ALEPH 89-125
PHYSIC 89-50
L. Garrido
21.7.1989

Minutes of the $Q\bar{Q}$ group meeting

19 July 1989
(transparencies are attached)

1 Trigger

1.1 Hadronic trigger (F. Palla)

He presented a hadron trigger with a efficiency for hadrons around 99%.

2 Hadron Selection

2.1 Total cross section measurement using calorimeters only (F. Palla)

He presented the results of a hadron selection criteria based only in calorimeters. A energy cut of 20 GeV is used to remove two photon events and muons. An aditional cut on aplanarity is used to reject most of the bhabhas and a cut on the number of cal objects can be used to recover taus if wanted. The acceptance for hadrons is around 99% after cuts.

2.2 Hadron selection (Hongbo Hu)

He presented a hadron selection criteria using only calorimeters and an extension of it to use also the main vertex information. The calorimeters objects closer than 15 degrees to the z axes are not used in order to reject bhabhas and possible beam related background. A energy cut of 20 GeV rejects two photon events and muon pairs. An aditional cut requiring at least 5% of the visible energy in HCAL rejects most of the electron pairs except the ones going to the ECAL cracks that can be rejected requiring than less of the 97% of the total energy in HCAL is concentrated in the cracks. Two aditional cuts on the energy imbalance in the z direction and in the transverse plane are also aplied to guarantee that no imbalance event is selected (like beam gas, electrons out of orbit, ...). After cuts the total acceptance of hadrons is between 95 and 96%.

Substituting the cuts to reject bhabhas by requiring a main vertex with more than 3 tracks and with a z position less than 7 cm the hadron acceptance is around 95.5% and the total bacground is reduced to 5 per mil.

2.3 Hadronic event selection (J. Harton)

He presented a hadron selection criteria based on cuts in the total energy and the total number of "good" tracks. An aditional "topological" cut can be used to reject taus. The total acceptance of hadron after cuts is around 99%.

2.4 The $M_{q\bar{q}}$ cut (LL. Garrido)

The cross section of hadrons with a invariant mass of the hadron system less that 70 GeV is negligible. There is not obius correlation between the total energy seen on the detector and the $M_{q\bar{q}}$. This let us to conclude that the hadron acceptance will be almost independent of the radiative details of the MC. In fact is expected that Lund and the versions of Koralz/Dymu2 that are being implemented for hadrons give the same answer. This remains to be checked.

2.5 Event reconstruction and hadron selection (M. Dinsdale)

He presented a hadron selection criteria based on cuts in the total energy and the number of tracks. Acceptances and backgrounds as a function of an angular calorimetry cut and the criteria to define the total energy were shown.

Selection efficiency of hadrons and relative background using only the information of the number of tracks in the TPC was presented.

2.6 Scanning strategy (S. Haywood)

He discused the scannig of the events as an easy way to identify major problems in the detector and during reconstruction, and also to classify the events.

2.7 Standard hadronic event selection program (E. Lange)

He presented an Alpha utility routine for the standard hadron selection. The selection of hadrons is done requiring a total energy bigger than 20 GeV and more than 2 "good" tracks. All the cuts can be changed by the user via data-cards.

3 Luminosity

3.1 Theoretical uncertainty in absolute Lumi (H. Burkhardt)

He studied the theoretical problems coming from the hadronic contribution to rad. corrections, higer orders and bugs on the programs. The conclusion was that the theoretical error is around 1%.

3.2 Luminosity studies (F. Bird)

He studied the sensitivity to the beam position and shower variations. It seems difficult to forsee problems for this measuremant, especially for the relative one.

4 Asymmetry

4.1 Efficiency of the jet charge reconstruction after simulation and reconstruction (A. Halley)

He presented an algoritm to find the charge of the jet. After a preliminary tuning, the probability of getting correctly the sign of any given jet is 65%. The expected FB asymmetry is about 60% of that predicted by theory.

5 Summary

5.1 Some missing pieces (A. Blondel)

He pointed out what he sees still missing :

- understanding of the dependence on QCD parameters of the hadron efficiency and methods to constrain it.
- method(s) to measure the trigger efficiency for hadrons
- a number for the effect of $M_{q\bar{q}} \neq E_{vis}$ cut.

5.2 next meetings

It is foreseen that analysis meetings will take place thuesday mornings for the rest of the summer (room 32-1A-24).

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