

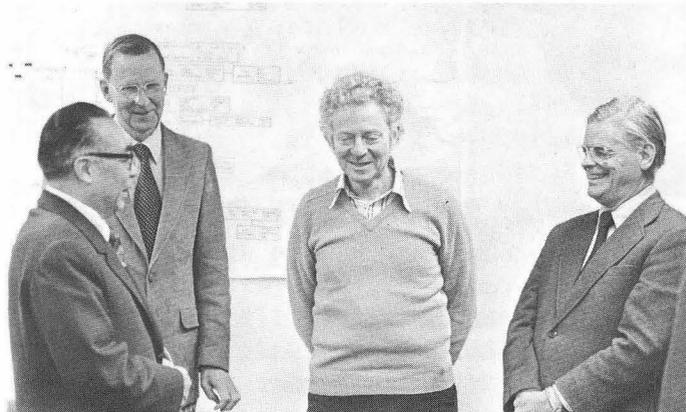
FERMINES

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Ambassador Chai Ze-Min (extreme left in photograph) visits with (L-R) Phil Livdahl, Leon Lederman and Robert R. Wilson. In the photograph at the right, Lee Teng, associate head of the Accelerator Division, points to



a cross-section of a superconducting magnet. Wilson is one of the key figures who is helping the Chinese design and build their 50 GeV accelerator near Beijing. Teng has assisted with the PRC relations for many years.

PRC AMBASSADOR VISITS FERMILAB

When Chai Ze-Min, People's Republic of China's ambassador to the U. S., first walked through the north entrance of the Central Laboratory, he leaned back and gazed up at the sweeping majesty of the building.

Welcoming him was Phil Livdahl, acting deputy director of Fermilab. A few moments later the ambassador and his four staff members were in the Comitium conference room visiting with many of the Chinese scientists who are now at Fermilab studying accelerator design and conducting experiments.

Leon Lederman, Fermilab director, and

Robert R. Wilson, director emeritus, gave the ambassador a general orientation about the Laboratory and its future plans. After the 35-minute session was over, he was taken on a tour of the site.

The ambassador came to Fermilab--he was visiting other areas of the Midwest at the time--because the Laboratory has a large group of Chinese scientists and because high energy physics is a high priority in China's new surge toward scientific excellence. Another reason the ambassador was in the area is that his country plans to open a consulate in Chicago.

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A SPECIAL TRIBUTE

With this issue, FERMINES recognizes the outstanding collaboration in science and technology between this country and the People's Republic of China. The talented Chinese physicists, engineers and technicians are making a vivid and positive impression on their counterparts here.

On the following pages, the many facets of the collaboration, its importance to both nations and the Chinese at work and in their homes in the Fermilab Village are presented. It's fair to describe this collaboration as one of the greatest exchanges of knowledge and friendship of the 20th century.

FRIENDSHIP PARAMOUNT IN CHINESE COLLABORATION

Friendship between the scientists from the People's Republic of China and those in this country is one of the important links that is making the scientific collaboration between the two great nations even stronger, according to Ji Cheng.

It's almost spontaneous, said Ji (pronounced Gee), director of the Chinese office that watches over business matters of the PRC-U.S. collaboration in high energy physics in this country. "Everywhere we find friendship."

In his office in the southeast section of the Central Laboratory's fourth floor, Ji spoke excellent English as he gave his impressions of the collaboration.

The U. S. does not have the monopoly on the talented emissaries coming from the PRC. Physicists and engineers (from the PRC) are at CERN in Switzerland, DESY in West Germany and KEK in Japan as well as in other countries, said Ji. Physics is not the only discipline that the Chinese regard as having a high priority in the overall scientific collaboration. Other disciplines being approached by the Chinese include agriculture, chemistry and medicine.

Ji explained that the Chinese have given high energy physics a top priority because it is "a branch of the basic sciences." Chinese scientists with the High Energy Physics Institute are now building a 50 GeV accelerator at Beijing (formerly Peking). It is the first step in the development of high energy physics in China, said Ji.

It is through this Institute that the PRC's most talented scientists, engineers and technicians working in high energy physics are sent to other countries to expand their knowledge and skills. They bring back with them advanced know-how that they use in building their own accelerator.

In this two-way flow (this country also is sending some of its best scientists to the PRC), Ji sees value beyond scientific exchange. The Chinese and the people of this country are learning more about each other's culture. "That's why this cooperation is most important," he said.

Ji described the overall collaboration as "very successful" and added that "we expect to send scientists over (to this



Ji Cheng (second from right), director of the Chinese business office at Fermilab, and Lu Zhen (center), also with the office, discuss some business with (L-R) Hazel Cramer, Anne Burwell and Helen Peterson, all with the Fermilab Director's Office. The three women are working closely with the Chinese during the collaboration.

country) for an indefinite period of time."

The men and women selected by the Chinese have the knowledge, capability and desire, said Ji. "They want to come to the United States to study." Indeed, for many of them, including Ji, it is their first time here.

Before departing, the Chinese refresh their knowledge of this country and its lifestyle and take additional training in English that, for some of them, continues for six months. The emphasis is on speaking English and understanding the spoken language, explained Ji. Most of the scientists already can read English quite well, he said.

This does appear to be one of the major problems for the Chinese here: speaking English and understanding people who speak it, admitted Ji. But it doesn't daunt them. When they are not at the Laboratory, many of the Chinese spend their time doing their homework and studying English. Ji added with a modest smile, "and watching television also."

"Chinese scientists always can expect a good reception and arrangements at Fermilab," Ji said. "When a scientist from the PRC arrives for the first time, the Laboratory has everything ready. Scientists with whom he will work at Fermilab give him a good introduction. Their cooperation is excellent." Some of the

Chinese stay here less than a week, others for more than a year. They live in the Fermilab Village on site.

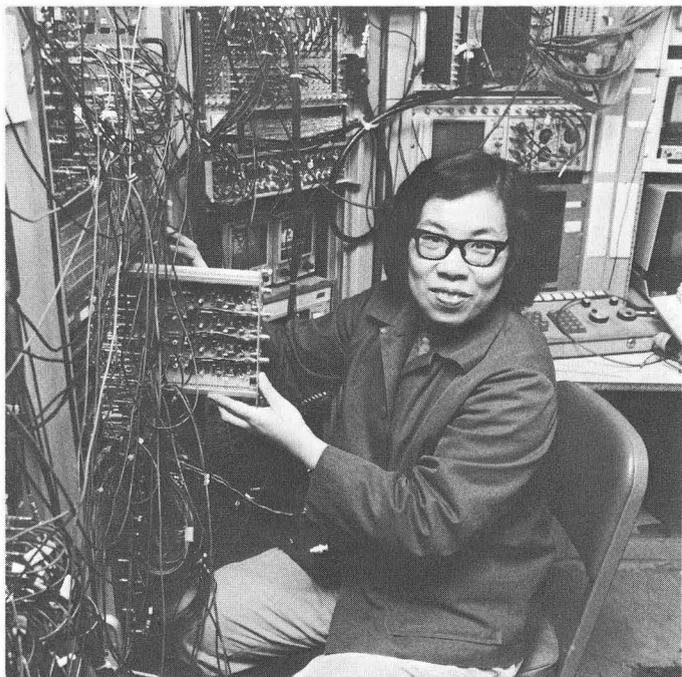
Although the Chinese work eight hours a day, six days a week in the PRC, those who have come to this country have found the pace "faster" than in their own country, Ji said. This appears to be one of the few "surprises" the Chinese have encountered, he added, "the very intense work schedule" of the people in this country.

Yet, despite the cultural differences and occasional surprises--that includes the vast number of cars and heavy traffic (the principal mode of transportation in the PRC is the bicycle)--the Chinese scientists find it "easy to adjust to this way of life," said Ji.

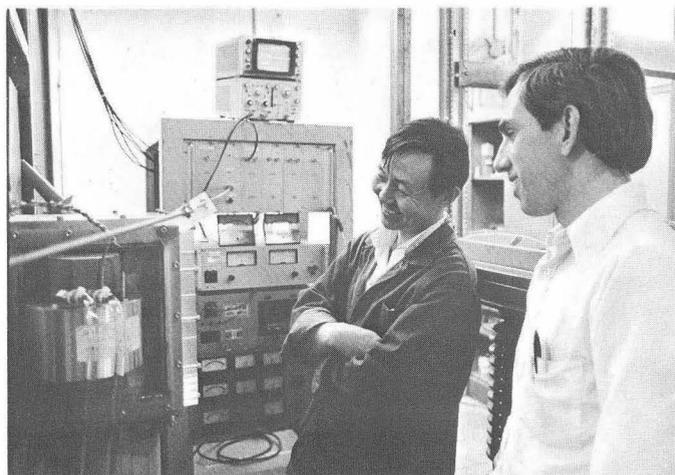
Almost all of the clothes they wear were brought from the PRC. Some purchases have been made in this country, said Ji. But because the style of American clothing is not exactly to the taste of the Chinese, they prefer to wear their own, which they find more comfortable, he added.

Although reluctant to say it, Ji did admit to one disadvantage of being in this country. The food. The visitors still prefer Chinese food, he said.

Each Chinese scientist is allowed to



Mao Hui-Shen, T. D. Lee scholar who is working with Exp. 515, examines some of the complicated electronics associated with the experiment.



Zhang Huashun (left) and Chuck Schmidt, Fermilab physicist, discuss negative ion sources.

take one cassette recorder and two pocket calculators, purchased in this country, home with him, said Ji. They have found the two items extremely useful in their scientific work here.

"There are very few recorders and calculators in the PRC," Ji explained. A recorder made in the PRC is large and expensive, he added. However, the PRC recently has imported some of these items from foreign countries, Ji also said.

He stays in constant touch with the High Energy Physics Institute by telephone. He readily admitted with one of his broadest smiles, "I make many telephone calls to Peking."

One thing is certain, Ji is enjoying his work here and is proud of the impression the PRC scientists are making on their American counterparts as well as the determination the PRC scientists are putting into their learning and work.

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SCIENCE BURGEONING IN CHINA

The People's Republic of China is rapidly shaking off the effects of the Gang of Four's Cultural Revolution as that giant country steps mightily into a new era of scientific inquiry.

This epic transition is described by Gloria B. Lubkin, senior editor of *Physics Today*, in the latest issue (March 1980) of that publication. In this first of a series of articles on physics in China, she surveys where physics has been, where it is now and where the Chinese scientists would like to see it in the years ahead.

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CHINESE PARTICIPATING IN THE COLLABORATION

The Chinese experts who presently are at Fermilab include two T. D. Lee scholars: Mao Hui-Shen, who is working on Exp. 515, and Li Yunshan, Exp. 490.

Four theorists are now at Fermilab. They are Dai Yuan-Ben, Gou Han-Ying, Hao Bai-Lin and He Zuoxiu. Studying accelerator applications are Fang Yibing and Zheng Min.

Those involved in experimental research are Chen Ting-Yang, Exp. 580; Li Jin, Wang Zhuxiang and Zhang Jiaquan, all Exp.253.

Representing the business office are Ji Cheng, director, and Lu Zhen.

The majority of the scientists, engineers and technicians are furthering their knowledge about accelerator design. Alphabetically, they are Cai Zhi-Guo, power supplies; Chao Zhiyu, superconducting magnets; Cui Ru-Yu, low level radio frequencies; Du Xijiu, negative ion sources; Jiang Jianhua, superconducting magnets; and Jiang Yan-Ling, injection systems.

Also, Jin Qingshou, negative ion sources; Liu Changhe, negative ion sources; Shen Baohua, power supplies; Shi Yin-Sheng, injection systems; Xiao Yixuan, injection systems; Zhang Huashun, negative ion sources; Zhong Shi-Cai, low level radio frequencies; and Zhou Xiao-Guang, low level radio frequencies.

The list of names is current through March 27.

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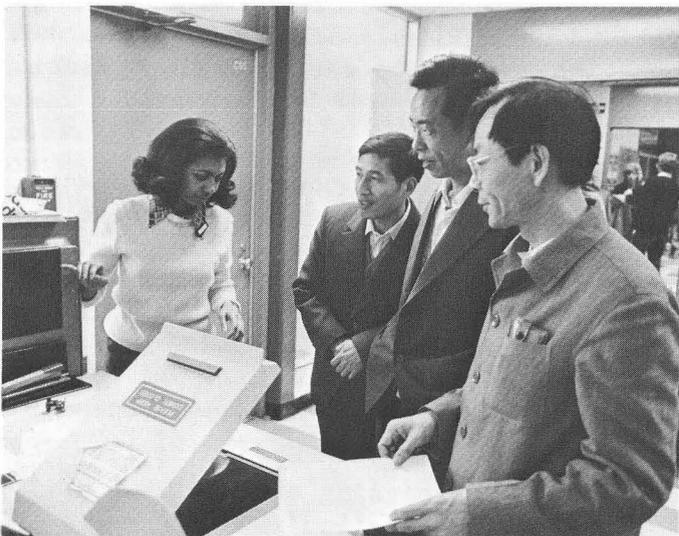
Visiting scientists listen intently as George Peknik (standing), a consultant from Glen Ellyn, helps them improve their English. The classes are held once a week. From the left, Yoshihide Sakai, a Japanese scientist, and Lu Zhen, Chao Zhiyu, Zhang Jiaquan, Wang Zhuxiang, Mao Hui-Shen and Chen Ting-Yang, all from the PRC.



Liu Changhe (left) and Jim Wendt stand in the dome of the Cockcroft-Walton preaccelerator and discuss some technical point.



Sharing a light-hearted moment are (L-R) Shen Baohua, Cai Zhi-Guo, Curt Owen and Shi Yin-Sheng.



Debbie McClemmon runs off some technical literature for (L-R) Shen Baohua, Cai Zhi-Guo and Jiang Yan-Ling.



Chao Zhiyu (left) and Jiang Jianhua (right) talk with Henry Barton in their home in the Village. Photograph was taken just before Barton joined them for a Chinese meal.



Cui Ru-Yu (center) and Paul Cliff (left) go over circuitry in the instrumentation radio frequency facility. In the background, K. C. Cahill works on a project.

TWENTY-EIGHT CHINESE HERE NOW

Twenty-seven men and one woman from the People's Republic of China are now at Fermilab as part of the science and technology agreement.

Seventy-eight Chinese are now working at various centers for high energy physics throughout the country. These include the Brookhaven National Laboratory, 16; Argonne National Laboratory, 3; Stanford Linear Accelerator Center, 12; and Lawrence Berkeley Laboratory, 19.

The number of Chinese who have worked at Fermilab since the agreement became effective in February 1979 totals 99 men and 11 women. For the country as a whole, the overall figure is nearly 200.

The data was compiled by Ann N. Burwell and Raeburn M. Wheeler, both with the Director's Office. The data is current through March 28.

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BACKGROUND OF CHINESE COLLABORATION

The Chinese collaboration has its roots in the latter part of the 1970s, when the U.S. government began leaning toward establishing diplomatic relations with the People's Republic of China. That dramatic time came on Jan. 1, 1979, when formal diplomatic relations were established and the world began adjusting to a new relationship that would affect all nations.

Then on Jan. 31, 1979, the "Agreement Between the Government of the United States of America and the Government of the People's Republic of China on Cooperation in Science and Technology" was signed by President Carter and Vice-Premier Teng Hsiao-Ping. It laid the groundwork for collaboration in a number of disciplines and provided considerable latitude for the two countries to develop their working relationship.

Paralleling the change in this government's attitude toward the PRC was China's modernization drive on the heels of a campaign that had deemphasized science and technology and had lasted for more than a decade. China's leaders now seek preeminence in science and technology. They set the broad objective of wanting to be regarded as an equal by advanced nations before the end of the century.

After the signing of that master agreement, more detailed implementing accords were carefully worked out and signed by the proper officials. Then the flow of Chinese scientists and technicians to this country began in earnest. One of these implementing accords dealt with high energy physics and directly affected Fermilab, since it was to be one of the major research centers in this country at which the Chinese would learn about accelerator design and would conduct experiments.

Other laboratories which are participating in this particular collaboration include the Argonne National Laboratory, Brookhaven National Laboratory, Lawrence Berkeley Laboratory and the Stanford Linear Accelerator Center.

But the PRC was not an isolated scientific community prior to the signing of the Carter-Hsiao-Ping agreement, particularly with respect to Fermilab. As early as 1972, delegations from the PRC began visiting the Laboratory to talk about high energy physics research and to see how an accelerator is put together.

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Linda Yu (fourth from right), reporter with television channel 5 (NBC, Chicago), joins Chinese for an elaborate meal in their home. She interviewed them for an upcoming feature about the collaboration. Sharing the friendly conversation with her are (L-R) Zhang Jiaquan (foreground), Zhang Huashun, Ji Cheng, Lu Zhen, Chen Ting-Yang and Shi Yin-Sheng.



TV-5 film crew catches Chen Ting-Yang serving (clockwise around table) Li Jin, Shi Yin-Sheng and Zhang Jiaquan.



Lu Zhen (right) and Chen Ting-Yang show the grand smiles of gifted chefs as the Chinese and their guests eagerly wait for the meal to begin.

ENTERTAINMENT BARGAINS AVAILABLE HERE

Two special entertainment offers are now available through the Fermilab Ticket Sales Desk in the CL-Atrium. One is a special discount on tickets for a performance of "H.M.S. Pinafore" in Aurora. The other is a reduced price for admission to Plitt theaters in the Chicago area.

Gilbert and Sullivan's "Pinafore" has been one of theatre's most popular musical comedies for over 100 years. It has played all over the world, never becoming out-dated, loved by audiences of all ages. The current touring company, Opera ala Carte of Los Angeles, specializes in works of Gilbert and Sullivan.

The rollicking music opens with "Poor Little Buttercup," and, later, "I Am the Monarch of the Sea...the ruler of the Queen's Navee," and many other well-known tunes. The plot tells of Josephine's love for Ralph, though she is betrothed to Sir Joseph. Eventually, Buttercup makes a startling revelation that brings the happy ending.

A block of tickets on the main floor of the beautiful Paramount theater has been reserved for Fermilab people. Tickets are priced at \$7.32 for adults (a 25% reduction for main floor seats). Student and senior tickets are \$6.00 each. Paid reservations must be made by April 15.

The show plays at 3 p.m. on Sunday, April 27. It is first class family entertainment.

Theater floor plan and further information may be obtained from Anne O'Meara at the Ticket Sales Desk, Ext. 3353.

Movie theaters such as Fox Valley 1-2-3, Water Tower 1-2-3-4, Oakbrook Theater and 23 others participate in the Plitt Theater special discount plan. Purchased in advance at the Fermilab Ticket Sales Desk, regular admission tickets are \$2.50 (at the door they are \$3.50 and up). Favorable response at Fermilab would bring down the price to \$2.00 when the present offer is finished.

See your favorite Academy Award flick at these bargain prices!

Pick up tickets at CL-Atrium Ticket Sales Desk.

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O'Meara



Ganchiff

NEW FACES IN NEW PLACES

Two new people are now involved in Fermilab's cultural activities.

Ruth Ganchiff is a part-time consultant to the Auditorium Committee. She will assist in the selection of programs as well as in the production of the activities sponsored by the Auditorium Committee. She may be reached at Ext. 3211.

A graduate of Indiana University, Ganchiff has been active in theatrical circles in Illinois for several years. She is an active member of the Western Springs Repertory as an actress as well as technical crew member. Dance and ballet are also among her varied interests.

Jeff Appel, recently-appointed Chairman of the Auditorium Committee, noted how fortunate the Laboratory is to have Ganchiff's help. "Ruth, as a member of the Illinois Arts Council, was originator and chairman of the Illinois Arts Week Celebration and the Governor's Awards for the Arts for the past two years. She is also the founder of the Illinois Citizens for the Arts, a grass roots support group," Appel said.

Anne O'Meara, receptionist in the Central Laboratory, now handles ticket distribution at the Central Laboratory Reception Desk. Before starting as a full-time employee recently, O'Meara worked at the Laboratory during the summers while attending Eastern Illinois University, where she majored in psychology, minored in theater.

The Reception Desk, part of the Fermilab Public Information Office, serves as an introductory point for the Lab's tours and tourists, as well as a ticket distribution center.

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NEXT BLOOD DRIVE APRIL 4

The next blood drive at Fermilab will be held April 4. Donations will be accepted by the Aurora Blood Bank in the southwest conference room, first floor, Central Laboratory, from 9 a.m. to 2:30 p.m. For an appointment and to have questions answered, call the Medical Office, at Ext. 3232.

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A VARIETY OF VACATIONS

Fermilab's recreation program is offering a variety of travel plans for employees, their families and friends. For more comprehensive information, contact Helen McCulloch, Ext. 3126, CL1W.

Travel programs are being offered for Atlantic City, July 7-11, July 25-27 and August 7-10; Walt Disney World in Florida, July 20-27; Montreal, Quebec, Aug. 29-Sept. 1; Hawaii, Oct. 1-11; a Caribbean cruise, Nov. 2-9; and Las Vegas, Oct. 24-27. The trips are being arranged through Groups International of Lisle, Ill.

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UMPIRES NEEDED

Qualified umpires are needed for the Fermilab 16-inch softball league. Play will begin next month. Interested individuals should contact Helen McCulloch, CL1W, Ext. 3126.

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COLLOQUIUM TAPES AVAILABLE IN LIBRARY

Cassette tapes of talks given by Physics Colloquium speakers are now available in the Fermilab Library, CL3S, Roger Thompson, librarian, announced.

The Physics Colloquium is held each Wednesday at 4 p.m. in the Central Laboratory auditorium. Its speakers, usually with national and international reputations, cover relevant scientific topics. The colloquium is open to all interested people.

Arranged by Fermilab Physics Colloquium Committee, recent speakers have included an astronaut, astronomer, nuclear physicist and an international expert on superconducting energy storage.

BIRD WATCHING HIKE COMING UP

Bird watchers--young and old, experienced and inexperienced--the DuPage Audubon Society has scheduled its spring hike for April 12.

Dave Carey, a physicist with the Meson Department, will lead the hike. Participants should assemble at the east entrance to the site, by the security house at 9:30 a.m. Carey suggests hikers wear warm clothing and adequate protection for feet (the going might be slushy at times, he warns).

He also encourages bird lovers to bring binoculars and a good bird guide. One he likes is "Birds of North America," published by Golden Press. The hike will be mainly on site and is expected to end around lunch time.

Some of the birds participants can expect to see include egrets, herons, hawks, Canada geese, meadow larks, chickadees, red wing blackbirds and many varieties of duck.

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DESLATTES TO SPEAK ON SPECTROSCOPY

Dr. Richard D. Deslattes of the National Bureau of Standards will speak at the next Physics Colloquium April 9.

His talk on "Precision Short Wavelength Spectroscopy" will begin at 4 p.m. in the Central Laboratory auditorium. Deslattes is chief of the Quantum Metrology Group, Center for Absolute Physical Quantities. He will be the guest of the Fermilab Physics Colloquium Committee.

Using a three-step measurement chain, it has been possible to connect gamma ray and high Z X-ray lines with optical transitions in a manner having significantly greater accuracy than was previously available, he said. Results from this exercise have been significant in the case of problems in muonic, pionic and kaonic spectra. Applications to normal atom spectra has revealed a pattern of systematic discrepancies between relativistic self-consistent field calculations and experiment, he also said.

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