FERMI NEWS

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Photo by Reidar Hahn

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INSIDE:

Getting Ready for the FIXED-TARGET *RUN*

Hogan Nguyen, a Wilson Fellow at Fermilab, and Miguel Barrio, a graduate student at the University of Chicago, test the readout electronics for KTeV's drift chambers.

by Sharon Butler

Asked what the scientists who rely on Fermilab's accelerators want most from the Laboratory, Patricia McBride, a scientist herself, once said, "Beam, beam and more beam."

When the Tevatron cranks up again, two fixed-target experiments will get under way and the scientists involved should be delighted.

The Tevatron will be running at 40 percent of its 1997 intensity—about all the intensity the two experiments can handle. But they'll be getting 1.5 times more beam, enabling experimenters to collect more data with better statistics for deeper insights into the way matter is put together and falls apart.

Staff in the Beams Division are now busily preparing for the upcoming run: refurbishing the septa in the switchyard, looking for shorts in the power supplies, testing the magnets, making sure all the utilities (the water lines, safety systems, and instrumentation) are in order.

Angela Bellavance, a graduate student at Rice University, inspects the preamplifier electronics for one of KTeV's drift chambers.

To get more useful beam to experimenters, the Fermilab staff are configuring the "new" beam to have a longer "flat top."

"In the first run, we had a cycle of 60 seconds total for each pulse of beam—ramping up to 800 GeV for 20 seconds, then ramping down," explained Craig Moore, head of the External Beams Department. "In this run, the cycle will be 80 seconds long, with the beam at 800 GeV [the "flat top"] for 40 seconds of that time."

"Before we were taking data one-third of the time; now we'll be taking data one-half of the time," said Craig Dukes, cospokesperson for the HyperCP experiment.

HyperCP

Besides studying the kaons and rare decays that emerge along its beamline, HyperCP, experiment number 871, is looking for CP violation in hyperons, particles that have at least one strange quark and are heavier than protons.

Scientists have long known that CP violation exists. In 1964, scientists studying neutral kaons in experiments at Brookhaven

On the cover:
Bill Leubke, of IIT, checks readout systems for the HyperCP experiment.

TWO experiments explore CP VIOLATION

Laboratory discovered an asymmetry in the behavior of the neutral kaon and its antiparticle, subverting the long-held belief that the combination of charge conjugation (C) and parity inversion (P) was an inviolate fundamental symmetry of nature. But while theory suggests that CP violation exists in other particles as well, including B mesons and hyperons, no firm evidence for the phenomenon has yet surfaced.

According to Dukes, 30-some physicists associated with HyperCP are still analyzing data from Run I. They accumulated the largest number of events ever recorded on tape by a particle physics experiment, Dukes said: 75 billion events in all, which take up "only" about 33 terabytes of information (since the detector is simple). From these data, they have been able to amass the profiles of 1.3 billion hyperons and 0.3 billion antihyperons. This was a tremendous experimental feat, since, as HyperCP physicist Catherine James pointed out, "you don't get hyperons and antihyperons at the same time or at the same rate."

By comparing the spatial distributions of decay products of hyperons and antihyperons, the experimenters hope to discover an asymmetry in their behavior. If CP violation exists, the experimenters expect the phenomenon to be as large as several parts in 10,000 (one of the largest manifestations of direct CP violation outside of decays involving *b* quarks).

In Run II, Dukes said, the HyperCP collaboration expects to collect four times as much data. With more data to shore up their analyses, the scientists will be able to reach firmer conclusions than they would with less data. The quality of the data should be better, as numerous minor but significant upgrades have been made to the apparatus.

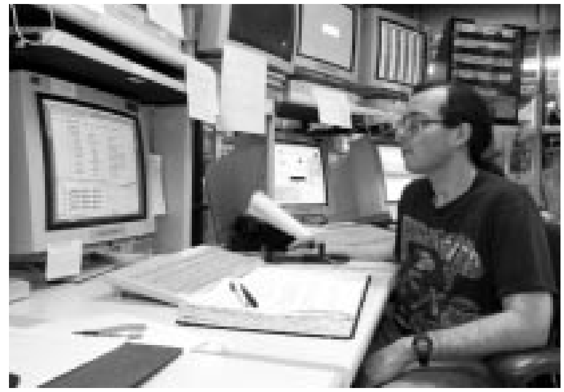
To collect more data, the collaboration has been focusing on upgrading its data acquisition system. In particular, the scientists have been working to increase the size of the memory so that the data acquisition system can cope with the barrage of

Photos by Reidar Hahn

From left to right: Tom Kobilarcik, Max Chertok and Craig Moore inspect the new meson beam test line out in the fixed-target area.

Craig Dukes, cospokesperson for HyperCP, installs new scintillation counters for the experiment's trigger

Right: KTeV's detector. Far right: Jason LaDue, a graduate student at the University of Colorado at Boulder, operates KTeV's DART program, a data acquisition system developed by Fermilab's Computing Division.



Photos by Reidar Hahn

data from the new beam. As James described it, the memory in the system serves as a buffer, a kind of shock absorber. Data stream in from the ramped-up 800-GeV beam and are stored in this buffer memory until the slower readout system can sort through the masses of digital signals and write the relevant ones to tape.

KTeV

KTeV, or Kaons at the Tevatron, is also studying CP violation, but in kaons.

"We're not only going to collect more data in Run II, but we expect the quality of the data to be better," said Ed Blucher, a physicist from the University of Chicago who is cospokesperson for the KTeV collaboration, along with Fermilab physicist Bob Tschirhart.

Several changes to the detector will make the experiment run "more smoothly and efficiently," according to Blucher, enabling the collaboration to collect more data. For example: In the last run, because of a fabrication problem in the custom integrated circuits that read out the detector's cesium iodide calorimeter, the collaboration lost considerable data-collecting time. Each time a chip failed—as often as twice a day, Blucher said—experimenters had to halt operations and replace the faulty components.

"The failures in these chips caused more than half of the downtime in the experiment due to detector problems," Blucher said. New chips were tested last fall, and proved to be far more reliable; there was only one failure during the four-week test. The new circuitry has now been installed.

To improve the quality of their data, the experimenters are also modifying certain features in their drift chambers, where crisscrossing, hair-thin wires help reconstruct the paths that particles take under the influence of a magnetic field. Delineating those paths enables the scientists to calculate the particles' momenta.

Ideally, the "spark" that occurs when a particle passes by one of the fine wires is amplified 100,000-fold, giving experimenters precise information on the particle's whereabouts. But in the last run, the electronics sometimes left the signal too weak, making it difficult to pinpoint a particle's location. The problem arose, said Tschirhart, "largely because external noise sources, like the data acquisition system and even radio station transmissions, prevented the electronics from operating at the original design amplification." Improvements to the grounding and shielding of the electronics should ensure optimal amplification.

Both Tschirhart and Blucher noted that the collaboration was in an ideal position. Because of the size of the collaboration (about 90 scientists), and the hard work of postdocs and graduate students, much of the data set from the last run has been analyzed already. Consequently, the scientists have been able to study methodically the operation of their detector and decide where to make improvements that would give them more and still better data.

Said Tschirhart, "The KTeV experiment ended a year and a half ago. It's not a lot of time but in that time we've finished many of our analyses, and we've gotten to a point where we clearly understand what changes in the detector would be beneficial."

The next run, Blucher said, is a chance to work with a detector whose bugs have been shaken out. "We've learned where we made small mistakes and where there were weaknesses. All of these issues have been addressed for the upcoming run."

Physics results, said Tschirhart, are dependent not just on more data but on higher-quality data—just as advances in astronomy, to use Tschirhart's analogy, depend not just on larger lenses to collect more light, but on finer optics of the lenses to better resolve the images of the galaxies.

Hazard Analysis

Murphy: "Anything that can go wrong will go wrong."

by Judy Jackson

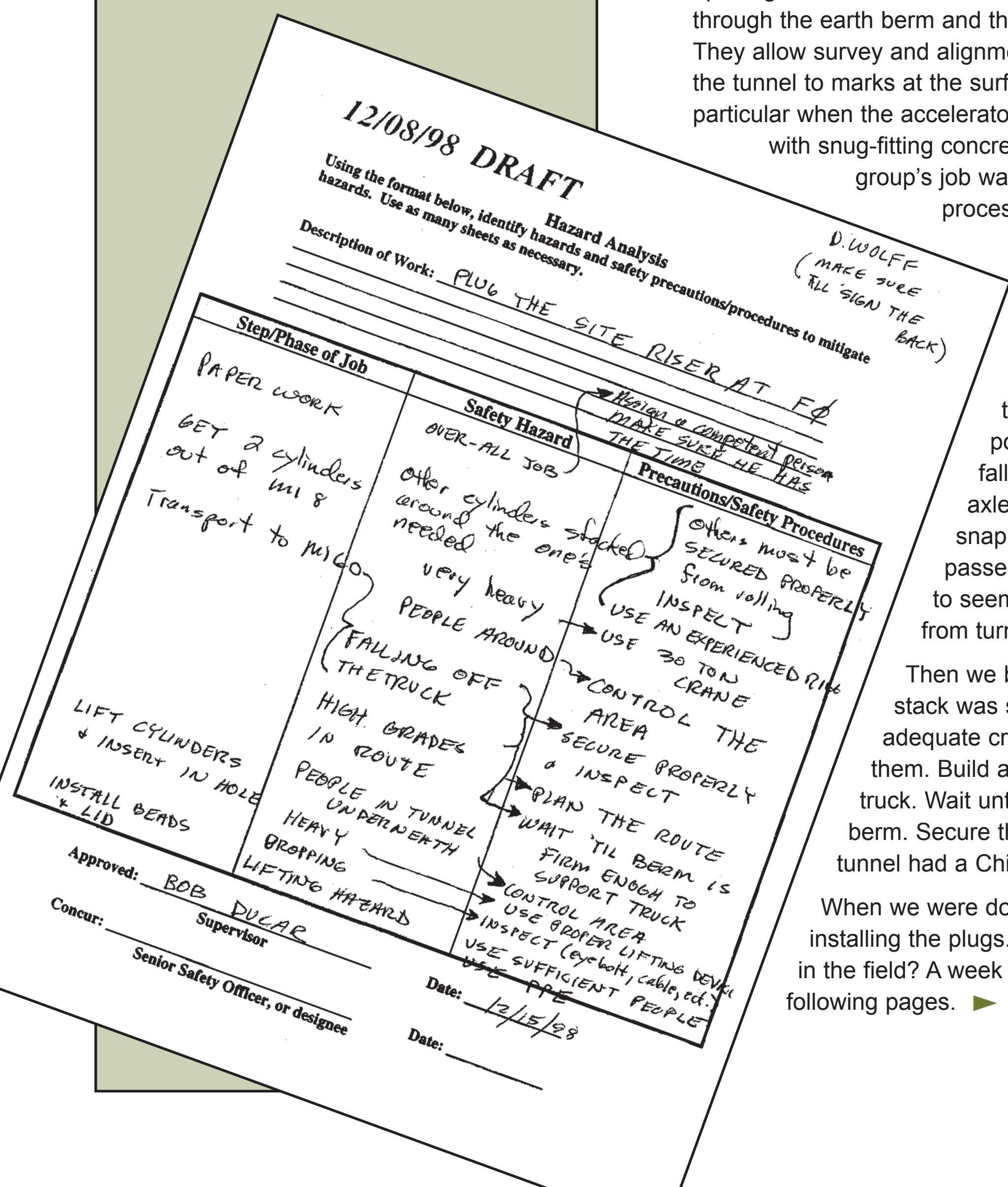
When Fermilab held a safety stand-down in December 1998, the proceedings included an exercise in hazard analysis. Work groups chose an upcoming task and mentally walked through it, trying to spot anything that might go wrong. Then they planned how to keep bad things from happening. All over Fermilab, little groups plotted how to keep mayhem, fiasco and trouble at bay.

One group, consisting of engineers and physicists plus a *FERMINEWS* reporter, shone the hazard analysis spotlight on the task of plugging sight risers in the new Main Injector accelerator. Sight risers are cylindrical openings, lined with metal sleeves a foot or so in diameter, that punch through the earth berm and the concrete roof of an accelerator tunnel. They allow survey and alignment teams to relate fiducial marks inside the tunnel to marks at the surface. When the risers are not in use, and in particular when the accelerator is operating, the holes must be plugged with snug-fitting concrete cylinders, to provide shielding. Our group's job was to decide what might go wrong in the process of moving two 2,600-pound concrete plugs from a stack in a service bay, loading them onto a truck, driving them up the Main Injector berm at FZero, and lowering them into the sight riser.

We thought of plenty of potential disasters: the stack might collapse, sending 2,600 pound rollers to flatten us; the plugs could fall off the truck, which could sink up to its axles in the earth berm; the crane cable could snap, dropping the plug just as someone passed by in the tunnel below. It was beginning to seem that only a miracle could keep this job from turning deadly.

Then we began to plan: We would make sure the stack was secured before moving the plugs. Use an adequate crane and experienced riggers to move them. Build a frame to hold the plugs snugly in the truck. Wait until the ground froze before driving up the berm. Secure the area below to make sure no one in the tunnel had a Chicken Little experience....

When we were done, we had a hazard analysis plan for installing the plugs. We all signed off on it. But would it work in the field? A week later, we found out—as you'll see on the following pages. ►



12/08/98 DRAFT

Hazard Analysis

Using the format below, identify hazards and safety precautions/procedures to mitigate hazards. Use as many sheets as necessary.

D. WOLFF (MAKE SURE ALL SIGN THE BACK)

Description of Work: PLUG THE SITE RISER AT FØ

Step/Phase of Job	Safety Hazard	Precautions/Safety Procedures
PAPER WORK	OVER-ALL JOB	Assign a competent person MAKE SURE HE HAS THE TIME
GET 2 cylinders out of MI 8	Other cylinders stacked around the one's needed	Others must be SECURED PROPERLY from rolling INSPECT
Transport to MI60	very heavy	USE AN EXPERIENCED RIGG
	PEOPLE AROUND	USE 30 TON CRANE
	FALLING OFF THE TRUCK	CONTROL THE AREA
	HIGH GRADES IN ROUTE	SECURE PROPERLY & INSPECT
LIFT CYLINDERS & INSERT IN HOLE	PEOPLE IN TUNNEL UNDERNEATH	PLAN THE ROUTE
INSTALL BEADS & LID	HEAVY	WAIT 'TIL BERM IS FIRM ENOUGH TO SUPPORT TRUCK
	DROPPING	CONTROL AREA
	LIFTING HAZARD	USE PROPER LIFTING DEVICE INSPECT (eyebolt, cable, ect.) USE SUFFICIENT PEOPLE USE PPE

Approved: BOB DUCAR
Supervisor

Date: 12/15/98

Concur: ____
Senior Safety Officer, or designee

Date: ____

Date: 10/23/98	**Description of Work:** Plug Sight Risers at FØ

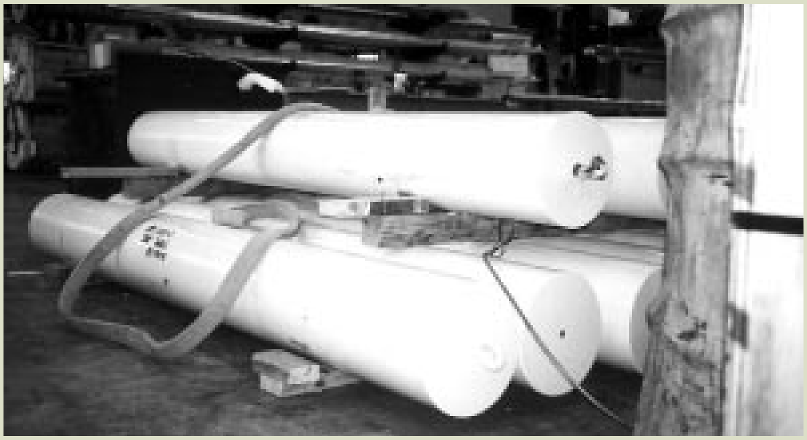
STEP 1

Photo by Jenny Mullins

Overall job: Assign a competent person. Make sure he has the time.

Fermilab construction coordinator Tony Ramos takes on the job of task manager. He reviews the hazard analysis with employees, contractors, and the photographer.

STEP 2



Job: Lift plugs from stack

Hazard: Stack might roll when plug is moved.

Plan: Check stack; cylinders chocked.

STEP 5

Job: Lift cylinders from truck, move to sight riser

Hazard: Heavy cylinders might fall.

Plan: Crane inspected? Crane operator trained, licensed?
Eyebolt specs okay? Eyebolts checked?
Enough people to help? Personal protective equipment?

STEP 6

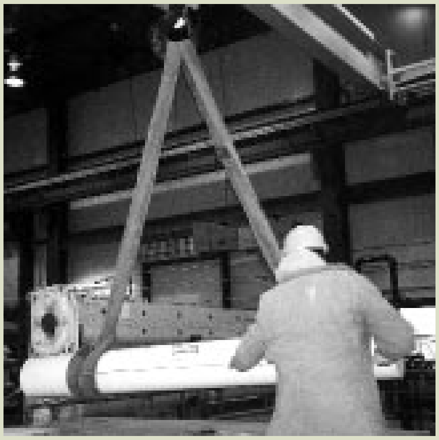
Job: Insert plug in riser

Hazard: Plug might fall on someone below.

Plan: Secure tunnel

Job Location: Berm Above Tevatron FØ Straight Section

STEP 3



Job: Move plugs to truck

Hazard: Cylinders heavy

Plan: User 30-ton crane, experienced riggers. Control area; wear protective equipment.

STEP 4

Job: Drive plugs to FZero berm

Hazard: Cylinders might fall off truck.

Plan: Secure cylinders in truck; wait until ground freezes on berm to support truck. Plan route for minimum grade.

JOB DONE

Photos by Judy Jackson

Sight riser plugged

No accidents, no injuries, no surprises

NEAR MISS

Photo by Fred Ullrich

Photographer fails to watch where she is going, trips on surveyor's stake, nearly spoiling perfect record.

SPRING Around the Ring

by Judy Jackson

Down below, in the accelerator tunnel, the Tevatron slowly cools down, coming back to life after a long shutdown.

Up above, around the accelerator ring, the prairie slowly warms up, coming back to life after a long winter.

Magnet by magnet, cable by cable, the Tevatron approaches the new physics run.

Bud by bud, tadpole by tadpole, the Main Ring landscape approaches the spring.

It's a slow process. Springtime in Illinois is not like springtime in England or Tuscany, or even like springtime in Washington. It isn't early, or lavish or mild. It comes haltingly, grudgingly, one small step forward and two chilly steps back; until suddenly, one week in May, it arrives all at once, passes through like a Memorial Day parade on fast forward, and gives way instantly to summer. In April, in Illinois, if you want to find springtime, you have to go and look for it, as photographer Fred Ullrich did one recent morning in the Fermilab Main Ring.

Sprouts of rare marsh betony, left; spring pools, above; oak buds, right.

CDF and DZero

detector experiments

ROOT teammates, from left: René Brun, Philippe Canal, Fons Rademakers, Masa Goto.

The ROOT of the MATTER

by Mike Perricone

Bit by bit by bit, through hundreds of thousands of electronic channels, high-energy physicists watch the information generated by their experiments growing enormously.

When it comes to making sense of their information, to sifting through it and finding what they're after, there's only one useful strategy:

Less is more.

The information from an experiment must pass through narrower and narrower electronic funnels, until those final and useful bits of information serve to address the critical questions—Did we find what we expected? Did we find something unexpected? What do we do next?

For the Collider Run II of the Tevatron, slated to begin sometime in the first quarter of the year 2000, the 5,000 tons of tracking equipment housed in each of the Collider Detector at Fermilab and the DZero detector will probably handle 250 kilobytes of data per collision event and 10 megabytes of data per second, storing up to 200 terabytes of raw data and producing up to 80 terabytes of data for a year's worth of final physics analysis.

That total is at least 10 times the data generated in Run I of the Tevatron. A less conservative (and probably more accurate) estimate could grow to at least 20 times the Run I data.

How much information is that?

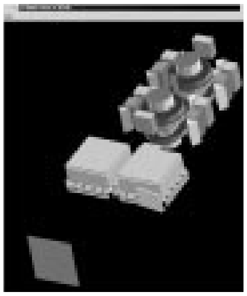
If your laptop computer's hard drive has a capacity of 1 gigabyte, you would need more than 80,000 laptops to handle 80 terabytes of data. That would mean every person in Fermilab's neighboring cities of Batavia and Wheaton working on a 1-gigabyte laptop of his or her own, just to record a year's worth of data for final analysis.

"It's simply a volume increase: there's more and more data to handle," said Steve Wolbers, deputy head of Fermilab's Computing Division and member of a two-year collaboration between Computing and the two experiments to reach a consensus on questions involving data acquisition and analysis.

"How people actually analyze their data, how they carry out their physics analysis, is another component of the issue," Wolbers continued. "There are different approaches, and the approach we're taking at Fermilab is, 'How do we best get our work done here?' That's the kind of discussion we've been having."

Against the background of an ongoing quest for that best way to work, a collaboration drawn from CDF and DZero, the Computing Division and the

Image courtesy of CERN



Experiment NA49 (investigating strange particle decays) at CERN, where development began on ROOT. The three-dimensional image was generated by ROOT.

will try out NEW data analysis software in **Run II**

Photo by Reidar Hahn

Philippe Canal, Computing Division: "Data is the only thing you have of value, and you want to be able to put your hands on it."

Run II Joint Computing Project Group has settled on a newly-developed system called ROOT to handle data at the detectors for the next two years—a limited adoption with options open, to paraphrase Wolbers.

"This is a tool being adapted for use by CDF and DZero for Run II for the short term," said Ruth Pordes, associate head of the Computing Division and a task coordinator of the CDF/DZero/CD Joint Offline Project.

"The Laboratory is not putting its weight behind (ROOT)," Pordes continued, "but the experiments are using it because it is pragmatic and offers what they want. In the short term over the next two years, in the critical commissioning and initial data taking stages, they will need very functional and quickly adaptable tools."

Pordes recently coordinated the organization of a ROOT workshop at Fermilab, with more than 60 attendees from an array of experiments at other laboratories. Also on hand was the team developing and implementing the system—René Brun of CERN, also the author of the widely-used data tool PAW (Physics Analysis Workstation); Fons Rademakers of CERN; and Masa Goto of Hewlett-Packard/Japan, who developed an important translation program for computer languages that was incorporated into ROOT. Fermilab participants included Philippe Canal, who does much of the local support for the software; Scott Snyder of DZero, who has made widely-accepted extensions of Masa Goto's software; and Rob Kennedy of CDF, who is incorporating core pieces of ROOT functionality into the local data handling software.

Pordes said the direct involvement of the development team was important to the transition from current systems, based on the long-established FORTRAN computer code, to the more recent C++ code, which evolved from C. The C-based codes are gaining commercial support, while commercial support for FORTRAN appears to be eroding.

"ROOT looks like an interesting product," said Joel Butler, former head of Fermilab's Computing Division, and a member of the joint group assessing the experiments' data needs. "There are other issues, like how flexible and maintainable it is. It will be interesting to see what happens."

In an object-oriented data system, such as ROOT, a segment of data (an "object") is encapsulated with the routines or methods that operate on that data; in other words, the information knows how to process itself when a user retrieves it. Canal explained that an object-oriented system allows access to higher levels of organization in retrieving data.

"One of the advantages is that we encapsulate more and more of the information," Canal said, "so that each user needs to know less about the details of how a chunk of data is implemented, and can focus more on the higher level concepts of using the data. The concept is to merge both data and functionality."

Butler emphasized that making data simple to store and retrieve is increasingly important to experimenters, because users and programs are increasingly approaching the data in different ways from different locations. The object-oriented approach offers a good match because of the merging of data and functions, bypassing the need for strict adherence to a particular method of access.

"More and more programs function collaboratively with each other," Butler explained, "but they also

Photo by Jenny Mullins

Ruth Pordes, Associate Head of the Computing Division: “The experiments are using (ROOT) because it is pragmatic and offers what they want.”

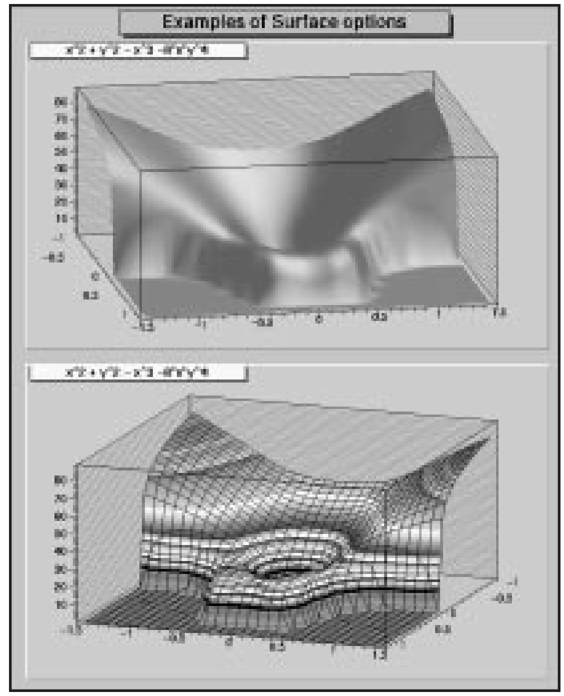


Image courtesy of CERN

Examples of three-dimensional surface drawing options supported by ROOT.

function asynchronously. If a user types something, he or she wants something to happen. The object-oriented model allows components to interact more freely, because it does not require a strict ordering of the interactions by the machine.”

Canal stressed that to an experimenter, “data is the only thing you have of value, and you want to be able to put your hands on it.” That usually means developing new tools.

Experimenters can’t use programs off the shelf from the local computer store, because of the sheer size of the data involved in their experiments (remember those 80,000 laptops). That much data can’t simply be stored in a computer’s memory; much of it has to go on remote disks, and Pordes pointed out that commercial tools generally work only with data stored in memory.

“We need software to support some of the data being on disk and some being in memory,” Pordes said. “Tools like PAW and ROOT support that, but commercial tools typically don’t.”

It is not unusual for physics experiments to adopt their own software, separate from the systems used generally throughout a Laboratory. Though its predecessor, PAW, is widely used in physics, ROOT is very much an individual product, started in the context of the NA49 experiment at CERN in 1995.

Commercial tools are not currently favored as solutions, but they are not being ruled out of the search at Fermilab, CERN and other labs, Wolbers said. He indicated that the less special attention an application needs, the more generally useful it would become.

“Software is something experiments can support on their own,” he explained, “but sooner or later a software choice could involve a significant support load from the Laboratory. We’re also looking for commercial products that might be modified or used as-is. We want to leave our options open in case other applications prove to be superior. We also want to continue working with CERN and other labs so we don’t come up with incompatible techniques. Hopefully, we’ll be able to do something that applies to all of high-energy physics.”

The search continues, rooted in the desire to link the greatest possible use with the lowest possible maintenance. For that final analysis, providing the best tools will require computer art as much as computer science.

the talk of the lab

The prairie is back

"There was only the enormous, empty prairie, with grasses blowing in waves of light and shadow across it, and the great blue sky above it, and birds flying up from it and singing with joy because the sun was rising. And on the whole enormous prairie, there was no sign that any other human being had ever been there.

In all that space of land and sky stood the lonely, small, covered wagon. And close to it sat Pa and Ma and Laura and Mary and Baby Carrie, eating their breakfasts."

—Laura Ingalls Wilder, *Little House on the Prairie*

In the 1870's, when Laura Ingalls Wilder was traveling by covered wagon across Kansas, northern Illinois was also covered with tallgrass prairie. But by the 1970s, when Fermilab arrived on the scene, a century of sodbusting agriculture and suburban development had shrunk the native grasslands to a few pitiful scraps along old railroad lines and in churchyard corners. The prairie was all but extinct, and ecologists were writing its epitaph.

They were premature. Today, twenty-five years of nurturing have brought large tracts of prairie back to life on Fermilab's site, and now prairies are popping up all over the Midwest. In our own neighborhood, schools, civic organizations, park districts and forest preserves are building and restoring prairies, often with a little help from Fermilab. The Laboratory's thriving prairie and efficient harvesting methods yield all the prairie seed Fermilab can use, with enough left over to share with prairie-minded neighbors—like the kids at Johnson School, just across the Laboratory's back fence.

Grants from the village of Warrenville, the Northern Illinois Wetland Conservation Foundation and others have funded an environmental restoration project just getting under way in the Summerlakes subdivision on Fermilab's eastern boundary. As part of the project, fourth and fifth graders at Johnson School are responsible for restoring native prairie plants. When Fermilab's Bob Lootens heard about the project, he offered seed from Fermilab to help jump-start the effort.

Fermilab provides seed for more than 50 school projects. The Fermilab prairie mix contains seeds of big bluestem and Indian grass, as well as what Lootens calls "a *pot pourri*" of about a dozen forbs, or broad-leaved (not grass) prairie plants. As Lootens travels around the countryside, he sees more and more patches of prairie with a familiar look. It's nice, he says, to see the neighbors getting into the prairie business.

Big Brother

Andrew Green is an Iowa State grad student, a DZero collaborator, member of the Fermilab Graduate Student Association—and a new big brother. He volunteered in November to the Big Brothers and

Sisters of Kane and Kendall Counties, and, after extensive screening, Green finally met his little brother a few weeks ago. The third grader from nearby Aurora has “a situation that’s not so different from the way I grew up,” Green said. “They try to match up big and little brothers with compatible backgrounds.”

Big brothers make a commitment to spend a few hours every week for a year with their little brothers. Green plans to bring his to Fermilab for a fishing trip, and with summer coming he envisions spending extra time with his new sibling.

“He’s enthusiastic, and I’m big-time enthusiastic,” Green said.

Principal for a Day

“We think we lead a harried existence at Fermilab,” said hard-working engineer-architect Vic Kuchler. “You should see what it’s like to be an elementary school principal.”

Kuchler should know. He spent April 20 as Principal for a Day at Nightingale Elementary School, at 5250 South Rockwell on Chicago’s South Side. He came away a little dazed at the exuberance of the kids, impressed with the quality of the education they are getting, and in awe of the real principal, John Arnieri.

“As soon as we came out of his private office, people were all over him,” Kuchler said. “He was calm at all times. ‘Okay, tell Mrs. Sanchez to get an interpreter and I’ll call the mom. That’s a very nice fish that you made. I’ll put it on my desk…’ It never stopped.”

Kuchler spent time with first graders (who were making clay fish for their fish unit) but he spent much of his day with sixth, seventh and eighth-graders in their science classes. The school uses an innovative method of computer-based “technology stations” to teach science.

“At one station, you make a movie. Another is a radio show. One station is about electricity, another one teaches structural technology—beams and things. There’s one for aerodynamics, and at one you build a rocket. The kids work in groups, spending four weeks at each station, starting in sixth grade. It takes three years to get through all the stations. The kids design and build projects, using computers as tools to help them solve problems.”

The enthusiasm of the teachers and the determination of the principal gave Kuchler a good feeling about Nightingale, where about 90 percent of the students are Hispanic. Many speak little English when they start school. Teachers estimate that it takes about three years for most students to grow fluent in English.

One purpose of Kuchler’s visit was to let the kids know the kinds of opportunities that are available to them at places like national laboratories—if they stick with school. And Nightingale sounds like good preparation. What, after all, is Fermilab but one of the world’s grandest and most glorious technology stations?

—Judy Jackson

LAB NOTES

Stockroom Closing for Inventory

May 14 at noon and reopening on Tuesday, May 18.

National Employee Health & Fitness Day, May 19, 1999

Fermilab and Wellness Works joins thousands of organizations across the country in celebrating National Employee Health & Fitness Day 1999—the largest work site health and fitness observance in the United States.

The National Association of Governor's Councils on Physical Fitness and Sports has designated May 19, 1999, as the official national health observance. Millions of employees in corporate settings, schools, and hospitals are expected to observe the 11th annual event with worksite walks, or special activities involving employees during the workday.

Wellness Works again will sponsor this year's event on Wednesday, May 19 from 11:30-1:00 on Ring Road beginning at A1. Walk, run, rollerblade, or ride your bike around the ring. A table will be set up at A1 where participants may sign-in, pick up their game ticket, and a bottle of water. Drop off a copy of your favorite low-fat recipe with your name, extension and mail station and be eligible to win a Moosewood Restaurant Low-Fat Favorites cookbook. Stations will be set up around the ring where you will find games to play, prizes to win and cheers of encouragement. The largest percentage of participation from Divisions and Sections will win a trophy.

Through employee health promotion programs, organizations support their employees' efforts to make healthy lifestyle changes, not just to encourage more exercise.

Relay for Life, June 25

Fermilab physicists Phil Martin and Al Russell, whose wives are both cancer survivors, are organizing a Fermilab team for the upcoming "Relay for Life," an American Cancer Society fundraiser. All night, starting on the evening of June 25 and finishing on the morning of June 26, teams of 10 to 12 people run or walk relays on the track of the Kane County Events Center. Each team member pledges to raise $100 for the event, with all proceeds going to the American Cancer Society. For info, or to join the Fermilab relay team, call Phil Martin x4547 or Al Russell x4829.

MILESTONES

RETIRING

Roger Braun, I.D. # 460, on June 3, from BS/Shipping & Receiving. His last work day will be May 14.

Sharon Strecker, I.D. # 3806, on May 14, from PPD/Technical Centers. Her last work day will be April 30.

HONORED

University of Chicago / Fermilab physicist Bruce Winstein, with a Guggenheim fellowship.

Chez Léon MENU

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

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

FOR RESERVATIONS, CALL x4512
CAKES FOR SPECIAL OCCASIONS
DIETARY RESTRICTIONS
CONTACT TITA, x3524
HTTP://WWW.FNAL.GOV/FAW/EVENTS/MENUS.HTML

LUNCH — WEDNESDAY, MAY 5

Asian Grilled Steak and Vegetable Salad

Cold Lime Soufflé with Kiwi

DINNER — THURSDAY, MAY 6

Spinach and Smoked Salmon Terrine

Pungent Pork Medallions

Grilled Sweet Potatoes

Vegetable of the Season

Vanilla Custard with Raspberry Sauce

LUNCH — WEDNESDAY, MAY 12

Chili Relleños

Chicken Flautas

Refried Beans

Mexican Rice

Pineapple and Papaya in Lime Rum Sauce

DINNER — THURSDAY, MAY 13

Squid and Shrimp Salad

Gingered Beef Kebabs with Mushrooms and Red Pepper

Green Rice

Cornmeal Cake with Black Cherry Compote

FERMI NEWS

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The deadline for the Friday, May 14, 1999, issue is Tuesday, May 4, 1999. 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. Letters from readers are welcome. Please include your name and daytime phone number.

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CLASSIFIEDS

FOR SALE

- '90 Chrysler LeBaron GT, 2 dr, v6, white/red int., loaded, 76K miles, runs great, extra clean, $3,200. Contact albright@fnal.gov or Carl, x3346.
- '90 Dodge Dynasty LE, 3.3 liter v6, Air, power seats, windows, sunroof etc., am/fm stereo/cassette, 114K miles, clean, $2,000 obo, x8187 or (630) 545-0898.
- '87 Nissan Sentra SE, 4-cyl. 1.6 liter, auto, front wheel drive, air, tilt, cruise, am/fm stereo/cassette, venting sun roof, 84K miles, clean, $1,600 obo, x8187 or (630) 545-0898.
- '86 Saab 900S 4 door 5 speed, red, 75K miles, excellent condition, no rust, no problems, $3,500. Contact Peter at x2629 or pcooper@fnal.gov.
- '84 Toyota Camry, auto, 4 dr sedan, 116K miles, $700 obo. Call Colleen, x8887.
- House, Naperville, walk to train, shopping, riverwalk, playgrounds, & schools. Across from park. 4 lrg bdrms, 2.5 bath, eat-in kitchen, family rm, fireplace, full unfinished basement, 2 car attached garage, central air, landscaped yard w/mature trees, built-in gas grill, $214,900. Call Heidi x8452.

RENT

- House, Oak Park Aug 15- Jun 15, 2000. Furnished 4 bdrms, 2.5 bath, attached 2 car garage, screened porch, lrg fenced yard. Centrally located near schools, shopping, CTA, 30 miles east of Fermilab & 8 miles west of downtown Chicago. $1,950/mo + utilities (incl. Lawn service). Call (708) 386-7982 or joan@hep.uchicago.edu.

WANTED

- Medium grade drum set for budding 6th grade percussionist. Prefer brand name set w/at least 3 drums, snare, cymbals, stands, & all hardware. I'll provide my own hearing protection & headache medication. Contact T.J. x3299 or sarlina@fnal.gov.
- Pull-behind bicycle trailer for hauling children. Please call Eric, x2248 or (630) 761-0903 eve.

CALENDAR

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

MAY 5

Academic Lectures: Neutrino Physics, "The LSND & Karmen Oscillation Experiments", Peter Kasper, 11a.m. in Curia II. http://wwwppd.fnal.gov/epp_www/Academic_Lectures/Academic_Lectures.html

MAY 8

Art Series presents: *Nicholas Payton Quintet*, $18. All performances begin at 8 p.m., Rasmey Auditorium, Wilson Hall. For tickets call (630) 840-ARTS.

MAY 9

Barn dance in Kuhn Village Barn 7 p.m. music by Rhys, Jim, & Jeff and calling by Martha Tyner. All dances are taught. People of all ages & experience levels welcome. Admission is $5, children under 12 are free (12-18 $2). Sponsored by the Fermilab Folk Club. For more info, call Lynn Garren, x2061 or Dave Harding, x2971.

MAY 12

Academic Lectures: Neutrino Physics, "The BooNE Experiment", Ray Stefanski, 11 a.m., Curia II. http://wwwppd.fnal.gov/epp_www/Academic_Lectures/Academic_Lectures.html

MAY 13

NALWO Spring Tea 10–noon at the home of Nancy Peoples. This is the last tea that Nancy will be hosting. Please come to thank her for her support of NALWO all those years and to wish her well with her new life. If you can, please bring an appetizer or dessert to share. For directions or more information call Selitha Raja (630) 305-7769.

Tunnel Visions Symposium:

Muon Colliders, Robert Palmer, BNL, 1 West 3–5 p.m.

MAY 14

International Film Society Presents: *Regeneration* Dir: Gillies MacKinnon (Can/UK, 1997, 105 mins). Film at 8 p.m., Ramsey Auditorium, Wilson Hall, $4. (630) 840-8000. http://www.fnal.gov/culture/film_society.html

MAY 19

Wellness Works presents: *Annual Employee Health & Fitness Day*, 11:30 – 1 Ring Road, A1.

ONGOING

English Classes, Thursdays at the Users' Center from 10–11:30, classes are free. NALWO coffee for newcomers & visitors every Thursday at the Users' Center, 10:30–12, children are welcome. In the barn, International folk dancing, Thursdays, 7:30–10 p.m., call Mady, (630) 584–0825; Scottish country dancing Tuesdays, 7–9:30 p.m., call Doug, x8194.

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