

# FermiNews

The Newsletter of the Fermi National Accelerator Laboratory

KTeV EXPERIMENT EXPLORES

## A HARD QUESTION FROM THE UNIVERSE

Fermilab's KTeV experiment, now under construction for operation in the 1996 fixed-target run at the Tevatron, will explore an aspect of one of the great puzzles confronting particle physics today: How did the universe come to contain matter without an equal quantity of antimatter?

The Standard Model, the prevailing theory of the fundamental nature of matter, in current theories of the evolution of the universe, fails to account for the fact that the universe appears to be made mostly of matter. It provides for only a small difference between the amount of matter and antimatter.

### A SURPRISING DISCOVERY

Until 30 years ago, physicists believed that a theoretical universe made of antimatter, with left and right reversed, would look and act exactly like the universe of matter that we know. But in 1964 a particle physics experiment by Christenson\*, Cronin, Fitch and Turlay

*\*Fermilab physicist Jim Christenson is now a member of the DZero collaboration.*

at Brookhaven National Laboratory gave the unexpected but indisputable result that the symmetry of matter and antimatter as described above is not complete. The experiment showed a slight asymmetry, a difference referred to as CP violation. (CP stands for "charge conjugation/parity," the symmetry just described.) Physicists hoped that an understanding of the results of the 1964 experiment would lead to an explanation of the preponderance of matter in the universe; but, 30 years later, we are not much closer to understanding it than we were then. Since that landmark discovery, experimenters and theorists have made enormous efforts to unravel this problem. Despite increasingly sensitive experiments, however, new results have not provided an explanation. How can we make progress from here?

Fermilab's KTeV experiment returns to the one place besides the universe as a whole where we have seen this effect—

The neutral kaon system provides an experimental thread—the only dangling thread we have found so far—that we can tug on to try to unravel the mystery of CP violation.

the particle called the neutral K meson, or kaon. The neutral kaon system provides an experimental thread—the only dangling thread we have found so far—that we can tug on to try to unravel the mystery of CP violation. Like the formation of the universe as a whole, the decay of neutral kaons into other subatomic particles exhibits an asymmetry in the ways in which matter and antimatter behave. Studying this asymmetry in neutral kaons may give us clues to the larger asymmetry that surrounds us.

### WORLD'S BEST KAON SOURCE?

Fermilab's Tevatron accelerator is an ideal source, perhaps the world's best, of the high-energy K mesons that such an investigation requires. KTeV stands for "Kaons at the Tevatron." The more high-energy neutral kaons Fermilab can produce, the harder KTeV can tug on the thread, and the more likely it is to unravel the mystery. Fermilab is constructing a new beam line of high-energy kaons for the experiment.

In designing KTeV, Fermilab's largest new fixed-target effort in a decade, experimenters have extended the techniques developed during their previous

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FermiNews



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# FEECAP AWARD WINNERS ANNOUNCED

Nine Fermilab employees were honored for their energy conservation suggestions at a Fermilab Employee Energy Conservation Awards Program (FEECAP) reception November 22 in the Wilson Hall Second Floor Art Gallery. Each employee received a cash award under the guidelines of the program.

The FEECAP Committee had a busy year in FY 1994 evaluating 39 suggestions from employees. The Committee extends its congratulations to the award winners for the good work done, for helping the Lab conserve its resources and support its mission. The award winners are:

**WILLIAM BYRD (FESS)** for his recommendation to replace electric heaters at roll-up doors in Wilson Hall with hot water unit heaters. This suggestion will save the Lab \$5,244 a year after implementation.

**JERRY DOMOLECZNY (RD)** for his suggestion to replace explosion-proof light fixtures in Lab B with fluorescent fixtures. This suggestion will result in a \$868 a year net cost savings.

**JOHN FURLONG (FESS)** for his recommendation to convert from electric to

gas heating at the Site 39 Warehouse. This suggestion will result in a cost savings of \$263 a year.

**RICHARD MOORE (RD)** for the suggestion to reduce energy losses from louvers in Research Division service buildings. His suggestion will result in a cost savings of \$4,886 a year after implementation.

**MARK OBRYCKI (RD)** for the recommendation to convert incandescent status signs to LED. His suggestion will result in a yearly cost savings of \$5,269.

**JOSEPH PATHIYIL (FESS)** for his suggestion to convert from electric to natural gas heating in PS5. His recommendation will result in a net cost savings of \$2,073 a year after implementation.

**HENRY SCHRAM (RD)** for his recommendation to install timers on "House Air" compressors for various site buildings. His recommendation will save the Lab \$269 a year after implementation.

**DONALD SORENSEN (AD)** for his suggestion to retrofit lighting controls in 24 Main Ring service buildings. The net cost savings per year after implementation will be \$1,700.

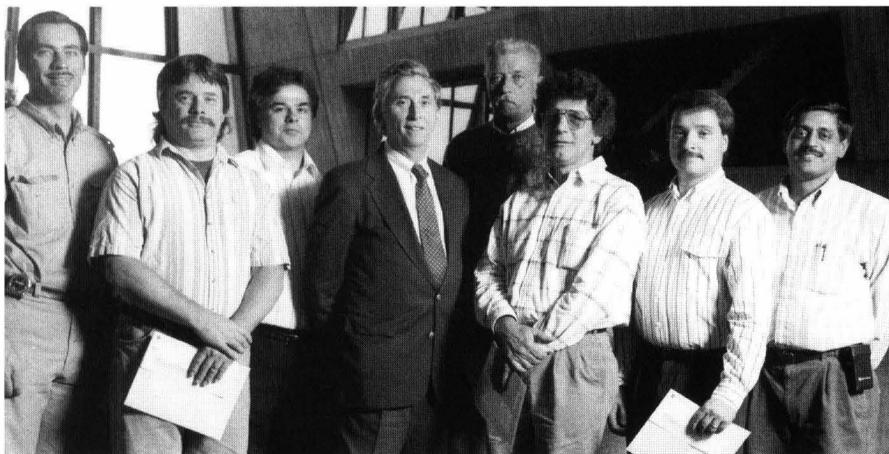
**KARL WHITTEN (FESS)** for the suggestion to install motion sensor lighting controls for various site buildings. His suggestion will result in a cost savings of \$4,686 a year.

The implementation of these nine suggestions is expected to result in a net cost annual savings for the Lab of \$25,258. "This work really does pay off," said Director JOHN PEOPLES. "Our electric power bill is 30% lower than it was nine years ago (when the program started.) It is impressive. What you (the award winners) have done helps us to do what we are suppose to do—which is to conduct a quality research program."

FEECAP was established to provide the means for an employee to submit constructive energy conservation ideas in any area of the Lab's operations, to have these ideas evaluated and to possibly receive a cash award for approved and implemented suggestions.

The success of the Fermilab suggestion program has resulted in DOE requiring all its sites to establish suggestion programs patterned after FEECAP. Since the inception of the program, over 150 suggestions have been received. For copies of the suggestion form, further details or any questions on this program, please contact the committee members. The FEECAP Committee members are: RAY STEFANSKI (Directorate), DOM CARULLO (TS), JEFF IRVIN (BS), TOM JURGENS (AD), STEVE KRSTULOVICH (FESS), VENKAT KUMAR (FESS), BARRY NORRIS (AD), STANLEY ORR (RD), JIM PRIEST (ES&H) and FRED RITTGARN (RD).

A round of applause for all the committee members whose diligent effort in evaluating suggestions has made FEECAP a success and a model program for the Department of Energy.—Venkat Kumar



*FEECAP Award recipients (l-r) Henry Schram, Richard Moore, Karl Whitten, award presenter John Peoples, Donald Sorensen, Jerry Domoleczny, Mark Obrycki and Joseph Pathiyil. Not pictured, William Byrd and John Furlong.*



# NEWS FROM THE WASTE MINIMIZATION SUBCOMMITTEE

In the November 4 issue of *FermiNews*, we asked people to help us think of a new name for this column. That challenge (despite the lack of a prize) got many people thinking and we received many fine entries. Those submitting ideas were JOEL FUERST (AD), JOAN ROCK (AD), RON HAYNES (BS), JUDY JACKSON (Directorate), BRIAN CHARLES (LS), PAULA GARRETT (LS) and CYNDI RATHBUN (LS).

We choose "Waste Line," which was submitted by CYNDI RATHBUN (LS). The Publications Office submitted the logo design which depicts our "shrinking waste." Thanks to all who helped.

## RECYCLING PROGRESS

We have received a number of calls about the overflowing recycling bins and uncertainty about the pick-up schedule. Hopefully we have worked out a better pick-up schedule for everyone, but if you think you were missed on a pick-up,

please let us know. We are working with Contracts to re-write the recycling contract and we will be addressing the problems we are experiencing. We hope to have a new contract in place by early next year. Please be patient and understanding as we go through this growing period. Recycling has been a great success, and with your cooperation, we hope to continue that way.

## TRASH TIP

Please do not throw any type of toner cartridge in the trash (or down garbage chutes)! There is a large box for the collection of the cartridges in the basement of Wilson Hall.

## VIDEO PRODUCTION

The Fermilab Waste Minimization video is now completed. Thanks to FRED ULLRICH and JIM SHULTZ of Visual Media Services and the Waste Minimization Subcommittee members for their efforts. Stop by the Atrium to see some of your fellow employees in their acting debut. If you have a group of employees who would like to see the video, contact

Visual Media Services.

## QUESTIONS AND ANSWERS

We have had many questions about the new *FermiNews* paper stock. The new glossy paper is a recycled stock that is 50% recovered fiber and 10% post-consumer waste. The previous paper was not a recycled paper product. *FermiNews* is still recyclable, but as junk mail.

We also have been hearing about the Cafeteria's switch from paper to Styrofoam plates. The paper plates were about 5-6 times more expensive than the Styrofoam plates. The paper plates ended up in the landfill. The Styrofoam plates are being recycled. There is a container for Styrofoam collection in the Cafeteria, as well as Wilson Hall Ground Floor. Other divisions have collection points as well. If you take your lunch back to your desk, the best choice is always china, but the Styrofoam plates can be taken to a Styrofoam bin the next time you are going that way. (They can be kept in a garbage bag). Also please remember that plastic cups and plastic silverware are being recycled.—*Kay Weber and Kevin Moss*

## KTEV

*continued from page one*

successful experiments. When kaons decay, they can produce positively and negatively charged particles, neutral particles, or a combination of all three. KTeV experimenters will be looking for the electronic signatures of certain combinations. The new KTeV detector is ideally suited to detect almost any combination of these three decay products.

## ALL BRAND NEW

A new experimental hall, now under construction, will house the detector and the control room. In contrast to earlier detectors, the new detector uses

a calorimeter made of 3,100 pure cesium iodide crystals to improve its capability to distinguish signal from noise, and to increase its ability to withstand high beam rates without damage. An improved system of veto counters will screen out uninteresting events to help the signal stand out even more.

A new magnet, whose coils are now under construction in California, will bend the paths of charged particles from kaon decays. Along with drift chambers, the magnet will measure the charged particles' momenta. Improved triggering scintillation counters will help the detector handle the high beam

rates. Large transition radiation detectors and muon counters will further identify particular particle types from the K meson decays. Newly developed readout electronics and trigger systems will feed detector signals to a new data acquisition system to record data for experimenters to analyze. Experimenters are now writing software to look for specific decays of the K mesons. Comparison of decays into charged and neutral particles will allow experimenters to measure CP violation with unprecedented accuracy.—*Judy Jackson*

*Future detailed articles will follow as work progresses.*

# People & Events

## FERMILAB ARTS SERIES PRESENTS

SECOND CONCERT IN SERIES,  
ARIANNA QUARTET,  
FERMILAB'S QUARTET IN  
RESIDENCE

The Fermilab Arts Series, in conjunction with the Northern Illinois School of Music, is proud to present the second concert by its quartet in residence: the Arianna Quartet. The quartet will present its Sunday afternoon concerts on December 4, 1994 in Fermilab's Ramsey Auditorium beginning at 2 p.m. (Please note that this concert was originally scheduled for December 11.) The remaining concerts are on March 4 and April 30, 1995. No advance ticket purchase is necessary. Tickets will be available at the door 45 minutes prior to each performance for a price of \$5.

The program will include Beethoven's String Quartet in f minor, Op. 95 ("Serioso"); Benjamin Britten's final String Quartet No. 3, and conclude

with Mozart's Clarinet Quintet, K. 581 with special guest artist Melvin Warner.

The Arianna Quartet formed in 1992 and spent a year in residence at Kent State University. They are currently studying with the internationally renowned Vermeer Quartet as resident graduate string quartet at Northern Illinois University's School of Music. They recently won top honors at all three of last year's national competitions on three consecutive weekends: The Fischhoff National Chamber Music Competition, the Coleman Competition in Pasadena and the Carmel Chamber Music Competition in Carmel, California. Winning the Fischhoff Competition resulted in a \$4,500 grand prize, a sponsored tour of the Midwest and an Orchestra Hall debut on October 30. Earlier this year they were one of six internationally selected ensembles to participate in the



*The Arianna Quartet*

first Isaac Stern Chamber Music Master Class at Carnegie Hall where their coaches included Stern, Arnold Steinhardt, Michael Tree, Timothy Eddy and Ralph Kirschbaum. In addition, the Arianna Quartet spent the summer working with Martha Katz and Lorand Fenyves at the Banff Academy of Chamber Music. Says Richard Young, violist for the Vermeer Quartet and one of Arianna's coaches, "This is a very difficult profession, but the Arianna is off to a very promising start. One can't do better than they have so far."

The Arianna Quartet performs at Ramsey Auditorium on Sunday, December 4 at 2 p.m. General seating tickets are available at the door for \$5.

## MAILROOM REMINDER

The Mailroom staff would like to remind all employees that the Fermilab mail system is to be used for official business correspondence only. Please refrain from distributing items of a personal nature such as chain letters, jokes or catalogs via the Mailroom.

Also, beginning December 1, 1994 through December 30, 1994, holiday hours at the Mailroom will be 12 p.m. to 4 p.m., Monday through Friday. Happy holidays from the Mailroom staff.

## Congratulations

- To Cecilia and MIKE GRIMSON (FESS) on the adoption of their son Peter John Grimson. Peter was born on August 29, 1990. His adoption was finalized on November 3, 1994. Peter is welcomed home by his seven-year-old sister Samantha.
- To Tammie and BOB CARRIER (RD) on the birth of their son Tyler Shane Carrier. Tyler was born on November 4, 1994 at 2:18 p.m. at Central DuPage Hospital in Winfield. Tyler weighed seven pounds and was 19.25 inches long. This is the Carrier's first child.

Santa Claus will be making his annual visit to the Lab at Nalrec's Children's Christmas Party December 11, 1994 in Ramsey Auditorium. Children up to age eight are invited to enjoy cartoons, refreshments and games. The party will be held from 1 p.m. until 4 p.m. For more information contact JESSE GUERRA at x4305 or JOHN SATTI at x3088.

## WELLNESS WORKS

### BLOOD PRESSURE SCREENING

A blood pressure screening will be held Tuesday, December 13, 1994 from 11:30 a.m. to 1 p.m. in the Wilson Hall Atrium.

### STREET SAFE/STREET WISE

Kathy Regoni from Mutual Ground and Steve Wennmacher from the Aurora Police Department will discuss being street wise/street safe at a brown bag seminar December 14 from noon to 1 p.m. in the 1West Conference Room.

## BLOOD DRIVE

The Heartland Blood Center will hold a blood drive Monday, December 12 from 9 a.m. to 2 p.m. in the Wilson Hall Ground Floor Center Conference Room.

## Harper's Index

Number of "translators" commissioned last year by a Yale divinity student to convert the Bible into Klingon: **10**

Number of "offensive" words to be dropped from the 1995 Official Scrabble Dictionary: **100**

The Fermilab International Film Society presents movies from all over the world. Movies are shown at 8 p.m. Fridays in Ramsey Auditorium. All foreign films have English subtitles. Admission is \$3 for adults, \$.50 for children 12 and under. Coffee and cookies will be served on the second-floor mezzanine following each film.

■ December 9: *Mon Oncle*, comedy on the recurrent theme of the common man confronted with an increasingly

mechanized and depersonalized society. Academy Award, best foreign film. Jacques Tati, director, French, 1958, 116 minutes.

■ December 16: *Brother's Keeper*, an illiterate dairy farmer is accused of murdering one of his three brothers. The small community, sensing a miscarriage of justice, rallies to his defense. Joe Berlinger and Bruce Sinofsky, directors, France, 1993, 104 minutes.

## NALWO ACTIVITIES

A Scandinavian Dance Party is being held tomorrow, Saturday, December 3 at 7:30 p.m. at the Village Barn. Hear Michigan fiddler Karin Code and the Chicago Spelmanslag. Dance the night away for just \$5 per adult.

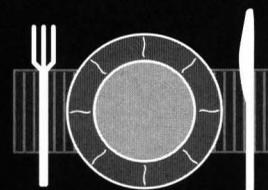
Visit festive Chicago on Saturday, December 10 on Nalwo's annual Christmas Shopping Trip. Enjoy the decorations on North Michigan Avenue,

browse or buy at the elegant Water Tower Place shopping mall; stroll on the "Magnificent Mile." A bus leaves the Users' Center at 11 a.m. and returns there by 5 p.m. The bus fare is \$2 per adult; children are free. Please register by December 8 with SELITHA RAJA at 708-305-7769 or BRENDA KIRK at 708-232-8648. Bring the family for a winter holiday treat in Chicago.

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## Chez Léon Menu

Lunch (Wed) \$8.00 • Dinner (Thurs) \$20.00  
Reservations: x4512



Wednesday, December 7 • Cream of potato soup, rouladen, spaetzle, glazed carrots, black forest cake

Thursday, December 8 • Garlic & saffron soup w/empanadas, paradise prawns Creole, rice w/pigeon peas, coconut rum souffle w/chocolate rum sauce

Wednesday, December 14 • Tortilla soup, spicy black bean & sausage calzone w/ corn salsa, fresh fruit w/lemon wedges

Thursday, December 15 • New England clam chowder, roast duck w/blackberry sauce, wild rice, vegetable medley, brandied pear & currant strudel w/brandy custard sauce

## NALWO ACTIVITIES

*continued from page five*

All women associated with Fermilab are cordially invited to attend Nalwo's Annual Holiday Coffee/Tea at NANCY PEOPLES' home on Thursday, December 15 from 10 a.m. until noon. Please bring an appetizer or dessert from your country or your holiday tradition to share. If you cannot easily bring food, please come anyway. Register young children for babysitting at Playgroup with TANUJA MISHRA at 708-406-0430 by December 12. For directions or more information, call Selitha or Brenda.

Nalwo and the Fermilab International Folk Dance group are pleased to invite everyone to a holiday dance party featuring the excellent music of Jutta and the Hi-Dukes, a Chicago band that plays a wide variety of international folk music. The party is at the Village Barn on Friday, December 16 from 7:30 p.m. until 11 p.m. Admission is \$5 per adult and \$1 per child. There will be many lively and lyrical dances, most of them simple enough to follow even for newcomers and novices. Children are welcome, but must be supervised (no babysitting is provided). For more information, call MADY NEWFIELD at 708-584-0825 or SUSAN JENSEN at 708-232-9089. See you there.—*Sue Mendelsohn*

# CLASSIFIEDS

### ■ VEHICLES

1984 Mitsubishi Cordia-L, 3 door hatch back, new tires, new mufflers and exhaust pipes, strong air conditioning, AM/FM cassette, runs well. Asking \$800. Call x2125 and leave a message.

### ■ MISCELLANEOUS

Simmons Beautyrest queen-size water bed with heater and frame. Excellent condition. Asking \$100. Call Bill at x4175 or 708-897-4892 evenings or weekends.

King-size water bed with mirrored headboard and 2 cabinets, 4 drawers underneath bed, \$350. Call Al at x3259.

Leer camper top, fits Chevy full-size (8 ft. bed) cab height, gray, \$400. Tool box fits S-10 models, black, \$50. Call Chuck at x3428.

1990 Formula Plus Skidoo snowmobile, 2 covers, low & high windshields, hand warmers, \$2,500 o.b.o. Call Ron

at x3011 or 708-897-9499.

In-wall gas heater, direct vent, 14000 BTU/hr in, 9800 BTU/hr out, natural gas, built-in thermostat, for walls up to 24" thick, 18" w x 28" h x 7" d, in box, never installed, \$175. Call Darryl at x2901.

Oak veneer entertainment shelves, 64" x 43" x 15", \$50; Soloflex w/butterfly & leg extensions, \$750. Call Greg at x3011 or 708-557-2523.

Twin bed: frame, box spring, mattress, maple bookshelf headboard, all for \$50. Call Ray at x3872.

### ■ REAL ESTATE

14'x60', 2 bedroom mobile home, Batavia. Call Karen Bohr at 708-879-7538.

### ■ LOST & FOUND

Lost glasses. If you have found a pair of brown glasses in a black case, please contact Ana at x5072, x8696 or x4914. Probably lost around November 17.

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submissions or ideas to  
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