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MARCH 9-10 MEETING OF THE FERMILAB PROGRAM ADVISORY COMMITTEE

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One of the first orders of business at the March meeting of the PAC was to announce a change in the name of the Committee. In the distant past, the Laboratory sometimes asked the advice of a committee which was called the "Physics Advisory Committee" in addition to that of the Program Advisory Committee. The deliberations of the Program Advisory Committee were originally focused entirely upon experimental proposals submitted for implementation in the relatively short range. The Physics Advisory Committee was asked for advice regarding the long-range plans of the Laboratory.

The Physics Advisory Committee has been inactive; its last series of meetings occurred in 1973. Since that time, the Laboratory has tended, more and more, to discuss matters of medium- to long-range planning with the Program Advisory Committee. Members of the Program Advisory Committee have expressed their interest in becoming more involved in some of those long-range questions. In recognition of the Laboratory's intention to bring such matters increasingly to the attention of the Program Advisory Committee and to welcome gratuitous advice on such matters from the Program Advisory Committee, it was decided to change the name of the Committee to "Physics Advisory Committee." Fortunately this sweeping change still leaves the Committee's abbreviated title "PAC," so the resulting confusion should not be unmanageable.

At the March meeting the results and recommendations of three prior subcommittee meetings were given final consideration. The first of those meetings had been a review of the neutrino program in the 15-ft bubble chamber. The second had been a review of new proposals for an upgraded 30-in. bubble chamber hybrid spectrometer system. The third of the meetings had been the regular Proposal Presentation Meeting held in February.

Following the meeting of the PAC in November 1977, it was announced that a test would be made, this spring, with plates in the 15-ft chamber and with a hydrogen fill. If that engineering test is successful and if physics analysis of the pictures is not compromised by the presence of the plates, the deuterium runs which have long been planned for the chamber will be made with a set of plates installed in the downstream section of the chamber. As a result of discussions at the March PAC meeting, two major experiments were approved to run in that configuration. The approvals we have given provide for the taking of 350,000 pictures with neutrinos and 150,000 pictures with antineutrinos.

After further consideration of the past deliberations on the 30-in. bubble chamber hybrid spectrometer program it was decided to proceed with an upgrading of that hybrid spectrometer system which will provide it with three new major downstream detectors. One of them is a large "ISIS" type system, now called "CRISIS." That system will play a role in the identification of secondary particles through the measurement of the relativistic rise in ionization density. A second downstream detector which will be

available for future runs is a large segmented Cerenkov counter which will also be used for downstream particle identification. It will be used primarily in an antiproton bombardment which is now approved for one of the two major groups that are building the new downstream detectors. A third detector is a large downstream gamma-ray detector which can be used in place of the Cerenkov counter. A 15-week run has been approved for one of the two consortia with emphasis on π^+ and π^- bombardments. A 10-week bombardment has been approved for the second group, with emphasis on the antiproton bombardment. In total, the Laboratory expects that about two million pictures will be taken with the 30-in. hybrid spectrometer system during the next running period now planned for late 1979.

Another familiar old problem received considerable attention at the recent meeting of the PAC. That problem has to do with a possible beam-dump experiment in the Neutrino Area. Five years ago an approved beam-dump experiment was given up by the experimenters involved, in favor of extending another approved run in a normal neutrino beam. At that time, the Laboratory encouraged all experimenters with suitable detectors in the neutrino beam to get together to plan the best possible beam-dump run, using a clean beam and the maximum available useful detector mass. Although a proposal was invited at that time, none was received until preliminary reports of a beam-dump run at CERN were forthcoming.

The first formal proposal for a similar run at Fermilab was received late in January 1978. That proposal was presented at the Proposal Presentation Meeting in February and further discussed at the full PAC meeting

in March. As a result of those discussions it was decided not to approve the proposal at this time.

The only point in extending the CERN investigation at Fermilab would be if a significant new contribution could be made which might lead to a better understanding of the phenomena which have been observed at CERN. Such a contribution might be of a qualitative nature, such as the investigation of observed event rates as a function of production angle or, such as the performance of the experiment in a substantially cleaner incident beam configuration. Alternatively, a new contribution could be made by improving the existing data in a quantitative fashion by increasing, perhaps by an order of magnitude, the number of events that have been observed. The amount of effort and beam time required to perform such an experiment would be quite substantial. It could not be done without serious interferences with our present program. The suggestion that a beam-dump experiment should be run in the near future was rejected on those grounds. One minor problem is that the beam dump which is now available in the neutrino beam line is made of aluminum. The signal to background would be less favorable than that obtained at CERN in the recent experiment there that was carried out with a copper beam dump.

An extension was approved for the HPWF experiment (Neutrino #310) which has been operating in Laboratory C in the Neutrino Area since the earliest neutrino observations were made at Fermilab. The contributions of the HPWF collaboration to the physics output of the Laboratory have been stimulating, and it is with a combined sense of satisfaction and regret that

the recently approved extension is identified as the run which will write finis to the work done by that group using the present Lab C detector.

Two of the interesting and controversial phenomena which have recently received the attention of that group have been the "high-y anomaly" and the production of multimuons in neutrino interactions. The newly approved run will use a major portion of the present detector, during the planned bombardment of the deuterium filled 15-ft bubble chamber, with a neutrino and anti-neutrino beam formed by the double horn focusing system. It is hoped that these data could be useful in resolving some of the controversy and uncertainties which surround the two phenomena in question.

Another major decision reached affecting the Neutrino Laboratory program is the approval for installation and initial running of a flash chamber detector proposed in P-594, which should be useful for the study of neutral current events. An approval for running during 1979 has been granted to that experiment. The apparatus will probably be developed in a modular fashion, running initially in the space immediately upstream of the liquid calorimeter of E-310.

One new proposal for a jet experiment, using a hadron calorimeter, was considered at the March meeting, but final consideration was deferred. It was noted that there are several similar live or embryonic proposals and it was felt that an occasion should be arranged, before the June PAC meeting, when the status and promise of jet physics could be reviewed and when all of the remaining proposals could be considered together.

NOTES AND ANNOUNCEMENTS

FERMILAB SUMMER PROGRAM. . .

Fermilab staff members are being invited to propose assignments for participants in the 1978 Summer Program for Minority Students. Approximately 20 students are brought to Fermilab to work on technical assignments under the direct supervision of Fermilab scientists and engineers. Interested people should contact the Summer Program Committee Chairman, Ernest Malamud.