Minutes of the 187th Energy Calibration Meeting held on 3 Dec 1999

1 Energy calibration requirements in 2000

The focus of the meeting was a first discussion of required machine time for energy calibration work in 2000. This is summarised in the accompanying memo.

A suggested experiment not included in this memo is a proposal from Ralph Assmann to devote a long MD to calibrating the spectrometer in 2 GeV steps from 41 GeV up to physics energies, in order to make a detailed comparison against the NMR model, and to see what happens to the 'banana' in the intermediate energy meeting. The meeting considered this an interesting idea, but it was felt that the $\sim$ 10 MeV precision of the spectrometer meant that little would be learnt in a single experiment, plus the priority lies in concentrating on the physics regime.

2 Status of NMR-extrapolation analysis

Guy Wilkinson reported that he was re-analysing the full ensemble of 1997, 1998 and 1999 polarisation data. This work is ongoing, but a preliminary conclusion is that the averaged NMR calibration is very stable throughout the datasets ($< 5 \times 10^{-5}$), as is the residuals plot.

Pete Renton has analysed the flux loop data of 1999. There are 18 cycles, distributed fairly uniformly throughout the year. There is some variation cycle to cycle, but the general picture is very similar to 1998, with a small negative offset for 'flux loop - NMR model'. This reproducibility is also seen on an individual NMR basis. However this latter conclusion is only reached when all the cycles in the year are averaged together. There is scatter at the $\sim$ 10 MeV level per NMR from experiment to experiment, which is apparently uncorrelated among the devices. New information from Joerg allows the NMRs to be compared with individual octants of the flux loop, rather than the average alone. This is important because most of the cycles have missing octants. However no clear conclusion has yet emerged from this comparison.

3 WPS studies

Jan Prochnow showed the latest results from his continued studies of WPS behaviour, in particular the jumps observed in LEP operation. These jumps are less severe than in 1998 thanks to the efforts to centre the wires in the sensors and the improved shielding, but their origin is still of interest. Dedicated measurements made with a sensor inserted in a special vacuum vessel shows much reduced fluctuations. Furthermore the level of the signal is similar to that observed 'post-jump' in normal LEP operation. Jan postulates that indeed the jumps arise from synchrotron radiation acting on the air, and that this effect gives the air the dielectric properties of a vacuum.

Jan has also conducted an experiment to compare the position sensor readings with those obtained by a laser interferometer. The RMS of the comparison between the readings is $\sim 80\,\mathrm{nm}$.

4 Next meeting

To be announced in the new year.

Guy Wilkinson, 9 December 1999.