Minutes of the 196th Energy Calibration Meeting held on 14 July 2000

1 ECAL talk at Osaka

Pete Renton gave a rehearsal of the ECAL talk he will give in the electroweak parallel session of the Osaka conference.

2 2000 energy files and RDP status

Guy Wilkinson told the meeting that he and Mike Hildreth had produced a preliminary energy file for the first three months of the 2000 run. There were several technical problems to resolve, most of which arose because of the miniramps. Another new feature of the model is the inclusion of the bending field spreading (BFS) correction.

The dipole NMRs were calibrated using the 3 RDP experiments of this year. These experiments span 41-50 GeV and give residuals vs energy in reasonable agreement with previous years. The most recent experiment (fill 7519) has a mean residual which is a little larger than usual. Swapping between the 2000 calibration and the 1999 calibration shifts the 2000 beam energy by $\sim$ 9 MeV.

Given the preliminary nature of the files, and the uncertainty of the energy boost from the BFS, an error of 50 MeV is assigned on E_b.

3 Status of 2000 Q_s analysis

Guy Wilkinson showed a transparency on behalf of Anke-Susanne Muller, who could not attend the meeting, detailing the status and prospects with the Q_s analysis.

A measurement has already been performed with Q_s vs RF voltage at several energies. The purpose of this measurement was to provide data to fit the inverse bending radius. This will be done, but requires as input the longitudinal loss factor, which has yet to be measured this year. For the time being Anke has used the data at the lower energies to fit a voltage calibration factor, and then determined E_b at the highest energy of the experiment (60 GeV). This gives a value 10 MeV different from that predicted by the NMR model, with an error of 60 MeV – this is acceptable for the very preliminary status of the analysis. It is expected that the error will decrease significantly with further work.

Data are required to fit the longitudinal loss factor, and several experiments for the energy measurement itself will be performed. The former of these, and the first energy measurement, is foreseen next week.

4 Spectrometer analysis

John Matheson has developed a spectrometer energy analysis to cross-check the work of Eric Torrence. He has applied the analysis to the first fill of the year (7129) and gets compatible results with Eric, also observing a large (-120 MeV) offset between the spectrometer and NMRs at 93 GeV.

John has also examined the impact of fitting the change in bend angle excluding certain BPMs. He finds that if the external BPMs of both arms (3 and 6) are excluded then the discrepancy drops to 30 MeV.

5 Erratum

In the minutes of the previous meeting a change in BPM response apparently correlated with a wiggler manipulation was attributed to synchrotron radiation. On reflection it was realised that any change in synchrotron radiation caused by the wigglers would not be seen in the spectrometer. Therefore any causal link more likely arises from a change in bunch length.

6 Planning

On Wednesday 19 July a 24 hour slot is available for energy calibration measurements. A RDP fill, two Q_s measurements, and a low current spectrometer fill will be attempted.

7 Next meeting

Friday 24 July – to be confirmed.

Guy Wilkinson, 18 July 2000.