

## Minutes of the QCD Meeting of 15 Feb. 1994 (Plenary Week)

There were two status reports to start with:

- (1) John Thompson.....  $Q\bar{Q}\gamma$ -Democratic-Analysis Status
- (2) Alex Finch..... Status of the  $\gamma\gamma \rightarrow c\bar{c}$  Analysis

These were followed by six talks with "Thursday-meeting privileges" on preliminary results to be presented at the German Physical Society (DPG) meeting in Dortmund 1-4 March; these are summarized in a separate Aleph Note, ALEPH 94-025/PHYSIC 94-021, by Glen Cowan.

(1) John summarized the motivation for doing the  $Q\bar{Q}\gamma$  democratic analysis, in which the gamma is treated with *liberte – equalite – fraternite* relative to the other particles produced in hadronic events: by not giving the photon the special status of an isolation cone, one has access to hard collinear photons which were suppressed in the previous cone analysis but are required by theory for the total cross section to remain finite. The theorists can thus predict the  $z_\gamma = \frac{E_\gamma}{E_{jet}}$  as a function of  $y_{cut}$  (Durham algorithm) in the democratic approach. This is then the prediction we test, and, since the  $\gamma$ 's are inside the jets, the signal can of course only stick out significantly above the background as  $z_\gamma \rightarrow 1$ . For the 2-jet and 3-jet cases, the cross-section is broken down into hard, perturbative and non-perturbative components, whereby the first two can be calculated. The third component needs an "ad hoc" term added to describe the data. The comparison between data and theory is good for the 2-jet (1 jet plus  $\gamma$ -jet) rate as a function of  $y_{cut}$  for  $z > 0.95$ , but this is true for the 3-jets (2 jets plus  $\gamma$ ) only for  $y_{cut}$  larger than  $10^{-2}$ . In all cases, Jetset predicts a rate which is too low, while Ariadne does better. There is a (small) problem arising from a smearing effect as  $z_\gamma \rightarrow 1$ , due to the difference in the way the Durham clusters at the parton and the hadron levels (it throws some soft hadronic energy into the photon jet at the hadron level), which is still being studied.

(2) Alex gave a status report on  $\gamma\gamma$  studies. The study on  $\gamma\gamma \rightarrow c\bar{c} \rightarrow D^*$  started by David Jackson will be finished up by Alex, who is in contact with the theorists regarding the QCD prediction. At the moment, our measurement for the cross section is  $1.20^{+0.52}_{-0.47} \times \sigma(\text{QPM})$  is compatible with the QCD prediction of  $\sim 1.5 \times \sigma(\text{QPM})$ , but more statistics are needed to definitely state that we are sensitive to the QCD component. Two new members of Aleph (G. Crawford and M. Lehto) are starting to work on tagged  $\gamma\gamma$  events.

RS