

# 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 Reidar Hahn

**HEPAP confronts funding crunch 2**

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Number 6



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# S T R E T C H E D

## HEPAP

warned:

**funding shortfall**

**threatens**

**science**

**programs**

**Photo on cover:** Chairman Fred Gilman (left) discusses a point with Peter Rosen, DOE's Associate Director for High Energy and Nuclear Physics, during meetings of the High Energy Physics Advisory Panel at Fermilab, March 9-10.

by Judy Jackson

**L**ike a spring that can be stretched only so far and still bounce back, the U.S. High Energy Physics program has reached the limit of budget stretching before irrevocable changes threaten its capacity for world-leading science. That was the message that members of the Department of Energy's High Energy Physics Advisory Panel heard from speaker after speaker at HEPAP's spring meeting, held at Fermilab on March 9 and 10.



DOE's John O'Fallon

Photo by Reidar Hahn

Paradoxically, at a time when long-straitened budgets for basic science in the United States are facing the best funding prospects in many years, the budgets for high-energy physics laboratories, already eroded by a decade of inflationary effects, took a downturn in the President's Budget Request for Fiscal Year 2001. The situation is particularly troubling, DOE and laboratory officials told the panel, because both Fermilab and SLAC are poised to begin using brand-new, multimillion-dollar facilities to carry out physics experiments whose potential for discovery is unsurpassed in the world.

"We have a fifty million dollar problem," said DOE's John O'Fallon, director of the Division of High Energy Physics. "In FY2001, Fermilab has a \$33 million problem and SLAC has a \$15 million problem. Now, we have to fix it."

O'Fallon, Fermilab Director Michael Witherell and SLAC Director Jonathan Dorfman all showed HEPAP members the same graphic illustration of the course of high-energy physics funding over the past decade.

The chart, which appears at right, shows a \$180 million decline in annual funding for operations and equipment for high-energy physics at DOE from 1990 until the present year, using current-year dollars and totals supplied by DOE's Division of High-Energy Physics. These are the funds required to utilize the investment in physics facilities. Fermilab's Witherell explained that the inflation index used to calculate yearly levels almost certainly underestimates the real inflation rate that high-tech organizations have typically faced in recent years. The "Operations and Equipment" line results from subtracting construction funds, including funding for the U.S. contribution to the Large Hadron Collider at CERN, from the total. The low level of construction funding in the years 1990-1993 occurred because the construction funding for the Superconducting Super Collider laboratory, now terminated, is not included in the total.

### THE BEST PHYSICS IN THE WORLD

Laboratory presentations from the Fermilab and SLAC directors emphasized the extraordinary physics opportunities made possible by major U.S. investments in new physics facilities, especially Fermilab's Main Injector and SLAC's B Factory.

# t o t h e L i m i t

Witherell listed the central questions confronting particle physics in the year 2000: the search for a Standard Model Higgs boson, the search for evidence of supersymmetry, the question of neutrino mass, the investigation of matter-antimatter asymmetry, and the possibility of new and unexpected discoveries.

“The Fermilab program is addressing all of these important issues with experiments that are the best, or among the best, in the world.” Witherell said. “The best chance for a discovery in the period 2001-2006 that would change the direction of particle physics is at Fermilab.”

Witherell described six major construction projects now underway at the laboratory: the CDF and DZero upgrade projects for Collider Run II at the Tevatron; the NuMI/MINOS and MiniBooNE projects to study neutrino mass; the U.S./LHC accelerator effort, centered at Fermilab; and the

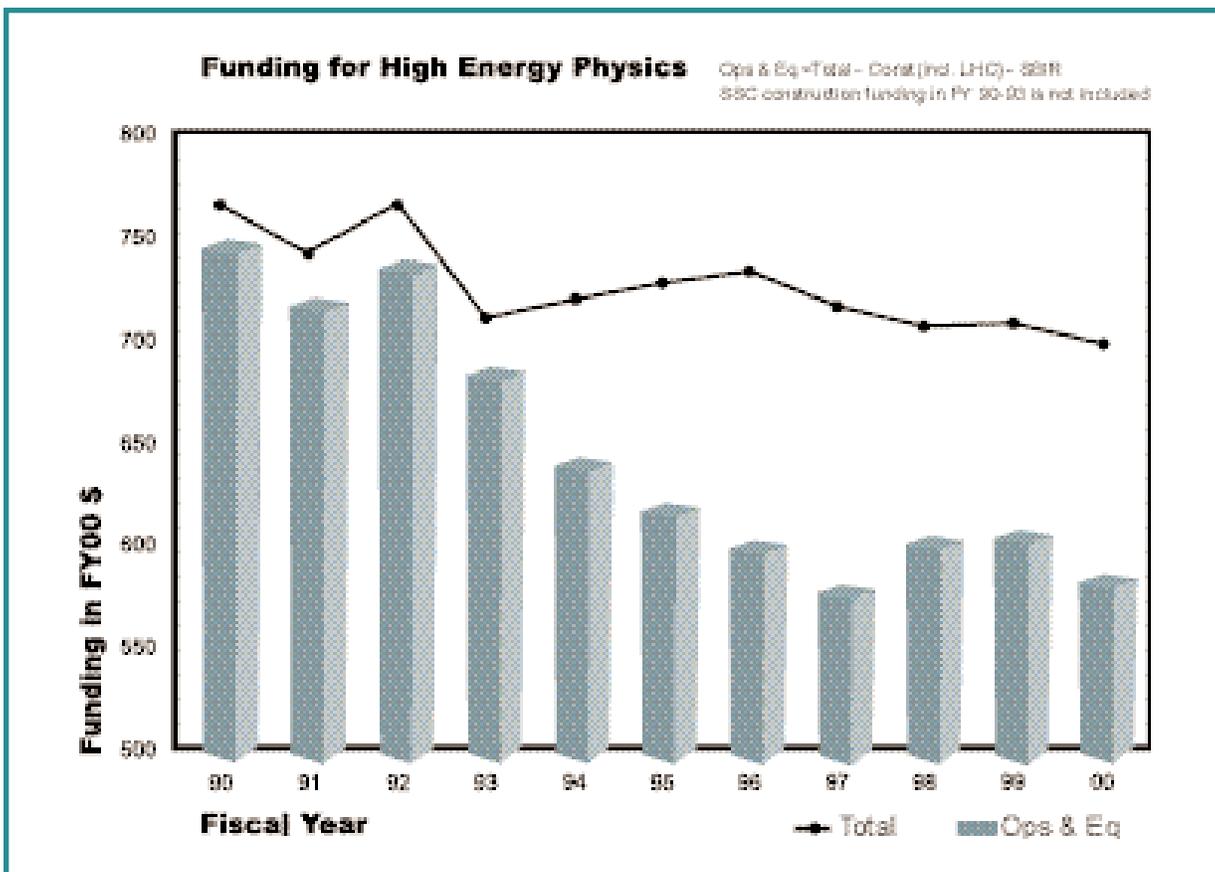
U.S./CMS project, also based at Fermilab, to build the nation’s contribution to the Compact Muon Solenoid, a major LHC particle detector. In addition, Witherell cited ongoing work on accelerator upgrades to increase the Tevatron’s luminosity and Fermilab’s continuing involvement in astrophysics experiments. He described critical R&D on accelerators for the future of particle physics.

“We need to protect the resources needed for this accelerator research,” he said.

The Fermilab director reaffirmed the laboratory’s commitment to begin Collider Run II at the Tevatron in March, 2001, and described the steps he has taken to ensure that the schedule will be met.

“It is clear to everybody that we are committed to meet the March 1, 2001 date,” Witherell said.

“In Run II, we will deliver as much integrated



# Stretch Ed to the Limit



Photos by Reidar Hahn

SLAC Director Jonathan Dorfan told HEPAP members of outstanding performance at the B Factory but warned of “irrevocable changes” without improved funding for 2001.

luminosity as possible, with the assumption that LHC experiments will begin publishing results in 2006. Run II will be the longest period of pure collider running in the history of Fermilab.”

Witherell described progress on the NuMI/MINOS project, which will send a high-intensity beam of neutrinos from Fermilab’s Main Injector to a particle detector in

northern Minnesota to search for evidence of oscillation from one neutrino flavor to another. He said the neutrino experiment was “the most sensitive” to the impact of proposed FY2001 funding cuts, and that the resulting delay “would significantly reduce the impact of the experiments.”

SLAC’s Dorfan told panel members of the excellent performance of the laboratory’s new B Factory and BaBar detector, whose current physics run began in mid-January, 2000, and will continue through August. He said SLAC has set an ambitious luminosity goal of 12 inverse femtobarns, to break new ground in the understanding of the matter-antimatter asymmetry known as CP violation.

“The B Factory is running very nicely,” Dorfan said. “We’d like the machine to run like this all the time. The BaBar detector is running at over 90 percent efficiency.”

Dorfan also shared the good news of NASA’s announcement on February 25 that the space agency had selected the SLAC proposal for GLAST, the Gamma Ray Large Area Space Telescope. The project is a joint DOE/NASA effort for a space-based detector, to be launched in 2005. It will use technology developed for high-energy physics experiments to explore the physics of gamma ray bursts and many other aspects of forefront cosmology and astrophysics.

## FUNDING CRISIS AHEAD

From physics opportunities, the laboratory directors turned to funding crises. Dorfan encapsulated the prevailing view.

“If we don’t improve the budget for FY2001,” he said, “something will be irrevocably reset in this field. You don’t recover from something like this in a year. Congress funded the B Factory at SLAC and the Main Injector at Fermilab. They did their job. And we did our job: we built them on time and on budget. Now we are ready to use them. Congress doesn’t want to throw that away.”

Witherell gave a similar view from Fermilab.

“We have successfully completed accelerator upgrade projects that renewed our research program without a very large new accelerator facility,” he said. “We are now trying to take advantage of the scientific opportunities made available by the new accelerator complexes, but the funding level is not sufficient to do that.”

Between a 20 percent cut in the base budget for the laboratories since 1992 and a five-plus percent inflation rate, driven by rising salaries for valuable scientific and technical staff, the laboratories are in real trouble, Witherell said.

“The staffs are too thin to operate the facilities, build the experiments and prepare for the future. Scheduled projects are not getting the funding they need to stay on schedule. The funding at SLAC is bad. The budget at Fermilab is even worse, worse than at any time in memory,” he said.

Witherell showed HEPAP members a table, shown above, comparing science funding across federal agencies from FY93 to FY00, using numbers from the FY2001 Budget Request.

“If you’re looking for a policy, this is the level at which policy is being made,” he said. However, he expressed measured optimism that the final FY2001 budget passed by Congress for high-energy physics would show some improvement and said that Fermilab would develop plans for “all budget scenarios.”



Smiles were few at the spring HEPAP meeting led by Chairman Fred Gilman (far left), but CDF Project Co-Manager Cathy Newman-Holmes (second from left) cheered up while describing the “installation shifts” physicists are working to prepare for Run II at the Tevatron.

### Science funding by agency, in \$ millions

Agency	FY 1993	FY 2000	Change	Δ (Constant \$)
NIH	10,335	17,813	+72%	+46%
NSF	2,750	3,897	+42%	+19%
NASA Science	4,058	4,895	+21%	+10%
DOE Science	3,066	2,788	-10%	-24%

### REVERSING THE TREND

Subpanel discussions, led by HEPAP Chair Fred Gilman, focused on the immediate funding crisis facing the field, and on reversing the long-term downward trend.

“These are extraordinary circumstances,” Gilman said. “Years of flat-flat [not inflation-adjusted] budgets have come home to roost just as we turn on the Main Injector and the B Factory.”

“Is there a way to look at the process to see where we have failed?” asked University of Chicago physicist Mel Schochet.

As one way to address the overall funding challenge, DOE’s Peter Rosen, Associate Director for High Energy and Nuclear Physics, requested that HEPAP review the 1997 Gilman Subpanel “Report on the Future of High-Energy Physics” and provide updated interim guidance on the direction of the field.

“Some think that the high-energy physics community has no clear idea where it’s going,” Rosen said. “We must formulate a national plan, with expenditures, timelines and road maps for the three proposed new facilities at the energy frontier and for the muon storage ring at the intensity frontier. This is an important step in developing an adequate budget.”

Rosen requested a brief white paper, complete by the fall meeting, outlining the steps to move ahead on the most realistic of the proposed new facilities and explaining how to unite the community in support

of it. He said that time did not allow for a new full-scale HEPAP subpanel report before a planned national workshop on future options in 2001. Gilman agreed that HEPAP would prepare the white paper.

Presentations on Fermilab science, the Large Hadron Collider, U.S. support for computing for LHC experiments, international science collaboration, and R&D for proposed future facilities reinforced the theme of outstanding science now underway or in prospect, with resources not adequate to achieve the benefits.

Witherell’s summary distilled the case for Fermilab, but he could have been speaking for all of high-energy physics.

“We have great opportunities for discoveries ahead,” he said. “We are exploring how to build the next generation of accelerators in an affordable way. But the FY2001 budget request would make it impossible to reap the physics reward of the Main Injector or build for the future. The FY2001 budget will set the course of Fermilab’s future for many years to come.” □



Fermilab Director Michael Witherell



# General Habiger



# Visits Fermilab



# Discusses Security



by Judy Jackson

**S**aying that he understands that “one size doesn’t fit all” when it comes to tailoring policies for the Department of Energy’s national laboratories, retired Air Force General Eugene Habiger, DOE’s “security czar,” visited Fermilab on March 7 to size up security issues at the laboratory.

Habiger, whose official title is director of DOE’s Office of Security and Emergency Operations, was on a national tour of DOE’s “Tier 3” laboratories. Tier 3 laboratories include those such as Fermilab and the Stanford Linear Accelerator Center, where no secret, or classified, research is performed. Concerns about security lapses at Tier 1 defense laboratories, including the high-profile case of Wen Ho Lee at Los Alamos National Laboratory, have prompted a DOE-wide effort to improve security at all national laboratories.

“I am aware that Fermilab is not Los Alamos,” Habiger told laboratory staff during his visit. “I understand that the security issues are not the same. I know that scientists have to be able to communicate with other scientists in order to do their work. I’m not here to put a stop to that.”

During a briefing session, Fermilab officials described the laboratory’s environment of openness both to university scientists from around the world and to neighbors from surrounding communities. Habiger shared his view that the primary security concern at Fermilab is not the guarding of secrets but the protection of research facilities.

“You have unique, one-of-a-kind expertise and facilities here that are the best in the world,” Habiger said. “We have to make sure that these unique facilities, this investment, is protected.”

Similarly, cybersecurity concerns center on possible corruption of experimental data and disruption of systems that control and monitor accelerators and detectors, rather than access to classified information.

“It’s not that people want to steal your data,” Habiger said, “but they could compromise your data.”

Accompanied by Fermilab Director Michael Witherell and other laboratory staff, Habiger visited the Main Control Room for the Fermilab accelerator complex. Operations Chief Bob Mau and Duty Assistant Mary Kohler explained the procedures in place to make sure no one gets into an accelerator tunnel who isn’t supposed to. Kohler demonstrated the fail-safe system of interlocks that control accelerator access and provided a look at the databases that track required training for those with access to the accelerator.



Photo by Reidar Hahn

Duty Assistant Mary Kohler and Operations Chief Bob Mau explain to General Eugene Habiger how security systems control access to Fermilab accelerators.

"You're doing a good job, Mary," Habiger said.

In a half-hour meeting with Fermilab employees, Habiger faced pointed questioning, especially on the subjects of badging and of public access to the laboratory site. Employees and users at Tier 1 and some Tier 2 laboratories (which are not defense laboratories but do perform some classified research) are required to wear identification badges at work. Traditionally, most Tier 3 labs, where research environments more closely resemble those of universities, have not required badging. One purpose of Habiger's visit, he said, was to assess the need for badges at Fermilab.

"The Department of Energy has no credibility with Congress when it comes to security," Habiger told employees. "We have a short time period to show Congress that we have changed and to make security at DOE the best in the nation."

Fermilab theorist Andreas Kronfeld acknowledged DOE's difficulties with Congress, but said Tier 3 labs such as Fermilab have no such Congressional image problem. Why, he asked, must Fermilab be caught up in the response to security problems at other labs?

"You're in the frag zone," Habiger replied, in one of many battlefield metaphors he used to make the case for improved security.

Nevertheless, Habiger told employees, DOE would not propose sweeping changes in security policy for Tier 3 labs.

"I think you'll be pleasantly surprised," he told the crowd in Fermilab's One West conference room. "You are not going to be walking around Wilson Hall wearing badges. Your neighbors are not going to have to wear badges when they come on the site. There won't be guards with guns. Or dogs."

Habiger's Fermilab tour included a stop at CDF. During a drive around the Tevatron ring, he said his recent reading of Richard Rhodes' "The Making of the Atomic Bomb," an account of the World War II Manhattan Project, had given him insight into scientists' views of security. He said he sympathized with Army General Leslie Groves, who managed the Manhattan Project for the military and was responsible for the security issues surrounding that project.

"Poor General Groves," Habiger said. □

# MAPPING THE MAIN INJECTOR



Aerial view of the Main Injector.



A Main Injector RF section (radio frequency cavities).

**W**hen Fermilab scientists want a close-up look at the Main Injector and the Antiproton Recycler, for repair, maintenance, or a quick inspection, they'll soon be able to click on a digital video available on a server or CD. Visual Media Services recently spent several days circling the two-mile tunnel with a specially-equipped video camera on a modified filming dolly, compiling an "e-documentation" for each machine. At completion, the project will provide an electronic image of each machine at 6-inch increments. An operator or scientist will be able to view an individual magnet string or a complete tunnel sector within seconds, all with real-life details beyond the design drawings. Engineers Lucy Nobrega and Jerry Leibfritz of the Beams Division requested and sponsored this project after seeing the Antiproton Source electronic documentation completed by Visual Media Services several years ago. Nobrega



The 8 GeV transfer line connects to the Main Injector.

feels "a real, searchable selection of images of the machine is extremely valuable for our mechanical group."



Fred Ullrich and Jim Schultz (seated) direct the video camera around the two-mile tunnel, documenting the Main Injector and the Antiproton Recycler.



Main Injector Sector 10, showing focusing, corrector and steering magnets.

# Bigger THAN LIFE

Backyard monsters

offer bug's-eye view

of science at SciTech

Visit SciTech at  
<http://scitech.mus.il.us>

by Mike Perricone

**W**hile you read this story, do not think about bugs. Especially big bugs.

Do not think about a praying mantis with the tree-top reach of a giraffe; or a shiny, black, horned beetle as big as a shiny, black VW Beetle; or ants that could demolish your doors in a single chomp; or a scorpion that could hold off a SWAT squad—all with exoskeletons as invulnerable as welded steel plates.

If you run into any of these backyard monsters at SciTech, the Science and Technology Interactive Center in Aurora's old Post Office building, definitely do not think about the possibility of stepping on one of them. Just make sure they do not step on you.

By now, of course, you've guessed that the bugs aren't real. The company that spawned these pneumatically operated animatronic creations, Creative Presentations of Valencia, California, had its own start creating special effects for the movie industry before shifting focus to museum displays.

At SciTech through May 15, these backyard monsters are themselves intended to shift your focus: from the imposing oversized forms, to the hands-on interactives such as Robo-Bug, the robotic demonstration of how a six-legged creature walks; and then on to the detailed displays of insect specimens. It's a step-by-step process described as "hands-on, minds-on, brains-on," by the museum's executive director, Ronen Mir.

"We're trying to give the kids a facility that will help them engulf themselves in the process," said Mir, named director in May 1999. "We want them to get into the process wholeheartedly, to spend a longer time at each exhibit, to get into a subject in greater depth. We try to be a catalyst, to show the fun of science and relate it to daily life."

The eight-foot animatronic praying mantis towers playfully over SciTech executive director Ronen Mir.





Mir gets confidential advice from two of the backyard monsters on exhibit at SciTech through May 15.

The daily life of SciTech, and of these giant steel-and-fiberglass visitors running on 65 pounds per square inch of air pressure, revolves around a core of dedicated volunteers. Many are directly or secondarily connected with Fermilab, which has enjoyed a close association with the museum since SciTech was founded.

Mary Lynn Johnson (her husband, Todd, is an operations specialist in the lab's Main Control Room) has volunteered since 1988. She worked on assembling the well-traveled animatronic bugs (their road shows have included Chicago's Field Museum), and she keeps them maintained: giving the mantis a facelift, fixing the actuating cylinder for the scorpion's claw, putting new wings on the poodle-sized fly snared by a spider that could free-lance as construction equipment.

"Some of the internal parts are delicate," she revealed, "but for the most part these things are bulletproof. They're built to last thousands and thousands of cycles."

Mary Lynn and Todd Johnson also form the nucleus of what Mir calls "the Techie Society."

"Every Wednesday night," Mir explained, "we meet at a restaurant. Everybody brings in the latest gadget, and we pass them around to get new ideas for the museum."

Mir listed the extensive Fermilab volunteer ties: former director Leon Lederman is a member of the International Advisory Panel; former director John Peoples is a member of the Board of Directors; Assistant Director Bruce Chrisman handles the formal link between lab and museum; Marge Bardeen and the staff of the Lederman Education Center lend their educational expertise; Bill Higgins of Environment, Safety and Health; John Konc and Orlando Colon of the Computing Division; Boaz Klima from DZero; Joe Incandela of the Particle Physics Division—"and many more," Mir concluded.

Mir is a high energy physicist by training, with experimenter credentials at CERN, SLAC and DESY, and he's a guest scientist at Fermilab. He's an educator by inclination, starting with volunteer work during his grad school days and ascending to full-time professional as designer of the two-acre Outdoor Science Garden at the Weizmann Institute for Science in Rehovot, Israel. He and his family (wife Debby, an environmental scientist; son Schlomi, 12; daughter Adva, 10) emigrated when the SciTech position was offered.

Mir is especially attuned to the international reputation built by SciTech's founding director, Fermilab's Ernie Malamud. International collaborations include developing exhibits for museums in Rome, Tokyo, and Melbourne, Australia; and participating in the establishment of the first Palestinian science center.

Augmenting its local educational outreach programs (which include science-themed summer camp sessions), SciTech is duplicating its renowned weather exhibits for nine other museums around the Midwest, in Indiana, Illinois, Michigan, and Iowa. The museum is also playing a leading role in the "WWW" ("Wings, Wheels and Waves") festival to be held in May, encouraging the redevelopment of downtown Aurora. And there are plans for extensive renovation of the museum, including the installation of a mezzanine level and an overall "high-tech" look.

"We're addressing the MTV generation in trying to develop a focused attention span," Mir said, "so we have to be very creative. But we're not just for kids. We're for everybody who is a kid at heart." □

**Clarifying the truss survey**

It was a pleasure to read your article “*The BIG Picture*” (*FERMINEWS*, Vol. 23, No. 4, Feb. 25, 2000), which gave welcome recognition to the lab’s Alignment and Metrology group. I would like to correct a couple of oversights. As the group’s Alignment Task Manager for the DZero experiment, I performed the analysis of the survey data given to the physicist in charge, Ai Ito, who was not mentioned in the story but should also be recognized.



I would also like to report that the second EMC Truss was surveyed using the same V-Star digital photogrammetric system on Monday night, February 28 in much better

environmental conditions. The temperature was 45 degrees Fahrenheit with wind speed less than 10 miles per hour. The digital photographs were taken inside the bucket of a Cherry Picker supplied and operated by Roads and Grounds. I took the photographs and was assisted by Craig Bradford of the Alignment and Metrology group. Manuel Garcia and Jorge Hernandez Sr. of Roads and Grounds operated the Cherry Picker. Ai Ito was present and assisted during the survey. In this picture, Garcia and I are inside the Cherry Picker bucket attaching a scale bar and retro-reflective targets to the truss.

O’Sheg Oshinowo

Alignment and Metrology group

**Cold facts on the truss**

One small question is niggling me after reading the account of the survey of the End Muon System truss. What account was taken of possible expansion-contraction effects in the massive steel truss structure when it was surveyed by ‘V-Star’ camera? John Greenwood explained that the survey was done outdoors in a temperature of 12 degrees. I presume this is degrees Fahrenheit, rather than Celsius,

and therefore cold enough to count as “brass monkey” weather here in Britain. But what will be the ambient operating temperature of the truss? The software may resolve the targets to an accuracy of 1/100 of an inch, but does that accuracy of the target array still stand if there has been even a small expansion of truss components once the structure has been installed in a warmer working environment? Do you apply some kind of temperature correction within the software, or is the expansion effect negligible or even irrelevant?

Chris Rogers,

BBC South West Plymouth, UK

**(Tom Diehl, overseeing design and construction of the truss, responds:)**

Dear Chris,

Good question. The coefficient of thermal expansion of steel is close to  $6.3 \times 10^{-6}$ /degrees F. That is, it will expand by about 6 parts per million per degree F increase in temperature.

We carefully measured the temperature in several places in the truss frame as we took the survey. We will be using the frame indoors. The difference in the temperature between the time we took the survey and the indoor temperature is about 60 degrees F. The truss frame will be about 170 mils (1000ths of an inch) larger than when it was surveyed. This is an important enough difference to require that we make a correction.

Our plan is to scale the distance between the survey points to account for the change in temperature. Because the frame is a complicated construction that procedure will be an approximation. But it’s good enough.

Thanks for your interest.

Tom Diehl

**An alternative scheduling view**

According to the Feb. 25th issue of *FERMINEWS* ("Feedback," *FERMINEWS*, Vol. 23, No. 4, Feb. 25, 2000), lab management is inclined against alternative work schedules for lab employees, based on fairness. While it may be less than completely fair to ask some employees to work nonstandard weeks (four 10-hour days for example), we believe in some cases the benefit to the laboratory would justify the action, just as swing shifts and 12-hour shifts benefit certain groups at the lab. In our group we have proposed an alternative work schedule which increases the presence of technicians during the week and reduces overtime. No doubt there are other groups which also will feel the strain of Run II and could better serve the lab by offering alternative work schedules.

A few years back the Government was pushing for mandatory car-pooling to reduce congestion and emissions. A four day-work week could help in addressing these issues. It would also reduce the parking burden and vehicular traffic at the lab. By viewing the alternative work schedule in terms of its benefit to the laboratory, we hope the management will reconsider its stance and continue to investigate, and ultimately implement, this concept where appropriate.

Joel Fuerst and Ken Olesen,  
Beams Division/Cryogenic Dept.

**Credit for a photo—and for Wilson**

Regarding the photo of Bob Wilson together with Ned Goldwasser at the control console ("*Robert Rathbun Wilson: Fermilab's founding director dies at 85*," *FERMINEWS*, Vol. 23, No.2, Jan. 28, 2000)—actually, I took that picture with my own camera on one of my midnight shifts during some of the most challenging times in Fermilab's history.

In 1971, under Wilson's direction, we were rushing to finish the construction of the Main Ring, and achieve a 200 GeV beam, in less than 5 years. Many outside the lab regarded it as an impossible task. When we started testing magnets in the tunnel, we hit snag after snag. There was relentless shorting of magnet after magnet. Magnetized shavings of stainless steel stopped the beam.

All available physicists were mobilized. And we worked hard to bring the Main Ring into operation. We did not have any sophisticated computer system, which Bob hated, nor any elegant software, which engulfs us these days.

We were driving by car from one service building to the next service building in a car, carrying a Tektronics Scope 454 by hand and setting it up on a turned-over garbage can, chasing the beam around the ring, communicating with the control room with a telephone (there were no cellular phones yet). This kind of primitive operation went on for several months, mostly during overnight shifts, because the Main Ring magnets had to be replaced or fixed during the daytime. Sometimes the operation was so intense, we had a nurse on duty in the control room.

During those days, Bob used to visit us in the control room once a week or so. Some days he came to the control room with an old book. While we were tuning the beam, he read verse aloud to us in French about how perilously an Egyptian obelisk was being raised with a mighty group and an ingenious leader.

On such a night we finally led the beam all way around the six-kilometer ring, and we continued to try to send the beam around the ring for a second turn. We saw some good signs. Bob got excited and he volunteered to tune the beam by himself. He had never before asked us to let him do tuning.



That is when I took his picture at the control console.

Another midnight shift produced a breakthrough of a dozen turns of circulating beam. By the end of March 1972 we had the 200 GeV beam circulating within the promised five-year period, thanks to everyone's coordinated effort under the direction of Bob Wilson.

Ryuji Yamada

## CALENDAR

### INTERNATIONAL FILM SOCIETY

#### Friday March 24

*Life is Beautiful (LaVita e Bella)*, Ramsey Auditorium, Wilson Hall 8:00 p.m. \$4.00. Dir: Roberto Benigni, Italy (1997) 114 min. Guido uses comedy to create an elaborate fiction to protect his young son from the horrors of the Nazi concentration camps.

#### ART SERIES PRESENTS:

#### Saturday March 25

8:00 p.m. Musicians from Ravinia's Steans Institute. Ramsey Auditorium, Wilson Hall. Tickets are \$15. This performance features the strongest musicians of 1999's institute performing in a chamber ensemble with faculty member and violinist Miriam Fried.

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

### ONGOING

NALWO is pleased to announce the free morning English classes in the Users' Center for FNAL guests, visitors, and their spouses have been expanded. The new schedule is: Monday and Thursday, 9:30am - 11am beginners (Music Room) and intermediates (Library) Monday and Thursday, 11am - 12:30pm advanced, emphasizing pronunciation and American idioms (Music Room)

NALWO coffee for newcomers & visitors every Thursday at the Users' Center, 10:30-12, children welcome. In the auditorium, International folk dancing, Thursday, 7:30-10 p.m., call Mady, (630) 584-0825.

### BARN DANCES

All dances are taught and people of all ages and experience levels are welcome. Admission is \$5, children under 12 are free (12-18 \$2). The Fermilab Folk Club sponsors the dance. For more information, contact Lynn Garren x2061 [garren@fnal.gov](mailto:garren@fnal.gov) or Dave Harding x2971 [harding@fnal.gov](mailto:harding@fnal.gov), or see <http://www.fnal.gov/orgs/folkclub/>

## LAB NOTE

### CALL FOR VOLUNTEERS

Interested in giving some of your time to help out with Daughters and Sons to Work Day (DASTOW 2000) at Fermilab? You can volunteer as a Mentor, and spend an hour with two or three kids telling them about your job, the lab, and science. Or you can help with organizing and staffing the day's many activities. The date: Thursday, April 27. Call Judy Trend in Public Affairs at x3351, or e-mail [treend@fnal.gov](mailto:treend@fnal.gov).

## MILESTONES

### HONORED

Rick Coleman, ID 05374, Beams Division, Fixed-Target Run Coordinator; and Mike Syphers, ID 04748, Beams Division, Run II Studies Coordinator; with Fermilab Employee Recognition Awards, for their work in successfully managing fixed-target experiments simultaneously with Run II accelerator upgrades, during the lab's recently-completed (and final) 800-GeV fixed-target run.

### BORN

Andrew Billerman Schumann on February 10, to Karen and Carl Schumann (Beams/Controls).

### RETIRING

Jay Luna, ID 1799, ES&H-Fire Group, March 10.

Jon Berge, ID 2524, PPD-CDF, effective March 31.

James Harder, ID 1615, BD-AS-Cryogenic Systems, effective March 31.

James Jensen, ID 2611, D0-Directorate, effective May 23.

LUNCH SERVED FROM  
11:30 A.M. TO 1 P.M.  
\$8/PERSON

DINNER SERVED AT 7 P.M.  
\$20/PERSON

## Chez Léon MENU

FOR RESERVATIONS, CALL X4512  
CAKES FOR SPECIAL OCCASIONS  
DIETARY RESTRICTIONS  
CONTACT TITA, X3524  
[HTTP://WWW.FNAL.GOV/FAW/EVENTS/MENU.HTML](http://www.fnal.gov/faw/events/menu.html)

### LUNCH WEDNESDAY, MARCH 29

Raspberry Chicken  
Wild Rice and Barley Pilaf  
Vegetable of the Season  
Almond Amaretto Cheesecake

### DINNER THURSDAY, MARCH 30

Sancocho  
Red Snapper in Coconut Sauce  
Fried Plantains  
Moro de Guandules  
Flan de Pina

### LUNCH WEDNESDAY, APRIL 5

Pork Vindaloon  
Steamed Jasmine Rice  
Latin Confetti Salad  
Pineapple Coconut Parfait

### DINNER THURSDAY, APRIL 6

Coquilles Ste. Jacques  
Grilled Pork Tenderloin  
with Roasted Red Peppers  
Pear Hazelnut Souffle

## F E R M I N E W S I

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

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The deadline for the Friday, April 14, 2000, issue is Tuesday, April 4, 2000. Please send classified advertisements 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

■ '99 Goldwing SE (Silver) with extras. Price lowered to \$1,500 less than Kelley Blue Book (01/18/00 \$16,500.) Priced at \$15,000 11K Miles - excellent condition, runs great must sell. Will even store for the remainder of the winter. Has Markland Receiver Hitch and (5 pin) OEM Trailer Wiring Kit, Markland Floorboards, Foam Grips and Extra Windshield. Also have 2 headsets for the intercom one full-face helmet model and one that can be used either on a full-face or open-face. Still has 2 yrs on original as of Nov. 5 (Unlimited Miles) Warranty. Can get another 3 yrs extended (Unlimited Miles). Call Terry X4572 or e-mail [skweres@fnal.gov](mailto:skweres@fnal.gov)

■ '91 Chrysler LeBaron, 104K, dark-red, dark-red leather interior and wood, 4 dr, sun roof, A/C, automatic, power seats/windows/doors, tilt/telescope wheel, AM/FM-cassette, cruise control, \$2,400, home (630)548-9850 or x6510 or [ursulam@enteract.com](mailto:ursulam@enteract.com) or [malzache@fnal.gov](mailto:malzache@fnal.gov)

■ '86 Toyota Cressida, 4 door sedan, sunroof, 150K miles, white, single owner. Very good condition. Some rust around wheel well trim. Complete maintenance records available. Predecessor to the Lexus. Tom and Ray think it's one of the best cars ever made. \$1,800 obo. [ducar@fnal.gov](mailto:ducar@fnal.gov) or x4040.

■ "The Pro" Nordic Track - electronic speedometer/chronometer which monitors distance, time, speed and calories burned - like brand new \$400.00 obo Linda x3082.

■ "King Cobra" driver, regular flex graphite shaft, \$95. "Taylor Made" fairway driver, graphite shaft, \$90, Jerry x8779.

■ Lynx Parallax pro line irons 3-PW, \$165.00, Lynx Parallax Sand Wedge (matches above set), \$20.00, Sam Snead "100" irons 3-PW, \$60, Yonex "Super ADX" Driver graphite shaft, \$90. Trident Metal Woods 1-3-5, \$60, Trident Metal Driver, \$10.00 (has dent), Trident Metal Driver graphite shaft, \$45.00, Ladies Trident Metal 3 wood, graphite shaft, \$25, Tour Edition 1 iron, \$20.00, metal 7 wood, graphite shaft, \$25. All clubs in very good to like new condition. Jack Mateski X2812 or e-mail: [mateski@fnal.gov](mailto:mateski@fnal.gov).

■ Looking for a good home for 2 birds: white cockatoo with large cage & stand - \$150 or best offer, yellow cockatiel with cage & stand - \$25 or best offer. Contact Steve at 852-4763, x8406 (work).

■ Moving sale: Krups coffeemaker with gold filter \$15, coffee grinder \$1, phone white \$10, cookware-set 4 pieces with lids \$18, wicker shelf 60" high \$5, small grill \$10, king flannel sheet \$40, king cotton sheet blue \$15, scale \$ 5, laundry basket \$3, 2 glass carafes \$ 3 each, salad bowls \$3+1, 5 microwave cook books \$5, shoe shelf \$10, magazine rack \$2, bulletin board \$2, rug \$2, 13 food container \$5, vases, boxes, small kitchen utensils... home (630)548-9850 or x6510 or [ursulam@enteract.com](mailto:ursulam@enteract.com) or [malzache@fnal.gov](mailto:malzache@fnal.gov)

■ Fender guitar amplifier, solid state, 30 watts, reverb, \$125. Guitar tuner, Qwik Tune chromatic, \$15 Curtis x2394 [crawford@fnal.gov](mailto:crawford@fnal.gov).

■ UNIVEGA Ladies Mountain Bicycle, 16" aluminum frame, aluminum alloy wheels with front and rear quick release, Shimano brakes and derailleurs, grip shifting, tuned. Equipped with toe clips, kickstand, bottle holder. Two summer old, original \$289, asking \$175 obo, call Mike 840-2191.

### HOUSE FOR SALE

■ Batavia - West side \$197,000. 3 bedrooms, 2.5 baths, 2 car garage, partial basement, large lattice enclosed deck, stone fireplace. (630)761-0221.

### FOR RENT

■ Naperville, private bedroom-furnished, adjoining bathroom, laundry, kitchen, utilities included. Phone not included. Linda 983-5374

### GOLFERS

■ Have an urge to hit something with a stick? The Tuesday Prestbury Golf League has openings for singles or teams. For more information contact Dean Sorenson [deans@fnal.gov](mailto:deans@fnal.gov), x8230 or Rod Klein [rklein@fnal.gov](mailto:rklein@fnal.gov), x4682.

### HELP WANTED: LIFEGUARDS

■ Fermilab currently seeks certified (Water Safety) Lifeguards with knowledge of water treatment and testing to maintain a safe and orderly pool. Dates of employment are May-September 2000, and involve flexible shift hours (including weekends and holidays). The selected individuals will also perform various maintenance duties. For consideration, please contact Jean Guyer at: 630-840-2548.

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