

August 9, 1984

FERMI NATIONAL ACCELERATOR LABORATORY

# FermiNews

## FERMILAB FOSTERS TECHNOLOGY TRANSFER



Some Fermilab patent holders (left to right) Quentin Kerns, Bill Fowler, Carl Pallaver, Frank Cilyo, Carl Lindenmeyer, Frank Juravic, and Ken Bourkland. (See story for names of additional patent recipients.)

Fermilab is a leader in particle physics with the most powerful accelerator in the world that is also the only superconducting synchrotron in operation. Fermilab is also a leader in high technology. Construction and operation of the Energy Doubler has brought superconductivity from the laboratory work bench to the threshold of an industry. The momentum of the Doubler construction did much to stimulate the modern superconducting wire industry. At the same time many developments were perfected for cryogenic refrigerators and controls. As applications of accelerators increase, people look toward Fermilab for expertise in all fields, such as beam dynamics, rf magnet systems, and controls. Electronic systems devised at Fermilab are

finding important applications outside the field of high-energy physics. Some of the modules pioneered here have become commercially available. Since 1980, Fermilab's involvement in technology has also been consistently recognized with seven prestigious IR-100 awards.

There are still problems with taking technology developed at Fermilab and moving that technology out to users in industry and government. Fermilab is a single purpose national laboratory. Our basic mission is research in elementary particle physics and construction and operation of the accelerators and laboratory facilities necessary to carry out that research. It

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is not appropriate to compare Fermilab to a multi-purpose national laboratory like Argonne where a wide spectrum of different projects are underway including many that bear directly on problems in the industrial sector. Nevertheless, there is cause for reflection when the relative patent rates at Fermilab are compared to some other laboratories. For example, the patent rate at Brookhaven National Laboratory is something like ten times higher than that at Fermilab. The rate at Bell Laboratories may be as much as one hundred times higher. This difference in patent rate gives rise to the suspicion that some good Fermilab technology ideas may not be getting all the visibility that they deserve.

Patents are not the sole means of transferring technology. Fermilab's impact on the superconducting industry is well documented. Part of this comes about through the give-and-take of interaction with commercial vendors working with Fermilab. Only a few patents touch on this tremendous area of superconductivity technology that has been developed here.

In the last few years there has been an increasing national emphasis on technology transfer. In 1980, Adlai Stevenson of Illinois, was a sponsor of a law encouraging national laboratories to move their technology out into the private sector. At about the same time, Leon Lederman established the Fermilab Industrial Affiliates as a mechanism for facilitating this kind of transfer. Recently another law (Byah-Dole) has given patent rights to many universities and non-profit concerns working on federal government contracts. For example, universities with research going on at Fermilab can retain their own patents. This is considerably different than the situation at Fermilab where URA can only get licenses to exploit Fermilab patents on a case-by-case basis. The Department of Energy is now negotiating with the University of Chicago to extend the Byah-Dole privileges to Argonne. The same privilege might eventually be extended to Fermilab.

How does Fermilab identify interesting technology? In the past this has mostly been done either through individual employee awareness of the importance of a particular technology or by watching the

publications released by the Laboratory. Each Laboratory publication is screened by the Laboratory patent officer, Dick Carrigan, and a DOE patent attorney. Recently, an incentive has been added to increase awareness of technology. A \$50 award will be made for filing a Record of Invention form in addition to the \$50 an employee will receive once a patent application is executed.

A Record of Invention form is a one-page standard document available in the Publications Office, WH3E. The form is

DDE Form GC-213 (2/78) DOE PR-9-9		U.S. DEPARTMENT OF ENERGY OFFICE OF ASSISTANT GENERAL COUNSEL FOR PATENTS RECORD OF INVENTION		DOE Case No.
This Record of Invention is an important legal document and proper care in its early and complete preparation will save important time and inconvenience in the future. The Instructions* on the back should be read carefully before filling in the data.				
A. Inventor: 1. Name(s):		2. Title or Position:		
3. Employed by:		4. Permanent Address:		
B. Title of Invention (1*):				
C. Description of Invention (2*):				
D. Dates and Places of Inventions:				
1. Conception by Inventor (3*) _____ At _____				
2. First Sketch or Drawing _____ At _____ In Workbook _____ Page _____				
3. First Written Description _____ At _____ In Workbook _____ Page _____				
4. Disclosure to Others (4*) _____ At _____				
a. _____ 19 _____ At _____				
b. _____ 19 _____ At _____				
5. Completion of Model or Full Size Device _____ At _____				
6. First Test or Operation of Invention _____ At _____				
E. Results of Tests and Extent of Use of Invention (5*)		F. Names of all Persons Having Knowledge of Facts Stated Under D. and E.:		
G. Pertinent Reports (6*):		H. Other Closely Related Publications, Patents, and Patent Applications (7*):		
I. Rights of U.S. Government:		J. Licenses or Assignments:		
K. Contracts Involved:		Contract No.:		Date:
Contractor and Address:		Type of Contract: Unclassified   Restricted   Confidential   Secret		
L. Signature of Witness: _____ Date: _____		Signature of Inventor(s): _____ Date: _____		Date: _____
Forwarded by (8*): _____				Date: _____

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straightforward, mainly requiring the title of the invention plus a description, and some supporting material about where the invention is first mentioned. The Laboratory also requires that one of the witnesses to the "Record of Invention" be the employee's supervisor. This disclosure should be filed whenever there is some reason to feel that a new technology developed at the Laboratory may be patentable. Basically, employees should take an optimistic view of what constitutes patentability. In most cases complex questions concerning patent law should be left to patent lawyers. The Department of Energy  
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# FIRST FIDDLE SHOWCASE FEATURED HERE AUGUST 25

by Jane Green

Fiddle is the favorite, most widely played of all string instruments! The tremendous range of this colorful instrument will be evident in Fermilab's first ever Fiddle Showcase. On Saturday, August 25, at 8 p.m. in Ramsey Auditorium, the Arts Series will present three celebrated groups playing jazz violin, Indian violin, and mountain fiddling.



*Ralph Blizzard*

## AVS REGISTRATION FORMS DUE

Registration forms for the Illinois Chapter of the American Vacuum Society's Short Courses on Vacuum Science and Technology, to be held September 10, 11, and 12 at Fermilab, are due Friday, August 17. Programs include Pumping Hazardous Gases, Operation and Maintenance of Vacuum Pumping Systems, and Leak Detection.

For more information, contact Gerry Czop, at ext. 3981 or MS #316.

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The jazz violin tradition will be captured by the Chuck Cushionery Group. Cushionery plays a variety of jazz styles, although his work is principally influenced by Stephane Grappelli. In concert at Fermilab, Chuck Cushionery's trio will present the hot jazz of Ellington, Grappelli, and Gershwin, as well as the cool sounds of such greats as Miles Davis and Oliver Nelson.

Indian violinist L. Shankar is a virtuoso with "dazzling technique and extraordinary ability in the art of improvisation." Shankar performs the music of South India, which is characterized by raga and tala, melody, and rhythm. In the Showcase, Shankar will perform on a double-neck violin of his own design, a stereophonic instrument, the necks of which can be played individually or together. Accompanying the violinist will be Zakir Hussain, an exciting and accomplished tabla player.

Old-time fiddler Ralph Blizzard will perform his own Appalachian Mountain Long Bow style with the New Southern Ramblers. With his quartet, Blizzard will perform his unique style of clear and hard driving traditional music with a blues overtone. In 1982 Blizzard won the Grand Ole American Fiddler's Contest and went on to tour in Canada and to perform at the Knoxville World's Fair with the Green Grass Cloggers.

Don't miss this unusual and unbeatable evening of fiddling! Admission to the Showcase is \$6, and tickets are available at the Information Desk in the atrium of Wilson Hall, ext. 3353. Phone reservations are held for five days awaiting payment.

## Congratulations To . . .

Paul "Harley" (Tech Suppt. - Insp.) and Mary Sue Forester on the birth of their first child, Amber Wynne, on July 17, at Central DuPage Hospital in Winfield. Amber weighed 6 lbs. 5-1/2 oz and was 19-1/2 inches long. Tickled PINK also is Grandpa Paul (Plant Maint. - A/C) and Grandma Bert (EAD) with their first granddaughter.

# EMPLOYEES ENCOURAGED TO FILL OUT INVENTION FORMS

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has recently made arrangements for a DOE patent attorney to be available on the Fermilab site every Tuesday so that questions can be conveniently answered. It is often easy to convince yourself that some technology is not patentable or is not new. On the other hand, the "Record of Invention" constitutes an important flag to others in the Laboratory about this technology. It also serves as a positive indicator of a person's contribution to the Laboratory. It is often possible to usefully disseminate a technology even though a patent cannot be obtained.

Since 1970, 27 employees have had patents issued, some more than one. The names of the employees (present employees in boldface) and the titles of their patents follow: **M. Atac**, Quenching Gas for Detectors of Charged Particles; **K. R. Bourkland** and R. A. Winje, High Current Power Supply for Accelerator Magnets; **F. Cilyo**, Bidirectional Power Amplifier; **J. R. Heim**, Low Heat Conductant Temperature Stabilized Structural Support and Method of Eliminating the Training Effect in Superconducting Coils by Post-Wind Preload; **H. Hinterberger**, A Non-Tracking Solar Concentrator with a High Concentration Ratio and Radiant Energy Receiver Having Improved Coolant Flow Control Means; **F. Juravic**, Improved Gaseous Leak Detector; **C. R. Kerns**, Current Level Detector; **Q. A. Kerns**, Stabilization System for Resonant Cavity Excitation and High Power Radiofrequency Attenuation Device and **Q. A. Kerns** and **H. W. Miller**, High Power Radiofrequency Attenuation Device; **C. W. Lindenmeyer**, Shuttleless Toroid Winder and Locking Mechanism for Indexing Device; A. W. Maschke, An Electrostatic Accelerated-Charged Particle Deflector; **P. O. Mazur** and **C. B. Pallaver**, Adjustable Expandable Cryogenic Piston and Ring; R. F. Nissen and **E. B. Tilles**, Resistive Coating of Long Ceramic Tubes and Indium-Sesquioxide Vacuum Gauge; **C. B. Pallaver** and M. W. Morgan, A Combination Vacuum Pump-Out and Pressure Relief Valve and Cryogenic Expansion Machine; A. Roberts, Image Dissecting Cherenkov Detector for Identifying Particles and Measuring Their Momentum; **J. A. Satti**, Superconducting Magnet and Method of Constructing a Superconducting Magnet; R. Sheldon and B. P. Strauss, Method for

Centering and Restraining Coils in an Electromagnet; B. P. Strauss, A Method of Fabricating Composite Superconductive Electrical Conductors; and B. P. Strauss, P. J. Reardon, and R. H. Remsbottom, Method of Fabricating Composite Superconducting Wire; **C. A. Swoboda** and A. W. Maschke, High Speed Analog to Digital Converter; P. C. Vander-Arend and **W. B. Fowler**, Superconducting Magnet Cooling System; **R. J. Yarema**, An Apparatus for Controlling the Firing of Rectifiers in Polyphase Rectifying Circuits.

The Laboratory has also established a patent survey group. The group includes M. Awschalom, S. Baker, G. Biallas, R. Ducar, R. Fast, J. Finks, I. Gaines, Q. Kerns, C. Lindenmeyer, P. Mantsch, B. Miller, R. Niemann, T. Peterson, R. Shafer, J. Simanton, and J. Zagel. These people have gone over recent technology development within the Laboratory and compiled a list of 100 areas of technology development. The list is being refined and documentation is being gathered for the technologies. Discussions are also underway on how this technology can be widely disseminated with a number of possibilities under consideration.

Fermilab remains first and foremost a single-purpose Laboratory with a mission to investigate very basic science. But, modern science does spawn technology. Fermilab employees need to be aware of this technology and ways to use it outside of particle physics. It would be nice to find an application for superconductivity with the same impact as microwave technology where every home now needs a microwave oven. A \$5 license fee for a superconducting toothbrush from every household in America could make a profound change in the Fermilab budget. In lieu of this windfall, Fermilab can be proud that it has helped to create an entirely new industry in superconductivity with an annual business volume somewhere over a hundred million dollars and a potential for billions.

The Inventors' Council, a non-profit association of inventors helping inventors, will hold workshops in August and October on different aspects of inventions. For further information, contact Rene Donaldson, ext. 3278.

CLASSIFIED ADS TO BE DISTRIBUTED WITH **FERMINES** AUGUST 9, 1984

FOR SALE

- AUTOS:
- 1979 BLACK OLDSMOBILE 88 ROYALE. 350-V8, P/S, P/B, P/W, A/C, AM/FM stereo 8-track cassette, wire wheels, trunk release, 46,000 mi., \$5,000. Call Bob, ext. 4207 or 231-7666.
- 1978 2-DR. 6-CYL. CHEVY MONZA HATCHBACK. AM/FM, P/S, new tires, 4-spnd man. trans., 43,000 mi., \$1,850. Call Carl, ext. 3719.
- 1978 5-SPEED SUBARU STATION WAGON. 88,000 mi., 40 mpg regular gas, very good condition, \$2,000. Call Curtis, ext. 4454.
- 1978 MGB CONVERTIBLE. No repairs needed, excellent condition, 38,000 mi., \$4,000. Call Curtis, ext. 4454.
- 1977 VOLARE STATION WAGON. New tires, new battery, very reliable, very clean, \$1,500 or best offer. Call Carlos, ext. 4400 or 879-5681 evenings.
- 1974 RUST BROWN PONTIAC LEMANS. Good condition, runs well, \$600. Call Dave, ext. 3893 or 4533, or 897-9355 after 5 p.m.
- 1974 VOLKSWAGON. Automatic stick, many new parts, needs work. All offers considered. Call 879-7530 or 393-1198 evenings.

MISC:

- 1980 HONDA XR80 MINIBIKE. \$370. Call Bill Williams, ext. 3169.
- 1978 HONDA CB 400A. New battery, windshield, road bars, many extras, excellent condition, 13,000 mi., \$600 includes storage cover. Call Norm Engler, ext. 3054 or 227-0691.
- JVC STEREO SYSTEM. Includes 30 W receiver w/built-in equalizer, belt drive, semi-automatic turntable, cassette deck w/Dolby, Omega 300 speakers, head phones, and record cleaner, \$520 negotiable. Call Mark, ext. 4419 or 896-8430.
- TECHMAR PROTOZOA. IBM PC prototyping card. Best offer. Call Tony, ext. 4414 or 4465.
- ADMIRAL 13 cu. ft UPRIGHT FREEZER. \$30. Call Robert E. West, ext. 3817.

For the following items call Don Trentlage, ext. 4673. Sears Lady Kenmore avacado like-new range, \$250; swings, merry-go-round, climber, and slide, \$20 ea.; Sears radial tire GR78-15, \$15; storm door, needs work, \$10; 4-in. plastic perfect flexible pipe, 200 ft, \$30; 2 rolls fencing, \$10 ea.; Sears tire balancer and weights, \$150.

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FOR SALE -cont.

LARGE TRACTOR TIRE FOR SANDBOX. \$10. Call W. Williams, ext. 3169 or 325-4608.

BABYSITTING SERVICES. A reliable and experienced mother will do babysitting part time or full time (small infants pref.) at her Warrenville home, outside Fermilab east gate. Call 393-3241.

WANTED:

USED HOME STEREO EQUIPMENT. Call Tony, ext. 4414 or 4465.

TWO OR THREE-BEDROOM HOUSE OR APARTMENT TO RENT. In Fox Valley area for 5-7 months. Call Ed Barsotti, ext. 4061 or 879-1245.

\*\*\*\*\*SPECIAL NOTICE\*\*\*\*\*

On Monday, August 13, Emergency Services will begin issuing new Fermilab vehicle stickers. For the convenience of employees, the initial issuance of the new stickers will be done from several locations on the following schedule:

Monday, August 13, Site 38 Portakamps - 8 a.m. to 11 a.m. and Wilson Hall - noon to 4 p.m.

Tuesday, August 14, Industrial Center Bldg. - 6 a.m. to 10 a.m. and Wilson Hall - 11 a.m. to 2 p.m.

Wednesday, August 15, Users Center - 8 a.m. to 11 a.m. and Wilson Hall - noon to 4 p.m.

Thursday, August 16, Wilson Hall - 8 a.m. to 4 p.m.

Friday, August 17, same as Thursday.

Beginning on Monday, August 20, all vehicle stickers will be issued from the Communications Center. The cut-off date for honoring the old stickers will be September 4, 1984. Employees and visiting scientists must bring their ID cards when picking up stickers.

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