

New England Section Newsletter

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2000 FALL MEETING OF THE NEW ENGLAND SECTION OF THE AMERICAN PHYSICAL SOCIETY Central Connecticut State University, New Britain CT, November 10 and 11, 2000

The Fall 2000 Meeting of the New England Section of the American Physical Society (NES/APS) will be held at Central Connecticut State University (CCSU) in New Britain, Connecticut, on Friday and Saturday, November 10 and 11, 2000. The description that follows is the important part of the home page of the meeting at Central. It has been unchanged for much of the summer and repeats information provided in the summer Announcement of the APS.

The program centers on Photonics for Friday afternoon. Saturday morning features General Physics, Photonics, Electroactive Materials, and Industrial Roundtable. A banquet will be held Friday evening at 6:30 in the Nutmeg Room, Memorial Hall, of CCSU.

Registration may be accomplished in any of three ways. A registration form is provided with the announcement in the APS Announcements if you have saved it since July. If you access the web page http://www.physics.ccsu.edu/aps_nes you may click to obtain a registration form as well as to learn information placed there since this newsletter was assembled. Finally, onsite registration begins at noon on November 10 in Copernicus Hall of CCSU and lasts most of the meeting. It is important to note that the early registration deadline is October 13, after which a \$10 late fee will be assessed.

The organizing committee of the meeting welcomes contributed and poster papers in Photonics, Electroactive Materials, and General Physics. There will be parallel oral and poster sessions on the morning of November 11. Student contributors will have their registration fee waived. Full instructions for abstract submission are at [/meet/meet-abstract.cfm](#). The deadline for receipt of abstracts is Friday, October 13.

The July APS Meeting Announcements and the home page cited present directions to CCSU and a list of recommended motels in the area. It is a

good idea to mention CCSU, AAA, AARP, and so on because one of these alphabetic strategies usually works. In the area there are wonderful museums, including the New Britain Museum of American Art.

The local organizing committee includes Peter LeMaire, Sadanand Nanjundiah, Ali Antar, Kristine Larsen, Luisito Tongson, and Nimmi Parikh. Contact person is Professor LeMaire, Department of Physics and Earth Sciences, CCSU, New Britain CT 06050. Telephone contact is (860) 832-2939 or (860) 832-2930 (department secretary). Fax if needed: (860) 832-2946. Email: lemaire@ccsu.edu.

SPRING 2000 MEETING AT RHODE ISLAND COLLEGE

The Spring 2000 Meeting of the New England Sections of the American Physical Society, the American Association of Physics Teachers and the Society of Physics Students was held at Rhode Island College on April 14 and 15. Here are two views of the meeting. The first (broad view) is by George Rawitscher, who worked long and hard for the meeting. The second (narrow view) is my addendum.

The themes of the meeting were the relations among physics, society and industry (Friday) and the teaching and learning of physics (Saturday). Most of the activities took place in the Clark Science Building. The meeting was organized jointly by Doyle Davis, New Hampshire Community Technical College and incoming chair of NES-AAPT, by Peter Glanz, Rhode Island College, who did local arrangements, and by George Rawitscher, University of Connecticut, who acted for the APS. About 90 registrants were at the meeting. Of great help was Larry Gould, University of Hartford and Secretary-Treasurer of NES-APS, who assisted in arranging the banquet talk. An excellent web page was constructed by Doyle Davis and contains details of the meeting: <http://comet.berl.tec.nh.us/?doyle/index.cfm>.

Friday's activities began at 2 pm with a welcome by Dr. Richard Weiner, Dean of Arts and Sciences and Professor of Political Science at RIC. In parallel with the joint invited speakers session were two contributed papers sessions of the APS and the AAPT, with five papers in each, and two workshops that are described below.

The invited session was chaired by June Matthews, President of NES-APS and Professor at MIT. Michael Lubell, CCNY and Director of Public Affairs at the APS, discussed Science in the New Millennium: Where is Washington Headed? He painted a reasonably optimistic picture of a Congress that at last sees national economic value in supporting pure research. Jeffrey Schweitzer, UConn, spoke on Applications of Nuclear Physics to Interdisciplinary Research, which supported the point made by Mike Lubell through examples of ongoing uses of physics to meet various industrial needs. Peter Mumola, Zygo Corporation in Middlefield, CT, in his talk Academe-Industry Relations: Dreams, Fears and Realities, showed the value to both parties in today's interdisciplinary world of a close working relationship between academe and industry.

The two workshops were led by Karen Bouffard, Newton Rules, on The

Physics of Toys, and Tom Poland, Wilson Educational Services, on Motivate, Integrate, Educate. The former exhibited many interesting and appealing toys that illustrate physics principles in action. The latter acquainted its audience with energy education programs in schools that have strong academic bases in physical science, math and technology. Completing the afternoon, Richard W. Peterson, Bethel College, MN, and national AAPT Secretary, gave the invited talk Applied Optics: Motivations in Undergraduate Research, Industry and the Arts. From 5 to 6 pm a poster session/ cocktail hour preceded the banquet, which was followed by John Stachel, Professor Emeritus at Boston University, who spoke on the intriguing question Einstein, a Man for the Millennium? These events were well attended.

Saturday's activities started early. Two contributed sessions of APS and AAPT separately, with four papers each, went from 8 to 9 am, as did a poster session. The invited session, chaired by Doyle Davis, began with Mario Belloni, Davidson College, on A New Approach to Authoring Interactive Curricular Material, which presented the value and beauty of "physlets." These are short animated visuals, easily modified by the user and located on the internet, that demonstrate particular physics principles. George Gibson, UConn, in New Themes and Audiences for the Physics of Music, explained a way of introducing physics of importance to sound and instruments by centering discussion on vibrations and spectra. The talk is based on his new course at UConn. Howard Goldick, University of Hartford, in Physics for Allied Health Students, described two courses that motivate the learning of physics as it applies to the human body.

The invited talks were followed by a lively round-table discussion chaired by George Rawitscher of UConn on How to Increase the Interest of Students in Science. Along with Professor Morton Sternheim of UMass, who described programs to improve the efficacy of high school teachers in the sciences, six other panelists were mainly successful examples from that group of teachers: Steve Albert, Robert Barkman, Dale King, Gerald Hastava, David Gewanter, and Keith Adams. The audience took active part in the discussion. Methods proposed to engage students in science topics included dynamic teaching and student projects with teacher help.

Saturday afternoon the AAPT ran a session with Favorite Labs and Demonstrations, and two additional sessions of contributed papers completed activities for the APS and AAPT. Thus ended a stimulating two days for the physics educators. This optimistic description of the meeting's high points completes the slightly edited writeup of Professor Rawitscher.

For me, your editor, there were some lows as well as highs. The Friday afternoon session of invited talks was excellent but had the smallest audience I can remember for this type of event. The speakers scanned the empty seats and then gave their fine presentations. There may be several reasons for sparseness. Some of our faithful members were at the symposium at Yale in honor of Martin Klein. A few arrived at poster/cocktail time. But I also think that we have a strong anecdotal test for the Laffer Curve. This mathematical model, you will recall, has status in economics and declares that lowering taxes from a level that actually parts rich people from a portion of their incomes will generate more

revenue for the government, the greater part coming from non-rich people. We could reasonably wonder whether raising the tariff from a low level would generate more or less money for the collector. The Laffer Curve keeps curving, but how? In all other Section meetings I remember, the registration fees were not as high as for this meeting. For example, students and emeriti are traditionally assessed maybe five dollars or no fee. For RIC there was a spike of a twenty dollar registration fee for those individuals. Some people I expected to see I didn't. But I also saw a few who simply did not register. They did not attend the banquet, which is the only ironclad way for the Section to make sure they register, unless there is some other paper trail, as for the lead presenter of a contributed talk or poster.

The after-banquet speaker deserves description (information provided by Larry Gould), especially for readers who spent the two days at Yale. The history of physics was the subject at Yale and is the field of the speaker at the Section banquet. John Stachel received his BS at CCNY, his MS and PhD at Stevens Institute of Technology, and his PostDoc experience at U of Pittsburgh. He worked at Lehigh and at Boston University, where he is now Professor Emeritus of Physics and is Director of the Center for Einstein Studies. His visiting professorships include Princeton U, Center for Advanced Studies, Mexico, King's College, London, University of Paris VI, and Max Planck Institute for History of Science, Berlin. He is founding editor of *Collected Papers of Albert Einstein*, Princeton U Press, and is currently editor of *Einstein Studies*, Birkhauser. He is author of about 80 papers in physics (primarily general relativity theory), philosophy and history of science. His most recent book is *Einstein's Miraculous Year*, Princeton U Press, 1998. It was adopted by the Library of Science and by the corresponding British book club and is being translated into German, Hungarian, Polish, Spanish, and other languages.

DM

HAIKUS FOR PHYSICISTS

Haiku is Japanese the way jazz is American. Others can practice the craft but only if they have the right soul. As everyone should know, the haiku is a tiny verse-form many centuries old. It began as the first part of the tanka, a five-line poem, often written by two people as a literary game, one writing three lines, the other two lines capping them. Then the three-line starting verse separated off. The haiku has seventeen syllables, five, seven, five, in order. There are certain conventions, such as a key word about nature implying a season. Language is used in a telegraphic form. Zen philosophy is embedded in many verses. There is also more than a statement of human feeling or a picture of nature; there is a suggested identity between two seemingly different things. Quotations, allusions, inventions, multiple meanings, absence of connecting words, of tenses, of pronouns for number or gender, are James Joycian. Consider Finnegan's *Wake* as a succession of maybe 50,000 haiku. In some of those haiku the wonderful word quark appears. Japanese is a highly polysyllabic language, unlike ordinary English but quite like scientific language. Alliteration and interior rhymes are common in Japanese because of the syllables available.

Technical terms have these properties moreso than the ambient din around us. That is why Tom Lehrer was able to make a charming easily learned song consisting of all the known chemical elements of the time.

One of my daughters presented me with a slim volume for Father's Day, Haikus For Jews (For You, A Little Wisdom), by David Bader. So what is the special character that makes a haiku Jewish? Consider this:

Sorry I'm not home
to take your call. At the tone
please state your bad news.

There are certain epochal writings I wish I had done. Among them are Death of a Salesman, The Adventures of Augie March, Fiddler on the Roof, Theory of Superconductivity, and this heartfelt haiku:

Is one Nobel Prize
so much to ask from a child
after all I've done?

With this preamble, I give you

Haikus For Jewish Physicists

The Universe is
larger than an overstuffed
chopped liver sandwich.

If I told you once
I told you a thousand times
Don't go near that black --

Too late. You were right
at the event horizon
and took one more step.

The whole Universe
is constantly expanding,
just like you, Bubbie.

It's so hot, Dearie,
so please stop playing with your
primordial soup.

Florida sunshine;
ultraviolet photons
head towards your sunscreen.

I don't know what's worse:
the energy that hits you
or the momentum.

Junior, leave the pool.
You know you can't cope with the
pee plus rho gee aitch.

Electricity
hurts. So does magnetism if
a magnet whacks you.

Hundred foot tall wall.
Fall ninety-nine: live. One more:
die. Gravity kills.

That black hole at the
center of our galaxy,
does it bother you?

Parity is not
conserved in weak processes.
Should we be worried?

Now I wonder whether other groups besides Japanese and Jewish people
can write haikus characteristic of their own outlook and sensibility. For
example, are there haiku for Fundamentalist physicists? Perhaps:

Parity is not
conserved in weak events. Whyyy?
Could it beeeeee Satan?

Or New Age physicists:

Parity would be
conserved in interactions
if we all held hands.

Planet Alzheimer's physicists:

Parity is not
something or other in weak
mental images.

Whatever your special denomination, send your contributions to the
editor for consideration for the next issue. If I get enough of them and
they are sufficiently good, we could write our own book. Maybe we can
become famous.

Why shrink back from it?
A little fame could not hurt
any one of us.

Once you start writing in this way, you find it is very hard to stop. I mean

Once you start writing
in this way, you find it is
very hard to stop.

DM

GUNS AND PHYSICS

The last page of the New York Times Sunday Magazine is called Lives. Often it is lives lived near an edge far in spirit and in space from Storrs CT. The article of April 16, 2000, by Stephen S. Hall, a contributing writer for the magazine, was Disorderly Conduct (Trying to scrub away the randomness that neither curtains nor cops can keep at bay.). It tells of an event in their Brooklyn neighborhood, with a car crash followed by lawmen and their lawless quarry with guns drawn on the Halls' street. Violence led to their front stoop's becoming a crime scene. The following half-paragraph caught my attention.

"The randomness of this kind of menace is particularly unsettling: if the stolen car hadn't been followed by the cops; if the physics of the collision hadn't deposited the vehicle just so at the corner of our street; if the neighbor across the street had moved to intervene a second sooner, or a second later; if the suspected felon, once cornered by the cops, had reached for his wallet, or his keys, or his cracked head, in too abrupt a manner. ... You would need to be a physicist to plot the probability of bloodstains on our doorstep on that sunny day." (The dots are Mr. Hall's.)

So my question is: Could a physicist actually do that with confidence and accuracy? Has any reader ever done something like the proposed set of calculations? Do we deserve the tribute implied by Stephen Hall's statement?

DM

I THINK I KNOW I AM

Ink abink adink. Iamb. Therefore I think.
Oh, am I thinking small? Or do I think at all?
I know I am of course: DesCartes before dayhorse.

PDQ

NEW ENGLAND SECTION EXECUTIVE COMMITTEE MEMBERSHIP 1998

June Matthews, Chair
Physics Department
MIT
Cambridge, MA 02139
(617) 253-4238
FAX (617) 253-5440
MATTHEWS@MITLNS.MIT.EDU

Harvey Gould, Vice Chair
Physics Department
Clark University
Worcester, MA 01610
(508) 793-7485
FAX (508) 793-8861
HGOULD@PHYSICS.CLARKU.EDU

John Calarco, Immediate Past Chair
Physics Department
University of New Hampshire
Durham, NH 03824
(603) 862-2088
FAX (603) 862-2998
CALARCO@UNH.EDU

Kannan Jagannathan, Section Advisor
2001
Department of Physics
Amherst College
Amherst, MA 01002
(413) 542-2346
KJAGANNATHAN@AMHERST.EDU

Laurence I. Gould, Secretary/Treasurer
Physics Department
University of Hartford
West Hartford, CT 06117
(203)768-4307
FAX: (203) 768-5244
LGOULD@MAIL.HARTFORD.EDU

David Markowitz, Newsletter Editor
Physics Department U46
University of Connecticut,
Emeritus
Storrs, CT 06269-3046
(203) 486-4286
FAX: (203) 486-3346
DM@PHYS.UCONN.EDU

EXECUTIVE COMMITTEE MEMBERSHIP 2000

Peter K. Lemaire, Member-at-Large
97-00
Department of Physics
Central Connecticut State
University
New Britain, CT 06050
(203) 827-7341
FAX (203) 827-7877
LEMAIRE@CCSU.CTSTATEU.EDU

George Rawitscher, Member-at-Large
97-00
Physics Department
University of Connecticut
Storrs, CT 06269
(203) 486-4377
FAX (203) 486-3346
RAWITSCH@UCONNVM.UCONN.EDU

Jefferson Strait, Member-at-Large
1997-2000
Department of Physics
Williams College
Williamstown, MA 01267
(413) 597-2008
JSTRAIT@WILLIAMS.EDU

Nalini Easwar, Member-at-Large 1998-2001
Department of Physics
Smith College
Northampton, MA 01063
(413) 585-3887
NEASWAR@SOPHIA.SMITH.EDU

Steven Davis (Temporary)
Physical Sciences Inc.
20 New England Business Center
Andover, MA 01810
(508) 689-0003
SDAVIS@PSICORP.COM

THE LAST BANG or At Least They Are Not Sticking Pins In My Doll

My column in the March issue of APS News drew several responses on divine truth, a topic absent from my universe of discourse. While I like to give the responders the last word, I wish to thank Barbara Helmkamp (letter, May issue; you save old newspapers, don't you?) for suggesting the book *How Should We Then Live?* by Francis Schaeffer. Subtitled "The Rise and Decline of Western Thought and Culture," the book is openly Fundamentalist Christian. It lives in the same world science lives in and sees it differently.

I read the book but when I appeared in public with it, I surrounded it by a copy of *Mad Magazine*. It finds most of the good in the world in Christianity and most of the bad in humanism, including science. Very well written, it brings together many historical and contemporary topics. They all point that author to Christian faith and this author to rational analysis. There is little middle ground.

People not suffering from depression see much beauty in the world, in nature, human nature, and even abstraction, such as art and math. Is the beauty elevated by attributing it to a deity or diminished by elaborating laws of science? To Schaeffer and many readers, the central event in history is Christ's death (for our sins) and aftermath. This makes physics and biology expressions of God's will. To others the same event is an accident of history. Why not Barabbas? Many sects have disappeared through the ages. Why did the Romans run out of lions? In Texas alone saviors come and go yearly.

The main claim in the book is that Christianity has a principle, man made in God's image, and this gives the world meaning. Outside of this there is

no meaning. All is arbitrary. God plays with dice. Eventually lawlessness emerges, the way marijuana use leads to high crime and misdemeanor. But science is built on a firm principle, a faith if you choose that word. The evidence rules. Without evidence, wishing does not make it so. Evidence points to a historical sequence out of which God has been fashioned in man's image. But if you don't like that, just go with nature.

Now I don't want to get off on a rant here, but why have western religions been given the edge called "pro-life"? For untold centuries religious wars were the norm. Wars over the succession of monarchs in European countries pitted Protestant against Catholic. Where was the religious opposition to the rise of fascism in the past century? More often it was "Godless" communists having their heads smashed in the streets. A few notable clerics put their lives on the line in opposing America's war in Viet Nam. Many more longhaired radicals with strange new practices did so, and they reminded me of the bands of 2000 years ago in "holy lands."

I can't get rid of a certain image of a Fundamentalist. It is Malvolio in Shakespeare's Twelfth Night, who warns that when he takes over England he will close the theaters. A generation later that is just what happened and it lasted until the Restoration. Malvolio was a killjoy. Other people's lusty actions bothered him. The Puritans found religious freedom in Holland. What they wanted was religious dominance so they came to America.

Schaeffer claims that society functions happily when it is all Fundamentalist. This is illusion, like the illusion that America functioned when it was a slave-holding country. Nobody asks the vast out-group how it feels to be out. Schaeffer himself is a promoter of cordial race relations. But that does not extend to Bob Jones University, a site that got George W. into trouble. Schaeffer has no problem with Jews. But Jerry Falwell consigns Jews to hell, if you think there is such a place, a hot episode on Larry King. It does become clear why religious skirmish is a daily occurrence around the globe.

There are some things science and religion are equally inept at, and they are explanations of personal tragedy. The young girl killed in an auto accident leaves her family needing answers. The physics may even be clear. Her car was speeding and the car in the adjacent lane bumped it, imparting transverse momentum sufficient to cause it to leave the road. No comfort there. Religion tries but fails in its own implausible way.

I can't help noticing that the vehicle that plunges into a ravine is usually filled with families traveling home from bible camp and almost never occupied by organized crime figures. That's easily explained. Many thousands of miles are logged by the former for each mile of the latter. All other conditions of roads, weather and drivers being similar, the results are in direct proportion. The only systematic is the random intervention of the stalled car in the road just ahead or the sun's blinding glare abruptly revealed when the cloud moves. To that extent it does appear that God plays dice.

I think of science the way I think of democracy. It is filled with flaws until you look at any competing system. We are flexible and tolerant and

in the ideal, which we never measure up to, we are perfectly honest. That's because we go by the evidence as far as we can gather, analyze and understand it. Western thought and culture definitely rose and may be declining, but it is not for lack of faith. Certainly the worst outcome for our country would be for any single faith to become dominant. Of course, that's just my opinion. I could be wrong.

DM

LOOK AT ME, I'M A PRESIDENT

Since my retirement three years ago, I (DM) have risen rapidly through the ranks of the Center for Learning In Retirement (clearly, CLIR), associated with the School of Continuing Studies at UConn and meeting in a well-appointed cottage on the UConn Depot Campus down the road from Storrs in the same town of Mansfield. (Does that jibe with your GPS?) This is one of ten ILRs (Institutes for Learning in Retirement) in Connecticut, all associated with institutions of higher education. I am in the midst of my stint as President.

The Elegant Universe has appeared in the curricula of a few ILRs, including CLIR, for which I gave the talk. It was stimulated by the prize-winning book of that name by Brian Greene. The book has been criticized by "hardliners" for inaccuracies but its imperfections have not harmed the appreciation on the part of non-scientific but generally educated audiences. People meeting up with stringy things in ten dimensions for the first time ask whether I believe in it. Now I know less about that theory than I do about the OJ Simpson trial. So what I tell them is that in a comparison of the evidence for the correctness of string theory and the evidence for the guilt of OJ Simpson, for strings there is at least a reasonable doubt. Edelweiss, Edelweiss, I told you vunce, I told you twice, So listen, viseguy, take my advice: superstrings.

Usually our members avoid math talks, but we had full houses for Much Ado About Zero (5000 years of history greatly compressed) and for Infinity (with several proved theorems).

DM

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