DELPHI TEST BEAM REQUEST FOR 1989

DELPHI Collaboration
North Area (H6 Beam)

All FEMC (Forward Electromagnetic Calorimeter) modules were successfully calibrated before the end of fixed target operation in August 1988. In addition a combined test of FEMC, Hadron Calorimeter & Muon Chamber modules was made as well as testing the Inner Detector & Micro-vertex Detector.

The following activities are foreseen for the FEMC in the H6 test beam during 1989. Some 200 counters should be calibrated in readiness for eventual maintenance of the detector. The response of the detector near the non-active zones between modules should be studied as a function of the following parameters: type & thickness of the dead region, energy of the beam & its direction with respect to the dead zone. This requires a pair of specially built modules to fit on the existing moving stage, and has not been possible to achieve during 1988. Finally it is proposed to make a detailed study of the scaling of the calibration constants as a function of magnetic field intensity \((0 - 1.2T)\). Data collected during 1988 indicated a small \((1-4\%)\) deviation from perfect scaling. In order to understand the origin of this effect, it will be necessary to study it as a function of various parameters such as counter shape, beam energy & angle of incidence.

The requested beam time for this programme is one day for the calibration of the 200 counters, and 7 days for each of the other two studies, i.e. a total of 15 days in the H6 beam.

The Forward Chamber B (FCB) group wish to test a small chamber in the magnet existing in the H6 beam area. The purpose of these tests would be to improve the calibration constants as well as to examine additional parameters (e.g. Percentage of alcohol admixture & the effect of variation of HT on the potential wires). Five days are requested to complete these tests following setting-up in a parasitic mode.

West Area (X7 Beam)

Eight HPC (High density Projection Chamber) modules have been tested in a beam in 1988. To date, a further 30 modules have been tested using cosmic rays. Systematic tests with cosmic rays started in September, and will continue until the end of January 1989 in order to test all modules prior to installation. Likewise, tests of the modules in a magnetic field as a check of the production quality (short circuits) continue in parallel.

In addition to the 144 HPC modules needed for DELPHI, 10 spares will be built and two or three of them used as reference modules. These will be tested in a magnet field using cosmic rays between February & July 1989. It is proposed to use the X7 test beam to study in greater detail the energy resolution & \(\pi^0\) mass reconstruction. The energy loss at the boundary between two HPC modules will also be investigated. Four weeks will be required to achieve this programme.
In addition, it is planned to make a combined calorimeter test using the hadron calorimeter test module which has been tested in the PS East Hall T9 beam. This programme would require two weeks.

Thus a total of 6 weeks' test beam time is requested for the 1989 HPC programme.

**Summary**

In summary, the DELPHI test beam requests for 1989 are as follows:

- **FEMC**: 15 days in H6
- **FCB**: 5 days in H6
- **HPC**: 42 days in X7