Minutes of the 102nd Energy Calibration Meeting held on 2 August 1996 at 10:00

1 Polarisation

Massimo Placidi reported on the depolarisation calibrations at 45 GeV. These were made with positrons, during the week where electrons were unavailable due to the PS septum problem. A table of flux loop and polarisation results is included in the transparencies. Following the original flux loop measurement, the nominal "Z" energy was trimmed down 2 per mil, to be 45.48 instead of 45.62 GeV. Fills 3508 and 3520 have polarisation measurements giving values of 45.601 and 45.579 GeV (both to be compared with 45.48 nominal). The main bend current measurements differ between the two polarised fills by 1.5×10^{-4}. The quoted polarisation values are corrected for the central frequency and tides. A difference of 20 MeV remains. Corrections for x_{arc} and temperature still have to be made, so these results must be considered to be preliminary. The quality of the second measurement was rather better than the first.

Bernd Dehning then described the attempts to find polarisation at 50 GeV. Polarisation at 45.48 GeV was optimised in fill 3520. There was an offset of the polarimeter of -2%. A polarisation of 6% was observed, so the depolarisation calibration saw a swing of 8%. This fill was then ramped to around 50 GeV, after which a long search for evidence of polarisation took place. The energy was scanned by changing the RF frequency. A promising harmonic spin matching was found. However, the maximum increase in the polarisation seen was only 1–2%. (Note – the polarisation achieved on peak is often lower than at peak$\pm$2 GeV. However, values of 20 to 30 % have been seen in previous years. The orbit quality was good for this present experiment, but the coupling was larger than before.)

2 LEP2 RF model

Mike Hildreth commented that the anti-correlation between the energies in points 4 and 8 he showed last week can be understood as a consequence of energy conservation. Work is in progress to get the forward and reflected power into the standard dst format. The definition of Rbom shown last week should be safe for high energy when the sign of the energy sawtooth is constrained by the fact all the units must be on.

More RF alignment measurements are needed to finish the error analysis of the 1995 data, and also for the LEP2 data. These will almost certainly have to wait until October and be done when the newly installed SC RF units are being phased in. With the present understanding there would be uncertainties of 2 to 3 MeV at OPAL and 0.8 MeV at L3 from this effect for the 1995 scan data.

3 Logging issues

There was a discussion of whether instantaneous values of the NMR's should be logged in addition to the means and sigmas (since these are made available by Peter Brummer's code). The suggestion was to store these values every 5 minutes, so that studies of noise correlations would be possible. At present Enrico is storing the instantaneous values every 12 seconds with his private logging. Paul Bright-Thomas is looking into making Enrico's data available in the standard DST form, and will also find out how they can retrospectively be stored in the logging data base.

4 1995 issues

Mike Koratzinos raised questions about understanding the 1995 scan data with 1996 measurements, in particular the correctors and the temperature coefficients.

For the correctors, it was agreed to ask Joerg Wenninger to define one measurement that could be made during the polarisation MD at the end of August, comparing the measured energy with two different corrector settings as a test of the modelling of this effect. If necessary, end of fill MD time during the 45 GeV running in October would then have to be used in addition to refine the understanding.

The data already collected in 1996 which might be help to measure ring and magnet temperature coefficients have not been examined in detail (for example the long polarisation MD at 50 GeV). If there is an opportunity for leaving the magnets at 45 GeV for a long time with no beam, this will be done (to test saturation and if possible temperature effects - the latter might require more "intervention" to produce a variation).

5 Next Meeting

The next meeting will be at 15:00 on Friday 16 August in the pavillon.

Pippa Wells, 2 August 1996.