Minutes of the 164th Energy Calibration Meeting held on 28 September 1998

1 Planning of the 102/90 MD

The plans for the next polarisation measurement are as follows:

- 102/90 optics, solenoids on
- Start at 12:00 on Tuesday 29 September
- If the RF maintenance takes place in the morning with no beam, then make a flux loop calibration.
- There are break points prepared in the standard ramp at 44.7 and 50 GeV. The polarisation wigglers are OFF by 40 GeV so there are no problems for the mini-ramp. Other wigglers should be brought down by hand. Care must be taken with bunch current/length. The optics will be unsqueezed.
- No bend modulation at start of fill
- No special temperature manipulation
- The fill will be kept at 44.7 GeV until about 23:00, with regular depolarisation measurements.
- Then, mini-ramp to 50 GeV, and if a reasonable level of polarisation can be achieved in a few hours, make a calibration.
- Finish with a central frequency measurement
- Hand the MD over to Helmut Burkhardt or Anke Muller to make an energy loss per turn measurement with a precisely known energy.

2 Recent MD's and modifications

There was a successful 5-point polarisation calibration from Sunday 20/9/98 to Monday 21/9/98 (fill 5214), with measurements between 41 and 60 GeV. (CONGRATULATIONS!!!!)

Guy Wilkinson showed plots of a fit to all 1998 fills prior to fill 5214 and of fill 5214 fitted alone. The combined fit shows more scatter per point than in previous years, which needs further investigation. The 5-point fill shows some banana-like shape, but the overall amplitude is lower than for the 1997 4-point fills by about 1 MeV. Note that these fits are very preliminary.

Anke Muller showed similar fits which showed the same trends.

The flux loop just before this 5-point measurement was of dubious quality since the loops in several of the octanges were dead. However, two more flux loops were made on Saturday 26/9/98 (with the same fill number!) and should be of good quality.

The NMR probes in the injection dipoles were changed again during the stop of week 39.

3 Future MD's

After some discussion, we will request two MD's in week 43:

- A second 5-point fill.
- An attempt to observe polarisation at physics energy, with the 102/90 optics, solenoids off, following a proposal of Ralph Assmann, based on a Russian paper: Derbenev, Kondratenko and Skrinsky, Particle Accelerators Vol. 9 (1979) 247-266.

Also, additional flux loop measurements should be made when there is are opportunities without beam.

4 Issues for the 1997 paper

Daniel Brandt has provided predicted values for the beam energy spread for different optics, nominal centre-of-mass energies and RF frequency shift. Guy Wilkinson will try to interface these to his existing framework so that averages can be made for each year. Eric Lancon has data available to derive the beam energy spread from the longitudinal beam size.

Guy will also follow up the questions about expressing the flux loop slopes in MeV/GeV (rather than Gauss/GeV), and whether an absolute prediction of the slope from the NMR/polarisation fits can be imposed on the NMR/flux-loop data.

5 Next meeting

The next meeting will be on Friday 9 October at 15:00 in the Pavillon.

Pippa Wells, 28 September 1998