October 27, 1998
http://www.cern.ch/LEPECAL/spectro/minutes/1998/mtg20.ps

LEP SPECTROMETER PROJECT

Summary Notes of the 20^{th} meeting held on October 22, 1998

Present: C. Bovet, D. Cornuet, B. Dehning, M. Hildreth, N. Hilleret, W. Kalbreier, G. Mugnai, Y. Muttoni, S. Myers (chairman), F. Roncarolo, L. Vos

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Comments to Summary Notes of previous meeting - None.

Update on the "QD20 Problem" - B. Dehning gave an overview of the recent MDs that were undertaken to resolve some of the open questions on what could be the cause of the bias in the BOM position measurement induced by moving close-by collimators at QD20. One of the QD20 pickups was recabled, allowing them to see that it was extra charge on the lower inside button that was causing the bias. Another recabling with new hybrid electronics allowed the observation of a second pulse 8ns after the passing of the beam. Yet another recabling will make this pulse directly observable on the bad button itself. L. Vos advanced the theory that this second pulse could be due to the acceleration of photoelectrons by wakefields induced in the collimator by the beam. The wakefield mechanism would at least explain the asymmetry between electrons and positrons in the measured bias.

Design and Fabrication issues for 1999 Installation - Y. Muttoni reported on the current plans for the 1999 spectrometer installation. New design studies will be required for the pickup block supports to facilitate alignment, and small changes to the wire sensor supports will also be implemented. As far as fabrication goes, the vacuum chambers are finished, the absorber blocks were started Wed. 21 Oct. The marble support blocks will be purchased soon. The question was raised as to whether the vacuum chamber through the MBI will be straight or curved, and it was decided that a **straight** chamber would be the simplest. Lead will be applied to the chamber (or a chamber) so it can be used for tests in the magnet mapping campaign in order to determine if the 600 kg of vacuum chamber causes enough deformation of the pole tips to modify the field.

News from the Tunnel - B. Dehning reported on progress in understanding the instrumentation installed at IP3. E. Torrence has optimised the cooling circuit by hand and has achieved $\pm 0.2\ ^{\circ}\mathrm{C}$ stability on the pickup block, which corresponds to approximately $\pm$ 0.4 μm of motion. This can potentially be improved by a factor of two with more work. No changes are envisioned for this setup for 1999, except for possible better contact between the cooling water and the pickup block, which is under dicsussion with Yvon.

Some progress in understanding the "jumps" on the wire sensors has been achieved with the help of Fogale. The company loaned us a number of different sensor heads that were installed in the tunnel. The sensor head that was completely shielded by 5cm of lead showed a large ($\times$10) reduction of the size of the "jump". Removing the shielding on top of this sensor caused the jump size to increase by a factor of three. Sensors with different glue holding the components together also showed some reduction in jump size. Fogale has also provided sensor electronics that allow the signal from the sensor heads to be read directly,

rather than the difference. Data from this will be shown at the next meeting.
Progress has also been made in understanding the poor resolution of the BOM electronics. Problems with the circuit whichs synchs the measurement to 50 Hz were identified, and a new version of the electronics was due to be returned to CERN 23 Oct. Without this circuit, the noise on the BOM signal reduces to 0.6-0.7 μm. It was noted (and shown last time) that at 95 GeV there is very little 50 Hz motion on the beam, so this circuit may not be crucial, whether or not it works properly. Some measurements to test the BOM sensitivity, including changing the QFQD compensation loop and the RF frequency, will be made once the new electronics are installed.

Magnet Mapping group issues and Hardware - W. Kalbreier reported on the status of the MBI dipole and the mapping campaign. The **MBI dipole** was delivered to CERN on 16 October and has been mounted on the girder. Some small mechanical interferences were resolved, and the overall "mating" of the magnet to the girder looks excellent. Weeks 43 and 44 will see the mounting of the coils, drilling of holes for the temperature probes, and dimensional checks by SU. The dipole will be moved to the ISR measurement stand on **2 November**. The cooling station for the magnet should be available at approximately the same time, so it will not delay (hopefully) the mapping campaign any further. M. Hildreth will discuss the small changes in the planning with J. Montes.
The measuring bench and software is nearing readiness for the mapping campaign. It is hoped that by the time the dipole is moved to the ISR, the software will have reached the point that a complete map can be made automatically. D. Cornuet showed the overall status of the mapping programme, and reminded us of the 15 baseline maps that need to be made. Further, more detailed, discussions will take place during the next Mapping Meeting, scheduled for 30 October.

Budget for 1999 - M. Hildreth showed (again) the last budget estimates made by M. Placidi during the summer. As of 22 October, 914 kCHF out of a budgeted 900 kCHF has been committed to the spectrometer project. The instrumentation request for 1999 is not yet finalised. An estimate from EST on their projected costs is also needed in order to determine how much extra money is needed. Apparently, there is some extra money available in the budget for this year; the real needs of the project need to be determined before we ask for any more.

AOB - A Web site has been created for storing minutes, plots, drawings, talks, and other spectrometer-related information. It is at

http://www.cern.ch/LEPECAL/spectro/

among the LEP Energy Working Group pages. Comments/suggestions/additions/contributions are welcome.

The next meeting will be on FRIDAY, 13th November.

M. Hildreth