

F N E R M I E W S

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



Mission: Luminosity 2

Photo by Reidar Hahn

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Number 13



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MISSION:

Beams Division leads **total-lab effort** in BOOSTING TEVATRON performance

Luminosity

by Steve Holmes
Associate Director for Accelerators

The sign went up on July 15, my first day back in the Beams Division. The sign says it all about our mission for this critical time in the Beams Division and at Fermilab—we are focused on improving the performance of the Tevatron for Run II, almost to the exclusion of anything else. Lots of people have already told me how much they like it—an indication that people in the division and in the laboratory are committed to succeeding.

I moved in as interim head of the Beams Division, at the request of Fermilab Director Michael Witherell, for the period between the completion of John Marriner's term and the arrival of a new division head. It is fun to be back in Beams and working directly with many friends, old and new, in attacking problems and meeting the challenge of improving Tevatron performance. I have established a number of intermediate-term goals for the division for the period

of my stay: first and foremost among these is to achieve a luminosity of $4.0 \times 10^{31} \text{ cm}^{-2} \text{ sec}^{-1}$ (4E31 for short) accompanied by an integrated luminosity of $7 \text{ pb}^{-1}/\text{week}$ by the end of September. This is a challenging goal, but one that I believe is within reach. A secondary goal is to bring on board the person who will take my place as the Beams Division Head by the end of the year. We are making good progress and have every expectation of being able to hand over the reins by the New Year.

We have made considerable progress on improving performance of the Tevatron over the last several months, building on the efforts initiated under John Marriner's leadership. On July 26 we reached the highest luminosity in the history of the Tevatron— $2.64 \text{ E}31$, eclipsing the previous best of $2.50 \text{ E}31$ achieved on May 10, 1995. It is certainly gratifying no longer to have to refer to our best stores as "21st century records." But we still have a long way to go. We've improved performance by more than a factor of two since January,



Photo by Reidar Hahn

ON THE WEB:

Fermilab's Beams Division

www-bd.fnal.gov

COVER PHOTO: Steve Holmes and Jim Morgan examine Tevatron performance in the Main Control Room.



Photo by Reidar Hahn

The Tevatron has achieved an all-time luminosity record of $2.64E31$, with more improvements to come.

but we're still about a factor of two behind where we hoped to be at this time. A great deal of hard work has already been invested in bringing the Tevatron performance up to where it is today, but it will take a continued and concerted effort to get to where we and the high energy physics community would like to see us operating.

The reaction of all the laboratory's division and sections to the current situation has been extremely gratifying. All have offered help and are pitching in to help us succeed. The Computing Division has played a leading role in getting the Shot Data Analysis (SDA) system up and running. The Particle Physics Division is supplying people to help on a variety of instrumentation projects and even contributed their Deputy Division Head, Stephen Pordes, who is now a member of the Beams Division coordinating Run II instrumentation. In addition to its usual indispensable support role of magnet repair and refurbishing, the Technical Division is helping us understand potential problems with noise in the Tevatron RF system, looking into monitoring systems for magnetic fields, and taking the lead on a number of hardware projects. And more assignments are in the works. We are confident that all Fermilab staff members stand ready to help when and if they're called on.

In parallel we are starting to integrate help from the outside world. SLAC, Berkeley, Brookhaven, Argonne, and CERN are all either providing support or are in the process of being taken up on their offers of help. Again, the outpouring of offers has been extremely gratifying.

Unfortunately, while these rigorous efforts are moving forward, many long-term efforts including R&D on linear colliders, muon facilities, and new

proton sources have gone onto the back burner. This does not mean these activities are unimportant—they are important, and we look forward to bringing them back. However, it is our belief that the single most important thing we can do today to enable the construction of a future forefront facility at Fermilab is to bring the Tevatron up to its full potential now.

Success in meeting the goals established for Run II will not be easy. It will require everyone's best efforts. I have been at Fermilab for 19 years and am well acquainted with the capabilities of the people who work at the laboratory and in the Beams Division. There is no question that our staff has the ability to take the Tevatron where it needs to go. 🍀



Photo courtesy Beams Division

After three years as head of Fermilab's Beams Division, John Marriner transferred to the Recycler Group on July 15. Marriner guided the Fermilab accelerator complex through a demanding period that included the commissioning of the Main Injector and the resumption of collider operations in March 2001. The division held a cake-and-coffee reception honoring Marriner for a job well done.

syracuse

JOINS
THE
SEARCH

Syracuse University adds a history of technology and leadership to search for CP violation

by Gary Ruderman

The first chancellor of Syracuse University allowed his cow to graze on campus.

But from those pastoral roots, the university has grown to be leader in the development of science and technology in New York state.

In the 1980s, Syracuse launched one of the state's first Centers for Advanced Technology—the CASE Center—to revitalize local economic growth through technology. Last year, New York state was the second-largest sponsor, after the federal government, of research at the university.

"Syracuse spins off a lot of businesses from its CASE Center, and the Syracuse Research Corp. attracts quite a lot of very smart people," observed U.S. Representative James T. Walsh (R-NY, 25th District). Walsh chairs the House Appropriations Committee's subcommittee on Veterans Affairs, Housing and Urban Development, and Independent Agencies. The subcommittee funds basic research for NASA, the Environmental Protection Agency and the National Science Foundation.

The university is also on the forefront of physics research. For the first time, Syracuse University professors and students are collaborating in a Fermilab experiment, a search to validate CP violations. With Fermilab's Joel Butler and a team of 175 scientists and students from institutions around the world, the Syracuse team will lead the most exhaustive study of heavy quarks and B-quark physics in an experiment planned for 2007. The BTeV (B-physics at the Tevatron collider) approval document credited the experiment with "great potential to discover new physics."



Rep. James T. Walsh

Among the physics faculty at Syracuse University are Marina Artuso, Tomasz Skwarnicki, and Sheldon Stone, co-leader of the BTeV experiment at Fermilab. Their expertise—building and interpreting results from the Ring Imaging Cherenkov Counter (RICH)—is a crucial element of BTeV. Syracuse is responsible for building the RICH counter and has recently been joined by a new assistant professor, Steve Blusk. The Syracuse team is also working on building the pixel detector at the heart of the experiment.

The Syracuse group has been working with RICH counters since they were developed in the 1990s. In the mid-1990s, Stone worked at Fermilab to test

ON THE WEB:

Syracuse University
www.syr.edu



Photo courtesy Syracuse University

Originally Genesee College in Ohio, Syracuse University was established in 1870 on 50 acres of farmland in central New York state, promising “equal education for men and women.” This view of the campus highlights Crouse College, now the main hub for the university’s College of Visual and Performing Arts, the School of Music, several art studios, music practice rooms, a beautiful 1,000-seat auditorium, and Crouse’s Holtkamp Organ. The Crouse Chimes, atop Crouse College, entertain passersby several times each day.

the RICH counter for the CLEO experiment at Cornell University, part of Syracuse’s 22-year participation in CLEO.

“Detectors can’t be reused,” Stone said, “since the geometry of each experiment differs and the technology changes and advances so quickly.”

For example, clearing out data from the RICH Counter for the CLEO experiment took 2.5 microseconds; BTeV has the capability to clear out the detector in just 132 nanoseconds. The group finished construction of the CLEO III RICH in August 2000, and has been taking data since then.

The BTeV experiment has four main parts: dipole magnet, pixel detector, trigger and RICH detector. The dipole magnet is centered on the interaction region, inside of which is a silicon pixel detector that tracks the particles and is coupled to a “trigger.” The computerized trigger looks at each of the estimated 7.5 million beam crossings a second and decides which are most interesting to investigate. Downstream of the pixels are other tracking detectors followed by the RICH, an electromagnetic calorimeter made from PbWO_4 (lead tungstate) crystals and iron plates to detect

muons. Crystal calorimeters are another specialty of Stone, who led the construction of the first such device in a magnetic field, for CLEO II.

The goal of BTeV is to conduct the most extensive study ever undertaken of CP violation in the decays of particles containing B-quarks.

“BTeV is the most important experiment that a high-energy physicist would be interested in,” said Chaouki Boulahouache, a Syracuse University graduate student earning his Ph.D. in August 2002. Boulahouache is working on parts of the BTeV pixel detector with Marina Artuso, his advisor. The 50x400-micron pixel detector is in the center of the 12-meter-long experiment.

For Orlokh Dorjkhaidav, another of the five graduate students on the Syracuse team, BTeV is a full-time summer job and a 20-hour-a-week job during the school year.

“Syracuse is not that big of a city so you study and study,” said Dorjkhaidav, a native of Mongolia. He is working on the hybrid photon detector that transforms light to electrical signals for analysis.

Photo by Judy Jackson



Syracuse physicists Sheldon Stone (left), Marina Artuso and Tomasz Skwarnicki attended the International Conference on High Energy Physics in Amsterdam, Holland. The Syracuse collaboration at Fermilab is working on the pixel detector (bottom photo) for the BTeV experiment.

BTeV Detector Layout

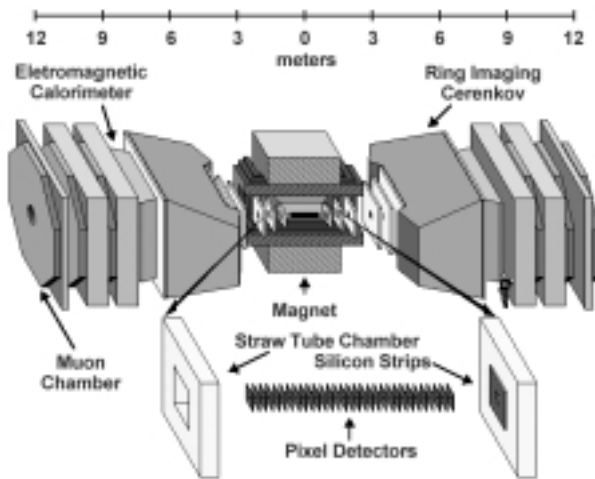
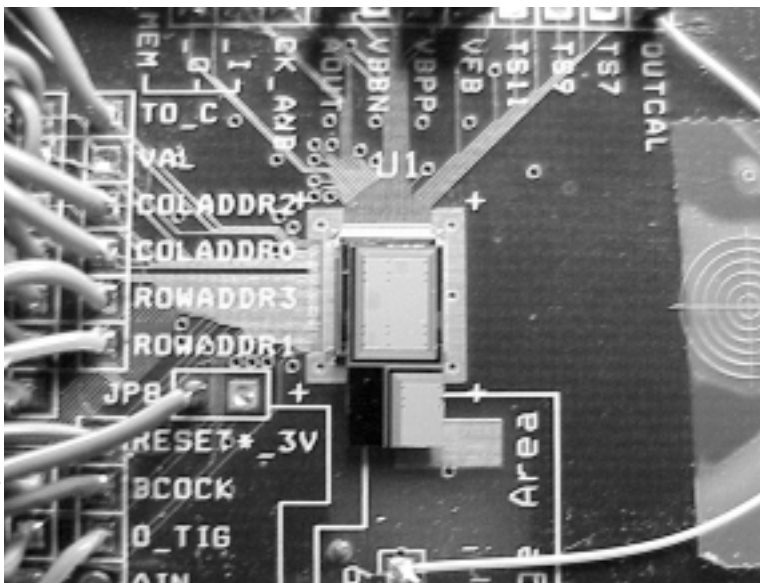


Photo courtesy of BTeV



Joel Butler, of the lab's Experimental Physics Projects Department, and head of the BTeV Research and Development Group, is co-leader of the experiment with Stone. Stone focuses on heavy quarks; Butler has worked for many years on photoproduction of charmed particles.

Butler explained that at the beginning of the universe—less than a second after the Big Bang—there developed a slight excess of quarks over antiquarks. As the universe cooled, the quarks and antiquarks annihilated in photons, “but the slight residual of quarks became us...”, meaning the universe and its inhabitants. The Tevatron gives experimenters the largest number of B-particles and the biggest range of things to look at since the beginning of the universe. B-quarks are produced in only 0.1 percent of all Tevatron collisions.

A Fermilab scientist since 1979, Butler has been working on building BTeV for eight years “and I’m very enthusiastic. The technology is new and exciting. We are breaking ground in particle identification, tracking and computing. The physics that comes out of it is very exciting.”

Butler added that BTeV has a National Science Foundation grant to pursue and refine fault tolerance computing—making decisions on which particles are “interesting.” Fault tolerance has promising future business applications, Butler said.

The first test of BTeV’s RICH detector is slated for next spring. “BTeV’s taken a huge amount of time,” said Stone, “and we’re still waiting for the Department of Energy” to take further action. The experimenters anticipate the \$110 million project being funded by the end of 2002, with the experiment beginning late in 2007. But there are no specific appropriation plans on the table, although the recent HEPAP Subpanel on Long-Range Planning for U.S. High-Energy Physics emphasized that “it is important that we participate in some” B-physics experiments in the US, with the possibilities including “a dedicated hadronic B experiment at the Fermilab Tevatron.”

Waiting isn’t easy, but the history of the university offers a lesson in resilience.

Syracuse University was originally Genesee College, founded in Ohio by the Methodist Episcopal Church. It moved to a 50-acre farmland area in central New York State in 1870 promoting “equal education for men and women,” according to the university’s history pages. Three years later Syracuse University moved out of rented space



Photo courtesy Syracuse University

The Carrier Dome is home for SU's football, men's basketball, and lacrosse teams. The fifth-largest domed stadium in the nation, it was the first in the Northeast and is the largest on a college campus. The facility has been instrumental in bringing national prominence and recognition to the University and its athletic program.

and dedicated its first building, the \$136,000 Hall of Languages. True to the area's rural nature, the first Chancellor allowed his cow to graze on campus.

In 1874, Syracuse offered the nation's first bachelor of fine arts degree. The school continued to grow until World War I when 1,000 students were drafted and overall enrollment fell more than 30 percent.

The Great Depression meant a 10-percent salary cut for professors as well the elimination of the school's 20-year-old college of agriculture, the only private agricultural school in the country. Just before World War II, the enrollment soared from 5,600 to 16,000. With the construction of more than 20 new buildings, the school's assets rose to \$200 million from \$15 million. By 1946 Syracuse welcomed 9,664 returning veterans, tripling the school's enrollment. Today, enrollment is more than 18,000 full-time undergraduate and graduate students.

The institution has a host of famous grads. The College of Arts and Sciences counts writers Joyce Carol Oates, William Safire and Stephen Crane as alumni. Among prominent physicists, Rubin Braunstein, co-inventor of the light-emitting diode, is a graduate, as are Joel Lebowitz of

Rutgers, Harvey Scher of the Weizman Institute and Dongqi Li of Argonne National Lab. Mark Reed of Yale, a widely quoted source on nanoelectronics and molecular electronics, received his Ph.D. at Syracuse. George Campbell, who specialized in particle physics, is now president of Cooper Union College. Eileen Collins and F. Story Musgrave have achieved milestones as NASA astronauts. Collins was the first female to pilot and command the space shuttle. Musgrave went on six space flights, and worked outside the shuttle to repair the Hubble Space Telescope in 1993.

In sports, Syracuse has produced two of the premier running backs in football history: Jim Brown, who went on to National Football League stardom with the Cleveland Browns; and Ernie Davis, the first African-American to win the Heisman Trophy as the nation's outstanding college football player in 1961. Since 1980, the Syracuse football team has played in the Carrier Dome, the fifth-largest domed stadium in the U.S., and the first constructed in the Northeast region.

With its innovative roof of fiberglass fabric, the dome dominating the Syracuse skyline could serve to symbolize the university's commitment to science and technology leadership. 🏠



Professor Giorgio Bellotini, CDF physicist, Commendatore della Repubblica Italiana, and dean of the Italian delegation at Fermilab, hosted Festa Italiana at the Kuba Barn.



Photo by Jerry Melina

Benn Tannenbaum, UDC Chair and Fermilab user from UCLA, drew applause when he announced he'll spend next year in Washington as a Fellow of the American Physical Society. Tannenbaum said users are generally happy with life at the lab, although they would like a footpath to DZero and better onsite taxi service.

FERMINEWS Friday, June 28, 2002 | 5

FACE TO FACE

FERMINEWS SETS OUT TO CORRECT AN ERROR OF IDENTITY

ON THE WEB:

“Thesis Award Recipient Research Presentation: A Measurement of Differential Cross Sections in Charged-Current Neutrino Interactions on Iron and a Global Structure Functions Analysis,” Un-Ki Yang, June 10, 2002

http://vmsstreamer1.fnal.gov/VMS_Site_02/Lectures/Users2002/Yang/index.htm

Fermilab Users Executive Committee
www.fnal.gov/orgs/fermilab_users_org/

Un-Ki Yang of the University of Rochester was awarded the fifth annual 2002 Universities Research Association thesis prize for the best Ph.D. thesis based on work at Fermilab in 2001. The award was presented by URA President Fred Bernthal at the Fermilab Users’ Meeting on June 10, 2002. Fermilab’s Visual Media Services photographed Un-Ki’s talk, and offered it on streaming video. The award was also part of the *FERMINEWS* coverage of the Users’ Meeting.

That’s where the glitch happened.

In *FERMINEWS* (vol. 25, no. 11, June 28, 2002, pg. 5), the photo of Un-Ki mistakenly ran with the caption for a photo of Benn Tannenbaum of UCLA, current chair of the Users’ Executive Committee. There was no shortage of messages offering corrections, including one stating: “If that’s Benn Tannenbaum, then I’m Queen Elizabeth II.” We thanked Her Majesty, apologized, and promised to make good on the mistaken identity.

Benn Tannenbaum and Un-Ki Yang now set the record straight on who they are and what they do.



BENN TANNENBAUM UCLA

At a time when the American Physical Society makes statements regarding free energy machines, when Scientific American publishes articles on “debunking creationist nonsense” and when the federal government withdraws from treaties for reasons that have neither scientific nor technical merit, it seems clear that more scientists are needed in positions where they can influence public thought in this country. I have always been interested in the connection between science and government, and this seems like an ideal time to explore that relationship. To that end, I will be the APS Congressional Science Fellow for 2002-2003.

This Fellowship gives me the opportunity to pick a Congressional office and help them with science policy. Following a three-week orientation on government, budgets and science policy, I will spend two or three weeks interviewing with Members and Committees on the House and Senate side of the Capitol to find an office that best suits my interests. My main concerns are science education and funding for the physical sciences. I have also lobbied against the National Missile Defense program. Given recent events, however, I find myself drawn to foreign relations and intelligence.

Particle physicists share information across cultural boundaries, among countries and through language barriers. I hope to be an advocate for keeping scientific ties open among as many countries as possible.



Photos by Jenny Mullins

UN-KI YANG UNIVERSITY OF ROCHESTER

Protons and neutrons (nucleons) are known to be composed of quarks and gluons. Interactions of quarks and gluons are described by the theory of Quantum Chromodynamics (QCD). My thesis work focuses on the measurement of quark and gluon (parton) momentum distributions inside the nucleon. This work has led to a great improvement in our knowledge of the parton distributions. Experimental work on the CCFR/NuTeV neutrino experiment and phenomenological studies on all deep inelastic scattering data are both efforts that contributed to these achievements.

Precise knowledge of parton distributions is essential not only in testing QCD, but also in the search for new physics at high-energy hadron colliders. After several studies on parton distributions, I conclude my thesis with the following question, “Are we ready to use the nucleon as a tool in searching for new physics?”

Find out where I spend my wonderful life now: Behind my computer terminal, I see the LED light splashes from the Track Fitter boards, which do an online silicon track fitting every microsecond as a part of the Silicon Vertex Tracker (SVT) system in the CDF experiment. Working as a postdoc on this system of the CDF experiment at the Tevatron was a natural place for my continued exploration of hidden nature. 🧪



FERMINEWS

congratulates

these

scientists,

who have

received

scientific

promotions

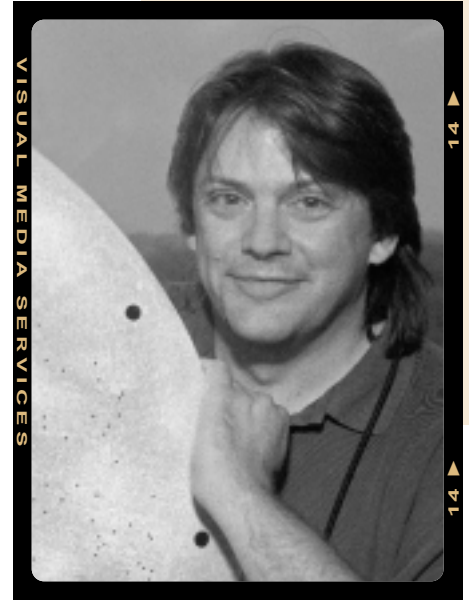
since

September

2001

Profiles compiled
by Pamela Zerbinos

Scientist I



JIM ANNIS

Age: 40

Place of birth: Billings, Montana

Years at Fermilab: 8

Role at the lab: Has worked on Sloan Digital Sky Survey since its planning stages

Outside hobbies: Reading: bad science fiction, history and esoteric non-fiction

If you could change one thing about Fermilab, what would it be?

"Grad students. I want to have them here [in Experimental Astrophysics]. I'd love to have close enough relationships with degree-granting institutions that we'd have graduate students here."

How do you see your role in exploring the great questions of particle physics today?

"The high-energy physicists are probing the structure of mass, and we're looking at the distribution of mass in the universe and why it came out distributed that way. One of the things I do is analyze large-scale sky surveys, look at large-scale structures, in particular the numbers and distributions of the clusters of galaxies. I was the person who pressed the button that took the first light data, the first data [the SDSS] ever took."



HOGAN NGUYEN

Age: 36

Place of birth: Saigon, Vietnam

Years at Fermilab: 10 this September

Role at the lab: Has worked with KTeV since its design phase and is now also working on CKM.

Outside hobbies: Volleyball, tennis, woodworking

If you could change one thing about Fermilab, what would it be?

"At the lab we don't get enough exposure to the rest of science. We have colloquia and seminars, but I wish there was a way to borrow techniques that have been developed from other fields and bring them back to enrich ours. There are a lot of good things going on out there, but we're so busy working with our own stuff that we don't get a chance to look beyond. There are a lot of things we could learn from what other scientific disciplines are doing."

How do you see your role in exploring the great questions of particle physics today?

"I've always been fascinated with the physics of flavor—CP violation is a part of that broader question of the physics of flavor. It's a very deep, very profound question, why things change flavor. That's fascinated me for a long time, and so my role is to pursue that question."

A Scientist I...

- Conducts research and develops theories to apply laws, theories and research in physics projects related to the overall mission of Fermilab.
- Requires the application of advanced knowledge in broad scientific disciplines and appreciable originality and ingenuity.
- Designs and develops detectors, electronics and accelerator technology.



JIM HYLEEN

Age: 53

Place of birth: Omaha, Nebraska

Years at Fermilab: 12 this September

Role at the lab: NuMI sub-project manager. Works on design of the target hall area.

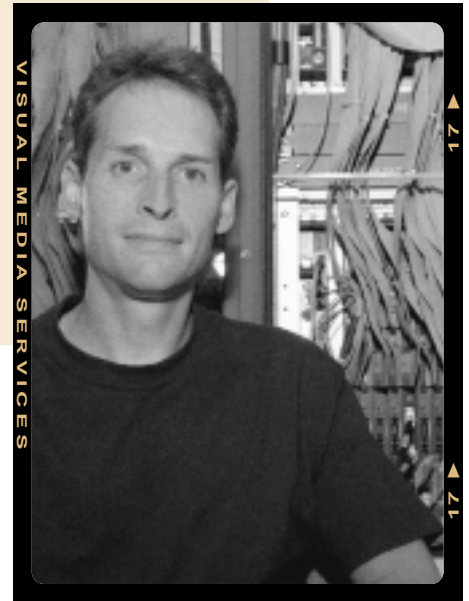
Outside hobbies: Spending time with son in Boy Scouts; science fiction

If you could change one thing about Fermilab, what would it be?

"Less bureaucracy. We seem to spend an awful lot of time on things that are not directly related to doing the science."

How do you see your role in exploring the great questions of particle physics today?

"My role is to provide a well-understood neutrino beam that will allow exploration of neutrino physics beyond the standard model...to make sure we don't get wrong answers because we don't understand the beam. I want to make sure that we don't have systematic errors in the experiment, and also I want to make sure we produce the best beam we can for exploring these topics."



PETER WILSON

Age: 41

Place of birth: Orsay, France

Years at Fermilab: 6 as a visiting scientist; 4 as an employee

Role at the lab: Designs electronics for the CDF experiment

Outside hobbies: Bicycling, gardening

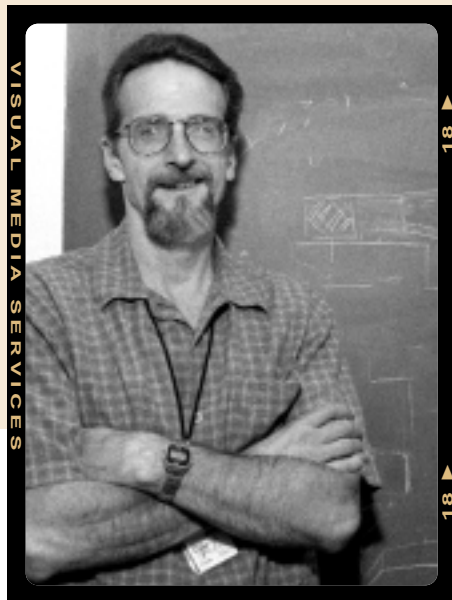
If you could change one thing about Fermilab, what would it be?

"I'd like to put it in the Rocky Mountains. But that's not science. Really, I would like to...have a much closer interaction between the physicists who work on experiments and the physicists who build and run the accelerator. I think for a long time we were very separate groups, and I don't think it's very healthy. It'd be much better if we could communicate better."

How do you see your role in exploring the great questions of particle physics today?

"My main role and primary interest is building the experiments so we're able to explore those questions, so we can search for new particles or new interactions."

Scientist II



BRUCE BALLER

Age: 50

Place of birth: Fergus Falls, Minnesota

Years at Fermilab: 15

Role at the lab: Project manager for NuMI technical component: oversees primary beamline, focusing elements, etc.

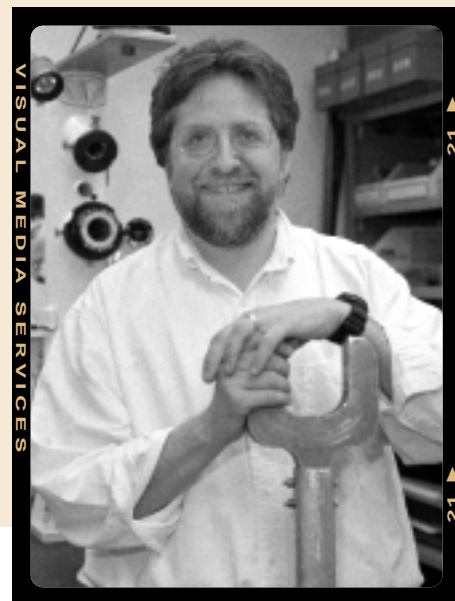
Outside hobbies: Biking, swimming, boating, reading

If you could change one thing about Fermilab, what would it be?

"It would be good if we could have a more collegial atmosphere. Years ago there was a different tenor to the lab, more camaraderie...but the more modern requirements on the laboratory for projects and project management and controls have wiped out some of that more free-spirit approach to doing good science."

How do you see your role in exploring the great questions of particle physics today?

"It's satisfying to be able to do both science—do analysis, work on an experiment which hopefully will have some long-term benefit to society or mankind—and to get projects done, to build them and make them work within the confines of things like budgets and manpower and schedules."



BOB BERNSTEIN

Age: 46

Place of birth: Mount Vernon, New York

Years at Fermilab: 15

Role at the lab: Co-spokesperson for NuTeV experiment; works on MINOS experiment; works on the neutrino factory; group leader for the alignment metrology group

Outside hobbies: Playing the cello, running, raising his six-month old puppy

If you could change one thing about Fermilab, what would it be?

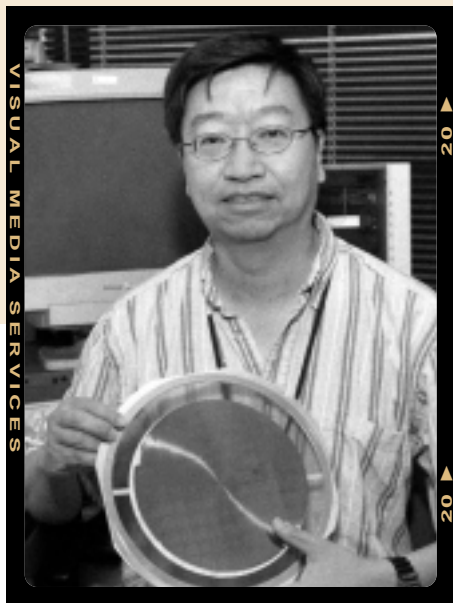
"I would change [DOE's] funding cycle so that we have more money, given to us over longer cycles so we can plan better."

How do you see your role in exploring the great questions of particle physics today?

"I think [neutrino physics is] at a really interesting point with the establishment of neutrino mass, and I think we're at the same place we were when we discovered the Cabibbo angle, the mixing of the quarks. A lot of physics we've done since then has been the exploration of the mixing of quarks and how they behave, and we need to be doing the same kind of thing for neutrinos. It's not exactly popular, and it's not well-defined yet, but if I can do anything in the next 30 years, it's help figure out what to do and push it in the right direction."

A Scientist II...

- Performs research of major importance and difficulty requiring the application of advanced knowledge and experience.
- Is recognized for significant scientific accomplishments or contributions to Fermilab's program.
- Supervises lower level staff in carrying out major programs and projects.



SIMON KWAN

Age: 47

Place of birth: Hong Kong

Years at Fermilab: 12

Role at the lab: Works on BTeV; development of pixel detector

Outside hobbies: Soccer, reading

If you could change one thing about Fermilab, what would it be?

"Organization. I would like some sort of structure in which there are resources allocated to a project rather than to a pool."

How do you see your role in exploring the great questions of particle physics today?

"I am pursuing the commonalities between what we are doing here and the linear collider. It is the general consensus that the linear collider is the machine for the future, and our work on the pixel detector is very relevant. I believe that the linear collider will benefit from what we have learned and what we are going to learn in the next five years. Collectively, Fermilab should play a leading role, and I hope that the linear collider will be built here."



HANK GLASS

Age: 46

Place of birth: Long Island, New York

Years at Fermilab: 5 as a grad student in the 80s; 11 as an employee

Role at the lab: Deputy head of development and test group in Technical Division; builds, maintains and develops new magnet technology for the accelerator; serves on the auditorium committee

Outside hobbies: Performing arts—attending plays, the symphony and the opera; tennis; writing

If you could change one thing about Fermilab, what would it be?

"I think it would be good if, every few years, they shuffled people around. For a few years, you work on an experiment, and then you go work on the accelerator, and so on. You would become more broadened, get a more global picture and better understanding of the lab. "

How do you see your role in exploring the great questions of particle physics today?

"In my day job, it's a supporting role. Experiments don't get anywhere unless they can get particle beams to them. So [I help provide] high-quality magnets so the accelerator actually works. However, they do let me out of my cage every now and then, and I help out whenever I can on the Pierre Auger Cosmic Ray experiment. We're trying to understand what ultra high energy cosmic rays are made of, where are they coming from, and what kind of processes are involved in making them."

Applied Scientist II

An Applied Scientist II...

- Devises methods to apply laws, theories and research in a specialized area of applied science.
- Develops and directs research projects, overseeing the design, schedule and budget.
- Performs data analysis, writes physics proposals, gives physics talks and publishes scientific papers.

Scientist III



CATHY NEWMAN-HOLMES

Age: 49

Place of birth: Oakland, California

Years at Fermilab: 19

Role at the lab: Former project manager for CDF upgrade; currently working on the Pierre Auger experiment and on organizing the 2003 Lepton Photon symposium at Fermilab.

Outside hobbies: Spending time with family; reading

If you could change one thing about Fermilab, what would it be?

"More excitement about the future."

How do you see your role in exploring the great questions of particle physics today?

"I will contribute where I can."

A Scientist III...

- Performs sophisticated and complicated technical duties.
- May have responsibility for a major department or division.
- Has demonstrated substantial and sustained scientific contributions to Fermilab.
- Demonstrates considerable and unusual leadership ability pertaining to the scientific or technical achievements of Fermilab.



BOB KEPHART

Age: 52

Place of birth: Phillipsburg, Pennsylvania

Years at Fermilab: 2 as a postdoc for SUNY at Stony Brook; 24 since then as a lab employee

Role at the lab: Head of Technical Division

Outside hobbies: Fly fishing, skiing, scuba diving

If you could change one thing about Fermilab, what would it be?

"I'd like the lab to have more money. There are many exciting things that we could do if we had better funding."

How do you see your role in exploring the great questions of particle physics today?

"Exploration of these problems requires large teams of people working in a cooperative effort. My role has been to provide scientific expertise, organization, and leadership to facilitate this process."

CALENDAR

WELLNESS WORKS

Sept. 17, Noon-1 p.m.

Brown Bag Seminar: Understanding Osteoporosis

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

Learn about osteoporosis risk factors and prevention from Richard Tom, M.D., of Rush-Copley BO/GYNE Associates, in the Curia II conference room.

FERMILAB ARTS SERIES 2002-2003 SEASON

The Fermilab Arts Series will bring some of the finest performing artists from around the world to Ramsey Auditorium for the 2002-2003 season: dance and theater from Russia, Scotland, Canada, China, Cuba, and of course the USA. In addition, the Gallery Chamber Series features some of the finest classical musicians in the Chicago area in three Sunday afternoon chamber music performances set among the fine arts exhibits in the Wilson Hall 2nd Floor Gallery.

OPENING NIGHT

An Evening With Groucho

Pre-Performance Talk at 7 p.m. in 1West
Post-Performance Reception

September 21, 2002 at 8 p.m.

Tickets - \$19 (\$10 ages 18 and under)

Award-winning actor, director and playwright Frank Ferrante recreates his portrayal of Groucho Marx as seen on PBS, and in New York and London, in this fast-paced comedy.

Russian State Chorus

October 26, 2002

Tickets - \$20 (\$10 ages 18 and under)

Known for decades as one of the world's leading choral ensembles, the Russian State Chorus performs an evening of Russian classical repertoire as well as Russian folk music.

Battlefield Band

November 23, 2002

Tickets - \$19 (\$10 ages 18 and under)

Inspired by their rich heritage of Celtic music, and fired by the strength of today's Scottish cultural scene, the Battlefield Band mixes old songs with new material and performs them on a unique fusion of ancient and modern instruments.

Windham Hill's Winter Solstice

Featuring Liz Story, Will Ackerman, and Samite of Uganda

December 7, 2002

Tickets - \$25 (\$13 ages 18 and under)

This collection of Windham Hill artists features pianist Liz Story, guitarist and Windham Hill founder Will Ackerman, and percussionist Samite of Uganda.

Libana

February 8, 2003

Tickets - \$17 (\$9 ages 18 and under)

Libana is now in its 23rd season of researching, performing, and celebrating songs, dances, and instrumental music of women from around the world.

Dragon's Tale: Nai-Ni Chen Dance

March 8, 2003

Tickets - \$19 (\$10 ages 18 and under)

Bringing to life the culture and traditions of China, this full-length family show leaves children mesmerized at each enchanting, astounding dance, and adults equally caught up in the magic of it all.

Quartetto Gelato

April 5, 2003

Tickets - \$21 (\$11 ages 18 and under)

As the engaging innovators of a fresh approach to classical music, Quartetto Gelato has won the hearts of audiences worldwide since their remarkable 1994 debut season.

Orquesta Aragon

May 10, 2003

Tickets - \$26 (\$13 ages 18 and under)

Fermilab is pleased to provide a rare opportunity to see one of the most influential groups in Cuban music.

Gallery Chamber Series

Sunday afternoons at 2:30 p.m.

Three Concert Series - \$36

After a sell-out inaugural season, Fermilab is pleased to again present the Gallery Chamber Series, a set of three Sunday afternoon concerts taking place in the Fermilab Art Gallery on the second floor of Wilson Hall. This year's series: the Chicago Chamber Musicians Brass on January 26; David Schrader, performing 16th and 17th century music for the Clavichord and Italian Harpsichord on February 16; the Scholars of Cambrai, an ensemble of two lutes, soprano and tenor, performing music of the Renaissance era on March 23.

Tickets for all Fermilab Events are available now. For further information or telephone reservations, call 630/840-ARTS weekdays from 9 a.m. to 4 p.m. Additional information is available at www.fnal.gov/culture.

LUNCH SERVED FROM

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

\$10/PERSON

DINNER SERVED AT 7 P.M.

\$23/PERSON

Chef Léon MENU

FOR RESERVATIONS, CALL X4512

CAKES FOR SPECIAL OCCASIONS

DIETARY RESTRICTIONS

CONTACT TITA, X3524

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

LUNCH

WEDNESDAY, AUGUST 14

Chicken, Avocado and Papaya Salad

Pecan Torte with Rum Sauce

DINNER

THURSDAY, AUGUST 15

Puree Gloria

Steamed Maine Lobster

New Potatoes and Sweet Corn

Strawberry Shortcake

LUNCH

WEDNESDAY, AUGUST 21

Marinated Catfish

with Tamarind Sauce

Grilled Summer Vegetables

Coconut Rice Pudding Parfaits

with Mango and Pineapple

DINNER

THURSDAY, AUGUST 22

Gorgonzola and Pear Salad

Veal Piccata

Orzo, Arugula, Asiago and Pine Nuts

Profiterole with Coffee Mousse
and Chocolate Sauce

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F E R M I L A B

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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

■ '99 Ford Ranger 4x4, 5-spd. manual, 3.0L V6, 57K miles, extended warranty to 75K, Rhino liner, must sell, \$8,200. Frank x4389, 630-553-0049, page 630-314-4029.

■ '90 FORD Escort LX, 4dr, red, 105K miles, \$1,200 o.b.o. Call 630-778-0744 or email papageo@fnal.gov.

■ '88 Z-24 Cavalier Convertible, white with black top. First year this model was made!!! Original owner, 102K miles. New top, tires and battery in '99. Always hand washed and waxed, garage stored. Call 393-6160 (Summerlakes Subdivision). \$2,800 or o.b.o.

■ '81 Honda 400cc motorcycle. Very good condition. Vetta fairing. Well-maintained. \$800 including cover. Call x8620 or email: daveg@fnal.gov.

■ Delta tilting top table saw, \$300; Delta 24" scroll saw, \$150; Stanley portable edge planer, \$30. Contact David Butler at x3370 or e-mail dbutler@fnal.gov.

■ Machinist Tools: Starrett, micrometers (0-1" , 1-2" , 2-3"), 0-9" depth mic, combination square w/protractor, magnetic indicator base, 6" scale and an edge finder. Browne & Sharpe 6" dial caliper. Other misc. tools and gauge blocks. All in an 11-drawer Kennedy Machinist Chest. Like-new condition. Seldom used, well taken care of. \$400 takes everything. Can view at Site 39 Warehouse. Call Kevin at x8722 or kanderson@fnal.gov.

■ Pentax 35mm SLR camera model ESPI0 200. 48-200mm zoom, quartz date, excellent condition, new \$360, selling for \$180. Frank x4389, 630-553-0049, page 630-314-4029.

■ Dining/kitchen set, 6 chairs, table 6 ft. long, pads for chairs & hutch all for \$350. White dresser, great for child's room \$20. Greg x4606 or 630-557-2523.

■ URGENT !! Moving SALE !! Everything must go by August 15. All items less than 2 years old. Sofa bed queen size (\$90) +matching chair (\$70), entertainment center from IKEA black (\$45), bookcase 5 shelves black (\$15), mixer (\$10), food processor + blender (\$30), microwave (\$40), 4 plastic patio chairs + table (\$25), all purpose wooden table (\$50), Hoover vacuum (\$30), 2 floor lamps (\$25 and \$15), floor scale (\$10), humidifier (\$10), toaster (\$5), mini CD tape and radio player with remote (\$25), 5 pieces set for the fireplace (\$15), iron (\$15), plus other miscellaneous items. Call (630) 7780744 or email papageo@fnal.gov.

FOLK DANCING

■ International folk dancing is held from 7:30 to 10 p.m., Thursdays, at the American Legion Post, 22 S. Second St. in Geneva.

"Silk and Thistle" Scottish country dancing meets from 7:30 to 10 p.m. Tuesdays at the Main St. Recreation Center at the southwest corner of Hill and Main Streets in Glen Ellyn.

Both locations offer wood floors, air-conditioning, and ample parking. Newcomers are welcome at both groups at any time and many dances are fully taught. Contributions towards the cost of the room are requested but not obligatory.

RIDE SHARE

■ Fermilab employee needs to share a ride to work. Algonquin Lake-in-the-Hills area. Call Randy Ward at 847-658-1939.

HOUSE FOR SALE

■ Warrenville: 2 bedroom, 2 bath townhome in Maple Hill Subdivision. Bright and airy, ground floor ranch model. Listed with Baird & Warner for \$174,000 with \$2,000 carpet allowance. E-mail: lisa@fnal.gov or phone x8023 (weekdays) or 630-393-3819 (evenings and weekends).

RENTAL WANTED

■ To rent accommodations in France and Italy by the month in February, March and April. treend@fnal.gov, x6633.

WRITING CONTEST

■ The 2002 Fermilab Creative Writers Club writing competition is open to all Fermilab employees and users. Submit entries in three categories: poetry, short story or "short-short" story (less than 500 words) by September 30, 2002. Participation is free, and prizes will be awarded to the winner in each category. The winning entries will be considered for publication in *FERMINES*. Results will be announced October 31, 2002. Complete guidelines can be located at <http://fnalpubs.fnal.gov/benedept/recreation.cwc.htm> or Contact Rod Walton at extension 2565 or rwalton@fnal.gov.

MILESTONE

AWARDED

■ Fermilab Employee Performance Recognition Award to Mike Martens, on August 2; for his

contributions as Run II coordinator in the Beams Division.

LABNOTE

MEET SCIENTISTS AT SCIENCE CENTER

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



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



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