

New England Section Newsletter

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**2004 Spring Meeting of the New England Sections of the
American Physical Society
and the American Association of Physics Teachers
Phillips Exeter Academy, Exeter, New Hampshire, March 26
and 27, 2004**

The Spring 2004 Joint Meeting of the New England Sections of the American Physical Society (NES/APS) and the American Association of Physics Teachers (NES/AAPT) will be held at Phillips Exeter Academy on Friday and Saturday, March 26 and 27, 2004 (www.exeternh.edu). This convenient location is only five miles off Interstate 95 between Boston MA and Portsmouth NH, to which it is much closer. The meeting has an astronomy/space physics theme and features some of the best speakers in this wide field.

A sampling: Friday will include John Bahcall on *Solar Neutrinos, Past, Present and Future*, Alan Title on *EUV Imaging of the Sun's Corona* (unsure of title but sure of Title), and Ron Edge on a related topic of physics history. The banquet speaker will be Robert Kirshner to tell us about *The Accelerating Universe*. Saturday will present Niel Brandt on *XRay Imaging of Astronomical Objects* and James Garvin on *Mars, a Scientific Revolution in the Making*.

A reader considering attending the meeting will be convinced affirmatively by viewing fantastic images to be presented by Alan Title and found at site <http://vestige.lmsal.com/TRACE/> and subsites POD/TRACEpod and POD/NAS2002v2. The site states that the pictures may be published in any form as long as there is an acknowledgment to "TRACE, the Transition Region and Coronal Explorer, a mission of the Stanford-Lockheed Institute for Space Research and NASA." (Done, pgs 7, 8.) Further convincing is provided by brief bios of speakers:

- John Bahcall is the Richard Black Professor of Natural Sciences at

the Institute for Advanced Study, Princeton. Among his awards are the APS Hans Bethe Prize, the National Medal of Science, and the Enrico Fermi Award.

- Alan Title is affiliated with the Lockheed Martin Solar and Astrophysics Laboratory. He is Principal Investigator for TRACE, for the focal plane instruments of the Japanese Solar Optical Telescope, and formerly for Space Lab II.
- Ron Edge is Distinguished Professor Emeritus, Univ. South Carolina, and is well-known for nuclear physics and what may be termed "science on a shoestring."
- Robert Kirshner is Professor of Astronomy at Harvard and an Associate Director of the Harvard-Smithsonian Center for Astrophysics. His work on the acceleration of the Universe was dubbed the "Science Breakthrough of the Year for 1998" by Science Magazine.
- Niel Brandt, a graduate of Phillips Exeter (site of the meeting), is Professor of Astronomy and Astrophysics at Penn State, specializing in XRay astronomy.
- James Garvin is Chief Scientist for the NASA Mars Exploration Program, which is learning amazing things about our sister planet.

In addition to the invited talks, contributed talks and posters are welcomed, particularly from students. It is the practice of the Section to reimburse, up to \$100 each, student attendees who submit their expense records at the meeting. Vitally important dates: for pre-registration with meal order, March 12; for submission of abstracts, March 13 (standard format).

Spearheading the organization of the meeting are: for AAPT, Cynthia Beals, Science Dep't of Phillips Exeter, cbeals@mail.exeter.edu, and Emily James, Brewster Academy, emily_james@brewsteracademy.edu; for APS, Richard Denton, Dep't of Physics and Astronomy, Dartmouth College, richard.denton@dartmouth.edu, with crucial aid from Jeff Dunham (2003 NES/APS Chair). Detailed information can be found at http://science.exeter.edu/NESAAPT_NESAPS.

Fall 2003 Joint Meeting at Bates College, October 3-4, 2003

The Fall 2003 New England Section Joint Meeting at Bates College in Lewiston, Maine, had the general theme *Passing the Torch: Helping New Physics Teachers Without Getting Burned (out) Yourself*. Additional topics treated were Optics and Waves, Light and Color, Physics in 3D and 4D, Women in Physics, Astronomy, Electromagnetism, Data Analysis, Superconducting Electrical Circuits: Qubits and Artificial Atoms, and Physics Apparatus and Software. Overseeing this diverse and extensive program were the ultra-capable

duo of Jack Pribram (Bates Physics) and Brenda Pelletier (Bates College Special Projects). The entire Physics Dep't of Bates shares credit for a lively and enlightening time.

The banquet speaker, Barbara Whitten (Physics Dep't and Women's Studies Program, Colorado College), particularly excited comment and discussion with *What Works for Women in Undergraduate Physics?* Mentoring and caring work well, and many listeners felt that those experiences would not hurt male students either. A sufficient number of female faculty is recommended. Among other data, the speaker pointed to the success of historically black colleges in nurturing their science (and other) students. The departments acted more like families than the more impersonal institutions most of us attended and have taught at. Careful to express the sentiment that integration is an overriding advantage, speaker and commenters nonetheless recognized the good in the traditional black schools. Single-sex schools, such as Seven Sisters (there's alliteration), are noted for similar favorable qualities.

A number of difficulties were brought up and analyzed at the Executive Committee meeting. Some were overcome handily by the energetic troubleshooting of the Bates leaders, and some were too thorny to right completely. This situation prompted the Executive Committee to issue the following requests of future attendees and presenters. (If requests are not honored, we may have to turn them into demands.)

You should tell us clearly in advance what special equipment or connections you need for your talk or workshop, beyond standard projection. Not all rooms to be used by the Section have capabilities for downloading or other web-based or remote powerpoint needs. The other important condition for all attendees is that you ought not just show up for the banquet without reserving a place, as the seating and the choices of meals are limited. If there is a specially choice meal (in the case of Maine meals, it is lobster, sometimes at a higher cost), then it is highly rude to take that dish without ordering it simply because you are on line ahead of someone who did order it. In the vast eternal plan for the Known Universe, these infractions are minor (alternatively, they are small potatoes in a carnivorous world), but regard for the host institution and for your colleagues makes for a good meeting.

DM

The Greater Boston Area Statistical Mechanics One-Day Conferences

Reported by Harvey Gould, hgould@physics.clarku.edu.

About 80 people attended the fifth annual Greater Boston Area

Statistical Mechanics conference on October 18, 2003 at Brandeis University. The main goal of these meetings is to offer an informal, friendly, and supportive environment where people from a variety of departments and institutions exchange ideas and old and new friends can meet. The usual format has four invited talks of 30 minutes each and about 30 contributed talks of perhaps 3 minutes each. Plenty of time is saved for informal conversations. The organizers of the meeting are Bulbul Chakraborty (Brandeis), Claudio Chamon (Boston U), Harvey Gould (Clark), and Bill Klein (Boston U).

At the recent meeting there were some 22 faculty members, 12 post-docs, 43 grad students, 2 undergrads, and 2 from nearby industry. Schools represented included Boston College, Boston University, Brown, Brandeis, Clark, Harvard, Holy Cross, MIT, Regis College, RPI, Smith College, Tufts, UMaine, UMass/Amherst, UMass/Boston, and Wellesley College. Departments included applied math, chemistry, cognitive and neural systems, computer science, and physics.

Of particular interest to New England Section members is that this meeting has been subsidized by the Section for the past four years at a cost of roughly \$10 per person for bagels, coffee and lunch. As a result, the organizers of the meeting have not had to collect a registration fee, and organizing the meeting has been relatively straightforward. The meeting is open to anyone, including non-members of APS and NES, but non-members are encouraged to join and are informed of the advantages members enjoy.

The New England Section encourages topical meetings of this type in New England and welcomes requests for financial assistance. The main criteria for the Section's consideration are that the meeting be open to all, be widely announced, and make some effort to involve people who may not be expert in the field. Requests for subsidies for student attendance are especially welcome. (These are among the criteria we apply for the Section's spring and fall meetings.)

For more information about the Stat Mech meeting, see <http://physics.clarku.edu/qbasml/>.

Schrodinger's Cat's Mewsings

Saddam Hussein turned out to be a disappointment. A teenager caught with a lit joint would have put up a bigger fuss than the big blowhard did. On the other hand, the tyrant did last longer in the hideaway than some Yankee managers did in the dugout.

I have a recurring nightmare that I am detained at an airport because my

retracted claws are deemed concealed weapons. (Maybe I should stop sharpening them on the furniture.)

Newcomers ask me the difference between Mansfield and Storrs. Simple. Mansfield is where all the kids are above average. In Storrs all the kids are way above average.

I wonder: Did God say let there be dark matter? Purrhaps.

I was climbing with some Germans, and I mentioned Schwarzenegger as a German. They scolded me and shouted "Austrian!" I said "You mean like Mozart and Schrodinger?"

Governor Pataki pardoned Lenny Bruce several decades after his death, and the OTC (One True Church) pardoned Galileo several centuries after his death, each of them for being outspoken, right and visionary. Perhaps Erwin will pardon me for being his most lasting legacy.

I know I say outrageous things. There's an advantage when people don't know whether you're dead or alive or what.

In spring 1999, five tumultuous years ago, I wrote a science fiction story in the Newsletter. It was simply a set of futile wishes, but they are more pertinent to today, so I am updating and republishing them. Basically they solve the unrelated (unless you believe in butterflies) problems of casting out both the demons of the Middle East and the Curse of the Bambino. The only requirement is the intercession of a future teenage scientist using the basic physics of wormhole tunneling to correct the past. Since we are already twisting frames using circulating laser beams, the crucial step envisaged should be handily undertaken in the next few centuries.

When We Were Jewish or *What Would Morty Do?* or *The Mortified World*

The rabbi was very proud of Morty. In a school where all the kids, God bless them, were above average, Morty was the most above. Now he was shining in the ritual followed by thirteen year old boys since almost before time was measured. How apt it was that in this year 5999, when worldwide records are meticulously maintained, it should pass that Morty's was the one billionth Bar Mitzvah of the century. This did not count all those men who took advantage of the new practice of holding a second Bar Mitzvah on their one hundred thirteenth birthday. That bit of unorthodoxy was being debated by the Earth/Moon Jewish Council.

To celebrate the unique event, Morty's parents, Golda and Bernard, had promised him any single gift that would not, if implemented, violate a

Law of Physics. The boy immediately chose chronomotion. Puzzled, they consulted their two hundredth edition of Merriam-Webster. "Oh, time travel. Why didn't you say so?" Among other talents, Morty was supremely gifted in applied physics. His family felt sure he would handle time travel just fine.

So where/when did he wish to go? His choice was a little-known town in what used to be called the Middle East in a time period of ferment and cruelty of two thousand, two hundred and some- odd years earlier than Morty's present time. This was a surprise to his parents, since the era was unpleasant and regarded as a time when nothing happened. Still, they could not deny their beloved boy anything. Do times ever change? So they arranged a comfortable high-speed, high-acceleration, low-jerk transport, and before he knew it, and especially well before his parents knew it, there he was among the rocks and pools of a primitive land, hearing primitive languages spoken. The only time he heard comparable tongues was through the outmoded medium of film at a retrospective of thoroughly gruesome and pointless productions.

Young men were dressed in the kind of robes that Morty knew from fraternity parties, and something struck him as being wrong with the gatherings, though it took him a few minutes to identify the anomaly. No young women. Maybe this was one of the unenlightened ages he had read about, scorned in his present society. He realized that his Gap Miraclethreads were inappropriate for the scene. And what was he to do with his unexplainable Laserphaser with its up-to-the-minute QUIM (quantum interference memory)?

Motioning to a straggler of his height and build, he offered to trade clothing. Being fashion conscious, the other man declined until Morty threw in his laser. The promise of magic has appealed in all ages. It bothered Morty to violate the ancient Star Trek injunction not to interfere with any alien culture, but he figured that on his next trip he could improve upon this one. An unintended consequence had not impressed itself upon his young mind.

Wonder of wonders, as soon as he donned the official uniform of that region at that time, he became aware that he could converse in their languages. Some soldiers shouted "There he is. Arrest him," and he understood it. As he recoiled from their weapons, they grabbed the other man, who was now wearing Morty's outfit. This man seemed unable to object verbally or to defend himself with his newly acquired laser. Immediately, the soldiers whisked the unfortunate fellow away, and Morty was left free to join any of the assemblies he wished.

An old man with bushy hair and sparkling knowing eyes was leading a troupe along a stony path. He looked to Morty like the succession of great scientists of recent centuries, recent that is to the century he had left, who became known as Einstein, Zweistein and Dreistein, nicknames of abundant affection. But this man apparently knew no physics at all. He kept stubbing his bare toes on rocks and shouting "Ouch! Thank you, Lord." Emphasizing the oneness with the earth that these mishaps produced, this man posed no attraction for Morty. His adherents kept showing their dedication by kicking and blessing each time the old man

did.

Someone from another group motioned to Morty and won him over. "You don't belong with those guys," he said, "Join a modern crew. That rabbi is from the last century. Our rabbi is so new that we are dating a calendar from the year of his first great sermon. This is the year twenty something, regardless of what you heard from anyone else." Morty was confused. Can you start a new calendar whenever you want to? What would the Earth/Moon Jewish Congress say about that? Or those soldiers, come to think of it? They didn't look receptive to anything innovative. And what's a sermon? Is it like a lecture, that old style of teaching science from a bygone era? Of course, that's far in the future for these guys but far in the past for him.

"Take me to your leader," Morty suggested. "That's a good way to put it," answered his newfound friend. They caught up to a young man animatedly regaling many disciples. He welcomed Morty and continued a speech that may have been a sermon. "Build your house on a rock foundation and not on the sand." Morty felt that at last he had found someone with a solid backing of physical principles. "I have to warn my faithful friends," the man said, "The authorities are opposed to my teachings, and they will send their soldiers to arrest me. You are in danger as well." Various confederates assured him of their allegiance. They told him they would not abandon him. Morty almost joined the chorus but felt it was premature.

The aggregation partook of a wonderful vegetarian meal. Morty was amazed that you could find such food without benefit of irradiation and genetic manipulation. Then the soldiers did come for the charismatic leader and led him away while his followers, who had sworn allegiance, did not raise a strenuous objection. "What will they do to him?" Morty asked. A follower pointed. "You see those poor guys waving in the distance? They are being crucified. The soldiers may do that to our leader." Morty was dumbfounded. The men appeared to be suffering, perhaps dying. There was no attempt at rehab or retraining for a socially useful purpose. Something in the scene stimulated Morty's memory, but he soon lost the thought.

The crowd of men showed up on a hillside where punishments were being administered. Several thieves were twisting in the wind. The disciples called them common criminals. Morty didn't know what to object to first. Criminality was uncommon in Morty's own time. "We have a plan," said one young man, "The soldiers let friends of the crucifree take him down before he expires. But they put him in a cave that's sealed by a large boulder and they figure he will die there. The thieves do die because they lack devoted followers. But we will rescue our beloved leader and make it known to all that he did not die. That way his message will continue to live, perhaps for centuries. Stay close to us. You'll see how we do it."

The soldiers were lamentably careless. They put a thief into the cave and pushed a boulder to block the opening. But the ground fronting the cave sloped away from the opening, and the boulder rolled a few sandallengths away. Someone entered the cave and removed the thief.

The soldiers did the same with a second thief, and again the boulder rolled. Someone dragged this thief out too. "Our leader requested a private cave," whispered a young man. The soldiers placed the broken bleeding beloved body in the cave and replaced the boulder in the usual way.

Morty could stand the absurd routine no longer. His sense of static equilibrium was so offended, he could not refrain from intervening. "Wait a minute," he shouted at the malefactors, who turned back to the cave, "I see what your problem is. Help me out here." Together Morty and the ablest soldiers built up the terrain around the cave so that the offending boulder rolled firmly into place and became as immovable an object as anyone remembered bruising a shoulder on. "That will do it nicely," announced Morty. "Thanks to you," agreed the soldiers. No extant records remain to describe the reactions of disciples and succeeding generations.

Soon Morty found himself on his way back to the year 5999 and his destination on the other side of Earth. He wordprocessed a few notes into his diary, which luckily was small enough to hide in any change of clothes. He knew he would be teased for wearing fraternity hazing togs, but it was too late to undo that. He scanned his optical mail. One message warned him about the Y6K parasite. Another, from a girl in his physolosophy class, promised him the homework. The third, from fellow baseball enthusiast, Ephraim, read "On your way back to the future, can you please stop off anywhere in the last few hundred years and give the RedSox a World Series victory?" Unfortunately, Morty's roundtrip economy ticket did not allow him a detour. The best he could do was to o-mail a pledge that the next time the RedSox play the Cubs post-season, he would personally intervene to give the Sox the victory. Morty's pledge is rock-solid.

It's true that he had in a sense wasted a chronotrip to an era in which nothing much happened, but the travel expanded him. Lives in 5999 centered about trivialities, he was convinced. Who will win the game? Will the Natives purchase the one remaining tract in what was once Connecticut, more recently Walmartica? Will the Moon build a stadium for the Patriots, one with a playing field of 300 yards to accommodate reduced gravity? The Laws were still worth pursuing, particularly the one yet in doubt: Perpetuation of Subquarks. But Morty had bigger plans than that. He aimed to become a beloved leader, to command the allegiance of droves of adherents. He was disillusioned with the Judeo-Physics Tradition. His goal, with God's help, would be the Judeo-Mortian Tradition. There would be AM and PM, anteMorty and postMorty.

DM

THE SAME ANNOUNCEMENT

As stated last year, the New England Section seeks a new Newsletter Editor. This is a rewarding position, with fan mail and everything. I will be happy to help the next Editor. Of course, styles and subjects are up to the next person.

Thanks to the readers who have expressed appreciation to me. As always, I will gladly include appropriate news of activities and achievements of colleagues and schools in the area. I have invited some of you to replace me, and the response has been universally "Don't look at me." So is there one among you whom I haven't asked yet? The next issue will be my last.

Creative Fundraising

Each year mail solicitations arrive at my address for my ex-wife from her alma mater, the University of Illinois. Each year I inform U of I she is not and was never at this address and they should desist. Recently I got a phone call for her from the Alumni Office. I told the caller we were divorced 25 years ago, and I've been married to Carol for close to 20 years. "Well," said the resourceful fundraiser, "is Carol an alumna of University of Illinois?"

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NEW ENGLAND SECTION EXECUTIVE COMMITTEE MEMBERSHIP 2004

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History Of The World, Part 2

To the reader: The editor laments the limitations of his abilities. But if your online abilities have gotten you this far on line, you should have no trouble finding the TRACE and AAPT websites for yourself.

I acknowledge that I have done all my writing and editing with a cat on my lap with his paws on the keyboard, not Schrodinger's, but a classical 16 pounder. Some opinions are his but all errors remain mine.

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