FERMI NEWS

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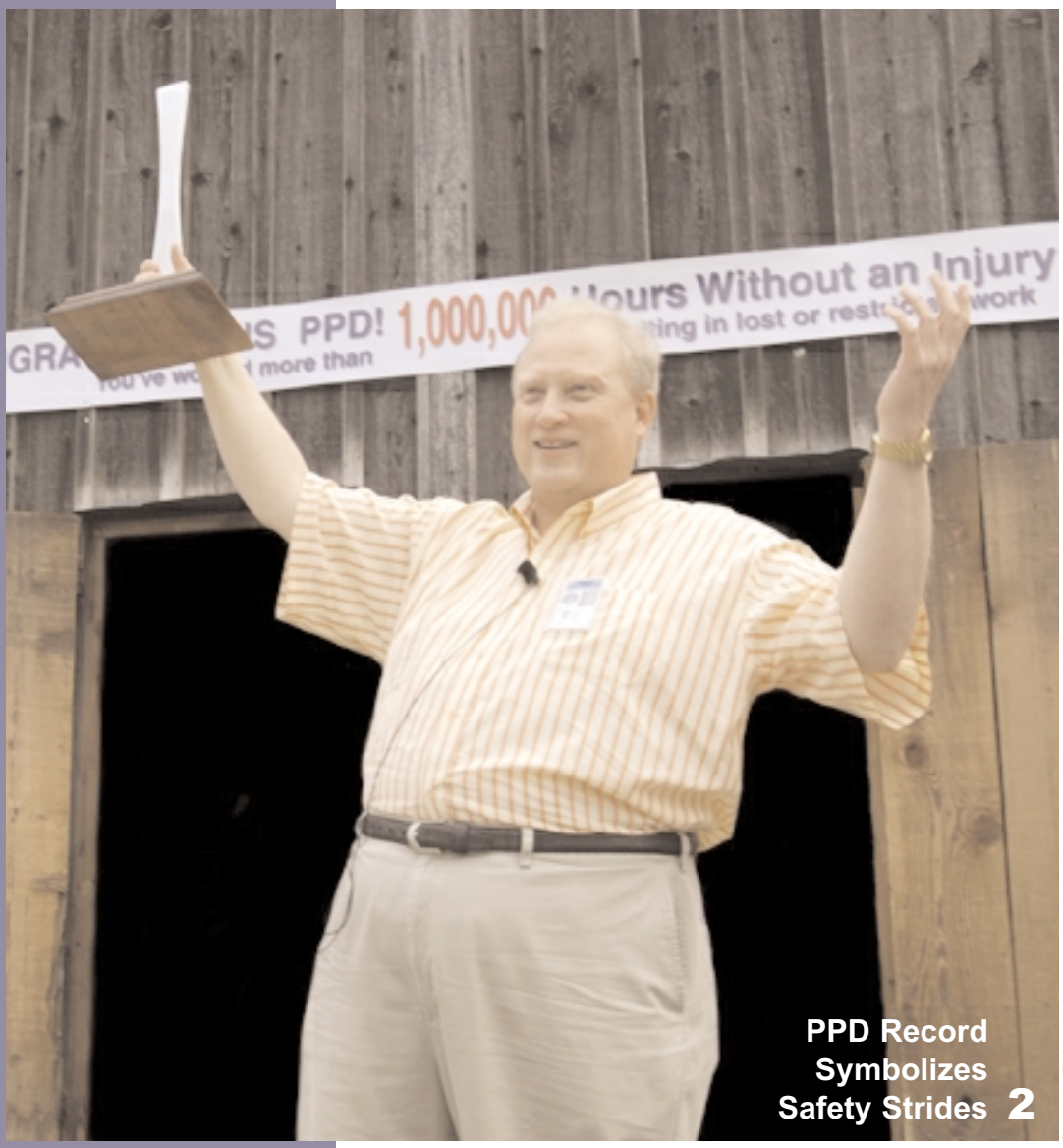


Photo by Reidar Hahn

PPD Record Symbolizes Safety Strides 2

Volume 26
Friday, May 23, 2003
Number 9

INSIDE:

Safety First

Fermilab employees set records as accident rate drops

by Kurt Riesselmann

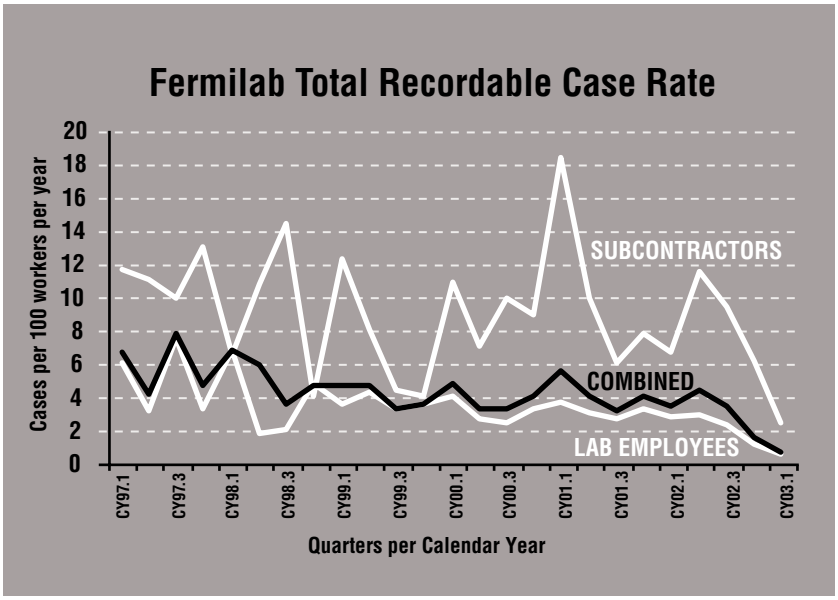
It was a tight space. The technician, 29 years old, knelt down to reach for equipment at the Collider Detector at Fermilab. To see better, he turned around to grab his flashlight.

Ouch.

What seemed like a routine job ended in a twisted knee and a trip to the doctor's office. The injury was so severe that he needed surgery.

The accident happened more than a year ago, on April 17, 2002. It is a reminder of the dangers that can lurk in even the most routine jobs. Yet that accident also cleared the way for an amazing record.

Since the accident, more than 600 employees of the Particle Physics Division have suffered no serious injuries. Working one million hours—and counting—the division set a lab-wide record for the most staff-hours without an injury serious enough to force someone to miss work or change from a normal assignment.



Over the two most recent quarters (Oct. '02 – Mar. '03), Fermilab employees and subcontractors achieved the best six-month safety performance ever observed at the laboratory. The total number of accidents per 100 workers per year has decreased to less than 1. The rate just for subcontractors has dropped below 4. During these six months a total of only five injuries occurred that resulted in temporary job-limiting work restrictions or in time away from work.

ON THE WEB:

Fermilab's Environment, Safety & Health Section:
www-esh.fnal.gov

Laboratory safety records by division
www-esh.fnal.gov/pls/default/lsc.html

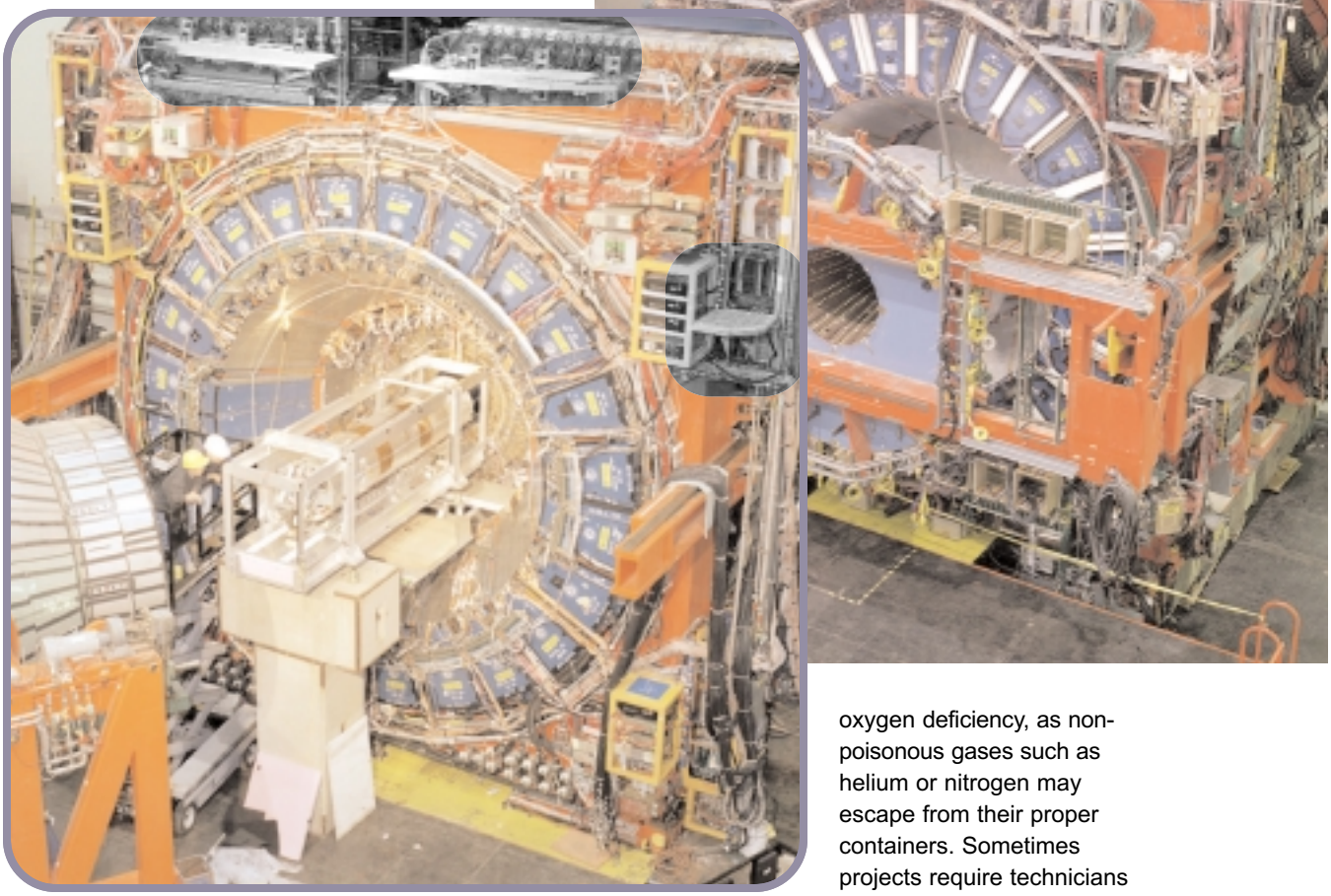


Photo by Reidar Hahn

Safety upgrade: CDF experts used the upgrade of the Run I CDF detector (right, shown in 1996) to install new scientific instruments as well as safety measures. The upgraded detector (left, shown in 2001) features additional platforms and tie-off locations for harnesses to increase the safety of technicians working on maintenance and repairs.

"For more than a year, we have had no injuries resulting in lost or restricted work," said Martha Heflin, senior safety officer for PPD. "Since the beginning of this year we haven't had more than a first-aid accident—cuts that required a band aid or so, but no reportable cases."

To celebrate the achievement and to re-emphasize the importance of safety in the work place, John Cooper, head of PPD, invited his division to a picnic outside Fermilab's Kuhn Barn on a sunny Friday, May 16. Director Mike Witherell presented the division with a safety award.

"This is really a remarkable record that PPD has assembled. It sets an example for the other divisions," Witherell said. "It is really impressive considering the work PPD does."

Many PPD work areas present industrial hazards. Lifts and cranes move heavy equipment. Maintaining and repairing large-scale equipment represent hazards by themselves. In some work areas, employees encounter the danger of confined space; in others, the possibility of oxygen deficiency, as non-poisonous gases such as helium or nitrogen may escape from their proper containers. Sometimes projects require technicians to handle hazardous materials like lead, beryllium and epoxies. And the list goes on and on. Yet it is not always the obvious dangers that cause the problems.

"The big hazards everybody sees," said Dwight Featherston, an electrical task manager at PPD who has worked at the lab for 20 years. "Most accidents are caused by something simple."

To help PPD employees recognize and handle the hazards of their work environment, the division has developed a spreadsheet that lists low- and high-level hazards. Before starting a new job, workers check the list to see whether any of the hazards apply to their job ahead. If they identify two low- or one high-level hazard, they need to write a hazard analysis and receive approval from their supervisor before proceeding with the job.

In PPD, supervisors and line managers are known for taking the time to personally inspect work areas and for talking to people about safety. If employees don't work safely, Cooper himself asks them to explain why. Trying to save money or time are two excuses that are unacceptable.

"People can tell when it's only talk," said Heflin. "And that's not John [Cooper]. For the January shutdown of the accelerator complex, thirty-six PPD techs went to help the Beams Division. John took the time to call in all these workers along with their supervisors. He reminded them that safety is the most important aspect, not schedule. He told them: 'If you feel uncomfortable doing a certain task, go tell your supervisor.'

"Ultimately, It's because of the workers in the division that we've had this success," said Heflin. "I see the improvements when I'm out and about, when I'm in meetings with them. When they submit their plans, often they've already reviewed the details and identified all of the hazards. They are just looking for confirmation or a better understanding of the rules and regulations. I think that a lot of them don't even realize they crossed this road."

PPD's safety achievement is the highlight of the improved safety performance of the entire lab. Both the Computing Division and the Environment, Safety and Health Section have exceeded their previous records as well, currently featuring more than 650,000 and 360,000 consecutive hours, respectively, without lost-workday cases. In the Technical Division, the Machine Shop Department, whose workers daily carry out hazardous processes—grinding, cutting, lifting, welding and similar jobs—completed 528 days without a lost or restricted workday.

Photo by Reidar Hahn

On May 9, the 640-employee Particle Physics Division held a picnic to celebrate one million man-hours without an employee becoming work-restricted or missing a workday due to a work-related accident. **COVER PHOTO:** On behalf of all PPD employees, Division Head John Cooper received the safety award presented by Fermilab Director Mike Witherell. Cooper told PPD staffers: "It's your trophy, not mine. Suffering no injuries is the best deal we can get." The trophy, manufactured by PPD employees, symbolizes the Fermilab sculpture *Acqua Alle Funi*. According to legend, workers in Rome erected an obelisk using pulleys and capstans, while the on-looking crowd had strict orders to remain silent, on penalty of death. When the ropes began to heat up and slip, putting the whole project in jeopardy, a brave soul in the crowd ignored the orders and shouted "acqua alle funi"—water to the ropes. Workers immediately took action, and the brave soul—rather than being beheaded—saved the day. "We should all apply this to the safety at our lab," said Cooper after telling the story at the award ceremony.

"The big hazards everybody sees. Most accidents are caused by something simple."

—Dwight Featherston, PPD

In April, the entire lab set a safety record as well. Over two quarters (Oct. '02 – Mar. '03), Fermilab reported only five injuries that resulted in temporary job-limiting work restrictions or in time away from work, the lowest two-quarter result ever achieved. Since the beginning of the year, the total number of lost-workday accidents per 100 workers per year has dropped to the astonishingly low number of 0.3 cases, considerably below the 2003 goal of 0.9 cases. The numbers indicate the progress the lab has made: Throughout most of the nineties Fermilab reported an average rate of 3.1 cases.

The improvements are the pay-offs of a safety campaign that began in February 1998, following two serious accidents that led to safety stand-downs at the lab. Recognizing the need for change, Fermilab's Directorate and the Environment, Safety and Health Section introduced additional safety training.

"Since February 1998, we offer DuPont training for supervisors and managers," said Mary Logue, associate head of the ESH Section. "The DuPont company has a reputation for high safety standards and performance. At our lab, about 350 to 400 people took this two and a half day course. And we've seen results. People who were doubters before became believers and then leaders."

PPD employee Dervin Allen, who supervises five technicians at CDF, clearly remembers the DuPont training and how rigorously safety is promoted at the company.

"I will never forget when they talked about safety with regard to climbing stairs," he said. "'You always have your hand on the railing when you walk up and down the stairs.' At DuPont, the first time you fail to do so you get yelled at. The second time you may get fired."

Better training is just one of the pro-active measures. Throughout the Fermilab site, employees have helped to identify safety hazards, from potholes in parking lots to unsafe equipment in machine shops. The following examples show the many different ways in which safety can be improved:

Photo by Fred Ullrich

Safety Rules:

- Always ask questions if you have concerns and issues.
- Don't assume everything is in order.
- If in doubt, stop and contact your supervisor.

Mary Logue (right), of the Environment, Safety and Health Section at Fermilab, frequently provides training to subcontractors coming to Fermilab. All subcontractors have to go through a half hour orientation to learn about potential hazards and emergency signals. Depending on the tasks at hand, additional training may be required.

■ At the 35-foot-high CDF detector, technicians more safely maintain the detector by using new platforms and tie-off locations designed and installed as part of the upgrade for Run II.

■ To relieve its alignment workers from unnecessarily lifting heavy equipment, PPD built a garage for their vehicle so that the equipment can stay on the vehicle overnight. Also, all equipment cases were labeled with their amount of weight.

■ Pliers used for crimping thousands of wires caused numbness in the hands due to the repetitive motion and the high pressure technicians needed to apply; the Technical Division developed a new tool that requires only one tenth of the pressure.

■ TD eliminated the hazard of lifting heavy bins with recycled papers, which get dumped into large containers on site, by getting a mobile lift station.

Many improvements aim at reducing the risk of back injuries, a high priority throughout the lab. With Fermilab's workforce getting older, the odds of someone getting hurt while lifting an object are increasing. The fact that some equipment at the laboratory is more than thirty years old, designed when ergonomics was not a priority, sometimes makes things worse.

"Back injuries have always been the largest contributor to lost work days," said Logue. "We began offering back training courses in late 1997. The course lasts an hour and a half and is conducted by a physical therapist. To prepare the class she has gone through the lab, observing workers and their work environment. In her class she now shows photos of lab employees lifting things, and she explains how the objects could be lifted more safely."

The course has been popular; over 1,500 employees have taken it. Several divisions require all their employees to take it. The impact has been impressive. Since 1998 the average number of back injuries per year has dropped to only seven lost workday cases per year, compared to nineteen from 1995 to 1997.

Despite this success, lab managers say there is no room for complacency. Every injury is one injury too many.

"The bottom line is: It's not about numbers and statistics," Heflin says. "We want people to go home in as good a physical condition as when they arrived. We tell them: 'It's about you. Your eyes, your hearing, your back. It's you.'"

Adding His Own *Spin*

Colloquium speaker David Awschalom revisits scene of his early training, and his father's contributions

by Mike Perricone

For David Awschalom, education wasn't limited to school hours. He had the advantages of two unique environments: his father was noted physicist Miguel Awschalom; his summer jobs in the late 1970s had him working with electronics at Fermilab.

"I worked in both physical electronics and computer programming, and that had a substantial impact in my choosing physics as a career," said Awschalom, now a professor of physics at the University of California at Santa Barbara, and director of the University of California Center for Spintronics and Quantum Computing.

"I remember enjoying it thoroughly," he said of his Fermilab experience. "I remember enjoying the atmosphere in the laboratory, and trying to understand as much as I could in the seminars. It was one of my first opportunities for an immersion in the world of computing, and to see the full impact of small-scale and large-scale computation in the world of science."

Awschalom will return to his early surroundings to offer the Fermilab Colloquium on Wednesday, June 11, speaking on spintronics—using an electron's property of spin, as well as its charge, to exploit quantum effects in information technology.

"So in a sort of odd way," he said, "I've come full circle—I'm now working in both fundamental physics and in computer science, through quantum information processing."

Miguel Awschalom works on the Neutron Therapy Facility in 1975. (Fermilab photo)

In his June 2002 article in *Scientific American*, Awschalom stated his belief that "we are being offered an unprecedented opportunity to define a radically new class of device that would exploit the idiosyncrasies of the quantum world to provide unique advantages over existing information technologies." Most laptop computers, he explained, already rely on a spintronic effect called giant magnetoresistance (GMR) to read high-capacity hard drives storing huge amounts of data. He traced the phenomenon of magnetoresistance—a change in electrical resistance caused by a magnetic field—back to its use in the earliest computer hard drives, to read data stored in magnetic domains.

In just a year since the article was published, Awschalom noted two significant advances in spintronics. The first was the unexpected development of exploiting nuclear spins—not just particle spins—in information processing, creating subatomic information storage, through the combination of magnetism and semiconducting materials. The second, within the past few months, was the demonstration of electrical control of spin states. In nature, he said, spins are controlled with magnetic fields; now they

ON THE WEB:

David Awschalom
www.iquest.ucsb.edu/sites/awsch
www.physics.ucsb.edu

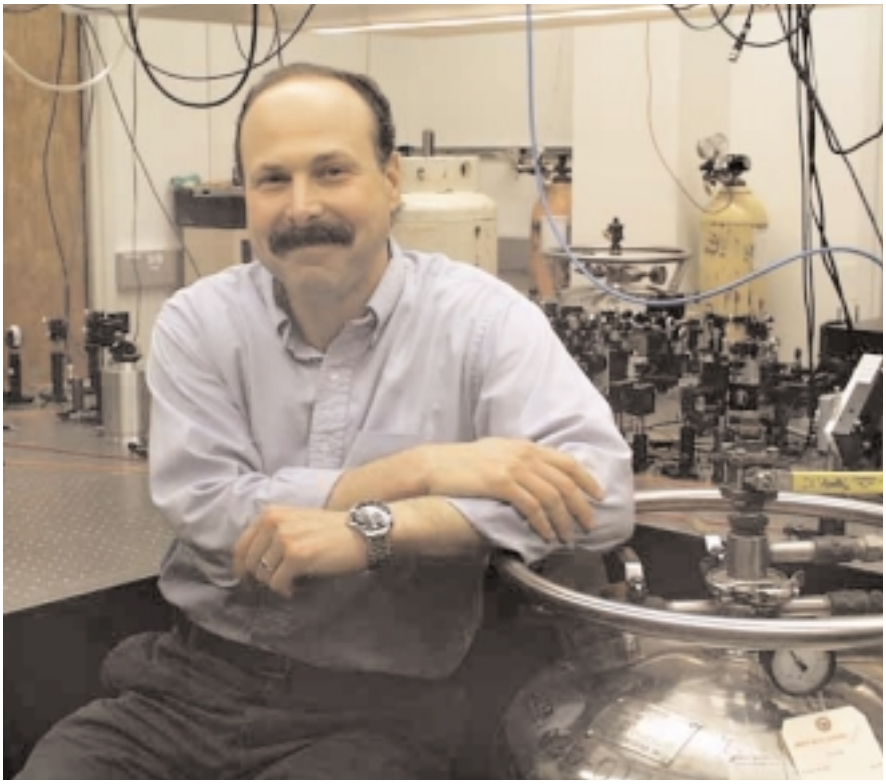


Photo courtesy UCSB

David Awschalom at the University of California at Santa Barbara.

PROFILE IN
PHYSICS

can also be controlled by using conventional gates, such as those on transistors and capacitors.

"This is very important," he said, "because it shows a straightforward way to control millions of electron spins with gates, and not with magnetism. This takes us to the realm of possibility of quantum information processors with real systems, made with real materials, using the fundamental quantum properties of particles, as we move from theoretical constructs to real systems."

Miguel Awschalom and NTF

Nearly 30 years ago, Awschalom's father, the late Miguel Awschalom, played a major role in advancing Fermilab's Neutron Therapy Facility from a theoretical construct to a real system.

"Miguel Awschalom and Don Young and Dr. Leo Cohen made it all happen," said physicist Arlene Lennox, director of NTF since 1985. "Don worked on beam extraction. Miguel designed the treatment room and the treatment chair, and he established a world standard for the calibration of a neutron beam. He designed the safety interlocks, the controls, the laser alignment, anything related to delivering beam to the treatment area. He set up the whole system, largely with student and volunteer work. It is exquisitely designed, and it has stood the test of time."

As detailed and closely focused as Miguel Awschalom's work was, his influence on David was one of encouragement, and not of management.

"My father provided lots of insights into the workings of the worlds of science and technology," David recalled, "but he never actually pushed me. In fact, my intended major [at the University of Illinois] was computer science and artificial intelligence. It was not until my junior year that I made the decision for majoring in physics."

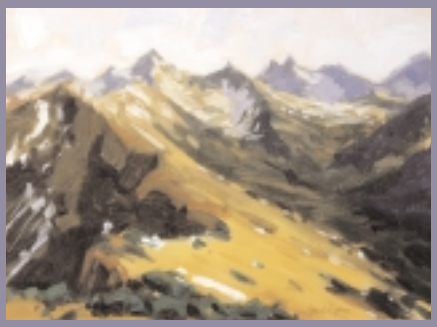
He was a research scientist and department manager at the IBM Watson Center in New York when the University of California at Santa Barbara extended an offer to join its faculty in 1992. UCSB was developing an interdisciplinary experimental effort in the sciences, with many former industrial researchers. Awschalom worked there along with physicist Michael Witherell, who was named Fermilab's fourth director in March 1999. Awschalom's last visit to the lab was five years ago for a seminar, and his return also offers a personal homecoming. His mother still resides in Batavia, adjacent to the laboratory.

Miguel Awschalom with Dr. Lionel Cohen, original director of NTF. (Fermilab photo)

"Obviously many things have changed since I was last there, and the lab has really grown in science quality and quantity," Awschalom said. "It will be fun to learn about the changes, as well as understanding the future directions of the lab."

An array of arts and crafts works by Fermilab employees—those shown here and many more—will be on exhibit in the Second Floor Gallery of Wilson Hall through June 2.

A Gallery of Skills



"Mountain Range," J.C. Yun

Gallery director Georgia Schwender (left) and Michelle Gleason position "Late Summer Landscape" by Kyoko Kunori.

"Andy's Quilt,"
Donna Lamore

"Free Standing Stained Glass,"
Wayne Braun

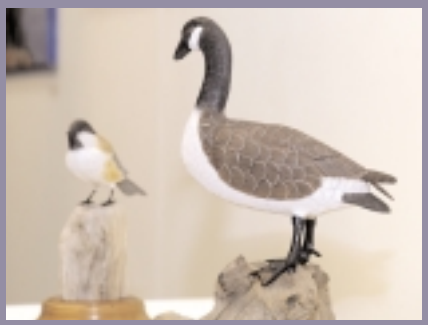
"Rhododendron,"
Karl Williams

"Purple Flowers in Blue Vase,"
Anna Gnoenskaya

Contributors and curators at the opening of the Fermilab Employees Arts and Crafts Show.

Jewelry, Katherine Johnson;
Jewelry, Bakul Banerjee;
Vase, John A. Litvinenko

"Mirror Image,"
William Gatfield



"Chickadee, Canada Goose,"
Alan Lamore

"Tower of London,"
Brady Chrisman

"Stoneware Jar,"
Anne Mary Teichert

New Funding RAISES QuarkNet Profile

by Sena Desai

Marge Bardeen

The 17 high-school teachers from 11 states who will visit Fermilab in June for a weeklong QuarkNet workshop will be among the happiest to learn that the physics outreach and teacher training program workshop is securely funded for the next five years, following joint reviews conducted by the Department of Energy and the National Science Foundation.

NSF's Education and Human Resources, Math and Physical Sciences Division, Elementary Particle Physics Division, and Office of Multidisciplinary Activities have together allocated QuarkNet up to $2,446,000 between 2003 and 2006; and DOE's Division of High Energy Physics has allocated $2,000,000. The funds will be managed by two QuarkNet founders, Marge Bardeen of Fermilab's Education Office and Randy Ruchti, a physicist at the University of Notre Dame, with Bardeen managing the DOE funds and Ruchti, the NSF funds.

"Having multiple funding for programs is not without its challenges," said Ruchti. "But a program like this, that can go on for ten years, is a real source of pride."

Photo by Fred Ullrich

QuarkNet teachers gathered at Snowmass 2001.

Some of this funding will be used to establish and maintain 10 new centers where high school teachers work with local particle physicists understanding the subject so they can teach it more effectively.

A new center has two lead teachers and two particle physicists from a local university or laboratory who act as mentors. The two teachers will spend eight weeks over the summer participating in experiments at CERN, Fermilab or any laboratory where their mentor works.

The rest of the funds will be used to conduct one- or three-week workshops for teachers in QuarkNet centers that are more than a year old.

QuarkNet now has six centers in the second year of the program. Each of these centers recruits more teachers, bringing their number up to about twelve for each center. The lead teachers and mentors will conduct three-week summer workshops for the new teachers.

The rest of the centers have existed for three years or more and teachers will meet for an annual weeklong workshop discussing and sharing their physics teaching experiences.

"We will organize meetings and conferences, and QuarkNet staff will continue to go out. Physicists will visit classrooms and students will come to see Fermilab," said Bardeen.

QuarkNet has a core staff of four principal investigators, two project evaluators, five high-school teachers, and a program secretary who coordinate the working of the centers.

The program is now in its fifth year and 50 centers have been established. "We are at 50 which is a huge and marvelous thing," said Ruchti. "We haven't

ON THE WEB:

QuarkNet
http://quarknet.fnal.gov

Mentor Jaehoon Yu (formerly of DZero), lead teachers Laura Nickerson, and Jennifer Ciaccio working with cosmic ray detectors at a QuarkNet workshop.

got the 60 centers that we hoped, but we are close to our goal." In all, there are 391 teachers from 352 high schools and 213 particle physicists currently participating in QuarkNet.

With renewed funding, QuarkNet staff can stop worrying about money and concentrate on establishing the 10 centers needed to achieve their original goals. And to strengthen the already existing centers.

"We want to establish a sort of community—to bring teachers into the research community in their area," said Bardeen.

QuarkNet's success in getting teachers involved in their local particle physics research emerged clearly when teachers and physicists sat down together at the DOE-NSF QuarkNet review panel. The teachers all agreed that their involvement in QuarkNet had given them new respect at school from students, fellow teachers, principals and superintendents. They were looked upon not only as teachers, but experts in particle physics research.

"If a project can do this, it is doing a lot right," said Marvin Goldberg, the program director for NSF's Elementary Particle Physics Division, who facilitated the development of QuarkNet. "Marge (Bardeen) has been an absolutely critical person," he added. "Her ability to organize and Fermilab's ability to marshal resources have been an important part of QuarkNet's success."

Kathleen Turner, program manager of DOE's Division of High Energy Physics, who was on the QuarkNet review panel said, "One of the strongest points about QuarkNet is that a teacher in any town in the United States can work with a high-energy physicist to learn how research is done. And get some ideas on how to transfer the new knowledge to the students."

Goldberg says there are more DOE and NSF collaborations in which Fermilab will be involved. "I look forward to working with Fermilab and DOE in the future," he says.

Photos courtesy QuarkNet

Lead teacher Pote Pothongsunan's students from Cape Henry Collegiate School in Virginia Beach, VA.

Meeting Season

Physics conferences spread the word on research, and build connections for researchers

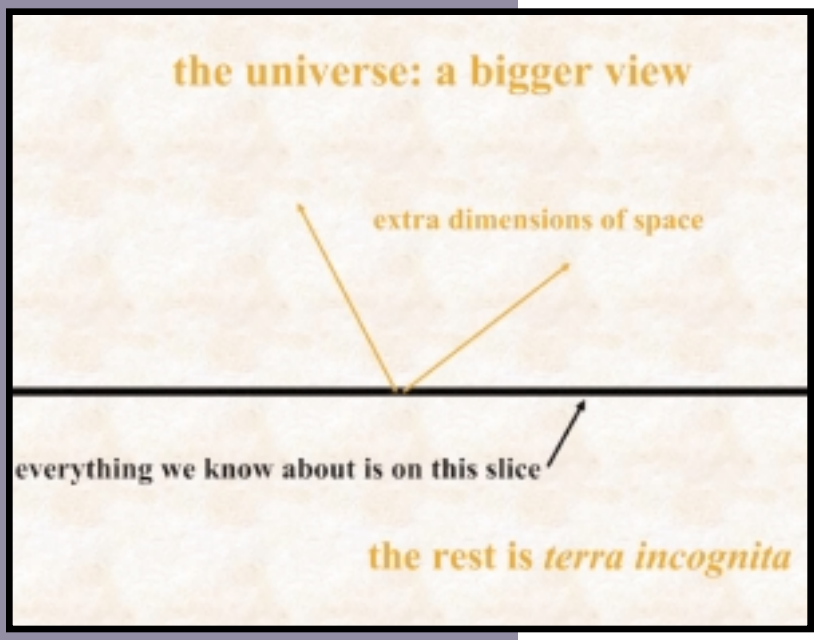
by Mike Perricone

Though the Illinois weather is hard-pressed to keep pace, the summer physics conference season is heating up quickly. From now through October, those long trails of email correspondence filled with ideas and opinions will now become attached to faces and voices, not to mention plenty of hand waving.

"We all need face time with each other," said Fermilab astrotheorist and David Schramm Research Fellow John Beacom. "That's important. That's why we don't all just work from home in our garages. You can read someone's paper from home, but you can't listen to them or talk with them. You need the interaction, the direct contact."

Beacom was one of more than two dozen Fermilab presenters at the April meeting of the American Physical Society in Philadelphia, setting up the accelerating summer schedule. In addition to gatherings convening from Italy, Spain and Holland to New York, California and Oregon, Fermilab itself hosted the fourth annual Large Hadron Collider Symposium at the beginning of May, and is looking ahead to its annual Users Meeting in June and to Lepton-Photon 2003 (the 21st International Symposium on Lepton and Photon Interactions at High Energies) in August.

Joe Lykken spoke on multiple dimensions at APS in Philadelphia in April.



For the Users Meeting on Monday, June 2 and Tuesday, June 3, conference organizers have worked to establish a consistent focus on Fermilab's future. Chris White of Illinois Institute of Technology, chairman of the Users Executive Committee, issued an invitation to John Marburger, director of the Office of Science and Technology Policy and chief science adviser to the President. Marburger, also the former director of Brookhaven National Laboratory, will speak to the users on Monday afternoon.

"Certainly Jack Marburger's presence at this meeting will give it a different sense of urgency," said John Conway of Rutgers University, the main organizer for the gathering. "We have lived with declining funding for over a decade, and the situation in our field, and at Fermilab, is at a real crossroads."

Conway pointed to the question of whether a new, large accelerator project would take shape, whether it might be placed in the U.S., and the role it would play in determining the future numbers of accelerator physicists. For the near-term future, while the Tevatron has drawn scrutiny with a slower startup than anticipated, the last several months have seen records set for both initial and weekly integrated luminosity.

ON THE WEB:

LHC 2003
http://conferences.fnal.gov/lhc2003

Lepton/Photon 2003
http://conferences.fnal.gov/lp2003

APS/Philadelphia
www.aps.org/meet/APR03/about.html

Photo by Reidar Hahn

Participants in LHC 2003 gather in front of Wilson Hall. More than 200 attended from all around the world for an update on the status of the Large Hadron Collider.

"The Tevatron program is alive and producing physics, and can do a lot in the coming half decade [before LHC is operating]." Conway said. "Marburger's talk will be in the middle of a session devoted to the Tevatron results, and I have asked the speakers to address the large picture of where we are and where we are going."

The second day of the meetings specifically focuses on the future of the lab, including a presentation by Fermilab Associate Director for Research Hugh Montgomery on the work of the lab's Long Range Planning Committee. Conway said there would also be an "open mike" session where anyone is free to offer views on how the lab should look in the LHC era.

"I think this session will be very interesting," he said.

LHC 2003

The LHC symposium laid the groundwork for discussion with three days of presentations, May 1-3, as more than 200 participants from around the world were updated on the status of accelerator components, magnets, detectors, software and physics planning for the collider under construction at CERN, the European Particle Physics Laboratory in Geneva, Switzerland. Scheduled to begin operations later this decade, LHC will take over the energy frontier at seven times the level of the Tevatron.

A major participant in supplying collider and detector components, Fermilab will also serve as host laboratory for the U.S. collaboration on the Compact Muon Solenoid detector.

"The physics programs at the Tevatron and the LHC have a large overlap," said John Womersley, cospokesperson of Fermilab's DZero collaboration. "They will confront many of the same questions, and these same people should talk about the same issues in the same room and then mingle. We all have common interests, but we don't always talk together."

Holding the symposium at Fermilab reinforced the LHC connection to the Fermilab experimental community, in addition to reinforcing the U.S. partnership. Visitors were given tours of the lab on the evening before the talks commenced, and there were ample opportunities for informal talks and for running into people in the Wilson Hall cafeteria between sessions in the One West conference room. Among the presentations: an overview of the LHC program from CERN Director of Research Roger Cashmore. Womersley noted a diversity in the audience that was as important as its size.

"One West was full, and these were not just 'the usual suspects'," he said. "Many were from outside the LHC collaboration. There were grad students, young postdocs, researchers from both CDF and DZero. LHC represents a large part of their own future, and this is a way to establish a community. In fact, we *are* the LHC community, and this is the way to build our credentials as members."

APS

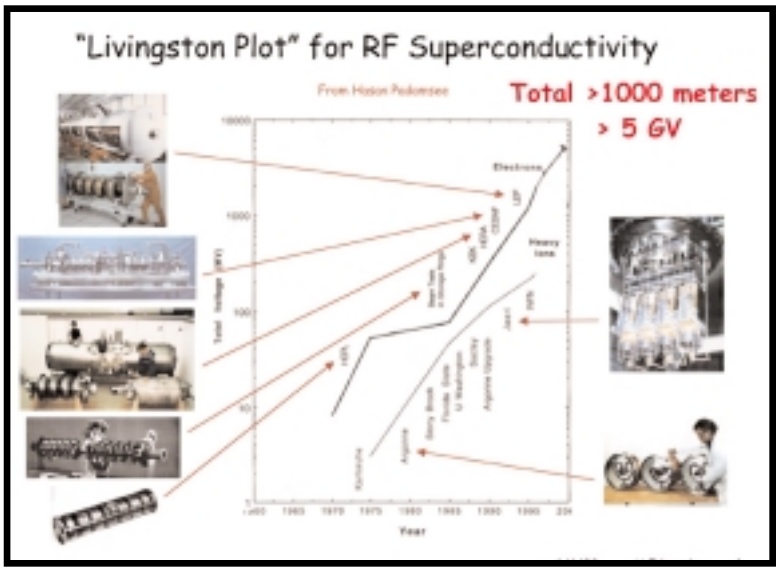
Conferences also represent a chance for laboratories to place themselves in the forefront of current thinking, as Fermilab did with some two dozen presentations at the Philadelphia meeting of APS in April.

Presentations ranged from theorist Joe Lykken on extra dimensions to cosmologist Michael Turner on dark energy, and on connecting quarks to the cosmos; from theorist Chris Quigg on a future linear collider, to Beacom on detecting supernova neutrinos; from Marge Bardeen, head of Fermilab's Education Office on involving teachers and students in particle physics research, to experimenter Paul Nienaber on education and outreach efforts on the MiniBooNE short baseline neutrino experiment; from Panagiotis Spentzouris on computing in accelerator physics to Lee Lueking on computing challenges in experimental results; and the prestigious Robert Wilson lecture by Helen Edwards, on RF superconductivity.

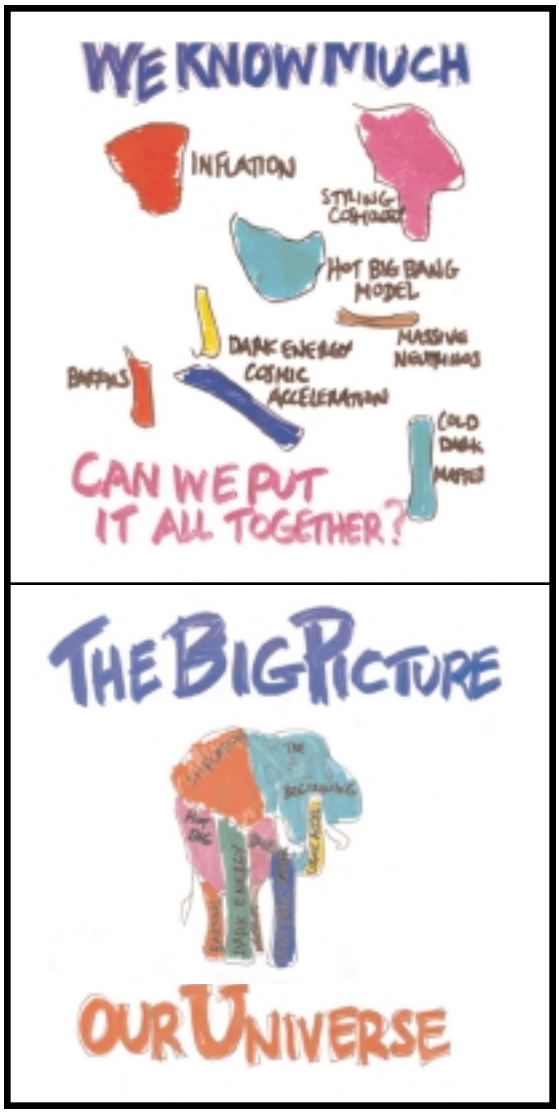
Lepton-Photon

Lepton-Photon has built credentials for decades as one of the premier international gatherings in physics, expanding its scope well beyond the original focus on lepton-photon interactions to encompass interactions throughout the field of high-energy physics. Lepton-Photon, sponsored by the International Union of Pure and Applied Physics, is held in alternating years with the International Conference on High Energy Physics (ICHEP), which was established 51 years ago and was held at Amsterdam in 2002.

"One of the differences with this conference is that it features only plenary sessions," said Fermilab's Catherine Newman Holmes, former coordinator for the CDF Run II upgrade project, now a collaborator on the Pierre Auger Cosmic Ray Observatory, and the country coordinator for the U.S. on Lepton-Photon '03. "There will be about 40 speakers, reviewing progress in different fields. They will certainly include any new results, but they will not only be speaking about their own experiments. By incorporating other work beyond their own, they will try to establish a context for the field and for new developments."



APS award winner Helen Edwards delivered the prestigious Robert Wilson Lecture.



Michael Turner spoke on Connecting Quarks with the Cosmos in a session on the future of particle physics at APS.

Cynthia Sazama, of Fermilab's conference office, anticipates around 800 participants, with more than 500 coming from other countries. While Newman Holmes has been the country coordinator for more than 18 months, other Fermilab scientists such as Joel Butler and theory department head Keith Ellis have been involved even longer in the organizing effort.

"This is one of the best chances for a lot of people to get together to review the latest results and the latest plans for future," said Newman Holmes.

FERMILAB ARTS SERIES SUMMER SEASON

To purchase tickets for Arts and Lecture Series events, or for further information or telephone reservations, **call 630-840-ARTS** weekdays between 9 a.m. and 4 p.m. Phone reservations are held for five working days, but will be released for sale if not paid for within that time. Will-Call tickets may be picked up, or available tickets purchased, at the lobby box office on the night of the performance beginning at 7 p.m. When coming to this event, only the Pine Street entrance to Fermilab will be open. *For more information, check out our web page at* **www.fnal.gov/culture.**

CHRISTINE LAVIN IN WHAT WAS I THINKING?

June 14, 2003; $17 ($9 ages 18 and under)

"Lavin knows how to keep her audience guessing thinking and laughing at the same time" - The Washington Post

In Christine Lavin's smart and funny theatre/concert you hear the soundtrack of American life: its people *(Strangers Talk to Me)*; preoccupations *(Making Friends with My Grey Hair)*; realities *(I Was in Love with a Difficult Man)*; inanities *(What Was I Thinking?)*; flutters *(Harrison Ford)* and hard facts *(Looked Good on Paper)*. An award winning singer/songwriter/guitarist/comedienne, she has recorded and released fourteen albums of original material, sings her own and others' songs on three disks of the "Four Bitchin' Babes" (a group she founded, nurtured and performed in during the 1990's), and has put together and produced eight compilations showcasing the works of dozens of singer/songwriters. From her award winning songs to her adroit comedy and twirling batons, Christine Lavin is an original.

APRIL VERCH

July 19, 2003; $18 ($9 ages 18 and under)

"It's always a good thing for a performer to leave an audience howling for more. But she is such a startlingly brilliant player/performer you have to wonder whether even too much would be enough." – Halifax Herald

Emerging from the thick of the traditional music scene, the fiddling and step dance vitality of an April Verch concert is a breath of fresh air. Though she has deep roots in the fiddling of her native Ottawa Valley in Canada, April's broad repertoire features traditional and contemporary tunes ranging from French Canadian to Appalachian, from Bluegrass to Celtic, and Brazilian to Old Time, not to mention her own colorful compositions. No matter what you call it, April's music is beguiling in the way it brilliantly balances contemporary élan and traditional resonance. This young musician is highly sought-after, not only for her master fiddling, but also for her virtuoso Ottawa Valley step dancing. April's award-winning performances of this dynamic, high-energy form of dancing never fail to bring the house down.

CORKY SIEGEL'S CHAMBER BLUES WITH BONNIE KOLOC

August 23, 2003; $20 ($10 ages 18 and under)

"Corky Siegel's Chamber Blues – Classical Music, elegant and precise, marries the loose and passionate blues in this utterly winning musical program." – The Austin Chronicle

For almost four decades the defining cultural arts critics from Rolling Stone, Stereophile, Down Beat, Billboard, Jazziz, New York Times, and Washington Post have all recognized Corky Siegel as a "phenomenal virtuoso on harmonica... a deftly accomplished genius of the Blues" and a pioneer who brings his original award-winning benchmark compositions to delighted audiences globally. New fans and longtime followers of Corky's blues career have been quick to embrace his freshly innovative, genre-busting Chamber Blues.

Chicago singer/songwriter Bonnie Koloc joins Chamber Blues for a multi-media event titled "Bestiary" which features some of Bonnie's original artwork and songs. Koloc is often considered, along with John Prine and Steve Goodman, as one of Chicago's top three singer/songwriters.

CALENDAR/LAB NOTES

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

ARTS AND CRAFTS SHOW

■ Fermilab Employees' Arts and Craft Show, May 1-June 2, Wilson Hall gallery (second floor crossover).

MAY 29, 2003: NALWO

■ invites all Fermilab women, visitors, and guests to the annual Spring Tea hosted by Ms. Beth Witherell at Site 29; 10am - Noon. Please bring a favorite dessert or appetizer to share. http://www.fnal.gov/orgs/nalwo/03529Tinvite.htm. For additional information please contact Sue, x5059 or mendel@fnal.gov

FERMILAB HOSTS VIRTUAL ASK-A-SCIENTIST ON JUNE 5, 2003

The Department of Energy's Fermi National Accelerator Laboratory will host the next Virtual Ask-a-Scientist on June 5, 2003 from 7:00 p.m. to 9:00 p.m. Central Time. Physicist Mike Clements, of Fermilab's DZero experiment, and Tunnel Engineer, Chris Laughton, of Fermilab's NuMI-MINOS experiment, will respond to questions live online.

WOODLANDS REVIVAL

Join your fellow Fermilab employees, 8 am to Noon the 4th Saturday of every month (we will meet on May 31st due to the Memorial Day weekend) at the Lederman Science Center as we work to revive areas by clearing away non-native brush to encourage native woodland flowers and trees to grow. The diversity of plants will continue to expand…with your help. Call Barb at ext. 3199 for more information.

LUNCH SERVED FROM
11:30 A.M. TO 1 P.M.
$10/PERSON

DINNER SERVED AT 7 P.M.
$23/PERSON

Chez Léon MENU

FOR RESERVATIONS, CALL X4512
CAKES FOR SPECIAL OCCASIONS
DIETARY RESTRICTIONS
CONTACT TITA, X3524
HTTP://WWW.FNAL.GOV/FAW/EVENTS/MENUS.HTML

LUNCH
WEDNESDAY, MAY 28
Spinach Cannelloni with Bacon and Walnuts
Caesar Salad
Mango Flan

DINNER
THURSDAY, MAY 29
Greek Salad
Grilled Lamb Kabobs with Vegetables
Rice Pilaf
Blueberry Tart

LUNCH
WEDNESDAY, JUNE 4
Pasta Salad with Tomato, Basil and Fresh Mozzarella
Fruit Sorbet with Berries

DINNER
THURSDAY, JUNE 5
BOOKED

FERMI NEWS

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A U.S. DEPARTMENT OF ENERGY LABORATORY

Ferminews is published by Fermilab's Office of Public Affairs.
Phone: 630-840-3351
Design and Illustration:
Performance Graphics
Photography:
Fermilab's Visual Media Services
Ferminews Archive at:
http://www.fnal.gov/pub/ferminews/

The deadline for the Friday, June 13, 2003 issue is Tuesday, June 3, 2003.
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.
Letters from readers are welcome.
Please include your name and daytime phone number.

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CLASSIFIEDS

FOR SALE

■ '96 Jaguar Vanden Plas., 53K miles, black ext., cream int., premium Connolly leather, loaded. $17,500. Contact 630-840-3930 or gerryb@fnal.gov.

■ '95 Honda Accord LX sedan, 104K miles, 5-spd. manual, 4-dr., blue, runs great, good body and interior. New tires at 90K. Kelley Blue Book says $4,500; will take $3,500. Contact Tony 630-840-6527

■ '93 Honda Accord LX, 173K miles, 5-spd manual, PS, PW, PB, AM/FM/cass., newer front tires, muffler, front disks and pads. Good condition, perfect for student. $2,500 o.b.o. Contact Licia Del Frate 630-840-6691 or liciadf@fnal.gov.

■ '89 Subaru GL Wagon 4WD, 143K miles, 5-spd. Needs some work but runs good. $300 o.b.o. Contact Paul 630-840-4495 or pkesich@fnal.gov

■ '88 FORD Ranger, 142K miles, 2.9L V6, auto. Work truck / mechanics special / 4x4 parts, $1,150 o.b.o. Contact Dan 630-840-6649 or dwatson@fnal.gov

■ Century fiberglass truck cap for S10 shortbed. Black. Sliding side windows w/screens. Sliding window to cab. 3rd brake light. $500. Contact Bill Dymond 630-840-6323, 815-787-9415 or dymond@fnal.gov.

■ Restored 1937 wood and canvas Old Town 16-foot (model: OTCA 16) sailing canoe, $2,500. Contact 630-840-6416.

■ Bike: 26″ Female style, 10-speed Murray Montero all-terrain, pink and gray, good condition, $40. Contact Ken 630-840-4225.

■ Very large landscape boulder (appx. 3 feet high by 4 feet in diameter). Perfect for yard project like building a waterfall, pond, retaining wall, etc. Free; you pick it up. Contact Matt 630-267-2436.

■ FE Olds trumpet, 4-1/2 years old, used 3-1/2 years, excellent condition, $400 o.b.o. ($750 brand new). Contact 630-505-0276

■ Pair of Gemini speakers, 320 Watt, 15″ woofers, 7 x 4 midrange, 3 Motorola tweeters, $150/pair. Contact 630-505-0276.

■ Vintage dining set. Rect. table with leaf, buffet with drawers, hutch with bowed glass front, 5 chairs, 1 armchair. Chairs reupholstered. Fruitwood. $500. Contact 630-840-2901 or 815-758-4076.

■ Regulation size ping pong table that folds up and rolls out of the way. Very good shape, $70. 6 horse power Johnson outboard motor (long shaft) with tank and line. Not pretty, but runs great! $125. Contact Dave 630-840-3366

■ Pecan Dining room set for sale. China cabinet, 66x54 oval table (with pads) and 6 chairs. $800 o.b.o. Viewable at: http://home.attbi.com/~jack4081/diningroom/diningroom.htm Contact Lisa 630-840-8023 or 630-393-3819.

SERVICES

■ Excavating dirt, gravel, trenching, mowing, handyman & other small jobs done. Excavator rental: $150 day rate or $75 half-day rate. Contact Steve 815-726-0442.

HOUSES FOR SALE

■ Spacious 2 BR with 2-car garage in Aurora, Woodlands at Oakhurst North, 10 min. from Fermilab, overlooks wetlands, many upgrades, $169,900. Contact: Tammy L. Dixon 630-373 9827

■ Two story house in North Aurora: Orchard Crossing subdivision, built in 2000, 3 bedroom, 2.5 bath, 1,800 square feet, large basement, 2 car attached garage, walking distance to new schools, 5 minutes to shopping, 15 minutes to Fermilab, 1 minute to I88. $224,900. Will consider renting for $1995/mo + utilities. Contact Patrick at gartung@fnal.gov or 630-803-8025.

VACATION HOME

■ Looking for a vacation spot for this summer? Lakefront home in Northern Wisconsin, close to Minocqua available to rent weekly or for the weekend. 4 bedrooms, 2 baths, sleeps 8-12 people, perfect for large family vacations. Contact 630-907-2565 or dkeiner@fnal.gov.

WANTED TO RENT

■ Looking for a furnished three bedroom house or an apartment to rent for the period of July 1 to July 31, 2003. Location near Fermilab preferred. Contact Jae 817-272-2814 or yu@fnal.gov.

FOR RENT

■ Share Cape Cod home in O'Hare-Elmhurst area. Senior F/M with small dog will share with employed adult or grad student. Cable, internet, fireplace, off-street parking, yard. Deposit, references. $425 per month. Contact 630-766-2928 or wood@clearnet.org

■ Wayne: 2 bdrm; greatroom with skylights, in wooded, rural setting; idea for 1-2 adults; 15 minutes from Fermilab; $1,150 per month plus utilities; deposit plus references; 630-377-7372.

GOLF OUTING

Fermilab's first golf outing of the season will be on Friday June 20, 2003 at Noon at the Wedgewood Golf Club in Plainfield, IL. All golfers of all skill levels are welcomed to play for fun and prizes! There will be individual hole prizes and overall team prizes for the best teams, with handicapping based on existing League and on-course scores. Sign up by calling Elliott McCrory (x4808, mccrory@fnal.gov) or Adim Yousif (x8393, yousif@fnal.gov). Deadline: June 6. Cost: $50, includes 18 holes of golf, riding cart, 2 hot dogs, a soda, and prizes for the winners. For more information, visit our web site at http://mccrory.fnal.gov/golf.

MILESTONES

■ The membership drive of Fermilab's Friends for Science Education ended with three winners in a "Figure with Fermi" contest, where contestants estimated the number of food items in three containers, and won the contents of the container. The correct answers all related to statistics describing Fermilab's education programs. There was a twist: Each answer required a multiplier for the number of items in the jar. The winners:

How many schools have participated in our programs since 1995 (malted milk balls)?
Answer: 800.
Winner: Kathi Luedemann of Laboratory Services Section figured 800 (a straight estimate).

How many hits does the Education Office website www-ed.fnal.gov get per year (peanuts)?
Answer: 6,000,000.
Winners: Alex Chen of Beams Division and Russ Rucinski of Particle Physics Division guessed 6,000,000 (multiplier: 10,000).

How many students have participated in our programs in the last year (buttered popcorn)?
Answer: 22,000.
Winners: Yuenian Huang of Technical Division and Chris Jensen of BD guessed 20,000 (multiplier: 20).

RECORDS SET

■ Week of May 9-16: Tevatron set a new integrated luminosity record with a level of 9159 nb^{-1}.

■ Fri., May 16: Antiproton Source sustained a new record stack-rate of 13.35mA for one hour at 2:52 PM.

■ Sat., May 17: At 3 PM, Operations established Store 2555 with a new record initial luminosity of 44.895E30.

GOLDEN TRUMPET AWARD

■ The informational brochure "Quarks Unbound: The New New Physics" received a Golden Trumpet Award from the Publicity Club of Chicago at its annual awards banquet Friday, May 16. According to the citation, Golden Trumpet Awards are presented for outstanding achievement in public relations, and honor the individual achievement of public relations and other communications professionals. www.publicity.org

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

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