FERMI NEWS

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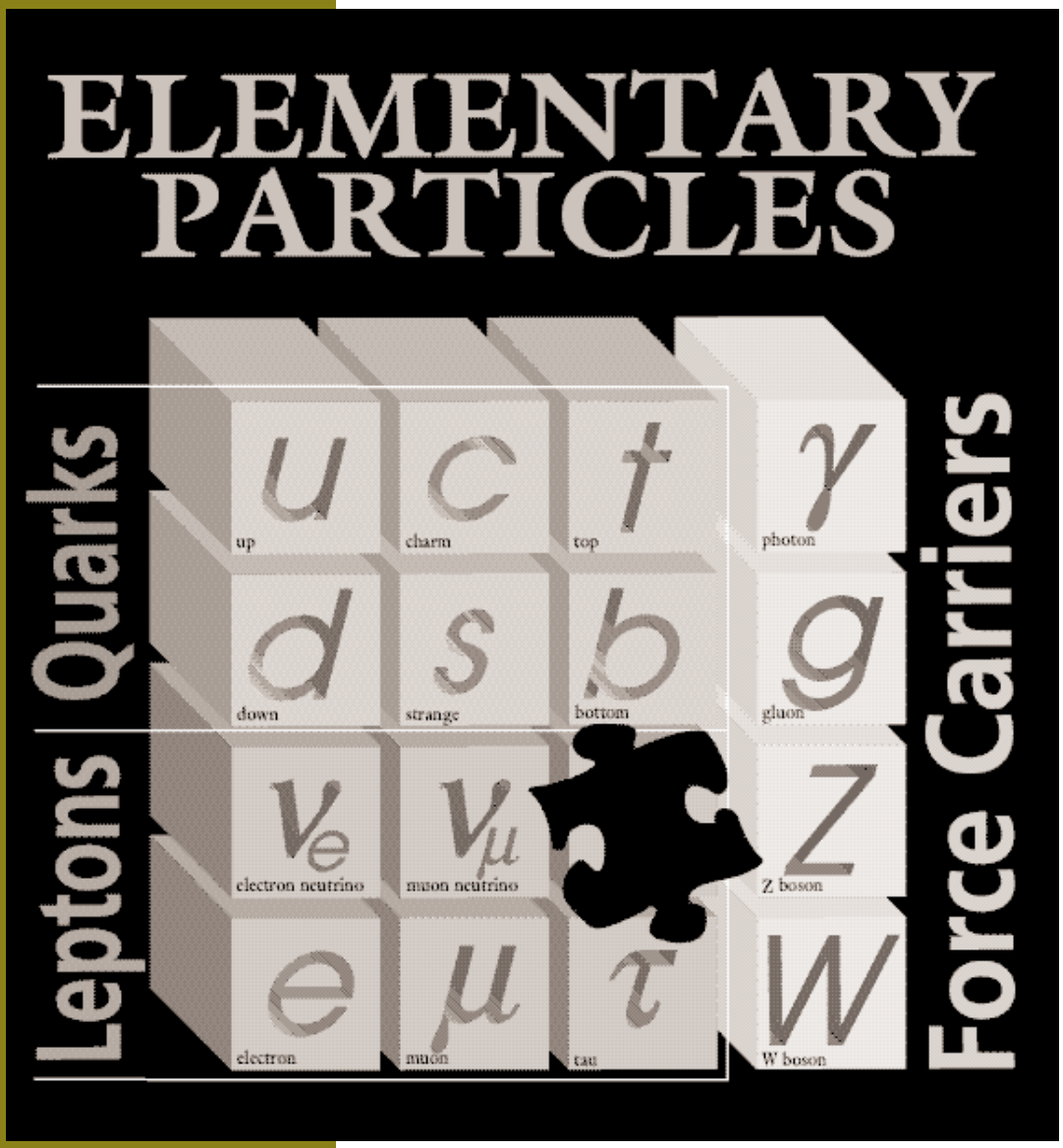

Fermilab Graphic

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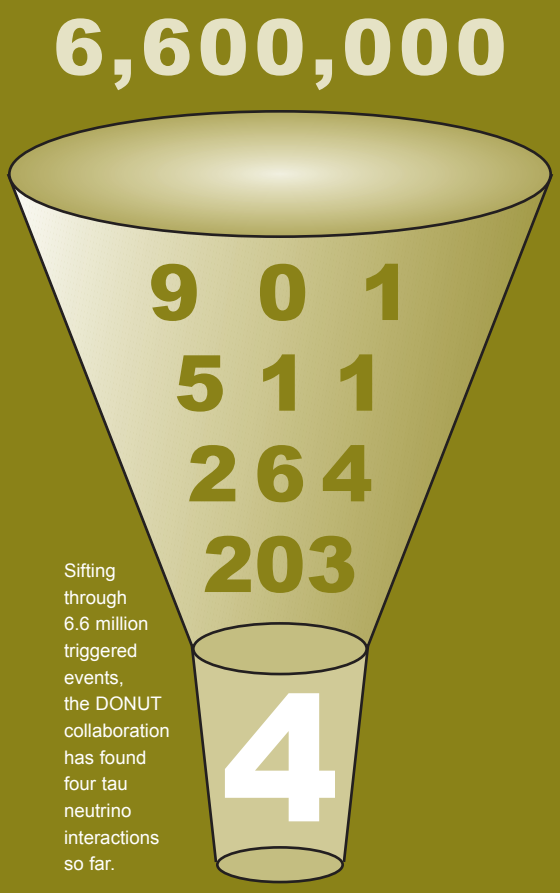
INSIDE:

DONUT Finds MISSING Puzzle Piece



Sifting through 6.6 million triggered events, the DONUT collaboration has found four tau neutrino interactions so far.

by Kurt Riesselmann

Physicists knew exactly what they were looking for. Over the last 40 years they had assembled the puzzle called the Standard Model of elementary particles. One crucial piece, however, remained undetected: the tau neutrino.

"It's simply been accepted that this guy exists," said Regina Rameika, a senior scientist on the Direct Observation of the Nu Tau (DONUT) experiment, an international collaboration of 54 scientists from Japan, Greece, Korea and the United States.

After sifting through more than two years of millions of particle events, the DONUT collaboration finally found the missing puzzle piece. On July 21, they announced the first direct evidence for the tau neutrino, the third kind of neutrino known to particle physicists. They reported four instances of a neutrino interacting with an atomic nucleus to produce a charged particle called a tau lepton, the signature of a tau neutrino.

Although earlier experiments had produced convincing indirect evidence for the particle's existence, no experiment had ever directly observed the tau neutrino, a massless or almost massless particle carrying no electric charge and barely interacting with surrounding matter.

"It is one thing to think that there are tau neutrinos out there," said Byron Lundberg, spokesman of the DONUT experiment. "But to really look for the rare incidence of a tau neutrino hitting a nucleus and transforming into a tau lepton is a hard experiment to do."

The tau neutrino is the most elusive neutrino of the Standard Model, the theoretical description that groups all particles into three generations. First-generation electron neutrinos and their second-generation cousins, muon neutrinos, are easier to produce and detect than tau neutrinos. Experimenters identified them in 1956 and 1962 by recording neutrino interactions creating either electrons or muons. More than 30 years of technological advancement have now allowed physicists to observe the third-generation tau neutrino producing a tau lepton.

"Fermilab has once more shown its capability for research at the frontiers of particle physics," said Secretary of Energy Bill Richardson. "The Department of Energy continues to make critical contributions to today's understanding of the fundamental structure of matter, including pioneering experiments with all three neutrinos."
Forty-four years ago, scientists discovered the first neutrino at the Savannah River Plant of the Atomic Energy Commission. In 1962, scientists found the second, the muon neutrino, at Brookhaven National Laboratory.

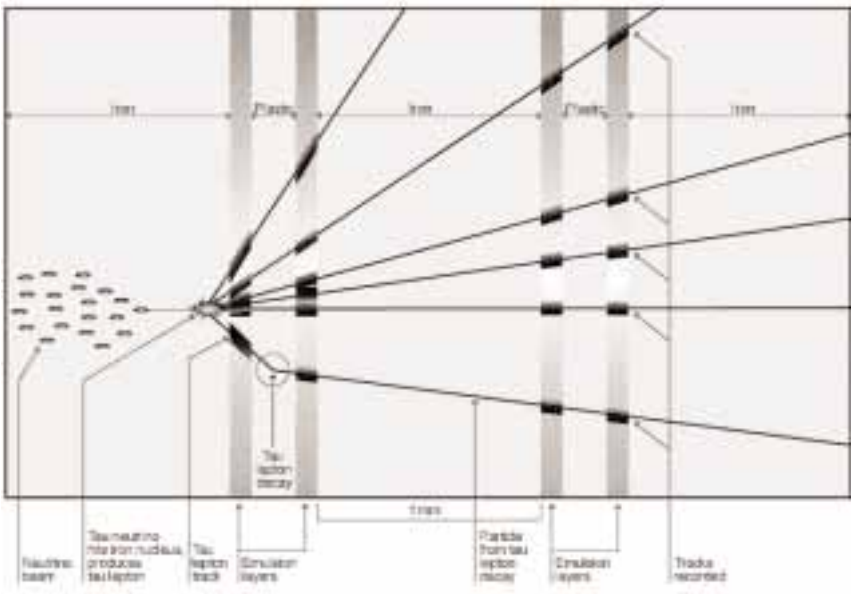
Photo by Reidar Hahn

During an hour-long colloquium, Byron Lundberg explained the DONUT experiment and its data analysis.

Detecting a Tau Neutrino

In 1997, using Fermilab's Tevatron accelerator, scientists produced an intense neutrino beam, which they expected to contain tau neutrinos. The neutrino beam crossed the three-foot-long DONUT target of iron plates sandwiched with layers of emulsion, which recorded the particle interactions. In the target, one out of one million million tau neutrinos interacted with an iron nucleus and produced a tau lepton, which left its one-millimeter-long tell-tale track in the emulsion. Physicists needed about three years of painstaking work to identify the tracks revealing a tau lepton and its decay, the key to exposing the tau neutrino's secret existence.

"The tau lepton leaves a track in the layers of emulsion, just as light leaves a mark on photographic film, but in three dimensions," explained Vittorio Paolone from the University of Pittsburgh, also a spokesman of the collaboration and a senior scientist at one of the six U.S. and six foreign universities involved in the experiment. "The main signature of a tau lepton is a track with a kink, indicating the decay of the tau lepton shortly after its creation."



Scientists expected one of a million million tau neutrinos that crossed the DONUT target emulsion to yield a signal. The tau neutrino event shown consists of six tracks. The lower track displays a kink less than one millimeter from the vertex, indicating the decay of a tau lepton that was produced by a tau neutrino.

Photo by Fred Ullrich

Members of the DONUT collaboration from the U.S. and Greece met on July 7 at Fermilab. The full collaboration, including colleagues from Japan and Korea, decided to make a public announcement of their tau neutrino results two weeks later.

DONUT Finds MISSING Puzzle Piece

Photos by Reidar Hahn

Physicists packed a lecture hall at Fermilab to hear DONUT spokesman Byron Lundberg announce the first direct evidence for the tau neutrino.

DONUT collaborator Koyu Niwa of Nagoya University, Japan, where the crucial emulsion analysis was centered, cited the experiment's distinctive technology.

"The tau neutrino results confirm the value of advanced emulsion technology for today's particle physics experiments and point to its future development for next-generation experiments," Niwa said. Using special scanning stations with computer-controlled video cameras, scientists at Nagoya created 3-D images of the particle tracks recorded in the emulsion layers.

Spokesmen Vittorio Paolone (foreground) and Byron Lundberg in the counting room of the DONUT experiment.

"It was the proverbial needle in a haystack," said Lundberg. The DONUT experiment recorded a total of six million potential interactions. By analyzing signals from various components of the 50-foot-long detector, they winnowed out all but 1000 candidate events. Of these, four events provided evidence for the tau neutrino.

Physicist Leon Lederman, who, along with Jack Steinberger and Melvin Schwartz, received the Nobel Prize in 1988 for the discovery of the second-generation muon neutrino, commented on the DONUT results.

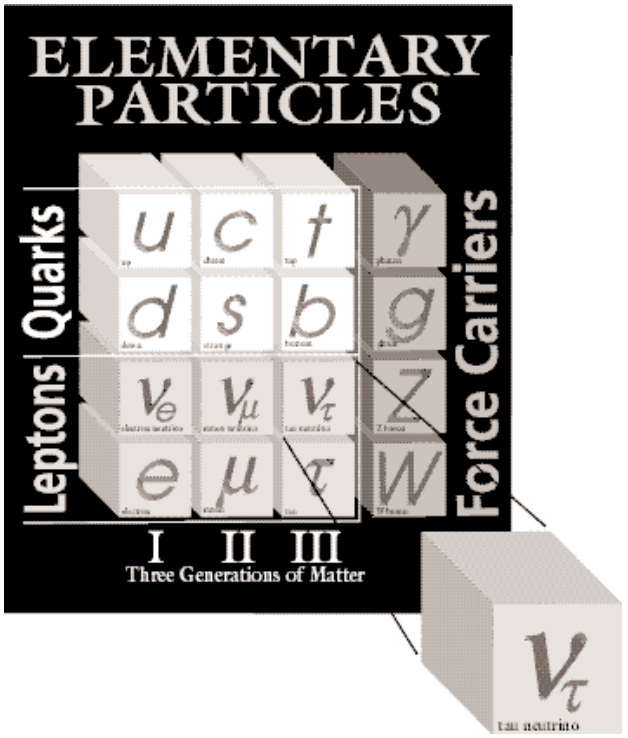
"Having participated in the research that established that there are two neutrinos, it would seem to be disconcerting to now learn that there are three. I can hear people complaining: 'Can't these guys make up their minds?'" Lederman said with a twinkle. "But seriously: The direct confirmation of the tau neutrino is an important and long-awaited result. Important because there is a huge effort underway to study the connections among neutrinos, and long awaited because the tau lepton was discovered 25 years ago, and it is high time the other shoe was dropped."

Stanford University physicist Martin Perl, winner of the 1995 Nobel Prize for discovering the tau lepton, the first indicator for a third generation of particles, congratulated the DONUT experimenters.

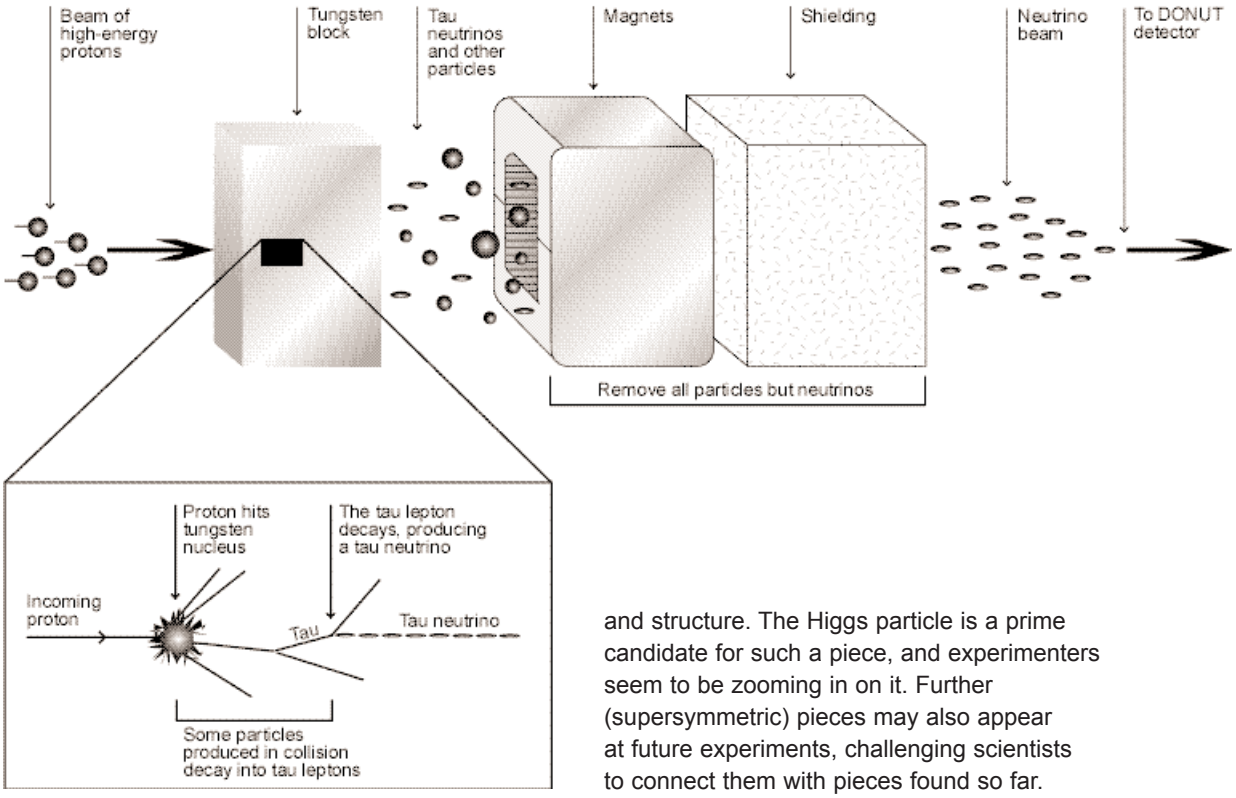
"Finding the tau neutrino is very important and very exciting," said Perl. "DONUT was not an easy experiment, and now it opens a whole new world. There is the possibility of the tau neutrino interacting somewhat differently from the other neutrinos. We might have a chance of learning more about all other particles."

After scientists at SLAC discovered the tau lepton, physicists realized that there should be a corresponding neutrino—an hypothesis further supported by E531, a 1982 experiment at Fermilab. In 1989, experimenters at CERN and SLAC found evidence that the tau neutrino is the third light neutrino of the Standard Model, but a direct observation was not yet feasible.

The new direct evidence for the tau neutrino is far from closing the chapter on neutrino physics. Scientists are eager to learn whether neutrinos have mass, a result that would put a crack in the Standard Model, leading to major changes



Creating a Tau Neutrino Beam



Smashing protons into a tungsten block, DONUT physicists produced many particles, including tau neutrinos. To minimize background and to avoid overexposure of the target emulsion, physicists installed magnets and shielding to remove all particles except neutrinos from the beam, leading to a pure neutrino beam hitting the DONUT target.

in our picture of the evolution of the universe. Experiments to answer these questions are underway in Japan, under construction at Fermilab and planned at CERN. The ability to detect tau neutrinos is an important step toward identifying non-zero neutrino masses.

Physicists packed a lecture hall at Fermilab on July 21 to hear DONUT spokesman Byron Lundberg announce the first direct evidence for the tau neutrino during a scientific colloquium. Following the discoveries of the bottom and top quark at the laboratory, scientists at Fermilab have now lifted the veil on a third elementary particle.

"I wish there would be more elementary particles so that we could do this more often," Rameika said in her opening remarks.

The tau neutrino just happened to be a puzzle piece that physicists knew all about—they just hadn't located it yet. Scientists have strong evidence that there must be other puzzle pieces of unexpected shape and structure. The Higgs particle is a prime candidate for such a piece, and experimenters seem to be zooming in on it. Further (supersymmetric) pieces may also appear at future experiments, challenging scientists to connect them with pieces found so far.

The DONUT collaborators, from Fermilab and the universities of Minnesota, Pittsburgh, Kansas State, Tufts, California at Davis and South Carolina; Nagoya, Kobe and Aichi (Japan); Gyeonsang and Konkuk (Korea); and Athens (Greece), will submit a scientific publication of the tau neutrino results to a major physics journal in the near future.

And in August, Carolyn Ericson and Jason Sielaff from the University of Minnesota, two of DONUT's six graduate students, will present the tau neutrino results at a meeting of the American Physical Society.

"Let's hope the graduate students each get an event," Lundberg jokingly remarked, referring to the fact that the collaboration has only identified four events so far. The DONUT analysis is not yet complete. A second method of analyzing the data is still to be completed, and scientists hope to double the number of tau neutrino events.

As Lundberg reassured the audience, "There are still plenty of puzzles left in the universe to solve." □

Photos and additional information on the tau neutrino announcement can be found at www.fnal.gov/pub/donut.html.

The Neutrino's Past

by Mike Perricone

"We would watch patiently and catch one every few hours or so. And there were many hours available for watching in a month or a year."

–Clyde Cowan

For nearly 70 years, the neutrino has been the hole in the donut for particle physicists. They could sink their teeth into tasty stuff all around it, but then what? Was the hole still there, or wasn't it?

The latest answer, fittingly, has come from the experiment called Direct Observation of Nu Tau—DONUT. In confirming the predictions for this third-generation neutrino, DONUT has filled a critical hole in the Standard Model—at least, in the Standard Model as understood today.

Frederick Reines, the neutrino's first observer in 1956 with Clyde Cowan, described this fleeting, baffling subatomic particle as "the most tiny quantity of reality ever imagined by a human being."

The first to imagine it, Wolfgang Pauli, actually doubted that anyone would ever see a neutrino. Pauli found a hole in an equation, and proposed the existence of a new particle to fill it—a particle with no charge and little or no mass, to explain what appeared to be a perplexing example of nonconservation of energy.

When a neutron transformed into a proton and an electron, Pauli saw that some energy and momentum seemed to vanish. The sum of energy and momentum after the decay event did not equal the initial total energy and momentum, threatening the conservation principle that is central to physics: if you know where to look for all the parts, you'll find that what you have in the end is always exactly what you had in the first place.

The new particle was a "desperate remedy" to this daunting problem, Pauli wrote in 1930. His mysterious, virtually invisible particle accompanied the electron in beta decays—thus making up for the missing energy and momentum, balancing the equations and saving the principle of conservation.

Unfortunately, Pauli's terminology wasn't as good as his theory. He confusingly called his particle the "neutron."

Enrico Fermi affixed the term "neutrino" (loosely, "little neutral one"), distinguishing it from the neutron of the atomic nucleus. His 1934 theory of beta-radioactivity pointed to the weak nuclear force in creating such instabilities within the atomic nucleus.

The neutrino, Fermi said, had no mass at all—and John Updike said the same in his 1960 poem, "Cosmic Gall." ("Neutrinos, they are very small./ They have no charge and have no mass/And do not interact at all...")

But the neutrino has grown in complexity under the watchful eyes of experimenters and theorists, and the next generation of experiments on the neutrino time line has no scarcity of holes to fill. □

1930

In a letter to the attendees of a physics conference in Tübingen, Germany, Wolfgang Pauli proposes as a "desperate remedy" the existence of a new neutral particle to explain the apparent energy nonconservation in radioactive decays. During the next few years, scientists elaborate Pauli's theory and conclude that the new particle must be very weakly interacting and extremely light.

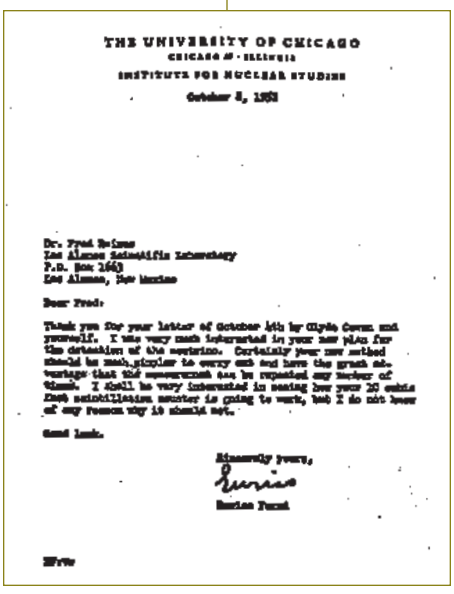
Photo: AIP, Emilio Segrè Visual Archives

Wolfgang Pauli

1933

Enrico Fermi proposes "neutrino" as the name for Pauli's postulated particle. He formulates a quantitative theory of weak particle interactions in which the neutrino plays an integral part.

Enrico Fermi



THE UNIVERSITY OF CHICAGO
CHICAGO 37 · ILLINOIS
INSTITUTE FOR NUCLEAR STUDIES
October 5, 1951

Dr. Fred Reines
Los Alamos Scientific Laboratory
P.O. Box 1663
Los Alamos, New Mexico

Dear Fred:

Thank you for your letter of October 4th to Clyde Cowan and yourself. I was very much interested in your new plan for the detection of the neutrino. Certainly your new method should be much simpler to carry out and have the great advantage that the measurement can be repeated any number of times. I shall be very interested in seeing how your 20 cubic foot scintillation counter is going to work, but I do not know of any reason why it should not.

Good luck.

Sincerely yours,

Enrico Fermi

EFrw

1956

Two American scientists, Frederick Reines and Clyde Cowan, report the first evidence for neutrinos. They use a fission reactor as a source of neutrinos and a well-shielded scintillator detector nearby to detect them.

1957

An Italian physicist, Bruno Pontecorvo, living in the USSR, formulates a theory of neutrino "oscillations." He shows that if different species of neutrinos exist, they might be able to oscillate back and forth between different species.

Photo: AIP, Emilio Segrè Visual Archives

Frederick Reines

1958

Maurice Goldhaber, Lee Grodzins, and Andrew Sunyar at Brookhaven National Laboratory demonstrate that the new neutrino has lefthanded helicity, meaning that it spins along the direction of its motion in the sense of a lefthanded screw. The experiment helps to distinguish among different forms of weak interactions.

1962

A group of scientists from Columbia University and Brookhaven National Laboratory perform the first accelerator neutrino experiment and demonstrate the existence of two species of neutrinos, the electron neutrino, ν_e, and the muon neutrino, ν_μ. In 1987, Jack Steinberger, Leon Lederman, and Mel Schwartz win the Nobel Prize for this discovery.

Brookhaven photo

J. Steinberger, K. Goulianos, J. Gaillard, N. Mistry, G. Danby, W. Hayes, L. Lederman, M. Schwartz

1968

An experiment deep underground in the Homestake mine in South Dakota makes the first observation of neutrinos from the sun. But experimenters see far fewer neutrinos than solar models had predicted.

1973

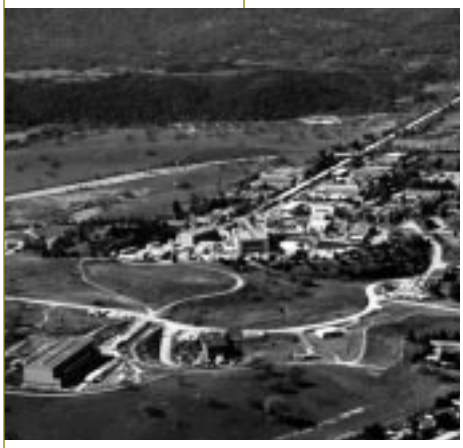
An international team working at CERN, the European Laboratory for Particle Physics, in Geneva, Switzerland, uses a bubble chamber to observe the first example of a "neutral current" event. Observation of this new interaction lends strong support to a unified theory of weak and electromagnetic interactions proposed a few years earlier by Sheldon Glashow, Abdus Salam, and Steven Weinberg. Shortly afterward, scientists at Fermilab confirm the discovery. ▼

1956

Two American scientists, Frederick Reines and Clyde Cowan, report the first evidence for neutrinos. They use a fission reactor as a source of neutrinos and a well-shielded scintillator detector nearby to detect them. ▼

1987

Large underground water detectors in the Kamioka mine in Japan and in the Morton salt mine in the U.S. detect the first neutrinos from a supernova, SN1987A.



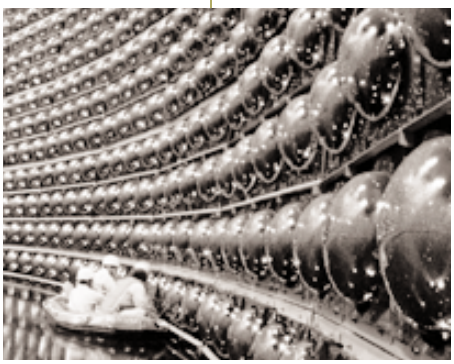
Stanford Linear Accelerator Center

1989

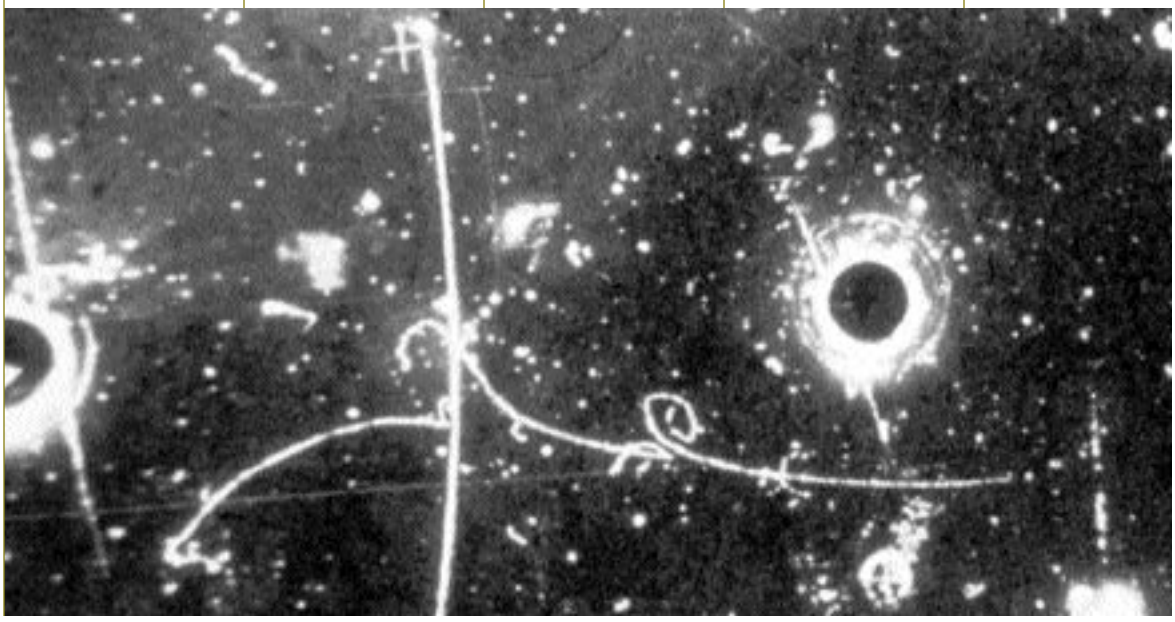
Experiments at CERN and at Stanford show that there exist only three species of light (or massless) neutrinos. Thus ν_e, ν_μ, and ν_τ must complete this class of particles. This direct measurement verifies strong suggestions previously deduced from the cosmological measurements.

1998

At the Neutrino '98 conference in Japan, physicists from the Super-Kamiokande experiment present significant new data on the deficit in muon neutrinos produced in the Earth's atmosphere. The data suggest that the deficit varies depending on the distance the neutrinos travel—an indication that neutrinos oscillate and have mass. ▼



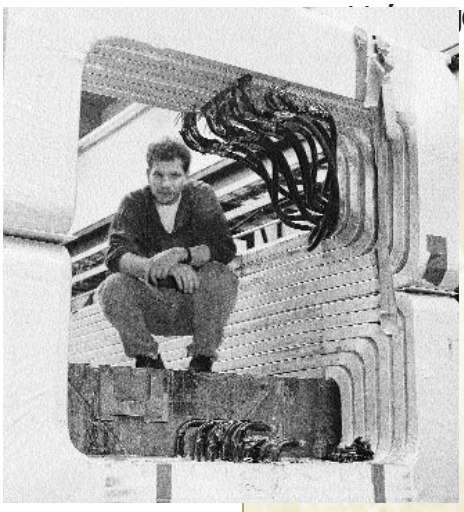
Super Kamiokande experiment



2000 and Beyond at Fermilab:

"The clearest part of our future is the neutrino program... This is an area that has been hot for a while and will continue to be for some years.

oing to know a lot more in five or six years than we know



Vittorio Paolone of DONUT

1999

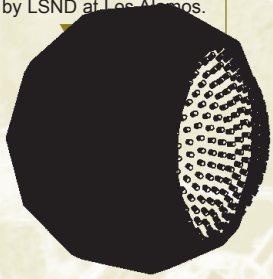
The Main Injector at Fermilab begins operation. The combination of its high-intensity particle beam and an energy of 120 GeV allows a new generation of neutrino experiments that will continue to probe some of nature's most fundamental questions.

2000

▲ **DONUT** collaboration reports the first direct evidence for the tau neutrino (July 21, 2000)

2001

MiniBooNE, using the Booster beam, is on a fast track to begin taking data in 2001, seeking to confirm or deny without ambiguity the neutrino oscillation signal seen by LSND at Los Alamos.



MiniBooNE detector

2003

NuMI/MINOS recently held groundbreaking ceremonies for on-site tunnel construction and will begin its search for neutrino mass in 2003. Using 120 GeV protons from the new Main Injector as its source, MINOS will send a beam of muon neutrinos through the earth to the Soudan mine in Minnesota, where it will seek signals for oscillations of muon neutrinos to tau neutrinos.

Photo by Reidar Hahn

MINOS collaboration

...and other accelerator-based neutrino experiments:

Short Baseline:

NOMAD
CERN

ORLAND
Oak Ridge

CHORUS
CERN

NESS
European Spallation Source

KARMEN
Rutherford Lab

TOSCA
CERN

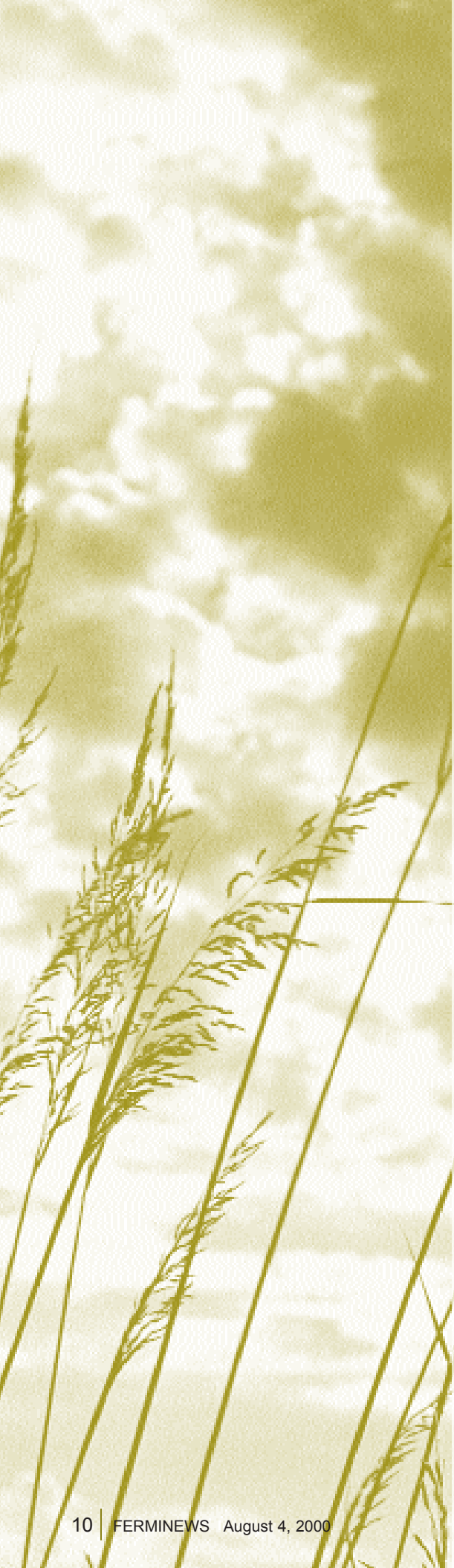
Long Baseline:

ICANOE
CERN to Gran Sasso, Italy (732 km)

K2K
KEK (Tsukuba) to Kamioka, Japan (250 km)

OPERA
CERN to Gran Sasso, Italy (732 km)

Aerometric photo



A

O prairie mother,
I am one of your boys.

I have loved the prairie
as a man with a heart
shot full of pain over love.

Here I know I will hanker
after nothing so much as
one more sunrise or a sky
moon
of fire doubled to a river
moon of water.

—Carl Sandburg,
"Prairie" (from "Cornhuskers," 1918)

Prairie Summer

Photos by Reidar Hahn

Rattlesnake master
(Eryngium yuccifolium)

Bee balm, or wild bergamot
(Monarda fistulosa)

Culver's root
(Veronicastrum virginicum)

Yellow coneflower
(Ratibida pinnata)

False sunflower, or ox eye daisy
(Heliopsis helioanthoides)

Dense blazing star
(Liatris spicata)

Water hemlock
(Cicuta maculata)
Caution: Poisonous!

Prairie dock
(Silphium terebinthinaceum)

Asking for TROUBLE

by Judy Jackson

Accelerator physicist Maury Tigner, newly appointed high-energy physics laboratory director at Cornell University and a preacher's son, spread the gospel of accelerator physics in his keynote address at New Perspectives 2000.

...*or* NOTHING EASY SHOWS HOW GOOD YOU ARE

These days it takes guts to be a graduate student in experimental particle physics. Your thesis research takes years, while detectors and accelerators are a-building. Funding for your chosen field grows ever more perilous, while you watch budgets for other branches of science go up. When you finally finish your degree, traditional university research jobs are scarcer than tau neutrinos. And the path to the future is anything but clear, as your elders attempt to converge on a vision for the years ahead. It's not a career choice for the faint hearted.

Yet last month, when the hardy band of Fermilab graduate students—the few, the strong, the chosen—met for their annual post-users'-meeting New Perspectives conference, they put enough of their own high energy into presenting and discussing their research to convince most observers that there's plenty of life left in high-energy physics.

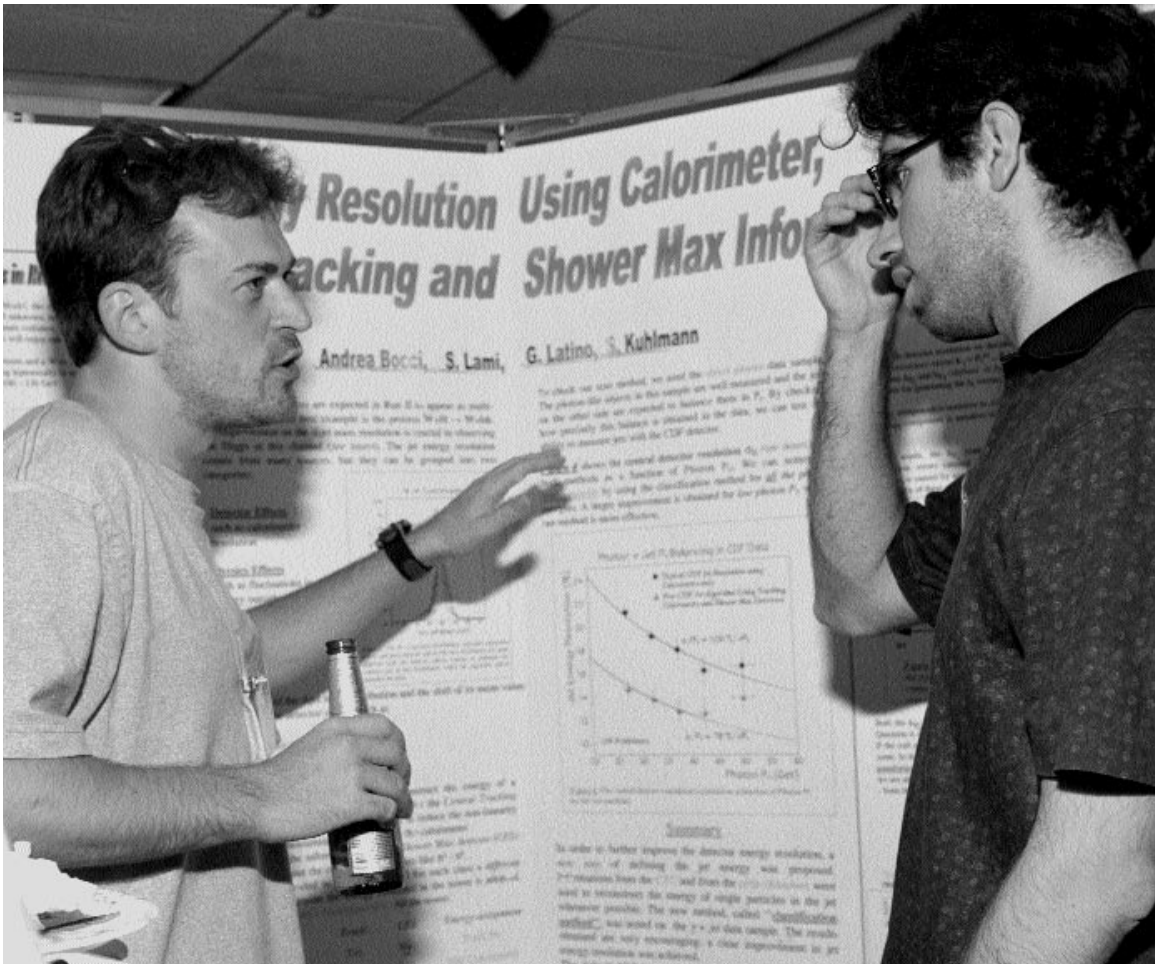
The traditional opening-night poster contest attracted a crowded field of entries, and a large audience of poster *cognoscenti*. Detector components, charmonium results, Higgs searches, neutrino experiments, accelerator physics—all those and more turned up, carefully diagrammed and thoroughly explained, at what must be one of the world's more specialized cocktail parties. Vadim Kashikin, a Russian graduate student in Fermilab's Technical Division, won first prize for his poster illustrating a breakthrough in the design of high-field superconducting magnets, a longtime Fermilab specialty.

For the following two days, the students presented papers describing their work on every aspect of Fermilab's experimental program. Amitava Roy from Purdue described work on tests of pixel sensors for the CMS experiment that Fermilab is helping to build for physics at the Large Hadron Collider at CERN. Jocelyn Monroe, who hasn't even begun grad school yet, talked about ionization cooling for a neutrino factory of the future. Bruce Knuteson of UC Berkeley explained his novel, model-independent search strategy to look for new physics at DZero. Stephen Bailey described a particle decay search using CDF data. And the University of Minnesota's Reinhard Schwienhorst presented a new upper limit for the magnetic moment of, yes, the tau neutrino.

"It's great," said Purdue graduate student Arnold Pompos, a CDF collaborator who chaired a session of the conference. "It's a chance to talk to your fellow

"WE HAVE six graduate students IN TOTAL.
LET'S HOPE THEY EACH GET A tau interaction TO ANALYZE."

—*Byron Lundberg:* *describing the DONUT collaboration's search for the tau neutrino, which has so far announced four tau interactions*



Fermilab grad student Alexey Safonov of the University of Florida talks CDF jet measurement with Andrea Bocci, a student from the Rockefeller University.

Photos by Jenny Mullins

University of Iowa student Suat Ozkorucuklu was totally ready to talk results from Fermilab's last 800 GeV fixed-target run.

students about the work you are doing without too much pressure. You can talk about whatever stage you're in."

On Wednesday morning, renowned accelerator physicist Maury Tigner, the conference's keynote speaker, gave the students a rousing address on the intellectual adventure and romance—and the practical necessity—of solving problems of accelerator physics in order for the field of particle physics to advance.

Tigner described one piece of developing accelerator technology as "asking for trouble."

"But if you don't ask for trouble, you don't get it," he said.

Pause.

"And our whole careers are built on trouble."

His audience looked as if they could hardly wait. □

PROFILE IN PHYSICS

Jean Trân Thanh Vân

by Judy Jackson

In 1993, to stimulate interest in science in his native land, Jean Trân Thanh Vân established the *Rencontres du Vietnam*. A poster announces the fourth such conference, held last month in Hanoi.

Before there was the World Wide Web, there were international physics conferences. After there was the World Wide Web, there are still international physics conferences. Electronic communication has changed the particle physics world forever, but there is still no substitute for the chance for scientific colleagues to meet together face to face.

Of course, not all physics conferences are created equal. Some are more worthwhile than others, and some are so highly regarded that they have become icons for the spirited international interaction between theory and experiment on topics of high current interest. Some people really know how to throw a conference.

The Division of Particles and Fields of the American Physical Society honored Jean Trân Thanh Vân at a gala dinner in Paris on July 8.

The acknowledged maestro, the dean, the Pearl Mesta of physics conferences is a diminutive Vietnamese theorist from the University of Paris at Orsay. He is the founder and organizer of three of the most respected scientific get-togethers going, the *Rencontres de Moriond*, the *Rencontres de Blois*, and the *Rencontres du Vietnam*. Beginning with Moriond in 1966, through the *Rencontres du Vietnam* held in Hanoi just last month, these annual events have inspired and excited generations of physicists, experimentalists and theorists alike.

On July 8, in his home town of Paris, the Division of Particles and Fields of the American Physical Society honored Jean Trân Thanh Vân with a Certificate of Appreciation, “in recognition of his many contributions to particle physics and international understanding.”

Citing the 35 years of lively discourse at Moriond, the “intellectual and human values that animate the *Rencontres de Blois*,” founded in 1989 and the vision inspiring the seven-year-old *Rencontres du Vietnam*, the DPF expressed heartfelt thanks for “creative and sustained service to particle physics, international understanding, and the humane aspects of science.”

LETTER TO THE EDITOR

Dear ***FERMINEWS:***

Though it probably matters more in Pittsburgh than anywhere else, there is a difference between "Melon" and "Mellon." Both spellings were used in the table of physics students who participated in research at the Tevatron fixed-target program *("Education: Right on Target," FERMINEWS, Vol. 23, No. 12)*. It is to the credit of your software—and, I daresay, a relief to the members of the Mellon family—that "Carnegie Melon" was not considered identical to "Carnegie Mellon." A "Carnegie melon" is a hypothetical menu item that I've not yet been able to convince a local club to adopt.

A more cynical or suspicious person would be tempted to think that you had made this error intentionally, as a test to see if the president actually reads your newsletter. I do, and I think it's very well done.

Sincerely,

Jared L. Cohon
President
Carnegie Mellon University

CALENDAR

Blood Drive to be held on 8/8/00 in conjunction with Heartland Blood Centers of Aurora. The drive will be held from 9am - 2pm in the Wilson Hall NE ESH training room. Questions? Please call Sharon Koteles x3598.

FERMILAB ARTS SERIES

Odetta

Saturday August 19, 8:00 pm. Tickets are $16. Ramsey Auditorium, Wilson Hall. The Queen of American Folk Music recently celebrated her 50th anniversary as a performer.

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

ONGOING

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

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/MENUS.HTML

LUNCH
WEDNESDAY, AUGUST 9

Shrimp Pasta Primavera
Peach Melba

DINNER
THURSDAY, AUGUST 10

Caesar Salad
Grilled Rib Lamb Chops with Basil Butter
Tomato Risotto
Vegetable of the Season
Cherry Strudel

LUNCH
WEDNESDAY, AUGUST 16

Grilled Ratatouille Salad with Feta Cheese
Mocha Cake

DINNER
THURSDAY, AUGUST 17

Corn, Cherry, Tomato, Arugula and Blue Cheese Salad
Red Snapper with Curried Sauce
Steamed Rice
Pea Pods
Peach and Blueberry Shortcake

FERMINEWS

FERMILAB
A U.S. DEPARTMENT OF ENERGY LABORATORY

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The deadline for the Friday, August 18, 2000, issue is Tuesday, August 8, 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. Letters from readers are welcome. Please include your name and daytime phone number.

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CLASSIFIEDS

FOR SALE

- '97 Honda Civic DX 4dr., 36k miles, air, automatic and CD player. Call 630-466-1959 for more info.
- '91, Buick Skylark, 75k miles, in good condition with air-conditioning, ask 1,500 $, obo. Call 2710 at Lab, or 305-8493 at home.
- '88 Toyota Corolla for sale: Black, 103k miles, AM/FM radio, new battery. Runs great! Very reliable! Ask $1,550 o.b.o. gradinu@yahoo.com or X3547.
- '99 Goldwing SE (Silver) with extras, 11.9k miles, $13,500. Excellent condition and runs great. Markland receiver hitch and (5 pin) OEM trailer wiring kit, Markland floorboards, foam grips and extra windshield, 2 headsets for the intercom. Still has 18 mo. on original (unlimited miles) warranty. Can get another 3 yrs extended (unlimited miles). Call Terry X4572 or e-mail skweres@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 $317, asking $150 obo, call Mike 840-2191.
- 3 piece sectional $400, bench with full set of weights $25, Kenmore 75 water softener $100, bunk beds $75, large upright freezer $50. Call Larry at 5242, or evenings 510-3096.
- Mountain bike Bridgestone x-large frame $150 new chain & sprocket. Trek - medium frame $200. Specialized - medium frame $250. Greg x4606 (630)557-2523
- Cateye Ergocisor Model EC-3500. Electronic heart monitor with variable load. This exercycle is in excellent condition. Very comfortable. $1,000 new - Asking $500 John Urish ext. 3017 (urish@fnal.gov).
- Sears Craftsman 10″ Radial Arm Saw with manual $175.00 obo. Contact Randy at 630-964-2311 or rlwyatt@fnal.gov or x8630.
- Guitar Effect Pedal: Marshall EC1 Compression. New $50. Riflescope with mounting hardware: Tasco. Previously mounted on Winchester 30-30, $15. Curtis x2394 or crawford@fnal.gov
- Scott's Classic 20″ reel lawn mower, 1 year old, $25; Women's golf clubs with cart, $50; Kenmore electric dryer, 6.5 years old, works fine; $25 Oak bedroom set with small 3-drawer bedside dresser & larger 9 drawer unit with mirrors, $400, x5165 or aicher@fnal.gov

FOR RENT

- Naperville 5 years new single family house, 3 bedroom 2-1/2 bath, school district 203, 2 car attached garage, master bedroom suite with luxurious bathroom and walk-in closet, full basement, $1,750/mo., chendi@fnal.gov or 355-1253
- Two bedroom apt. lower level for rent. Non-smoker, no pets. $500 a month plus one month security. Pidgeon Hill area-Aurora. 801-1775 or pager 905-1698.

TUTORING

- Adult bilingual woman science tutor/teacher is looking for work. Contact Teodora (doina@fnal.gov).

PAINTING

- Professional painting: Interior, exterior, commercial and new construction. Call for free estimate 630-714-8080.

BIBLE STUDY

The 12 o'clock (noon) Bible Study meets in the Huddle every Wednesday. Everyone is welcome. If interested contact Jeff Ruffin x4432, or ruffin@fnal.gov.

MILESTONES

RETIRING

- Larry Coulson, ID 1813, DO-Directorate, September 5. Last day of work, August 15.
- Fred Rittgarn, ID 2147, BD-BS/Tevatron Department, August 21.
- Jerome Biltgen, ID 7063, DO-Directorate (G&A), August 31. Last day of work was June 30.

PRESENTATION

- Olga Lobban, of CDF and Texas Tech University, presented the student perspective in the concluding session of the 50th annual series of open and informal meetings between Nobel Laureates and young researchers in Lindau, Germany. At the June 30 wrap-up session, Lobban represented the 600 participating students, sharing the dais with Countess Sonja Bernadotte, president of the organizing committee for the meeting, Johannes Rau, President of Germany, and Martinus Veltman, co-winner of the 1999 Nobel Prize in Physics.

ACE

- Mike Kucera of Beams Division shot a hole in one on the par 3, 168 yard, 9th hole at Fox Valley Country Club on July 25, 2000—his 42nd birthday. Mike used an easy 5 wood for a beautiful shot that rolled right in the cup. The shot was witnessed by Steve Bjerklie, Bob Florian and Gary Golinski.

LAB NOTE

BIKE RANSOM

Since the front entrance has been closed, some bicycles have become orphaned on the front plaza. While the scaffold and weather wall are being built, they are not in the way, but when the windows are being replaced, the bikes will have to be moved. We will have security cut all locks and remove them to another location. There are new bike racks on the west side of the building to make up for the lost spaces on the plaza.

To retrieve a bicycle, please contact Stan Boyson, FESS Construction Coordinator, at x8012, page 314-7380, or e-mail at boyson@fnal.gov.

http://www.fnal.gov/directorate/public_affairs/ferminews/

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