



Quarks: A Christmas Lecture by Leon Lederman

Quarks: A Christmas Lecture by Leon Lederman will be televised nationally on the Learning Channel as the premiere broadcast of the Christmas Lecture Series being produced by the William Benton Broadcast Project of the University of Chicago. Modeled after the Christmas Lecture that has been a tradition in England for more than 125 years, the annual series is produced in association with the Smithsonian Institute.

The Christmas Lecture Series, a new programming approach to science for young people and their families, is a direct response to the growing crisis of science illiteracy that is gripping the nation. The series offers lively and inspiring dialogues between superstars of science, many of them Nobel laureates, and small groups of ethnically diverse teenaged students. Each session, held in an intimate environment, provides students with a unique chance to meet and exchange ideas with noted men and women of science.

The premiere telecast features Leon Lederman, Fermilab Director Emeritus, who establishes a warm, straightforward dialogue with a group of 14 students at the Illinois Math and Science Academy.

Leon's topics range from subatomic quarks and leptons to the big bang and expanding universe. He notes that the problems encountered in studying "inner space" of particle physics and the "outer space" of cosmology are beginning to look the same. It may be that the laws of nature that control and order both worlds are identical.



Dr. Leon Lederman, 1988 Nobel laureate in Physics and Fermilab Director Emeritus, presents science in a charming and understandable manner to a group of students at the Illinois Math and Science Academy in *Quarks: A Christmas Lecture by Leon Lederman*, which will air in Chicago on Sunday, December 23 at 12:00 noon (CT) on WTTW.

Displaying charm and wit, and his special facility to communicate and teach, Lederman draws connections between the every day world we live in and the unfamiliar territory of the particle physicist. In the process, he makes the "intangible" tangible, and the "submicroscopic" bigger than life.

At one point, a young girl asks: "Have you ever seen a quark?" Lederman replies: "I never saw a quark, but I believe they exist. I never saw an atom, but I believe atoms exist. One way to think about it is, you hear a loud noise in the sky and rush outside. You see a white line in the sky, you say 'A jet passed, the 747 that's going to land at O'Hare at 7 o'clock.' Did you see the jet? No, but you heard the noise and saw

the white line in the sky. And you deduced the existence of the jet."

The lecture is not just about science. It is about Leon Lederman, himself. The award-winning physicist describes how he first became interested in science. He recalls his childhood and the time his father gave him a book about Albert Einstein in which he compared scientists to detectives solving mysteries. This inspired Lederman to choose science as his lifetime career.

He also recalls how he first studied chemistry, before becoming interested in physics. "Physics looked like more fun than chemistry, and didn't smell as bad," he tells his audience.

Continued on page 3

Happy holidays

While visions of sugar plums danced in their heads...

With sparkling eyes and enough wonder and enthusiasm to touch even the heart of Scrooge, the children from the Children's Center arrived to help decorate the Fermilab Christmas tree which traditionally graces the atrium of Wilson Hall.

To most of us the tree seems to almost magically appear each holiday season, gaily decorated and ready to boost our holiday spirits, but a lot of effort is put forth behind the scenes by many fellow employees to make the magic happen.

This year's 25 feet tree was hand selected by **Bob Hall** (BS/Roads & Grnds.) in Montelo, Wisconsin and picked up and delivered to the Lab shortly before Thanksgiving by **Harold Wilkinson** (BS/Dist./Rcvg./Ship.). Roads and Grounds crew members **Cace Chandler**, **Jim Kalina**, **Rich Kujath**, **Lonnie La Sourd**, **Bryan Needham**, **Kenny Parker**, **John Plese**, **Dave Shemanske**, **Larry Thomas**, **Fred Torres** and **Steve Whiteaker** were in charge of set up which involved structuring support cables and base support. **Sue Grumboski** waters and maintains its fresh appearance.

Charlotte Smith (BS/FM/Comm./Mail) was asked by **Chuck Anderson** (BS/Section Office) to chair the deco-



Children's Center preschoolers add handmade ornaments to the Christmas tree.

rating committee. Serving on that committee were **Rose Gatze** (TS/Eng.), **Roy Jeffries** (CD/Central Comptg.), **Connie Kania** (Directorate), **Alma Karas** (BS/Contracts), **Ann Miller** (BS/Section Office), **Ruth Salach** (DOE), **Sylvia Trevino** (CD/Div. Office) and **Lorraine Walter-Smith** (BS/Dist./Rcvg./Ship.). Assisting the committee were Building Management staff members **Ray Fonseca**, **Jorge Hernandez** and **Joe Trevino**.

Charlotte commended all those who helped with the decorating by saying, "Everyone pitched in and worked hard and we got done in record time."

In keeping with the theme of this year's Nalrec Christmas Dinner-Dance, "An Old Fashioned Christmas," the tree is decorated with glistening pearls, silvery snowflakes, colorful paper chains, shiny glass balls and handmade ornaments.

In memoriam

1936 - 1990

Leslie Oleksiuk (AD/Linac) passed away Friday, November 23, 1990 while vacationing in Florida. Les was a member of the scientific staff at Fermilab for 21 years.

Les began his Fermilab career on March 17, 1969. He was first em-

ployed in the Beam Transfer Group doing computer designs and studies for magnets and beam transport systems. Over the years, he has worked in the Tevatron, Accelerator Theory and Linac Departments. In the last few years, he was active in computer designs and modelling of the accelerating structure for the Linac Upgrade program. His work contributed to the design of many systems now operating

at Fermilab and to technical papers on computer modelling of accelerator systems.

A memorial service will be held for Les at Toon Funeral Home, 4920 Main Street, Downers Grove, Illinois on Saturday, January 5, 1991 at 1:30 p.m.

Les is survived by his wife, Lucy; a daughter, Lisa and a son, Karl.

Planning for the future: staff attends DOE conference

Chuck Ankenbrandt (Accel. HQ Staff), **Regina Rameika** (RD/Site Oper. Dept.), **Victoria White** (CD/DA Support), **Stanka Jovanovic** (LS/Ed. Office), **Dennis Theriot** (Directorate), **Arlene Lennox** (AD/Linac), **Dianne Engram** (LS/EOO) and **Marge Bardeen** (LS/Ed. Office) attended the DOE Review of Laboratory Programs for Women, held at Argonne National Laboratory on November 16, 1990. Presentations were given by Regina Rameika on preliminary results of a survey of Fermilab women with at least a bachelors degree; by Marge Bardeen on strategies for recruiting female students for Fermilab precollege programs and by Arlene Lennox on her experience serving as a role model and mentor for young women. All three presentations were well received.



Lederman (continued from page 1)

Throughout the discussion, Lederman also presents a brief history of science. How some of the questions the ancient Greeks asked are still asked today. Although we have come a long way in answering these questions, Lederman mentioned some of the riddles that will be left for future generations to solve.

Lederman also touches on the crisis in science education today. He speaks of why the general population needs to know about the ozone layer, toxic wastes and future energy systems in order to make choices in a world that is increasingly involved with and affected by science and technology.

Lewis Freedman, director of the William Benton Broadcast Project of the University of Chicago and Executive Producer of *The Christmas Lecture Series* says, "In past decades, there were many prominent scientific role models for children to look up to. Thomas Edison, Albert Einstein, Jonas Salk and the Mercury, Gemini and

Apollo astronauts all gained national prominence unmatched by any scientist in recent years. Today, these scientist heroes have been replaced by the superstars of sports and movies." One of the goals of the series is to introduce young people to the superstars of science.

The finishing touch

Bill Newcomb (BS/FO-Carp.) puts the finishing touches on the newly installed plaque dedicating Fermilab's prairie interpretive trail in honor of Margaret Pearson, long-time manager of the Public Information Office.

The Margaret Pearson Memorial Trail officially opened June 7, 1989. The trail circles a plot of land which is part of the prairie restoration project and is accessible to the public during daylight hours.

The Fermilab Carpenter Shop was responsible for installing the plaque located at the head of the trail.



Art and Lecture Series

New York Chamber Soloists

Saturday, January 12 at 8:00 p.m.
Admission \$12

Seven outstanding individuals performing chamber music with a genuine sense of interaction that will leave you completely charmed: this is the promise of the **New York Chamber Soloists**. This internationally acclaimed ensemble of strings, winds and piano brings its lively and vibrant playing to Ramsey Auditorium on Saturday, January 12 at 8:00 p.m. These musicians have long been recognized for their diverse, yet always impeccably performed repertoire, and this concert will be no exception. The program will feature Mozart's Trio for Clarinet, Viola and Piano; Ravel's Sonata for Viola and Cello; Poulenc's Trio for Piano, Oboe and Bassoon; Milhaud's *Suite d'apres Corrette* for Oboe, Clarinet and Bassoon and Schumann's Piano Quartet.

The **New York Chamber Soloists** is a group of distinguished virtuosi who have been performing together since 1957, appearing in Europe, Asia, South America and the South Pacific, as well as in all the major chamber music series throughout the United States. Members of the ensemble include violinist Hamao Fujiwara, guest artist with the Toronto Symphony and the Rochester Philharmonic; violist Ynez Lynch, soloist with the Musica Aeterna Orchestra and the Festival Orchestra of New York; cellist Alexander Kouguell, Principal Cellist with the Clarion Music Society of New York and former Principal Cellist with the Baltimore Symphony; Melvin Kaplan, oboe, founder of the New York Chamber Soloists and Vermont Mozart Festival; clarinetist Allen Blustine, past performer with the New York Philharmonic and the Orpheus Chamber Orchestra; Mark Goldberg, bassoon, a member of the New Jersey Symphony and past guest performer with the

Metropolitan Opera; and Elizabeth Metcalfe, harpsichord/piano, frequent performer with the Vermont Symphony and the Vermont Philharmonic Orchestra.

Indoor Radon, Risks – Concerns – Solutions

Dr. Thomas B. Borak, Professor, Colorado State University
Friday, January 18 at 8:00 p.m.
Admission \$3

Radon gas can accumulate in your home and office as well as in the water that you drink. It is tasteless, odorless, invisible and a serious health hazard for the entire family, estimated to cause 20,000 deaths from lung cancer annually. What can you do to detect it? To get rid of it? To prevent the problem from coming back? **Indoor Radon, Risks – Concerns – Solutions** is the topic of Dr. Thomas Borak's lecture in Ramsey Auditorium on Friday, January 18 at 8:00 p.m.

Dr. Borak's interest in radon began with a search for ways of protecting uranium miners. From there, his research evolved into the study of radon in domestic environments. As a Professor in the Department of Radiological Health Sciences at Colorado State University, Dr. Borak has worked extensively on the characterization and measurement of ionizing radiation. His distinguished career has also included work at Argonne National Laboratory; CERN in Geneva, Switzerland and Fermilab. As a result of his extensive research, Dr. Borak has published numerous scientific papers, a large number of which concern radiation as a health hazard.

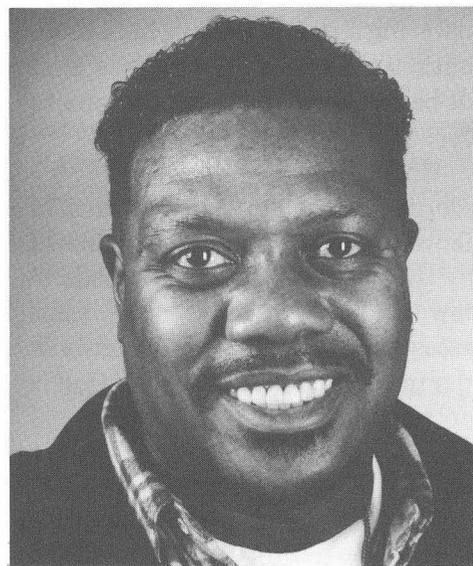
Dr. Borak's lecture will explore the question of whether the current outburst of public concern about radon is legitimate or merely a misinterpretation of scientific information. Also dis-

cussed will be methods of estimating the risks of having high radon levels in your home. As Dr. Borak summarizes research related to understanding how radon is transported into buildings, he also offers contemporary solutions to the dilemma.

As a resident of an area where radon is a very real and problematic issue, this lecture should be of great interest.

Tickets for the Arts and Lecture Series events are not refundable. For further information or phone reservations, call 708-840-ARTS weekdays between 10:00 a.m. and 12:00 noon or 1:00 and 4:00 p.m. Phone reservations are held for five working days but will be released for sale if not paid for within that time. All telephone orders the five days immediately preceding a performance must be paid for by credit card. —Janet MacKay

Why is this man smiling?



There are a lot of ways to show pride in one's place of employment, but **Paul Gentry** (TS/Supercon. Magnt.) has found a truly unique way to do it. Turn to page 7 to see how.

Milestones



Ten-year service awards were presented by **Ken Stanfield**, representing the Directorate, at a luncheon held Friday, November 16. The recipients were (row 1, l. to r.) **Mark Rooney, Mike Petkus, Doris Thurston, Mark Bodnarczuk, Judy Sabo, Mario De Anda Gonzalez**, (row 2, l. to r.) **Douglas Wesemann, Rob Reilly, Lisa Des Jardine, Jerry Szabo, Ruth Pordes**, (row 3, l. to r.) **Paul Gentry, Fred Schultz, Jeffrey Spencer, Richard Smith, Mary Barath**, (row 4, l. to r.) **John Voirin, Dennis Schmitt, John Barilla, Mike Nurczyk, Craig Olson, Todd Nebel**, (row 5, l. to r.) **Randy Zifko, Steve Gould, Don Nurczyk, Jim Rife, Steve Lusted, Ivan Stauersboll**, (row 6, l. to r.) **Tomus Sengmanivong, Jorge Morfin, Ken Stanfield, Mark Wegman, Dave Burk and Edie Loskot**.

Education Office

Ruth Ann Verell, Deputy Director University and Science Education Programs, DOE, Office of Energy Research, recently visited the Fermilab Education Office. In addition to attending an informal review of the precollege education programs, Ms. Verell visited a program planning meeting. The agenda of the meeting included working on the development of the Fermilab component of the Chicago Science Explorers Program. Pictured here are **Marge Bardeen**, Education Program Manager, and Ms. Verell reviewing some of the educational materials developed at Fermilab.



Applause Applause Applause

Marge Bardeen (LS/Education Office) was elected as Chairman of the Board of Trustees for the College of DuPage on November 14, 1990. She will hold this office for one year. Marge was elected to serve a six-year term on

the College of DuPage Board of Trustees in 1987. The Board consists of seven members. Six are elected officials and one is a student representative. Last year, Marge was Vice Chairman of the Board and also chaired the

Board of Trustees Staff Committee, which conducted staff negotiations.

Recycling:

It all adds up to more years for our landfills

"This space reserved for the next 100 to one million years."
This, in effect, is what we say every time we bury certain materials in our landfills.

The waiting game

When we bury this in a landfill . . .

We wait this long for it to decompose . . .

Tin can



100 years

Aluminum can



500 years

Glass bottle



as much as 1,000,000 years

Source: *Book of Lists 2*

By recycling these materials instead of throwing them away, we can save valuable space in our landfills . . . and add years to their useful lives.

How long can we wait for our garbage to disintegrate?

Time is running out. Some industry experts predict that over half of our country's landfills could reach capacity within 10 years. The best way to "buy more time" for our landfills is to recycle. The best time to start . . . is now.

Did you know . . . ?

As much as one-fourth of what we would otherwise throw away can be recycled into useful products.

Retirement Announcement



Gerald DiSandro (AD/Booster) will be retiring from the Laboratory at the end December 1990 after 11 years of service. While at the Lab, Jerry worked in the Booster Accelerator Group "with a lot of dedicated people." Jerry has been involved in many projects during his 11 years at the Lab, but counts his work on the energy saver as his most exciting project.

During his tenure at the Lab, Jerry has been active in the Car Club and the Garden Club. After retirement, he hopes to spend some of his leisure time traveling, fishing and golfing.

Recycling information available

According to Eric Keeley, Recycling Coordinator for DuPage County, "Recycling is a rapidly changing field and is becoming an increasingly more important method of waste disposal. Materials that are difficult or impossible to recycle today may be commonly collected in the next couple of years through curbside, dropoff and commercial recycling programs."

As recycling becomes more and more popular, the need to get the word out about how to properly prepare materials for collection programs is clear. The DuPage County Department of Environmental Concerns publishes a

quarterly publication titled, *DuPage County Recycling Yellow Pages*, which answers this and other questions regarding recycling.

This publication is available free of charge to all Fermilab employees, users or visitors. It may be picked up at the information table outside of the Public Information Office located at WH1W. Also available on the information table are three other brochures from the DuPage County Department of Environmental Concern regarding landwaste recycling, composting and disposal of hazardous waste.

Quality Corner

"Quality is an achievable, measurable, profitable entity that can be installed once you have commitment and understanding and are prepared for hard work."

Philip B. Crosby, *Quality is Free*.

If you have a suggestion on how to improve the quality, efficiency, reliability or effectiveness of a Laboratory service or operation, please send it to:

Mark Bodnarczuk
MS 200 or
BITNET Bodnarczuk @FNAL.

Give it your energy

Protect your home from outside heat and cold

Millions of single-family homes in the United States still are not adequately protected from outside weather, according to Department of Energy estimates.

Here are some tips to make sure yours is not one of them.

Draft-proof windows, doors, and other air leaks.

- **Test your windows and doors for air tightness.** Move a lighted candle around the frames and sashes of your windows. If the flame dances around, you need caulking and/or weather-stripping.

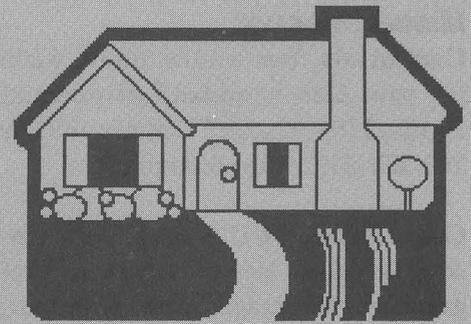
- **Caulk and weatherstrip doors and windows.** It's easy to do yourself. Caulking and weather-stripping materials cost about \$25 for the average house (12 windows,

2 doors). Savings in annual energy costs could amount to 10 % or more.

- **Look for other air leaks** through walls or ceilings. Close fireplace dampers; seal cracks or holes; fill gaps in insulation.

- **Install storm windows.** Combination screen and storm windows (triple-track glass combination) are the most convenient and energy efficient because they can be opened easily when there is no need to run heating or cooling equipment. Alternatives range from a heavy-duty, clear plastic sheet on a frame (about \$10-\$15 each), to clear plastic film which can be taped tightly to the inside of the window frames (a total of about \$10 for the average home).

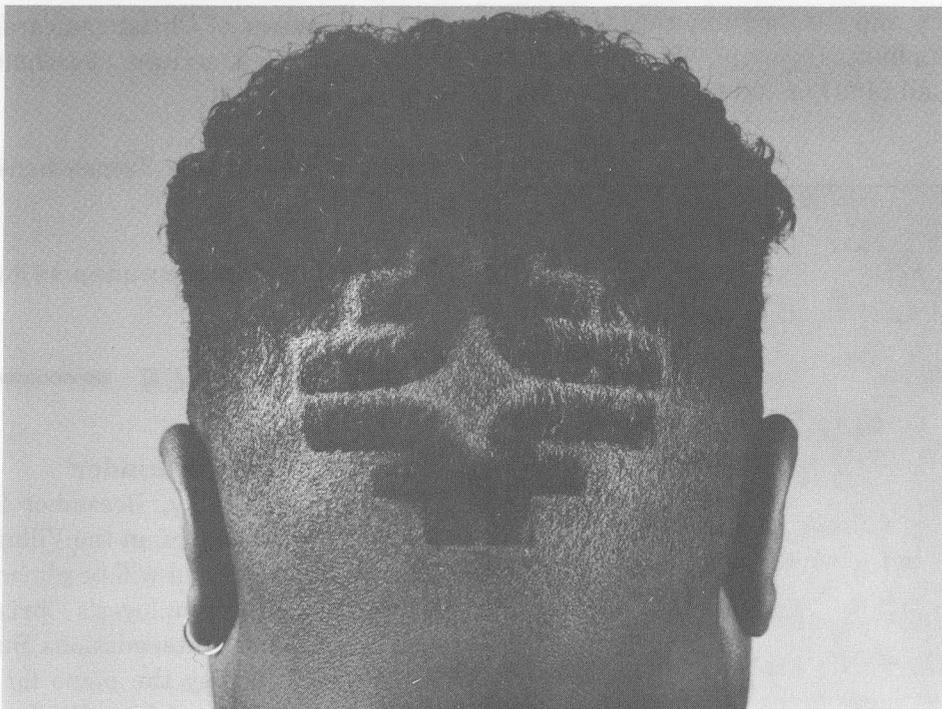
Savings in reduced space heating costs for any of these types of protection can amount to as much as 15% a year.



If every gas-heated home were properly caulked and weatherstripped, we'd save enough natural gas each year to heat about 4 million homes.

Adding storm doors in very cold or very hot climates could increase these savings.

Tips for Energy Savers, DOE/CE-0231, is available through the DOE Conservation Referral Service, P.O. Box 8900, Silver Spring, MD 20907 or by calling 800-523-2929.



Paul is sporting a new hair design, created by Walter of Gollie's Barber Shop in Chicago, which features the Fermilab logo. Paul said, "I've seen a lot of guys with basketball logos and such, so I said, 'Why not the Lab logo?'" Paul showed the barber his Lab ID and asked if he could reproduce the logo. Walter took the challenge, and in only ten minutes had reproduced the design. Paul is beginning his eleventh year as a Fermilab employee, and obviously, he likes where he works.

Classified Ad\$

Miscellaneous:

Cockatiels, two mated pairs, \$100 per pair. Also, hand-fed **Lutinos** and **Pieds**, \$75 each. Call Don at x4881 or 708-557-2397 after 5:00 p.m.

Commodore 64-C, 1541-II computer & disk drive, lots of software (programming languages, word processor, utilities, etc.), printer and printer interface, \$350 or best offer. Call Mike at x4518.

Gold color silverware, 144 pcs. set, solid wood case, 12 pcs. to every 1 setting plus 12 pc. serving set, 1968 Thailand, Bangkok, \$400 or best offer. **1968 Canon 35 mm camera with case and flash**, Hanimex F2.8 135-55 mm zoom lens, Soligor auto tele converter 3x and 2x, Soligor F3.5 35-105 mm zoom lens with macro, Soligor F1.8 50 mm lens, entire system \$300. Call x 3585 or 708-553-0128.

Ladies ski wear: Bright yellow jacket, sz. med. \$10. **Navy blue and pink jacket w/navy bibs**, sz. 12, \$25. **Light blue/royal blue jacket and matching bibs**, sz. med. \$30. **Kelly green bibs**, sz. 14, \$10. All clean and in good condition. Call Carolyn at x3315 or 708-879-8957.

Paintings and etchings, various quality, priced from \$100 to \$500. Call A. Visser at x 3273 days and 708-232-4023 after 6:00 p.m.

Zenith Supersport PC-compatible laptop computer, 8 MHz 8088 with 8087co-processor, dual 720K drives, battery, charger and carrying case. \$950 or best offer. Call Tom at x3441.

Bernina 830 sewing machine, straight stitch, zig-zag, blind-hem, stretch stitches, overlock and decorative stitches. excell. cond., \$475. **Bernette 234 serger**, rolled hem and blind hem attachments included, excell. cond., \$400. Call Eve Kovacs at x2400 or 708-985-1419.

Motorized vehicles:

1984 Honda Prelude, silver, 5 spd., sun roof, AM/FM cass., A/C, no rust, well maintained, 84,000 mi., new tires, \$4,500 or best reasonable offer. Call Ann at x4438 or 708-513-5279 after 6:00 p.m.

Real estate:

Townhouse for rent in Warrenville, Thornwild subdivision, 3 bdrms., living and dining rms., eat-in area, all appliances, garage, \$800 per month. Call x4597 or 708-983-0279 evenings.

Your first break

Someone saw something in you once. That's partly why you are where you are today. It could have been a thoughtful parent, a perceptive teacher, a demanding drill sergeant, an appreciative employer or just a friend who dug down in his pocket and came up with a few bucks.

Whoever it was had the kindness and the foresight to bet on your future. Those are two beautiful qualities that separate the human being from the orangutan.

In the next 24 hours, take 10 minutes to write a grateful note to the person who helped you. You'll keep a wonderful friendship alive.

Matter of fact, take another 10 minutes to give somebody else a break. Who knows? Someday you might get a nice letter. It could be one of the most gratifying messages you ever read.

—Anonymous

Average number of Christmas cards received by an American household each December : 26

Market value of three French hens: \$15

Market value of seven swans a-swimming: \$7,000

Nalrec News

Christmas Party reminder

This evening, Friday, December 21 from 5:15 to 10:00 p.m. in the Village Barn, Burgundy Road will be playing for the NALREC Employee's Christmas Party. During intermissions, **Sue Grommes** will play the piano for a Christmas carol sing-a-long. Food and refreshments will be served.

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The deadline for the Friday, January 18 *FermiNews* is Wednesday, January 9. Please send your article submissions or ideas to the Publications Office.