

The Science Education Center at Fermilab

Science education took center stage at Fermilab on Saturday, October 7, 1989. The new Science Education Center at Fermilab, a collaborative effort between the Laboratory and the education community, was launched with a symposium on "Science Education for the Entire Nation" in the Ramsey Auditorium, and a groundbreaking ceremony at the Center's future site. Building upon the strong foundation laid by the Laboratory's successful science education programs sponsored primarily by the Friends of Fermilab, the Center will offer a wide range of programs for students from kindergarten through high school. The Center, a Fermilab project supported by the Department of Energy's (DOE) Office of Energy Research, is the fruition of years of effort on the part of Stanka Jovanovic, Fermilab's Education Office Manager, and Marge Bardeen, Fermilab's Education Office Program Manager.



(Fermilab photograph 89-1120-24)

Secretary of Energy James D. Watkins at the podium in Ramsey Auditorium on the occasion of the symposium on "Science Education for the Entire Nation." Seated to the Secretary's left are John Peoples, Leon M. Lederman, Lourdes Montegudo, Howard S. Goldberg, Roosevelt D. Burnett, and William E. West, all of whom spoke at the symposium.

Moderated by Fermilab Director John Peoples, the symposium featured an address by U.S. Department of Energy Secretary James D. Watkins; Leon M. Lederman, Fermilab Director Emeritus and Professor, University of Chicago, speaking on "Scientists and Science Education - The National View"; William E. West, President-Elect, Illinois Science Teachers Association and Science and Technology

Chair, Naperville Central High School, addressing the issue of “Science Education: The Fermilab Experience”; Lourdes Monteagudo, Deputy Mayor for Education, City of Chicago, on “Science Education: A View from the City”; Howard S. Goldberg, Professor, University of Illinois at Chicago, on “Integrating Math and Science in the Elementary School: Problems and Prospects”; and Roosevelt D. Burnett, Principal, Chicago Vocational High School, on “High School Science Education in the City: Needs and Prospects.”

Secretary Watkins delivered the keynote speech at the ground-breaking ceremony, followed by Congressman Dennis Hastert (R.-Ill.). Then it was time for a series of luminaries to turn the ceremonial shovels of earth. Included were Secretary Watkins; Hilary Rauch, Manager, DOE Chicago Operations Office; Fermilab Director Emeritus Robert R. Wilson; John Peoples; Leon Lederman; Stanka Jovanovic and Marjorie Bardeen; and students Al’ishandrah Braneon, Samuel Byrd, Eric Dahl, Choudet Jhou, Clarissa Ramos, Clare Sammells, Aaron Smith, Laurent Stadler, and Jason Stevenson.



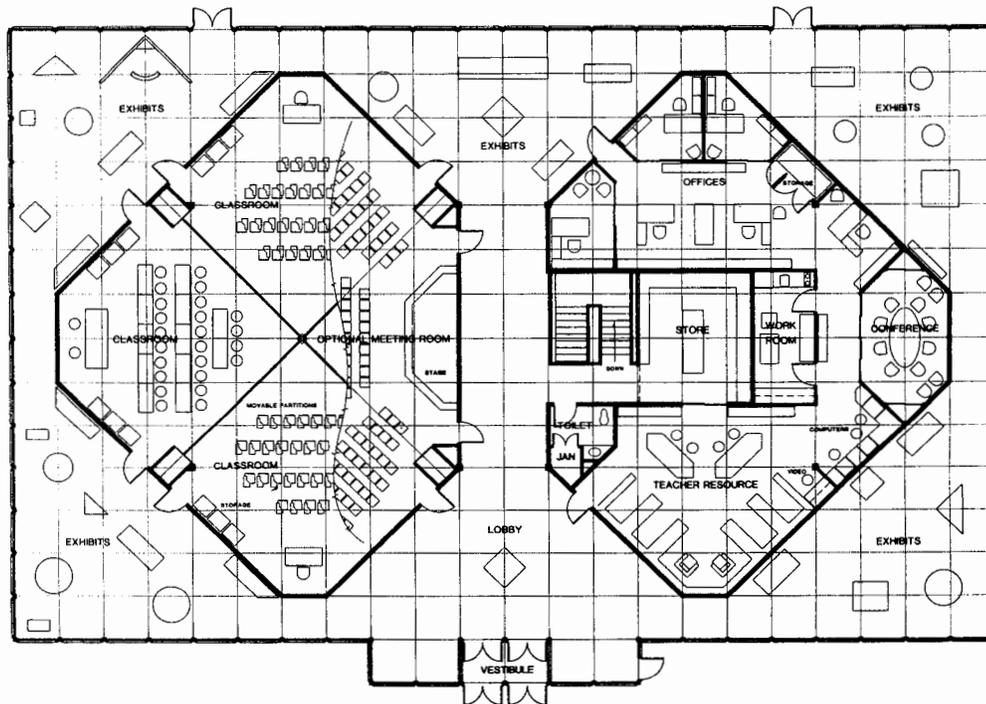
(Fermilab photograph 89-1124-20)

(L. to r.) Secretary Watkins, keynote speaker at the Science Education Center groundbreaking, John Peoples, Fermilab Director Emeritus Robert R. Wilson, and Leon Lederman do the ceremonial honors in front of more than 200 onlookers at the groundbreaking.

The building (shown in the conceptual drawing on the cover of this issue of *Fermilab Report*) is reminiscent of Frank Lloyd Wright’s Prairie School of architecture. That aesthetic was foremost in Fermilab Director Emeritus Robert R. Wilson’s design philosophy for the building’s exterior. Wilson envisioned a low building, capped by a roof with a pronounced overhang, and set upon a plinth, or

berm, to emphasize the structure. In the architect's drawings and models, the building seems to float above the ground while, at the same time, appearing to be firmly placed in its surroundings.

Wilson's concept was brought to the design stage by Fermilab's Construction Engineering Services group. The plans call for an 84 ft by 132 ft one-story structure with a partial basement. On one side of the building (see floor plan, below) are offices, a teacher resource area, a conference room, a work room, and a store where science education-related learning tools will be sold. The other side of the building is divided into four classrooms. The walls dividing the classrooms are movable partitions, allowing for conversion of the space into larger rooms or into one meeting room that can accommodate groups of up to 200 people. The two interior halves of the building are, in effect, islands surrounded by open space to be occupied by hands-on exhibits.



Proposed floor plan for the Science Education Center at Fermilab.

The building's roof will feature a concavity lined with windows. Daylight will pour through the windows, creating natural indirect lighting for the Center's interior.

Ed Crumpley, Jr., one of the Construction Engineering Services staff who worked on the design of the Center, found the project "exciting for an architect. For one thing, this is a finished space, something we don't usually get a chance to work on here at Fermilab, where much of our work involves empty buildings and experimental halls that will be filled with experimental apparatus.

"The enthusiasm that Marge Bardeen and Stanka Jovanovic brought to this project was truly infectious. They looked at many similar buildings during their travels, and came into the project with so many fine ideas for utilizing the space."

The Center's design will undergo some fine tuning just prior to the construction start. Construction Engineering Services will be refining the plan, seeking out additional economies in construction and materials choices. - *Richard Fenner*

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Three main program areas have been implemented by the Friends of Fermilab for the Science Education Center at Fermilab. Local school districts will be invited to become members of a program advisory group, which will play a role in determining the Center's programs.

The first of these programs, the Teachers' Resource Center (TRC), will "generate a stimulating atmosphere for science education by providing materials and services to schools." Science educators and school librarians in Illinois' Kane and DuPage counties will form an education network with the TRC serving as a clearinghouse for ideas, materials, and resources. Teachers will have access to space in the Center where they can build classroom demonstrations and assemble science kits from supplies provided at cost. A pool of scientists, teachers, and others with science expertise will be accessible via hotline.

The formal-education programs include: the Department of Energy (DOE) High School Honors Research Program, which brings students to Fermilab from each state, Puerto Rico, the District of Columbia, and six Economic Summit countries for a two-week program of seminars with Fermilab scientists as well as to work on a Fermilab experiment; the DOE Teacher Research Associates Program, an opportunity for some 20 teachers selected from both regional and national schools to work with a scientist or engineer on a research project during the summer at Fermilab; and the Summer Institute for Science and Mathematics Teachers at Fermilab, which enables 45 high school biology, chemistry, and physics teachers, and 15 mathematics teachers, to spend four weeks at the Laboratory attending lectures by research scientists and mathematicians, as well as computer, laboratory, and mathematics sessions with master teachers. Other programs include: Chemistry West and Physics West, teacher networks that allow high school teachers to share skills, teaching strategies, and materials; and *Topics in Modern Physics*, a teacher resource manual containing curriculum materials.

Finally, the K-8 Programs include Beauty and Charm at Fermilab, a hands-on curriculum unit that has to date trained over 90 teachers and brought over 5000 students to tour Fermilab, and the Wonders and Magic of Science, a science show for outstanding area science students, grades three to six.

A variety of classroom materials, created in conjunction with precollege education programs, are made available free of charge or at cost to teachers. Included are Beauty and Charm kits, *Topics in Modern Physics* resource books, videotapes, and posters. Some of these materials have been translated into Spanish for Latin American scientists and teachers.

The Center's informal hands-on science programs, designed to encourage creative investigation and thoughtful questions, will include interactive exhibits, environmental exhibits, audio-visual materials, computers, and a science playground as part of Center's science education offerings.

The interactive exhibits will cover five areas: accelerators, detectors, scattering experiments, the structure of matter, and the structure of the Universe. "Discovery rooms" will include table-top interactive displays in many areas of science and mathematics related to the school curriculum.

Taken together, these programs form a solid foundation for the Science Education Center's future.