Minutes of WP-meeting 213

Attendance:
DESY: Ties Behnke, Oleksiy Fedorchuk, Leif Jönsson, Claus Kleinwort, Paul Malek, Felix Müller, Klaus Zenker
Fuzebox: Deb Sankar Bhattacharya, Paul Colas, Madhu Dixit, Keisuke Fujii, Serguei Ganjour, Katsumas Ikematsu, Jochen Kaminski, Takeshi Matsuda, Amir Shirazi, Ron Settles, Jan Timmermans

PCMAG/LP setup, test beam:
Felix: TRACI/test beam area:

- The new position of TRACI is still under consideration. The doors to the counting room will be opened only by the DACHS card, which will be handed out only for the test beam, after safety instructions.

News from the groups:
Jochen reported on the status of the test beam preparations. In Bonn InGrids are being mounted on the Octoboards. The statistics is not very high yet but currently about 20 % of the new InGrids seem to have a short inside the chips. They draw very high currents and measurements show 0 Ohms. This has not been observed before and is only in the IZM-6 batch. Octoboards with IZM-5 do not seem to have the problem.

Deb Sankar has simulated the temperature distribution in the ILC TPC. He assumed an ambient temperature of 22°C and a heat production of 5.5 kW per endplate, which corresponds to 7 mW per channel. He showed the temperature distribution inside the chamber: After 7 h of operation, the highest temperatures is as expected at the vicinity of the endplate and reach above 50°C. The temperature drops fast and reaches about 26°C in the center. If the heat sources is reduced by a factor of 10 (e.g. power pulsing and cooling), the temperature at the endplate drops to 25°C. He also showed the influence of the heat on the drift velocity (about 0.2 cm/µs for ΔT=50-60°). Deb has also studied the impact of a gas exchange of 10 l/h, but has seen little change.
In the following discussion several interesting modifications were suggested: The inner field cage has been neglected sofar, the gas flow could be increased to a more realistic value, the outer detectors (ECAL, SIT, SET) are producing also a constant heat, which has an impact on the temperature of the TPC gas.
If the work is continued also long standing questions (if we need a thermal jacket or a cooling for the resistor chain) will hopefully be answered.
A short discussion on the thermal design of ALICE followed. They are cooling the electronics with water and also have a thermal jacket, but are believed to have take nno further stps for optimization. They are, however, monitoring the temperature and correcting for any effects by using tracks of a laser beam.

Madhu suggested a configuration which he used already for the OPAL Z-chamber and which allows to measure the drift time with a higher precision. Since the FADC clock is not synchronized with the trigger signal in the case of the LP setup, the starting/stopping signal of the time measurement is only known within one clock cycle, i.e. in case of a 40 MHz clock within 25 ns. To improve the measurement, one could couple a scintillator trigger signal to one FADC channel (in case of the MM

modules this could be one of the two channels disconnected because of the HV feedthrough). The pulse is injected in a capacitor and the FADC measures the charge. By calculating the center of gravity of the pulse a more precise time information can be reached.

Paul is preparing his test beam. He has now measured the homogeneity of the black diamond resistive layer of the two new modules. They were claimed to be 3M/□. Paul is using a circular probe to measure them and measures at most places between 4.1 M/□ and 5.1 M/□, at some places even 6 M/□. Also variations are quite strong: after changing the probe's positions by 1 probe diameter, the resistivity can change by 1 M/□. A circular probe is more robust than a 4-point probe investigation are ongoing.

AOB:
Takeshi announced that he will be leaving KEK and is moving from Tsukuba to Kyoto. He will be joining the telephone meetings but no face-to-face meeting anymore. Though his email address will be still viable he asked to put other people in cc, so it is not lost, in case he can not answer temporarily. The next workpackage meeting will take place on February 19th.