

The Magnetizer

 fermi national accelerator laboratory
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COLLIDING BEAMS AT FERMILAB?

Recently a small meeting gathered in the Village to discuss prospects for colliding beam physics at Fermilab. In these schemes colliding beams would be produced by using a storage ring built adjacent to the Main Ring into which the beam of the Main Accelerator would be injected and stored. At a straight section common to the two rings, the beam in the storage ring and the beam in the Main Accelerator would collide. The total energy available in the center of mass of the colliding particles is almost the sum of the energies of the protons in the two colliding beams. Several alternative modes of operation were discussed at the meeting.

Storage rings are not substitutes for conventional accelerators. Rather colliding beam experiments complement techniques used in conventional accelerators. A storage ring system permits study of reactions that occur in energy regions beyond the present state of the art in particle accelerators, namely the Fermilab machine. Search for certain particles such as the elusive intermediate boson with predicted masses of 60 BeV require colliding beams at Fermilab energies.

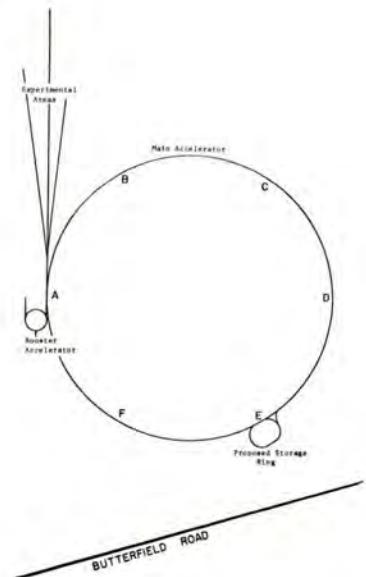
Several different possibilities for storage rings at Fermilab were considered at the meeting in the Village. One of the central topics involved schemes for using the Energy Doubler/Saver. The Fermilab Doubler/Saver will consist of a ring of superconducting magnets installed in the present tunnel of the Main Accelerator. The beam from the present accelerator will be injected into the Doubler/Saver and accelerated to 1000 BeV. The possibility of producing interactions between beams in the Doubler/Saver and beams in the Main Accelerator was one impetus for the meeting.

Arrangements for colliding the beam from the Doubler/Saver with the beam from the accelerator depend on the placement of the magnets in the Main Ring tunnel. The further the Main Accelerator and the Doubler/Saver rings are separated, the more difficult it will be to bring beams from one ring to the other, make them cross, and then get them back in place in the 52 meters of long straight section. This plan could provide collisions of beams up to 400 BeV and 1000 BeV, leading to center of mass values of 1,250 BeV.

A second storage ring proposal suggested the possibility of constructing a "small" 25 BeV storage ring at Fermilab to intersect the Main Accelerator at the long straight section upstream of the RF location (straight section E). This proposal would use conventional magnets and have a ring with the same radius as the present Booster Accelerator. Interactions would occur as the Main Accelerator is ramping, much as the present arrangement with the jet targets at the Internal Target Area.

With the Main Accelerator or the Energy Doubler/Saver operating at 400 BeV, the system would give center of mass energies of 200 BeV. This design has been submitted to the Program Advisory Committee as an experiment for an intermediate boson search by an experimental group consisting of Russ Huson, Phil Livdahl, Rae Stiening, Lee Teng, Frank Turkot, and Jim Walker.

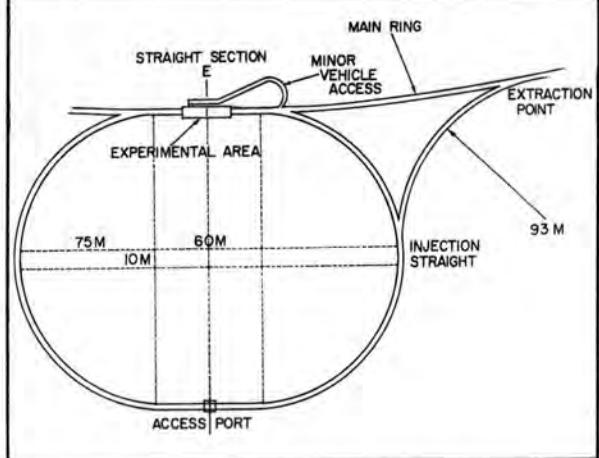
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...Proposal for storage ring at Fermilab...

COLLIDING BEAMS (Continued)

The possibility of matter-antimatter colliding beams was also reviewed at the meeting. An interesting attack suggests a small storage ring that would collect antiprotons produced by first making antiprotons in collisions of the main ring protons with a normal target. A race track-shaped field with ends three meters in radius would be used to accumulate 2 BeV antiprotons produced by the Main Accelerator. These antiprotons would be cooled using a several amp, 1 MeV electron beam. The antiprotons are cooled by the electrons, so that they oscillate less in their swing around the accelerator and more can be fitted into the machine. Designers estimate that perhaps 4×10^7 antiprotons could be stored per cycle until about 10^{10} were accumulated. These antiprotons would be injected back into the Main Accelerator and accelerated backwards simultaneously with "right way" protons. Theories claim that anti-proton-proton collisions lead to higher production of intermediate boson particles than do proton-proton collisions.



..Main Features of Proposed Storage Ring Facility...

Storage rings exist at several other research laboratories in the world. Among these are the electron-electron colliding beam facilities at SLAC, the proton-proton facility at CERN, the electron collisions at Novsibirsk, U.S.S.R.. Others are located at the Frascati National Laboratory in Rome, the Orsay Laboratory in France, and in Germany. In the United States, construction of a new set of large intersecting electron storage rings have been approved at SLAC (the PEP project). Brookhaven National Laboratory is proposing to build a set of proton storage rings dubbed ISABELLE.

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ADDITIONAL NOON-HOUR TAXI SERVICE

Starting this week, an additional taxi unit will be assigned to provide increased service during the mid-day peak demand period. In making the announcement, John Colson, head of the Support Services Section, noted that the two taxis currently in use are hauling an average of 165 passengers per day to and from various on-site locations. Their use has shown a steady increase and is nearly 80% greater than a year ago.

In addition to providing improved service during the peak demand period that normally occurs each day between 10:30 a.m. and 1:30 p.m., the third taxi will help to handle the increased number of passengers that result when the accelerator is shut down for maintenance.

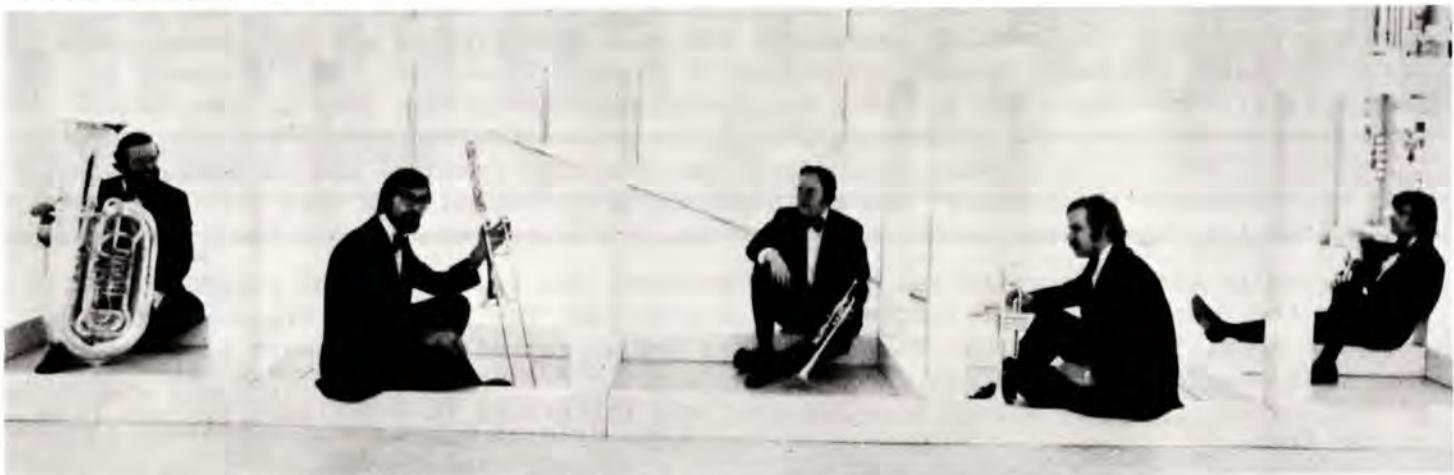
The Fermilab taxis run from 8:00 a.m. until 5:00 p.m. on weekdays and are requested by calling Ext. 4225 (HACK).

SPECIAL TOUR GUIDES NEEDED

Attention NALWO members, and families of Fermilab employees: Fermilab needs tour guides for special elementary school tours weekdays during April and May. Each tour will require about 2 hours time. The tour plan and orientation will be given by Public Information Office. Guides must like children and be willing to accomodate such groups. Employees are not eligible. Guides must have a definite and continuing knowledge of the Laboratory. Tour guides will receive a fee for each tour they give.

Interested persons must submit a written statement of their qualifications for guiding children's activities and a brief description of Fermilab as they feel it should be presented on such a tour. Send this information to Cheryl Stadtfeld, Public Information, CL-1W by April 1.

CHICAGO BRASS QUINTET HERE



...Chicago Brass Quintet...

Five of the best brass players in the Chicago area -- the Chicago Brass Quintet -- will perform in concert at the Fermilab Auditorium on Saturday, April 3rd at 8:30 p.m.

Members of the Quintet are Robert Bauchens who plays tuba; William Klingelhoffer, French horn; Charles Geyer, trumpet; James Mattern, trombone, Brian Perry, trumpet.

Since its formation in 1962, the Chicago Brass Quintet has grown in stature and reputation. The Fermilab program will display individual virtuosity as well as ensemble talent. The program was chosen to give the audience an opportunity to fully appreciate what is performed by this combination of instruments.

The program starts with Gabrieli "Canzona per Sonare no. 1," and then goes on with the Bach "Fugue in D"; Bartok "Four Pieces"; Purcell, "English Suite in C"; Arnold, "Quintet for Two Trumpets, Horn, Trombone and Tuba"; Debussy, "Fanfare no. 1" from "Le Martyre de Saint-Sebastian"; Schuller, "Music for Brass Quintet"; Pezel, "Sonata no. 22"; Mattern, "Sonata Breve."

Critics have said of the Quintet: "This is indeed a first rate ensemble"..."Intonation and balance, dynamic contrast and a perfect blend of warm tonal colors were the trademark of the group which is sure to thrill many an audience with its musical offerings"..."Brian Perry was brilliant as trumpet playing ought to be"..."Trumpeter Charles Geyer, surely the most engaging classical musician around..."

Tickets for the concert are now on sale in the Guest Office, CL-1W. They are \$3.00 for adults, \$2.00 for students and senior citizens and \$1.50 for children under 12. Tickets will also be sold at the door. There will be no dinner.

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COMING EVENTS AT THE USERS CENTER

Tuesday, March 30 - 5:30 - 9:30 p.m. An evening of Folk Music.

Friday, April 2 - Fondue Party, cheese, beef and shrimp fondue from 5:30 - 7:30 p.m. Call Sam Rumble, Ext. 3524 or Jane Theis, Ext. 3126 for further information and reservations.

Monday night is Bridge Night at the Users Center. Anyone interested in playing bridge should be at the Center at 7:00 p.m. every Monday beginning April 5.

The Users Center, located in the Village, is now open Monday through Friday from 5 p.m. to midnight. The Center offers many activities including ping pong, pool, electric shuffleboard, color television, chess, checkers and other table games. A variety of refreshments and pizza, sandwiches and snacks is now available.

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PERSONNEL NEWS AND NOTES

Performance appraisals are used to establish a formal communication regarding employee progress. At Fermilab appraisals are done annually for all employees. This year the timing has been changed to February - March. In earlier years it was late spring. Procedures for carrying out performance appraisals vary in the individual groups. However, the primary purpose is to assess the individual's performance--to recognize the job well done, to suggest specific improvements, and to communicate this assessment to the person. The appraisal is not intended as a tool for determining specific increments in the salary review or for recommendations for promotion.

Normally after the appraisal has been written, the individual and supervisor discuss the content. At the conclusion of discussions the employees are asked to sign the form, indicating that they have read the appraisal and are aware of the content. The employee's signature does not necessarily denote agreement with the comments, although where there is strong disagreement, the individual is encouraged to note this on the form.

Appraisals are reviewed by Division leadership, by Personnel, and then put in the person's personnel file.

SPRING CLEAN-UP SCHEDULED

The week of April 5th will be Spring Clean-Up Week at Fermilab. This is everyone's chance to clean out their area and be assured that reusable, recyclable, or waste materials will be removed. Site Services will coordinate the program under the direction of Don Smith, Ext. 3492. The following areas will be serviced on the days noted:

Village - Monday April 5 - call George Doyle, Ext. 3421, for details on container locations and assistance.

Central Laboratory - Tuesday, April 6 - call Gene Plant, Ext. 3824, for details on container locations and assistance.

Experimental - Accelerator - and Site Wide - Wednesday, Thursday and Friday, April 7, 8 and 9. Don Smith has the details on container location and assistance.

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...THE LABORATORY will again have a limited number of summer positions available for general clerical and grounds jobs. The requirements are that the candidate be available for a minimum of eight weeks during June, July and August. The minimum age is 16 and the rate of pay will be \$2.30 per hour. Please contact the Employment Office for an application or call William Butler, Ext. 3324, for further information. Applications must be received by April 2.

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CONGRATULATIONS...to Anthony (Operations) and Ann Malensek [REDACTED]

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CLASSIFIED ADS

FERMILAB employees, visitors, & experimenters are invited to Mass, offered by Tim Toohey, S.J., at 12:00 noon every Wed. of Lent at Cenacle Retreat House, Batavia Rd., Warrenville.

WANTED - 4 bedroom house for Cornell prof. visiting Fermilab this summer July 6 for 6 or 7 weeks. Wheaton or Glen Ellyn preferred. Call Ext. 3136.

FOR SALE - 3 bedroom tri-level North Aurora $\frac{1}{2}$ acre, lge. family room, $1\frac{1}{2}$ baths, fireplace, heated garage, many extras. Call 896-9308.

FOR SALE - 1968 GMC Van, engine exc. cond. Call Ext. 3524 after 4 p.m. \$300 firm.

FOR SALE - Used 24-ft. above-ground swim. pool & all accessories, \$500. B. Murphy, 393-2172.

FOR SALE - 1973 Honda 350F, 5200 mi., good cond. \$800. E. Stitts, 3734 or 896-6932.

FOR SALE - New sofa, green & black tweed, 3 cushions, \$160. Call 859-8268 after 6 p.m.

FOR SALE - Used Cragar cassette player for auto. \$30. Call Ernie, Ext. 3210.