Minutes of the 191st Energy Calibration Meeting held on 28 April 2000

1 BPM stability

Bernd Dehning reviewed work performed on the spectrometer BPMs during the shutdown and up to the present. (NB the transparencies for this presentation will be appended to the minutes of the *next* meeting.)

All BPMs have now been installed with horizonal motors, to enable them to be better centred around the beam. The dynamic range of the motors is $\pm 500\mu$m, and the step size $\sim 1\mu$m.

Many studies have been performed in the lab with the BPM electronics connected to a beam simulator circuit. The stability of the 'position' of the pseudo-beam was monitored as a function of various variables:

- **Change of f_{RF}**
  Not a problem for the variations we will have.

- **Temperature**
  This is a more significant effect. Temperature changes lead to position fluctuations in a rather unpredicatable manner. To ensure 1μm stability the temperature should be regulated to better than $0.1C^\circ$. This was not necessarily the case in 1999... For the present run new regulation has been installed which keeps the electronics constant in temperature to 0.03°.

- **Current dependence**
  Depending on the settings current variations of a few 10s of % can lead to shifts of several μm in the observed position. However the input attenuators on the buttons can be safely tuned to a regime where such variations do not occur. This tuning will be performed for all BPMs in the coming week. Any variations which do occur as a result of current changes appear to be quite deterministic and reproducible.

Bernd showed that if all these effects are controlled very impressive resolutions of 100nm are achievable.

2 Miscellaneous

- Patrick will give us an opportunity for a first energy calibration MD within the next fortnight. We shall attempt a depolarisation measurement, in conjunction with the spectrometer – most likely a 2 point fill.

- An energy calibration abstract has been submitted to the EW session of ICHEP 2000.

- Some comments have been received on the first draft of the note on the 1999 energies. It was felt that the level of detail on the spectrometer and on the Q_s fits was a little unbalanced. Therefore the latter will be fleshed out a little.

3 Next meeting

The next meeting will be scheduled soon after the polarisation attempt.

Guy Wilkinson, 8 May 2000.