

# F E R M I N E W S

F E R M I L A B A U.S. DEPARTMENT OF ENERGY LABORATORY



Photo by Reider Hahn

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# Theory vs. Practice

## Marburger sees need for scientific methods in evaluating science

by Mike Perricone

**W**ASHINGTON, D.C.—A physicist taking on a national policy role faces an inevitable and inescapable question from colleagues in the sciences: What about the issue of static-to-declining funding for physics research?

John Marburger—physicist, former director of Brookhaven National Laboratory, and, as Director of the Office of Science and Technology Policy, chief science advisor to the President of the United States—took on the question as the keynote speaker for the 27th annual Colloquium on Science and Technology Policy of the American Association for the Advancement of Science.



John Marburger, Director of the Office of Science and Technology Policy

Photo by Fred Ullrich

The question of physics funding, Marburger said, raises questions of its own.

"I don't believe anyone questions the need for more funding," Marburger said. "I don't think anyone is not alarmed. But what's missing is a link to some discriminating factor. Where do we apply the money? Does it go into existing programs? Do we put it into one agency versus another agency? Do we increase the National Science Foundation budget? How do we handle the relationship of NSF and Department of Energy science?"

"This is frustrating," he continued. "It's easier for the life sciences. It's easy to lobby on questions of disease and cure. But the rest of the balance [in research funding] is not so simple. We need to give advice to the government, to provide a little more of a handle on how to do it and where to go. The American public is skeptical after the end of the Cold War. The national security hook is not there any more."

Marburger was confirmed as OSTP director in October 2001, in the aftermath of the terrorist attacks on the U.S. As a physicist, he appreciates the historical link between national defense and the physical sciences growing from the Manhattan Project in World War II. He also appreciates that the link has now been abridged by two dramatic world changes—the end of the Cold War and the rise of terrorism—as evidenced by the title of the colloquium held April 11-12: "Science and Technology in a Vulnerable World: Rethinking Our Roles." As a scientist and policy maker, he's in the middle of the conflict.

Photo by Fred Ullrich

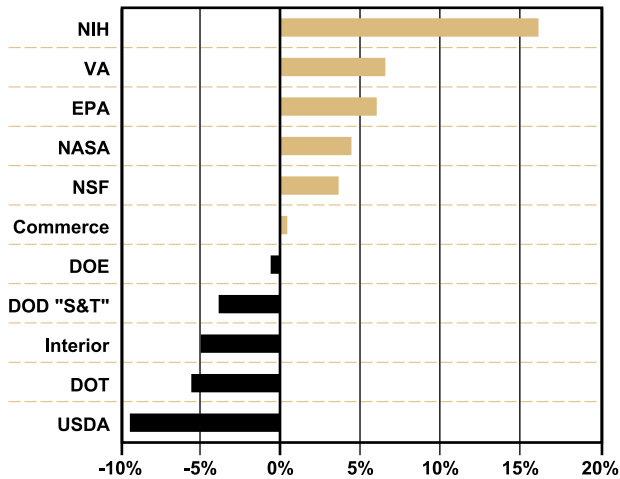
### On the Web

**Office of Science and Technology Policy:**  
[www.ostp.gov/](http://www.ostp.gov/)

**American Association for the  
Advancement of Science**  
<http://www.aaas.org>

## FY 2003 R&D Request

Percent Change from FY 2002



Source: AAAS, based on OMB R&D Budget Data and agency estimates for FY 2003. DOD "S&T" = DOD R&D in "6.1" through "6.3" categories plus medical research. MARCH '02 REVISED © 2002 AAAS

"issue" science, respectively. He does not see the "spinoff" argument as a solid basis for science policy, believing that science itself has intrinsic needs, and resources devoted to solving a social issue (for example, terrorism) will benefit only those areas of science directly related to that issue.

Marburger sees a key question as how to evaluate basic science. For example, is there a rational way to establish an end date for an experiment? Can the peer review process be made more explicit, and applied across scientific fields? And he would like to put the tools of social science to work in a methodical evaluation of the basic

"A good solution is to add a lot more money to everything—in theory," he said. "In practice, there is only a limited amount of money. The war against terrorism is expensive. We're in a different economic climate than we expected."

Marburger said the concept of "balance" in the research funding portfolio was "misleading, and maybe even dangerous," implying a balance among all the different areas of science—for example, doubling funding in other areas apace with doubling funding for the National Institutes of Health by FY03.

"The presidential priorities state that research in the life sciences merits a substantial increase," he said. "Other priorities have not drawn as much funding, but other priorities will emerge over the course of the Administration. Congress appropriates the money, and Congress has to share in the vision."

Constructing a vision is the challenge to a policy maker. Marburger the scientist sees the need for a rational and methodical process.

"We cannot fund all the sciences, all the time, to the full extent that we'd like," he said. "Choices need to be made. We need to advise the government on how to evaluate and make those choices wisely, and not leave them to random decisions of the public finance process."

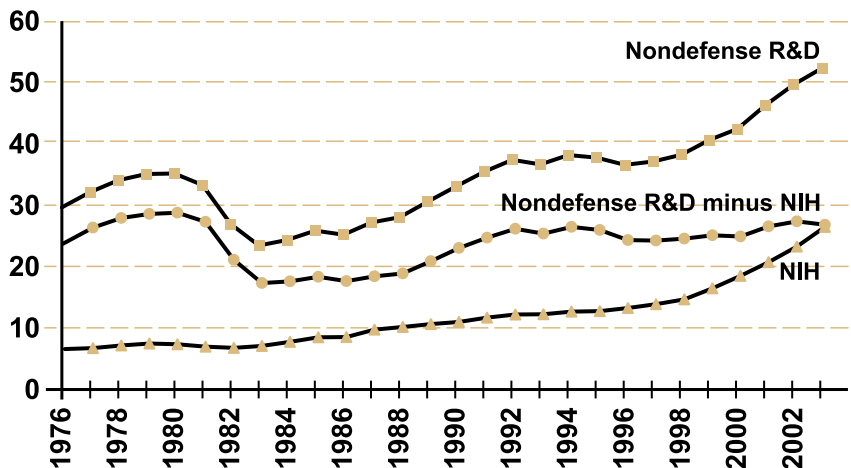
To Marburger, the war against terrorism does not loom as a significant driver of science, because terrorist targets are not limited to facilities controlled by the federal government. He refers to basic and applied science as "discovery" and

sciences; he believes private industry "seems to have a more academic approach to management" than does the academic sector.

"We have an unprecedented ability to control matter, both organic and inorganic," Marburger said. "The process of delivering funding to programs is very complicated. We need language to form the framework for discussion, not just doubling here and doubling there. I prefer this language to be more science-based for the advice that drives the funding." ❖

## Selected Trends in Nondefense R&D FY 1976-2003

in billions of constant FY 2002 dollars



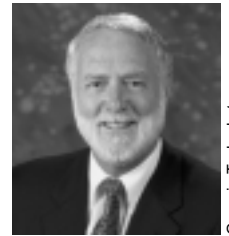
Source: AAAS analyses of R&D in AAAS Reports VIII-XXVII. FY 2003 figures are President's request; FY 2002 figures are latest estimates. MARCH '02 REVISED © 2002 AAAS

# Other Views

## Questions from many sides on the direction of U.S. R&D spending

by Mike Perricone

**W**ASHINGTON, D.C.—When G. Wayne Clough, president of the Georgia Institute of Technology, hosted a visit by President Bush on March 27, he received strong advice on how to comport himself in the President's presence.



Georgia Tech photo

G. Wayne Clough

"Everybody urged me to get as close to him as I could, so that I would appear in the pictures that were taken,"

Clough told the AAAS Colloquium on Science and Technology Policy.

"Sure enough, the next day, there we were in color on the front page of the newspapers. But apparently I hadn't gotten quite close enough, because only half of me appeared in the picture."

Clough, who was named to President Bush's Council of Advisors on Science and Technology (chaired by OSTP Director John Marburger) in December 2001, compared the photo-op strategy to what he saw as a disappointing policy trend in the aftermath of last September's terrorist attacks.

"Unfortunately, I feel as if a lot of people are treating this issue the same way," Clough said. "They're trying to get as close to it as they can, to make sure they'll get into the picture."

Clough emphasized that he wasn't opposing national security spending as a priority, but was seeking a context for other long-term priorities.

"We will be spending money on security whether we like it or not," Clough said. "The challenge is how to make that a positive for our economy."

Illustrating that challenge, and speaking for the academic sector, he pointed to some disturbing images in the big picture of U.S. research and development:

- Federal research and development spending fell from 1.6% of Gross Domestic Product in 1987 to just 0.6 % in 1999;
- Sweden, Japan and South Korea spend proportionally more than the U.S. on research and development as a percentage of GDP;
- South Korea is the world's fastest-growing research and development spender, followed by Singapore, Ireland, Australia, Sweden, Italy, Canada, and the U.S.;
- The U.S. ranks just 10th in world in the percentage of 24-year-olds with degrees in science and engineering;
- Demonstrating what Clough called "the connection between research funding and warm bodies," graduate enrollments are down in the fields where federal research funding has been cut, and they are up in the life sciences where research funding has increased.

Clough pointed to the Internet as the result of research money spent in the 1950s, '60s and '70s. He cited the growth of nanotechnology from 1959, when Richard Feynman coined the term at a meeting of the American Physical Society, to its contemporary presence in products ranging from stain-resistant khaki pants to self-cleaning windows, women's cosmetics, and running boards for vans.

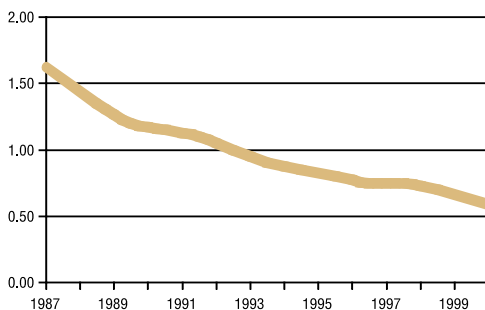
"By the same token," he countered, "I doubt that General Motors, Eddie Bauer, or Revlon Cosmetics in their wildest imaginations ever thought of investing in



Photo by Fred Ullrich

### Federal Funding for R&D

As percentage of the Gross Domestic Product



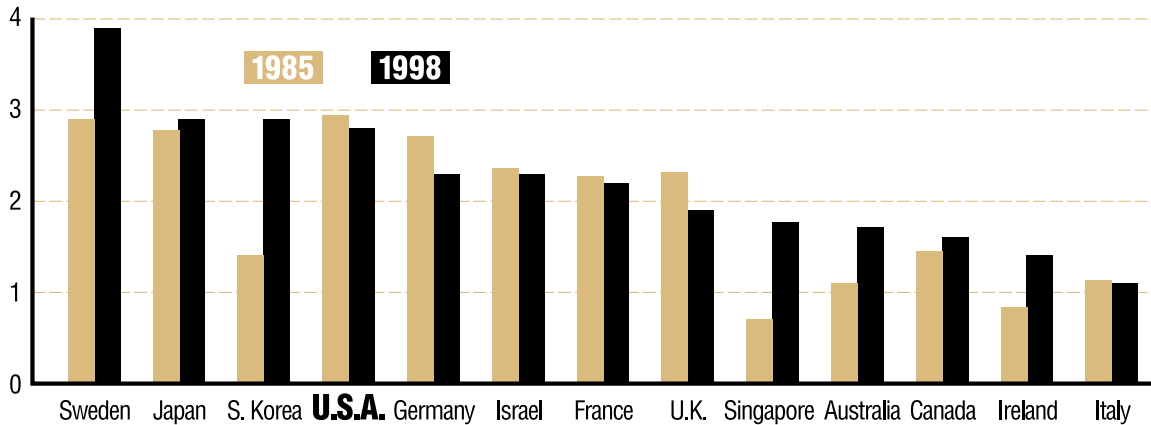
U.S. Competitiveness 2001, Council on Competitiveness

#### On the Web

27th Annual AAAS Colloquium  
on Science and Technology Policy  
[www.aaas.org/spp/dspp/rd/colloqu.htm](http://www.aaas.org/spp/dspp/rd/colloqu.htm)



# Total R&D as Percentage of GDP



National Science Board: Science & Engineering Indicators 2000

the frontier physics research that generated the nanotechnology from which they are now profiting.”

Other speakers noted points for concern in directions of R&D spending:

**Scott Lilly, Minority Staff Director, House Committee on Appropriations:**

- Doubling the NIH budget by 2003 offered no guarantees afterward, and “boom and bust funding forces out researchers;”
- Adding up research cuts in the FY03 budget yielded a sum \$30 million below the current FY02 level;
- The recent tax-cut bill will cost \$100 billion in revenues lost in the short run, and is projected to cost \$250 billion in revenues lost over the next decade.

**Ben Wu, Deputy Under Secretary for Technology, U.S. Dept. of Commerce:**

- In 1950, the U.S. (both federal and private spending) accounted for 70% of the world's R&D; today, it's about 1/3;
- In 1950, federal R&D accounted for about 47% of the world's R&D; today, it's about 10%;
- In the 1950s and 60s, the ratio of federal to private research spending was 2/1; today, the ratio of private to federal spending is 2/1;
- The reversing trend opens the question of how R&D policy makes its way to the marketplace.

**Kei Koizumi, Director, R&D Budgeted and Policy Program, AAAS:**

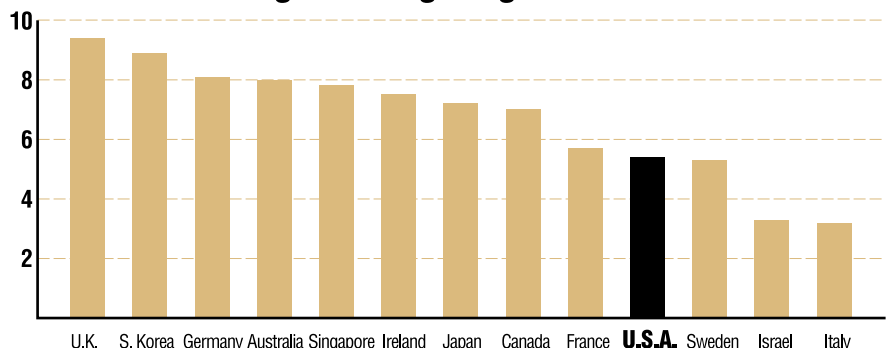
- The increase in federal discretionary spending in FY03 is \$49 billion, with \$44.5 billion going to the Department of Defense;
- If NIH and DOD are removed from consideration, all other R&D spending is “flat-flat,”

- Non-defense R&D has not regained the levels reached in the Carter Administration, in constant FY02 dollars;
- Sciences other than life sciences depend on agencies whose budgets haven't grown in the last 10 years.

Conceding wryly that the notion of “balance” in research spending “has become an interesting word lately,” Clough maintained that balance is an important principle.

“The problem with advancing some disciplines at the expense of others is that both the most important problems and the hot-beds of discovery and innovation are in the gaps between the traditional disciplines,” Clough said. “...Advances in biomedical research are grounded in fundamental research not just in biology, but also in chemistry and physics, and in chemical and mechanical engineering, which provide insight into the operation of living systems. Yet these disciplines are seeing a declining level of federal support.”

## Percentage of 24-year-olds with Science or Engineering Degrees / 1998



National Science Board: Science & Engineering Indicators 2000

There's nothing  
neutral about  
Boris Kayser

On the Web

**Fermilab Theoretical Physics  
Department**  
[theory.fnal.gov/](http://theory.fnal.gov/)

**Neutrinos at the Main Injector  
(NuMI)**  
[www-numi.fnal.gov/](http://www-numi.fnal.gov/)

**MiniBooNE**  
[www-boone.fnal.gov/](http://www-boone.fnal.gov/)

# Charged Up

by Gary Ruderman

**B**oris Kayser's passion runs deep underground. Some of Kayser's strongest scientific interests lie at the bottom of mines where much of the basic research begins on the elusive yet abundant and critically important neutrino.

Last fall, Kayser and other particle physicists descended ("It felt like we were dropped") down a mile-long mine shaft at the old Homestake Gold Mine in Lead, S.D., site of the world's first solar neutrino detector.

"For me," he said, "it was a shrine."

Kayser, 63, is an overtly enthusiastic particle physics theorist whose eyebrows and voice rise in proportion to his excitement. He joined the staff of Fermilab's theoretical physics department in October 2001, with the title of Fermilab distinguished scientist. He brought with him more than a decade of academic research, and three decades at the National Science Foundation (NSF). As Fermilab undertakes its neutrino detection and oscillation experiments with MiniBooNE and MINOS, Kayser hopes for a confrontation with big questions.

"If one wants to understand the universe, one must understand neutrinos," Kayser explained. "If there were no neutrinos, the sun and stars would not shine. There would be no energy from the sun to keep us warm, no atoms more complicated than hydrogen, no carbon, no oxygen, no water, no us."

He summed it up: "No neutrinos—no *NU'S*—would be very BAD NEWS."

Kayser is most interested in the matter-antimatter relations that neutrinos may challenge.

"In the Standard Model of Particle Physics," he said, "you have a detailed picture of nature. We try to do experiments to verify that this picture is correct. But the Standard Model is surely incomplete, so we're also looking for places where it breaks down. One piece of experimental breakdown is the non-zero mass of neutrinos. The Standard Model assumes that neutrinos have no masses."

Questions abound: Where do neutrinos get their mass? Are there more than three types of neutrinos? Are neutrinos identical to their antiparticles? In a public lecture, Kayser likened neutrino oscillation to ice cream spontaneously changing flavor: the oscillation changes the "flavor" of the neutrino as it travels over a long distance. While the particle is born in the earth's atmosphere as a 'chocolate' or muon neutrino, it can, over a great distance, become a 'strawberry' or tau neutrino.

Kayser has already placed a theoretical wager on Charge-Parity-Time Reversal invariance. If neutrinos have a different mass than their antineutrinos, then CPT invariance is violated. Theorists at Fermilab and elsewhere have suggested that nature does violate CPT in just this way.

Kayser's bet: "This would be a big shocker and I'd bet against it. But nature is full of surprises. It's loads of fun to think what the world would be like if CPT is indeed



Photo by Reidar Hahn

Theorist Boris Kayser: “No  $NU'S$  would be very bad news.”

broken, and it’s important to see experimentally whether it’s broken or not.”

A New Jersey native, Kayser was a Westinghouse Science Talent Search winner in high school before earning an undergraduate degree in physics at Princeton in 1960. For his Ph.D., Kayser chose particle physics at CalTech. In 1972 he joined NSF, where he and several colleagues helped found the NSF-funded Institute for Theoretical Physics at the University of California at Santa Barbara.

While at NSF, Kayser’s interest was piqued by the new field of neutral weak currents. His research migrated away from strong interaction physics, toward the neutral, weakly-interacting neutrino. The switch left him—he says—“more charged. I’m intrigued by not knowing the underlying physical laws of this new discipline.”

But he felt the classic administration/research bind. He said he was able to author or co-author more than 100 physics papers during his time at NSF only by defying the laws of time: “I spent 100 percent of my time in administration—and the other 100 percent on research.”

At Fermilab, he feels he can give his enthusiasms (and his facial and vocal emphasis) free reign—enthusiasms that include another passion, CP Violation beyond quarks and strong interactions. In this area of matter-antimatter asymmetry, Kayser and others see further possibilities for cracking the Standard Model.

“We are lovers of symmetry,” he said. “We would expect matter and antimatter to behave in the same way, or in mirror images of behavior, like the equal but opposite charges of electrons and positrons. But nature doesn’t work that way; the mirroring is not precise. Otherwise you’d walk down the street, meet the anti-you, and both annihilate.

“Something has to explain the preponderance of matter over antimatter,” he continued. “We know that quarks violate symmetry—that was the discovery of CP Violation in  $k$  mesons, a very tiny effect. But is this CP Violation the only source? We need something more to explain the matter-antimatter asymmetry, and we’re confirming big asymmetries in  $b$  mesons, which can be made in the Tevatron. So we want to measure a whole bunch of different decays in  $b$  mesons, and others which aren’t CP violating but are related. We want to see them all and hope there’s a failure, a breakdown in the Standard Model.”

A breakdown means the chance to build anew.

“This is very basic stuff,” Kayser said. “Recently both CP Violation and the physics of neutrinos have become very exciting because of experimental discoveries. These areas will be pursued big-time at Fermilab—at CDF and DZero, at BTeV, in the neutrino experiments that are coming together and maybe more of them in the future. Nature may not be what we’ve thought for the last 50 years. Fermilab is the crossroads where this is all happening. I love it.” 🍷



# DASTOW 2002

The world's highest-energy particle physics laboratory became the center for high-energy family activity on Daughters and Sons to Work Day at Fermilab, Thursday, April 25, 2002.

Virtually every corner of the lab was open for view—including a virtual reality demonstration of neutrino event simulations, courtesy of the Computing Division and the MiniBooNE experiment. DASTOW activities ranged from the buffalo herd to bird-watching, from tree-planting to Fire Department rescue operations, from the Cryo Show to women scientists and engineers urging girls and young women to “Go For It!” in technological careers.

DASTOW 2002 had the biggest turnout ever, with an estimated 450 kids and family members of Fermilab employees and users in attendance for a day of learning, fun and hot dogs.





**DASTOW 2002 had the biggest turnout ever, with an estimated 450 kids and family members of Fermilab employees and users taking part.**



**A chilly, windy day didn't dampen spirits on Peter Kasper's Early Bird Walk.**



Photos by Reidar Hahn

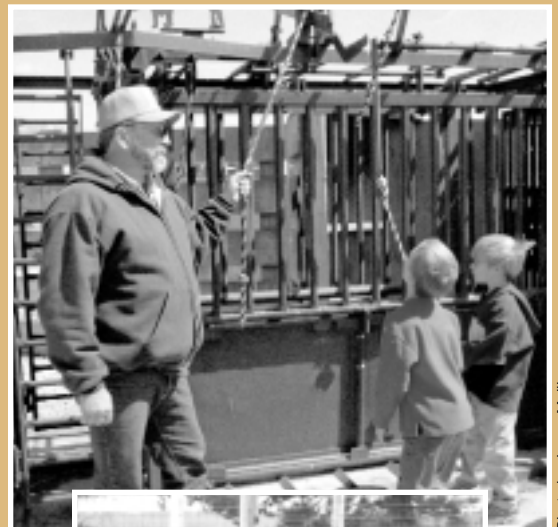


Photo by Jenny Mullins



Photo by Reidar Hahn



**Veteran herdsman Don Hanson gave visitors a tour of facilities used in caring for Fermilab's herd of American bison. And the first calves of the season offered a heartwarming touch to the day.**



The Fermilab Fire Department demonstrated the “Jaws of Life” in simulating a rescue from a car wreck.

Photos by Reider Hahn



The audience in Wilson Hall’s Virtual Reality room learned about neutrinos, and donned special polarizing spectacles to view the 3-D simulations.

Photos by Jenny Mullins





Photo by Jenny Mullins

Women scientists and engineers discussed their careers on the “Go For It!” panel.



Photos by Jenny Mullins

Planting a tree is a treat for everyone—and so is a hot dog lunch, even on a chilly day.



Jerry Zimmerman’s Cryo Show ended the day with a bang.



Photos by Reidar Hahn

# The Un-Common Language of Science

*Does  
particle physics  
need to find  
new ways of  
describing itself?*

by John Womersley  
DZero Co-spokesperson

I recently attended a conference with a significant number of cosmologists, dark matter experimentalists and so on—people we don't normally talk to very much.

I gave a typical talk about the Higgs search at the Tevatron. Afterwards, during the coffee break, one of the cosmologists came up to me and started asking questions. It took half an hour of the two of us standing at a whiteboard, re-interpreting my talk, before we both understood, in a common language, why what I had just described mattered to him.

This conversation brought home to me one of our problems in particle physics. Often we like to focus inwards on our experiments, treating them as closed controlled systems where we can understand all the rules of a game of particles and forces. As for what this means for the universe, we just hope that cosmologists will read our papers and figure out the implications.

This compartmentalization is bad for us all. Any discussion with non-specialists will make it clear that what we do has relevance only because it helps us understand the cosmos. Few people care about understanding proton-antiproton collisions at 2 TeV; many people care about understanding the universe. Moreover, our own physics experience should teach us that we cannot separate the forces we observe from the symmetries of the cosmos: in a real sense, they are the same thing.

We should never talk about finding the Higgs as if it's another particle to add to our list of trophies. We should talk about it (and think about it) as a weird property of space-time that we are trying to explore experimentally. The universe is not an empty space in which the rules of particle physics apply; the universe is the rules and the rules are the universe.

My discussion at this conference didn't change the physics that I did—we'll still look for the Higgs in the same way. But it helped to change my appreciation of why we are doing what we do. I believe it may help to change

Respond online at  
[www.fnal.gov/pub/ferminews/  
interactions/index.html](http://www.fnal.gov/pub/ferminews/interactions/index.html)  
or send email to  
[ferminews@fnal.gov](mailto:ferminews@fnal.gov)



“Trying to talk about **PARTICLE PHYSICS** without talking about the **COSMOS** is like talking about **DNA** without talking about **LIFE**”

the public's appreciation, too. One way to foster that appreciation is to use a different language. The term “life sciences” is used to cover biology, medicine, biochemistry, and genetics, because they seek to understand, and ultimately manipulate, the processes of life. Recent advances have blurred the boundaries between them and created new sub-disciplines, but life sciences as a whole are vibrant and active.

By analogy, I believe we should refer to astronomy, particle physics, cosmology, string theory, gravitational wave searches and so on as “cosmic sciences.” They all seek to understand (and, yes, ultimately manipulate) the processes of the cosmos.

Trying to talk about particle physics without talking about the cosmos is like talking about DNA without talking about life—it may be scientifically valid, but it is devoid of context. Our accelerator-based particle physics experiments are cosmic science because the ways in which matter behaves, and which these experiments reveal, apply everywhere in the universe.

At the highest level, what we are trying to do is to understand the recipe we would need if we were going to create this universe from scratch. By recipe, I mean what kind of space, time, forces, symmetries and matter we would need to use and how to set them up. For millennia, philosophers have tried to answer this question, but our goal is to understand things through experiments, not through philosophizing.


Cosmologists are often criticized because they cannot conduct experiments to test their hypothesis. That's not true. What we do in the Tevatron is experimental cosmology—the experimental exploration of the structure of the cosmos. 



Photo by Reidar Hahn

DZero Co-spokesperson John Womersley: “Any discussion with non-specialists will make it clear that what we do has relevance only because it helps us understand the cosmos.”

the

# talk

## The truth, the whole truth, and nothing but...

When K.C. Cole writes about science, she knows that the scientists she's interviewed are likely to be disappointed with the final result. She likes to remind them that her approach is actually similar to theirs.

"When physicists are running an experiment, they get rid of 99 percent of their data to find the really interesting and important stuff," she said at her Colloquium presentation at Fermilab on March 27. "Writing a story works the same way. I often feel bad about leaving someone out, but not everything you've talked about makes it into a story."



Cole began her journalism career by covering politics and government. She has worked at *The New York Times*, the *New York Daily News*, and the *Los Angeles Times* as both a reporter and science columnist. She teaches writing at UCLA. She is the author of *"The Hole in the Universe: How scientists peered over the edge of emptiness and found everything," "First You Build a Cloud, and other reflections on physics as a way of life," "The Universe and the Teacup: The mathematics of truth and beauty,"* along with countless news and feature stories about science and scientists, primarily physicists.

Yet her Colloquium presentation carried the title, "Lost in the Translation: Writing About Science for the General Public." If the connotation appears to be that writing about science is not an exact science—in fact, cannot be an exact science—that is pretty close to the actual message she delivered.

In fact, the rule atop her list of tried-and-true techniques in science writing is: "Lie," with "Cheat" and "Steal" not far behind. Kidding aside, she justifies the usefulness of less-than-total accuracy by quoting unimpeachable sources—scientists.

One of her first contacts in science was the late physicist Victor F. Weisskopf (see Milestones), himself the author of *"Knowledge and Wonder: The Natural World as Man Knows It"* (MIT Press, 1979). Cole's first rule is a distillation of a principle voiced by Weisskopf: "We always have to lie a little to tell the truth."

Weisskopf fully appreciated the challenge inherent in the contrast between "the crisp clarity of equations and the fuzzy reality of metaphor," as Cole put it in her talk. Even the late Niels Bohr, not noted as a literary figure, said, "there is an uncertainty relationship between truth and clarity." Cole acknowledged the frequent criticisms by scientists that science writers leave out or simplify the wrong information, and use quotes out of context.

"Technically, everything you quote is out of context," she said. "The only way to use a quote in its full context is to include everything that someone said."

She also confirmed something that scientists usually suspect of science writers: a lot of what is said goes over their heads. But that's the nature of reporting, and the nature of learning, and the only way to gain knowledge is to keep coming back for more.

"You need the patience to let it sink in," she said, "while you're feeling like a dope. Eventually, ideas will begin to resonate."

Even experienced writers sometimes are left to chagrin and bear it over their mistakes. Cole recalled the time she referred to the tau particle and spelled it "TAO."

"I got a lot of letters about that," she said with a laugh.

But in the long run, a little occasional embarrassment is a small price to pay for being a witness to new discoveries and new thinking. For, as she quoted another early science mentor, physicist Frank Oppenheimer: "Scientists and artists are the official noticers of society."



Photos by Jenny Mullins

—Mike Perricone

# table

## CALENDAR

### SATURDAYS: MEET SCIENTISTS AT SCIENCE EDUCATION CENTER

The popular Ask-a-Scientist program takes place EVERY Saturday from 1 to 3 p.m. at Fermilab's Lederman Science Center. Scientists will meet visitors to answer questions ranging from "What is dark matter?" to "How do you accelerate a particle close to the speed of light?" The Science Center with its hands-on science displays is open Monday through Friday from 9 a.m. to 4 p.m. and every Saturday from 9 a.m. to 3 p.m. Visitors must use the Pine Street entrance.

### ONGOING NALWO

Free English classes in the Users' Center for FNAL guests, visitors and their spouses. The schedule is: Monday and Friday, 9:30 a.m. to 11:00 a.m. Separate classes for both beginners and advanced students.

## MILESTONES

### APPOINTED

■ G. P. Yeh (ID 06874N, CD-CDF Computing and Analysis), as Special Adviser to the Japanese Minister of State for Okinawa Affairs and for Science and Technology Policy on a New World Class Graduate School; by Koji Omi, Japanese Minister of State for Okinawa and Northern Territories Affairs, and Minister of State for Science and Technology Policy; on April 2. As Special Adviser, Yeh will help establish "one of the best graduate schools in the world in Okinawa," as charged in his appointment letter.

### ELECTED

■ As a Fellow of the American Academy of Arts and Sciences: Fermilab astrophysicist Edward "Rocky" Kolb. Election to the American Academy "recognizes those who have made preeminent contributions to all scholarly fields and professions." For more information and list of inductees: <http://www.amacad.org/news/new2002.htm>

Website for Fermilab events: <http://www.fnal.gov/faw/events.html>

### MAY 12 / BARN DANCES

The next Fermilab Folk Club barn dance is Sunday, May 12 at 6:30 p.m. in the Warrenville Community Building, with music by Bob Borcharding & Friends and calling by Paul Watkins. Traditional square and contra dances. Admission is \$5 for adults, \$2 for age 12-18, and free for under 12 years old. Contact Dave Harding (x2971, [harding@fnal.gov](mailto:harding@fnal.gov)) or Lynn Garren (x2061, [garren@fnal.gov](mailto:garren@fnal.gov)) or go to <http://www.fnal.gov/orgs/folkclub/>.

### MAY 15 / NATIONAL EMPLOYEE HEALTH & FITNESS DAY

Wellness Works sponsors this year's event on Wednesday, May 15 from 11:30 a.m. to 1:00 p.m. on Ring Road beginning at A1. Walk, run, rollerblade your way around the ring. Participants may sign-in, pick up their game ticket, and a bottle of water at A1. Go to the Wellness Services web page at: <http://fnalpubs.fnal.gov/benedept/recreation/wellness.html>

### MAY 23

Wellness Works Brown Bag Seminar, Noon to 1 p.m., Curia II: "Ecstasy and Club Drugs: A Parents' Guide," with Michael Moran, director, Breaking Free Treatment Center.

### JUNE 11

Wellness Works Brown Bag Seminar, Noon to 1 p.m., Curia II: "Legal Issues Facing the Elderly and Their Caregivers," with attorney Daniel Parsons. Registration required: Bernie Dugan X3591 or [bdugan@fnal.gov](mailto:bdugan@fnal.gov)

### SUMMER ACTIVITIES

Employees, Users, On-Site Contractors and Retirees: information on Recreation Office summer activities at <http://fnalpubs.fnal.gov/benedept/recreation/leagues.html>

### AWARDED

■ Ph.D. to Abid Patwa, State University of New York at Stony Brook, for his research related to the DZero experiment.

### AWARDED

■ Fermilab Employee Performance Recognition Awards, to nine members of the Computing Division: Jon Bakken (ID 10925N, CD-Integrated Systems Development, Mass Storage Enstore); Gerry Bellendir (ID 00361N, CD-Financial & Support Service, broad range of leadership); Matt Crawford (ID 10122N, CD-Computing Division Office, FNAL Computer Security); Jim Kowalkowski (ID 11963N, CD-Computational Physics, Object Oriented software); Lee Lueking (ID 07553N, CD-DZero Computing & Analysis, DZero data handling); Wyatt Merritt (ID 05711N, CD-DZero Computing & Analysis, DZero online and offline); Dane Skow (ID 08972N, CD-Computing Division Office, Joint Run II Computing and FCIRT); Adam Walters (ID 04683N, CD-Equipment Support, testing and

support, leadership of ESD); Vicky White (ID 02263N, CD-Computing Division Office, DZero data handling).

### RETIRING

■ Robert Horbus, ID 799 PPD-Technical Centers, April 30.

■ Robert Maly (ID 292, TD-Machine Shop), July 20, 2002, last day was May 3.

### DIED

■ MIT Institute Professor Emeritus Victor F. Weisskopf, a protégé of physicist Niels Bohr who helped develop the atomic bomb and later became an outspoken advocate of arms control, died April 21 at his home in Newton, Mass. He was 93 years old. To read his complete obituary, go to <http://web.mit.edu/newsoffice/nr/2002/weisskopf.html>

LUNCH SERVED FROM

11:30 A.M. TO 1 P.M.

\$10/PERSON

DINNER SERVED AT 7 P.M.

\$23/PERSON

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CONTACT TITA, X3524

[HTTP://WWW.FNAL.GOV/FAW/EVENTS/MENUS.HTML](http://www.fnal.gov/faw/events/menus.html)

### LUNCH WEDNESDAY, MAY 15

Roasted chicken,  
pepper and onion salad  
Pear strudel

### DINNER THURSDAY, MAY 16

Antipasto  
Grilled scampi  
Spinach fettuccine  
Cassata alla Siciliana

### LUNCH WEDNESDAY, MAY 22

Pasta salad with shrimp, roasted  
peppers and black olives  
Fresh fruit coupe

### DINNER THURSDAY, MAY 23

Caribbean soup with grilled prawns  
Pork tenderloin with tamarind sauce  
Black beans and rice  
Latin confetti salad  
Guava paste and white cheese  
Papaya with lime

## F E R M I N E W S

F E R M I L A B  
A U S . D E P A R T M E N T O F E N E R G Y L A B O R A T O R Y

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The deadline for the Friday, May 24, 2002, issue is Tuesday, May 14, 2002. Please send classified ads and story ideas by mail to the Public Affairs Office, MS 206, Fermilab, P.O. Box 500, Batavia, IL 60510, or by e-mail to [ferminews@fnal.gov](mailto:ferminews@fnal.gov). Letters from readers are welcome. Please include your name and daytime phone number.

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## CLASSIFIEDS

### FOR SALE

■ '98 Explorer XLT, 4x4, V6, light blue w/gray leather, A/C, cruise, tilt, pwr windows, pwr locks, pwr driver seat, CD/tape, running boards, roof rack, alloy wheels, off-road size tires, original owner, runs & looks great, asking \$9,800, contact Terry at 630-782-9936 or blackjackkarney@msn.com. (Below Kelley Blue Book \$11,375 and N.A.D.A. \$13,650).

■ '98 Dodge Dakota club cab SLT truck. Black with gray cloth interior, 3.9L V-6 engine, automatic 4-speed, PS, PB, AC, intermittent wipers, AM/FM cassette, tilt wheel, power locks, and windows, sliding rear window, rear cap and much more. 45K miles, 6 year warranty. \$1,500 o.b.o. 630-505-0276.

■ '96 Chevy 1/2-ton extended cab Silverado, 2WD, pwr. windows, doors & locks, PosiTraction. 164K miles. Excellent condition. \$6,500, crogers@fnal.gov or call 630-327-1953 (Kevin).

■ '92 Chevy Lumina 7 passenger van, 125K miles, power windows/locks, AM/FM/cassette, body is in excellent condition, garage-kept. \$2,500 or best offer. Please call Steve x8879, or email SCarrigan@fnal.gov

■ '89 Chevy Beretta, 114K miles, excellent condition and very dependable. Asking \$1,100 o.b.o. Call x3884 or 896-6196 after hours.

■ '89 Dodge Grand Caravan LE, 3L V6, 160K miles, runs well, rear heat, 7 passenger, \$1,000 o.b.o. Dane at x4730 or dane@fnal.gov.

■ Fiberglass tonneau cover for full size Ford pickup (shortbed), 1996 and earlier, \$150. 4 antique movie theater seats circa 1926, \$180. Krups Espresso Nova with Perfect-Froth, used once, \$80. Bally Mr. & Mrs. Pacman Pinball Machine, needs minor repair, \$200. Murray lawn mower, like new, \$75. Call x4663.

■ 1973 Crestliner 14' boat with Sea Bird trailer. 5-1/2 HP Johnson Seahorse motor, 2-electric trolling motors, Garmin Fish Finder, dual anchors with cranks, misc fishing poles, tackle, vest, etc. \$1,700 o.b.o. Call 630-505-0276.

■ Boat propeller, 14 x 19, stainless steel, right hand rotation. Michigan Wheel part number SSM-249-C, new part #033004. Will fit most Alpha I and Bravo I sterndrives from 1986 thru present. Just back from repair of minor dings, and rebalanced, polished, \$150. Call Ed Dijak x6300 work, or 630-665-6674 home, dijak@fnal.gov.

■ John Deere tractor 111. 11 HP, older was not used for a while. Runs good. \$325 o.b.o. Trailer, 4-8 feet wide, \$75 o.b.o. Pull-out dining table, extends to 10 to 12 feet. \$70 o.b.o. Call Tim x4070

■ Resin patio set (blue). Large round table and four chairs with matching umbrella stand. \$150; Girl's bike (for ages 8-10). Dark purple. Great condition. \$25; crogers@fnal.gov/x3824.

■ 21 cu/ft Frigidaire upright refrigerator freezer. White, 5 years old. excellent condition, \$350; Clothes Washer & Dryer, Sears Kenmore, white, gas dryer less than 1 year old, \$250 Contact: Ed Dijak, work 6300, home 630-665-6674, e.dijak@att.net.

■ Picnic table. Hardwood, good condition, 39"x86", \$50. Lucy x2241, Inobrega@fnal.gov, or 630-527-0577.

■ 46 Star Trek paperbacks, \$20 for all. 1976 Cutlass rim with centercap and mounted tire, \$10. Call x6342 or 708-645-1168.

■ Sony Clie Palm handheld Personal Entertainment Organizer PEG-S320. (Upgraded Palm Pilot). \$207 new, unused, only \$125 o.b.o. Contact Mike Albrow x8618 albrow@fnal.gov.

■ Piano: Kawai upright, model CX-5H, oak finish., like new, orig. guarantee, \$3,000 o.b.o. Call Franco evenings 630-933-0514 or bed@fnal.gov

■ Contemporary, full-size, four post canopy bed with like new mattress and box springs \$300; two night stands (match bed) \$50 each; flowered full-size quilt, pillow shams, neck roll pillow, eyelet bed skirt, mattress pad, and two sets of sheets, \$75; corner computer table w/adjustable keyboard shelf, \$100; framed contemporary prints, 39"W x 31"H, \$50 each; Brother portable electric typewriter, \$25; Kenmore zig-zag sewing machine with carrying case, \$50; contact Cynthia at 312-317-2383 or by email at sazama@fnal.gov.

■ Lane 4 pc. Contemporary dining room set, caramel colored burl wood. China Hutch: Twin, lighted cabinets with two glass doors Each cabinet measures: 37w x 72h x 14d. Table: 42" round with 2-18" leaves and pads w/glass top. Server: Measures 40w x 34h x 18d. Has pull/out extension and 2 doors w/shelving and drawer inside. Glass top also. \$950. o.b.o. Three section entertainment unit; cream colored high gloss finish. Cylindrical audio tower on swivel base. Extra large TV cabinet with pull/out swivel and component storage. Upper and lower cabinets for component speakers. Bar with wine glass storage behind doors. Open glass shelf display area with radius corner and mirrored back. Unit arranged as shown measures 10 ft. wide by 7 ft. high. \$950. o.b.o. Contact John Fomusa at x3842 or fomusa@fnal.gov (can email pictures).

■ Musical instruments: Ludwig Bell Kit for beginning drummers. Includes Bells, practice pad, stand, and zippered carrying case for \$150. Also, Yamaha Portatone PS-25 electric keyboard with molded carrying case for \$50. Call T.J. at 630-840-3299 or sarlina@fnal.gov.

■ Alarm clock with radio, toaster, blender, coffee maker, stereo set w/ speakers, TV, 6 rattan chairs, wireless phone and answering machine. x2326 or bergen@fnal.gov. Will accept any reasonable offer.

■ Machinists tools and housewares. 630-406-6941 May 3rd and 4th, 931 Norcross Dr., Batavia.

■ Elliptical fitness crosstrainer - heavy duty \$100 Greg 630-557-2523 or x4606.

■ Telex flight headset, \$40, o.b.o. 640-584-2801, Jim Griffin.

### FURNITURE REFINISHING AND RESTORATION

■ Contact X3762.

### HOME FOR SALE

■ Beautiful 3 bedroom tri-level in Lake Holiday, 2 bath, professionally landscaped, Sandwich Schools, large lot, 3 beaches, boating, fishing, water-skiing, low taxes. Available after April 1, 2002. \$139,900. Call x3499.

### FOR RENT

■ Short Term, spacious one bedroom apartment (with dish washer, washer/dryer) in Huntington Apartment Complex to sublet July 1 until October 31 (or longer). \$800/month. Call 630-428 2778.

■ One big bed room plus bath room on independent floor in family house. Quiet residential Naperville. Car garage, laundry, living room available. \$495/month. Ready April 30. Call: 840-2574 office hours.

### GOLF

■ The Fermilab Golf Leagues hold their first outing of the summer on Friday May 17th at Phillips Park in Aurora. Cost for the 4-person scramble will be \$53/person person including greens fees, cart and contests. Sign up and pay fees by Friday May 10th to either Elliott McCrory x4808 (mccrory@fnal.gov) or Steve Baginski x3721 (baginski@fnal.gov). More information: <http://mccrory.fnal.gov/golf>

<http://www.fnal.gov/pub/ferminews/>



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