but you must purchase a ticket from the yellow machines nearby. The Upper Hearst garage and the lot off Stadium Rim Way at Gayley are the closest to LeConte Hall. See <http://berkeley.edu/map/> for campus maps.

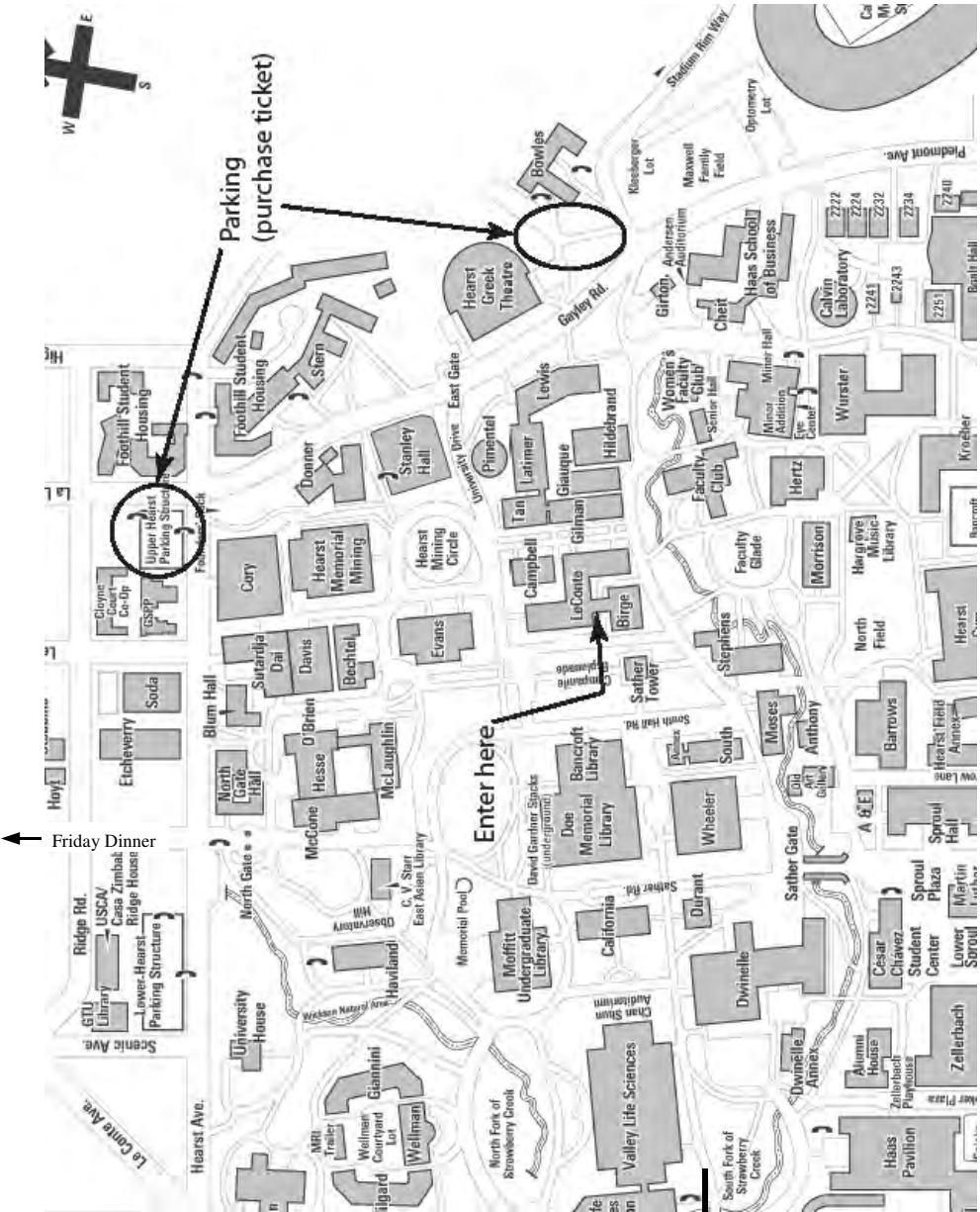
If you're coming from Highway 24 through the Caldecott Tunnel, take the 'Berkeley Highway 13 North' exit (#5B) then continue on Tunnel Rd (which becomes Ashby). Turn right on College Avenue, right on Durant, and left on Piedmont.

Parking fees on evenings and weekends are \$.50/half hour and machines are supposed to accept coins, \$1 bills, \$5 bills.

~ Finding LeConte Hall ~

LeConte Hall is just northeast of Sather Tower—the Campanile — the clock tower that can be seen from almost anywhere on campus.

The only entrance to LeConte Hall open Friday night and Saturday will be the door under the breezeway between LeConte and Birge Halls (door closest to the Campanile).



Parking
(purchase ticket)

Enter here

Friday Dinner

Downtown Berkeley
BART Station
(Shattuck and Addison)
about one block