Minutes of the 217th Energy Calibration Meeting held on 28 January 2002

Present: Bernd Dehning, Eric Torrence (by phone), Jorg Wenninger, Guy Wilkinson

1 Spectrometer Analysis

Guy presented an attempt to make an energy determination from the 2000 spectrometer ramps. He has analysed almost all the good fills, and has applied all known corrections (ambient field, cross-talk etc).

As long known, the results have a significant variation depending on which combination of BPMs are considered in the angle measurement. In all cases, however, it is the inner BPM combination which give the highest energy estimate, and the outer BPM combination which give the lowest estimate. Thus there is a fully correlated and reproducible systematic which biases the measurement.

Guy has tried various methods to establish which combination of BPMs is more trustworthy. Comparing the spectrometer to the NMR is the 40-60 GeV range for 5 fills where there are such measurements strongly indicates that the inner combination is to be favoured, and indeed that here the inner combination is compatible with the true energy. The conclusion that the inners are a better estimator is confirmed by seeing how the direction of the bias evolves with energy for these fills. However attempts to isolate bad BPMs through magnet constrained fits (see meeting 215) are at present ambiguous.

Guy suggested that if these conclusions remain valid, a sensible way forward will be to update the spectrometer results, using the inner BPMs as the estimator, and halving the previously assigned error bar. This would give an estimate of the energy around 90 GeV essentially consistent with that of the NMRs. The BPM systematic would be $\sim$ 15 MeV. These results show a splitting in the electron and positron energy estimates of $<$ 25 MeV, a result which is just about compatible with the assigned error on the sawtooth model.

Eric will attempt to cross-check the more important of the above results.

News since meeting: Guy has realised that the 40-60 GeV systematic studies do not properly implement the ambient field correction. It is quite possible that including this will significantly alter the conclusions! This will be reported in the next meeting.

2 News on the mapping

Bernd reported on behalf of the MBI team that work is about to restart in making final maps to check the sensitivity to the Hall probe alignment. The meeting welcomed this news.

3 Sawtooth analysis

Jorg has a complete draft of a note on the sawtooth model. He is still waiting for cross-checks from Mike on the effect of the polarisation wigglers before declaring the analysis final.

4 BPM lab tests

Bernd is setting up the equipment, and will soon be ready to make lab tests of the BPM stability.

5 Next meeting

To be announced.

Guy Wilkinson, 29 January 2002.