February 4, 1999
http://www.cern.ch/LEPECAL/spectro/minutes/1999/mtg24.ps

LEP SPECTROMETER PROJECT

Summary Notes of the 24^{th} meeting held on February 4, 1999

Present: D. Cornuet, M. Hildreth, J. Montes, G. Mugnai, Y. Muttoni, S. Myers (chairman), J. Palacios, J. Prochnow, M. Sassowsky, E. Torrence, J. Wenninger, W. Weterings, G. Wilkinson

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Comments to Summary Notes of previous meeting - None

Update on Hardware Status - Y. Muttoni showed another detailed schedule of the fabrication, assembly, and bake-out procedures for the Spectrometer components (See copies, attached). Everything for the pickups and absorbers is proceeding at or ahead of schedule. The other components for the WPS system will be fabricated by the beginning of March. The designs for the "non-time-critical" items of the BPM station, like the wire sensor shielding and the "cooling huts" for the BPM stations their shielding, are almost finished and will be ready on time.

Questions on Vacuum Pipe- G. Mugnai showed a drawing of the cross-section of the MBI gap with the dipole chamber inserted and indicated several questions which need to be resolved with N. Hilleret, namely, whether or not the standard "insulation" will be installed around the vacuum chamber inside the dipole, and how thick this will be. There is also some question of equipping our dummy chamber with the standard lead shielding. Giuseppe will meet with Noël to discuss this.

Results from the Mapping in the ISR - G. Mugnai reported that he and B. Dehning had positioned 3 of the 4 reference NMRs with their final re-designed mechanical supports. The fourth probe will be positioned today. They estimate that each of the probes is installed in a region of the dipole with field gradients no larger than 10 mG/mm, with the average more like 5 mG/mm. This limits the local field error for any replacement of the probes to 1.1×10^{-6} at 41.6 GeV, assuming a 1 mm error on placement. The new pump for the cooling station to give higher flow rates will be installed in the next couple of days. Giuseppe also showed Bernd's overview of the mapping planning, where he pointed out that the last two weeks or so before the dipole is moved to the LEP tunnel will be devoted to measurements of the field with the alternate methods of the "mole" in the vacuum chamber and the rotating coil used for the LHC dipoles.

M. Hildreth showed a selection of plots to give a feeling of the mapping reproducibility over the short and longer term. Repeated maps at a single energy during a single day were used to estimate the short-term drift. The integral of the core field from the NMR, when normalised to the Reference NMR probe to remove any small drifts, shows an rms of approximately 1×10^{-6} at 100 GeV. Mike has also implemented a simple algorithm to "recalibrate" the Hall probes with every map by scaling the end field integral from the Hall probe to the ratio of the Hall probe to the NMR where they overlap at each end of the dipole. This can substantially reduce the rms in the Hall probe measurements, which dominate the rms on the total integral field. The reproducibility of the total field integral ranges from 4×10^{-6}

to 1.5×10^{-5} at 100 GeV, which is adequate. Mike also showed the expected behaviour of the core and end fields over the horizontal aperture of the dipole (parallel to the beam axis). The core field tends to increase towards the backleg, while the endfield increases towards the gap. (These results are from a simulation made by M. Sassowsky.) The mapping data at 100 GeV show the same trends in both the core and end fields. At 41.6 GeV, the core field behaves as expected, but the trend in the end field is not discernible due to noise on the Hall probe integral. Mike also showed the reproducibility of maps made at different horizontal positions, where the maps were made a week apart. The reproducibility of the core integral at 41.6 GeV is excellent (a few 10^{-6}). At 100 GeV, the reproducibility is worse, but this could be due to the fact that a degauss was made between 41.6 and 100 GeV for one of the sets of maps. The ratios of the integrals of the central fields between 100 and 41.6 GeV showed the same trend for the maps made a week apart, but there is an offset due to the fact that the 100 GeV maps are different.

Many more analyses are in progress and will be completed now that we have a consistent set of mapping data, all processed with the same code by J. Palacios.

The next meeting will be on Thursday, 18th February.

M. Hildreth