



FERMILAB FRIENDS FOR SCIENCE EDUCATION exists to support innovative science education programs.

Global Warming Summit at Fermilab

Local science teachers will not soon forget leap day of 2008: many found inspiration at the Global Warming Summit that took place that day in Fermilab's auditorium.

Designed as a high-level professional development day for secondary science teachers in Chicago's western suburbs, the event drew over 500 teachers from as far away as Peoria and Wisconsin.

They came to Fermilab to hear a panel of scientists discuss the very latest research on climate change.

The night preceding the summit, Dr. David Carlson spoke to the general public, introducing topics about which summit participants would learn more the following day.

Carlson was director of the International Programme Office for the International Polar Year, an enormous scientific study of the Arctic and Antarctic polar regions involving thousands of scientists in the biological, physical and social sciences.

Carlson had oversight of the more than 200 projects under the IPY umbrella. His Thursday night talk asked key questions: What do we know about global warming? How do we know it? What should we do about it? After speaking for an hour and a half, Carlson stayed on stage for another hour to take questions from the audience.

The following day summit participants had a chance to learn about key topics in more depth. Carlson began the day with a talk about "Exploring the Polar Regions at a Critical Time." Dr. Martin Jeffries of the NSF spoke next on "The Changing Arctic and Global Consequences." Frank Niepold of the NOAA offered thoughts on how to incorporate climate literacy in the curriculum by interweaving it with physics, chemistry, biology and earth science units. Dr. Jen Baeseman spoke on involving teachers and students in collecting data and helping others become involved in climate change science.

In the afternoon Carlson concluded the day's talks

by asking "What Next?" He summarized the challenge of climate change and proposed possible solutions to problems. A panel discussion and questions from the audience closed out the day.

The West Suburban Science Supervisors, a group of high school science department chairs, organized the event. Bill Grosser, a member of the group and an FFSE board member at the time, first learned of Carlson's work when he spoke at Illinois Benedictine College a year ago.



Grosser was so excited by Carlson's talk that he decided to contact him and ask if he would address the west suburban educators. Louise Huffman, a retired Naperville teacher now working for Andrill, a collaboration drilling in Antarctic ice to study the preserved record of climate change, was instrumental in connecting Grosser with Carlson.

Grosser says that teachers are still talking about the summit. They have raved about the high level of the presentations and expressed gratitude that the speakers released their PowerPoint presentations for classroom use. Clearly, the day inspired teachers and gave them the kind of solid information they need to teach effectively.

While Grosser is grateful to Fermilab staff for videotaping the event, smoothing the day's logistics, and providing such touches as a memorable Chez Leon dinner for the presenters, FFSE's Susan Dahl is grateful to Grosser for making a suggestion about how to connect with teachers and help Friends fulfill its mission of supporting innovative educational opportunities.

It was a leap day to remember.

Videos, podcasts, and links to supplementary material are available at <http://gwsommit.org/> and in the Streaming Video Archive at http://www-visualmedia.fnal.gov/VMS_Site_2/index.shtml

Information about the International Polar Year is available at <http://www.ipy.org/>.

So you think you're fast? Come run with the protons!

In the fall of 2009 FFSE will present a Fermilab 5K run/walk to be known as "Run with the Protons." The event is still in the early planning stages, but with help from FFSE members, the day will provide opportunities for enjoyment and education for all who attend.

Michael Knapp, a runner and FFSE board member, and an organizing committee have met to outline this new event and determine what will be needed to ensure that the day is a success.

The event will be a 5K run/walk to allow people at any skill level to participate. Awards will be given in various age divisions, and racers will receive T-shirts and goody bags to commemorate the day. The race is planned for 8:30 a.m. on a Saturday in September, with the date still to be finalized. Activities will be available at Wilson Hall to engage family and friends who are not sweating it out on the racecourse, and bands will provide live music throughout the day.

The race will be a wonderful opportunity to welcome visitors to Fermilab and get them excited about the science and the educational offerings here!

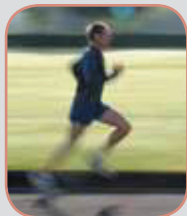
BUT the event cannot happen without help from FFSE supporters. Please consider volunteering!

People are needed to oversee the following areas:

- **Sponsorship and Donation:** Seek material, monetary or service support.
- **Logistics:** Prepare the course, materials, and personnel.
- **Advertising/PR:** Get the word out about FFSE and the race through written materials.
- **Awards:** Contact an award supplier; organize a simple award ceremony.
- **Volunteers:** Determine number and types of volunteers; help find and oversee them.
- **Water and Food:** Manage food stations before, during, and after the race.
- **T-shirts & Swag:** Coordinate race T-shirts and swag bags for participants.
- **Activities:** Find and coordinate volunteers for science activities for children.

The race is a year away, so there is ample time to prepare if we begin now. If you would be willing to coordinate any of these areas, please contact Mike Knapp at mknapp7@sbcglobal.net as soon as possible.

This is a great opportunity to show support for science and future scientists of America!



Science Chicago LabFest 2008



Michael Cooke helps set up an acceleration experiment.



David Schmitz assists with the gravity accelerator.



David Harding explains physics principles to a participant.



Girls roll objects to learn about moment of inertia.

On September 20, a team from Fermilab loaded up FFSE's new van with ramps and balls, skateboards and eddy tubes, and drove off to the Museum of Science and Industry to participate in Science Chicago's LabFest, the kick off to a year long celebration of science.

The Fermilab crew—scientists, docents and Education Office staff—was one of about 50 groups that brought hands-on equipment and a wealth of knowledge to intrigue Chicago-area residents with the wonders of science.

On a hot Saturday in the city, the theme of the Fermilab presentation, "Heat and Cold, Force and Motion," seemed very appropriate. Fermilab's annual Wonders of Science event inspired some of the thermal activities: kids inflated and deflated balloons using heat and ice and theorized why ice cubes would melt quickly when placed on one material but slowly when laid on another.

Other stations included favorites from the roster of classroom presentations: a spiral tower to accelerate balls, a spinnable platform and bicycle wheel to demonstrate rotational forces, an eddy tube to demonstrate Lenz's Law. People of all ages were fascinated by a cryogenically levitated train, and Jerry Zimmerman wowed the crowds all day with cryogenics demonstrations.

Dave Schmitz, a new Lederman Fellow, wrote on his blog about the event: "To my mind the day was a huge success. I have no idea how many people came through the event, but it was easily in the thousands, and the Fermilab tent looked to be one of the most popular stops." (<http://davidschmitz.wordpress.com/>)

Perhaps one young attendee summed the day up best when he exclaimed "Science is cool, science is fun, and science is a workout!"

Fermilab is a major participant in Science Chicago, with events offered throughout the year. Information is available at www.sciencechicago.com.



*The Fermilab LabFest crew: Education Program Leader **Sue Sheehan**, scientist **David Schmitz**, docent **Dee Huie**, scientists **Michael Cooke** and **David Harding**, docent **Mary Jo Murphy**, and scientist **Jerry Zimmerman**. Not pictured: Teacher Resource Center Coordinator **Susan Dahl**.*

Looking Backwards, Looking Forwards

This year FFSE celebrates its 25th year of support for science education. During the year, News Notes will feature three articles summarizing past achievements and looking forward toward future ones. This first article outlines the founding of Friends. The second will present the impact of the founding of the Education Office in 1989.

FFSE traces its beginning to a group of high school teachers who asked permission to attend Saturday Morning Physics in 1981.

Although designed for secondary students with a deep interest in science, Saturday Morning Physics also appealed to teachers who wanted to learn about modern physics to increase the breadth of their teaching. Fermilab Director Leon Lederman was sympathetic to the teachers' needs. In fact, it made him wonder if Fermilab could play more of a role in science education. His thoughts led him to wander the Fermilab cafeteria searching for someone who might expand his idea and make it a reality.

Physicist Drasko Jovanovic mentioned Leon's concerns to his wife, Stanka, a research chemist at Argonne National Laboratory. With experience in founding a not-for-profit organization in her school district, Stanka recognized the next step. She wrote an outline for a fundraising strategy, gave it to Leon, and thought that would be the end of her involvement.

But following a dinner in February of 1982, Leon again broached the subject, asking Stanka if she would help create a foundation to assist with science education in the surrounding area. Stanka agreed and enlisted Leon's wife, Ellen, a former art teacher.

A few days later Stanka contacted Marge Bardeen, president of the Glenbard School Board and wife of physicist Bill Bardeen, to ask if she would help. Marge expressed willingness on the condition that teachers would have input in designing the programs. Thus the "Friends of Fermilab Association Ad Hoc Organizing Committee" was born.

Others soon joined the founding group: Robert McCullough, a local businessman with knowledge of fundraising, Jean Fisk, proprietor of a preschool in Batavia, and Judy Zielinski, Leon's administrative assistant, who provided clerical support.

The group held several meetings during the spring of 1982. By the end of May, a document was ready for Leon to present to the Fermilab Board of Trustees, proposing a not-for-profit foundation to raise funds for precollege science education programs at the Lab. When the board gave their wholehearted approval, Marge urged the committee to be-

gin designing a program right away. She felt that Friends needed to establish a successful program track record before they could raise substantial sums.

Marge Bardeen, Marge Cox, director of instruction for the Glenbard School District and wife of a Fermilab scientist, and George Zahrobsky and Bill West, two high school science department chairs, invited educators and community leaders to a needs assessment to analyze how Fermilab could best assist local schools.

From this meeting emerged the December, 1982 proposal for a "Summer Institute for Science Teachers." The plan was for a four-week program which would help secondary teachers enhance their content and teaching strategies in biology, physics, and chemistry.

The Fermilab Board of Trustees had expressed doubt about Friends' ability to raise funds for programs at a publicly financed laboratory, but help came from an unexpected source.

Five days after the committee mailed the state incorporation papers, and just two days after they sent off the first grant proposals, *A Nation at Risk: the Imperative for Educational Reform* was published. Three days later, on March 16, courtesy of the

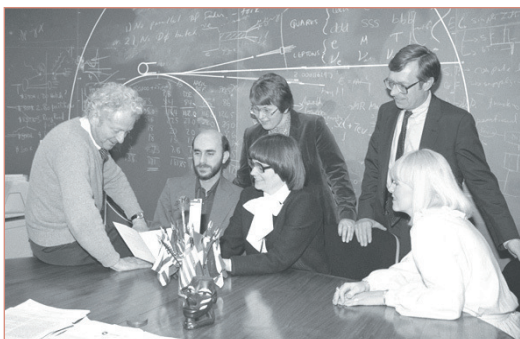
DOE and three private foundations, FFSE had funds for their first program.

More than 100 teachers applied, and 45 participated in the first summer institute. They attended lectures, completed lab exercises, received computer instruction and heard from 45 experts in a wide variety of fields over the course of four weeks. Teachers received graduate credit from Northern Illinois University and a \$1,000 stipend from Friends. The Institute was a grand success and became the prototype for institutes that followed in the ensuing years.

In the next issue: a look at FFSE's achievements.

The aim of the association is to provide a mechanism for supporting endeavors which extend Fermilab's commitment in science to social responsibilities in science and education... Many of us acknowledge a debt to Fermilab for enriching our lives and communities. We hope, in return, to aid Fermilab in continuing and expanding programs and activities which enhance its own unique character and accomplishments.

- from the first membership brochure



Leon Lederman with early FFSE members Jim Ruebush, Stanka Jovanovic, Marge Bardeen, Bob Riely and Judy Zielinski Schramm.

FROM THE ARCHIVES

The first document describing the new organization was entitled *Friends of Fermilab Association: A Foundation Toward an Era of Excellence*. It was signed by Organizing Committee members Marjorie Bardeen, Jean Fisk, Stanka Jovanovic, Ellen Lederman, Robert McCullough and Judy Zielinski. The following are the introduction and statement of purpose from that document.

INTRODUCTION

From the very inception of Fermilab, Robert R. Wilson, its founder and first director, has been concerned with the Laboratory's responsibility to the people and their environment. The careful thought and dedication of the Laboratory has touched many of us here and across the world. Fermilab has become a place of beauty with its architecture, prairie, buffalo, sculptures, and wildlife. It has become a cultural center that has brought to our back door The Guthrie Theater, Joffrey II, Carl Sagan, and The Fine Arts Quartet. It has become an art gallery where we have seen Greek vases, rare shells, and works of many painters, sculptors, and other fine artists. Fermilab has made our lives richer beyond any expectations we had in 1968 when, on a rainy day in December, the groundbreaking took place in the muddy cornfields of the Midwest.

Leon Lederman, an old friend of Fermilab and its director since 1979, has expanded the Laboratory's already fine role in our lives to include the education of our children. He has reached out and offered the Saturday Morning High School program at Fermilab that has opened doors into the world of science for several hundred students and their teachers.

Many of us who have witnessed the birth of Fermilab feel a debt of gratitude to the Laboratory for enriching our lives in more ways than we can list here. It is our desire to offer, in turn, a friendly hand to Fermilab to continue and to expand the fine programs that touch the people across our land and beyond.

STATEMENT OF PURPOSE

We propose the formation of the "Friends of Fermilab Association" (FFLA), a not-for-profit organization in the State of Illinois.

The sole purpose of the association would be to provide a vehicle for the regional, national and world community to extend support to the efforts to utilize Fermilab's capabilities and social responsibilities beyond its principal task of research in elementary particle physics.

Fermilab's principal activity, its research into the basic structure of matter and energy, is supported by the U.S. Department of Energy. However, extending its work not only on the technological frontiers of electronics, cryogenics, computers, and similar fields but also on the cultural-philosophical frontier of a developing world view, Fermilab offers a valuable resource to the Midwest area and beyond in a variety of ways. It is to further these activities, which are not in the DOE-supported mission, that FFLA would seek additional funds through private sources.

2008 Distinguished Educator Award



Hundreds of cicada chrysalises massed on a cabinet, microscopes waiting for inquisitive eyes: Vida Goldstein's classroom stimulates young imaginations and calls them to the fascination of science.

"Dr. G," as her students call her, has been teaching middle school science for seven years

at St. Mary's School in West Chicago, emphasizing problem-based learning and striving to help students connect science to everyday life.

Every year her students take a trip to Fermilab to study the prairie, and many years her students come for the Beauty and Charm program as well. Says Goldstein, "Fermilab is the best there is. It's a great place for kids to experience nature and a great place for teachers to go for professional development. It's wonderful having it right on my doorstep."

Goldstein especially values prairie field trips because they allow students who have only experienced natural places at a distance to get in close and overcome fears they may have. She tells of one student who feared touching a tadpole. A little while later, the girl came running up excitedly with a tadpole she had caught herself cupped in her hands.

Beauty and Charm field trips give Goldstein a chance to teach students about the importance of science and basic research to society. She knows they won't remember all the facts or understand all the details they hear, but she believes it is important for them to see people doing science in real life.

Goldstein received the award for "Her exceptional contributions to science education through her participation in Beauty and Charm and Particles and Prairies. Students are active learners in Vida's class. She values the importance of students exploring, discovering, and determining explanations on their own."



A REMINDER THAT THE "TREE OF KNOWLEDGE" PLAQUE IN THE LEDERMAN SCIENCE CENTER CAN BEAR YOUR NAME OR YOUR FAMILY'S NAME FOR A \$1,000 DONATION.

Annual Appreciation Picnic

On a hot evening in July, about 50 instructors, participants and program leaders convened outside Kuhn Barn for the annual appreciation picnic sponsored by Fermilab Friends. The picnic is an annual event capping off a summer of learning for some of the more than 2,800 educators who participate in continuing science education programs at Fermilab each year.

As in past years, summer programs included opportunities for teachers, educators and education students to engage in research, attend lectures and classes, hone teaching skills and share classroom strategies and information with colleagues.

Anne Casper, a teacher at Nardin Academy in Buffalo, New York, traveled to Fermilab in order to attend the QuarkNet "Boot Camp." Commented Casper, "It's very exciting being at Fermilab. I teach physics to juniors at an all-girls school, and I am the only physics teacher. I really can't express what a relief it is to talk to others like me!"

FFSE provided a spread of bratwurst, hamburgers, cherry pie and watermelon for the occasion. Susan Dahl, the new president of FFSE, spoke gratefully of Marge Bardeen's contributions over the years and announced a yearlong celebration of Marge's contributions to education at Fermilab. Middle school teacher Vida Goldstein received the "2008 Distinguished Educator Award" from Susan Dahl.

Then, despite the heat, picnickers ended the evening with stickball games and more lively discussions about the art of teaching science.

Thank You

Our thanks go out to new and renewing members of FFSE. Your generosity and commitment to supporting science education programs, especially when government budgets are tight, make an enormous difference in our local community and beyond.

Your donations enable students to experience the excitement of science and support dedicated teachers in their work of bringing science to a new generation.

With your support, we look forward to another year of excellence in educational opportunity and innovation.

Bringing Science to Schools

After years of wishing, waiting and significant planning, the Education Office has acquired a new van for the use of scientists navigating the Chicago area, bringing science to schools.

Each year as part of the Education Office Classroom Presentation program, Fermilab volunteers visit schools to meet with students in grades 2-12. Together they explore such topics as Force and Motion, Electricity and Magnetism, Light and Color, Physics in the Real World, and Space, Time and Einstein.

Fermilab scientists, engineers and graduate students volunteer their time, but using Fermilab vans had not always been possible.

The shiny blue cargo van will now remain at the ready, packed with equipment for the volunteers to drive to the schools.

The van will carry DOE and Fermilab logos and sport colorful graphics, serving as a rolling billboard for Fermilab education.

Classroom presentations began in 2005 during the World Year of Physics. Michael Albrow, a former FFSE Board member, originated the idea, and now more than 10,000 students benefit from classroom presentations every year.



Join ISTA through FFSE

FFSE and the Illinois Science Teachers Association are premiering a joint membership offer, allowing educators to receive a discounted rate. Teachers may purchase a year's membership in both organizations for just \$39, a discount of \$6. Discounts are also available on Associate and Institutional memberships in ISTA.

An organization of more than 2,200 teachers, science supervisors, administrators, scientists, and business and industry representatives, ISTA promotes excellence and innovation in science education. It serves as an advocate for science educators and provides programs and services such as workshops, conventions and awards.

By the end of October, over 60 teachers had already taken advantage of the combined FFSE/ISTA membership opportunity. Learn more about ISTA at www.ista-il.org.

Membership Form

Annual Dues: Director's Club..... \$1,000
Patron..... \$500
Sponsor..... \$250
Benefactor..... \$100
Regular..... \$50
Joint FFSE/ISTA membership..... \$39
Teacher..... \$10

*Please check the appropriate membership category and enclose your check made out to **Fermilab Friends for Science Education**. Include matching funds from your company, if applicable.*

Name _____

(Partner) _____

Address _____

City _____ State _____ Zip _____

Telephone _____

Employer (self) _____

Employer (partner) _____

Matching Funds (yes) (no)

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Fermilab Friends *for* Science Education

P.O. Box 500, MS 226

Batavia, IL 60510-0500