

## Minutes of WP-meeting 250

### Attendance:

DESY: Ties Behnke, Oleksiy Fedorchuk, Leif Jönsson, Claus Kleinwort, Oliver Schäfer, Uwe Krämer, Dimitra Tsionou, Lisa Waldmüller

Vidyo: Alain Bellerieve, Paul Colas, Madhu Dixit, Keisuke Fujii, Jochen Kaminski, Amir Shirazi, Ron Settles, Jan Timmermans

### General News:

Ties announced that Dimitra will be the new subdetector software contact of the TPC in ILD, that is she will follow the implementation of their subdetector in the ILD software models, including the various versions for the ILD optimization. They are the central ILD software team coordinated by Frank Gaede and LCTPC.

### PCMAG/LP setup, test beam:

Ties: PCMAG/TRACI/test beam area:/LP:

- The infrastructure worked well during the test beam campaign.

### News from the groups:

Ties reported from the test beam campaign. The original intention of building three new modules with a more precise and reproducible production technique could not be done, because the ceramic frames were not delivered to date, because of problems in money transfer to the UK. Therefore, it was planned to resurrect three of the old modules produced by Felix. However, the GEMs had not been treated with care before/were overtested and operational sectors had to be aligned to cover the complete track paths. Of the three modules one was destroyed during insertion, one was unstable from the beginning and had to be removed. The last one had a discharge destroying all four sectors of one GEM this morning. Therefore, the test beam had to be canceled. Close post-mortem analysis of the destructive discharge is planned and the new filter will be tested regarding its functionality. For the upcoming test beam in November/December the new modules should be ready.

Keisuke mentioned that at the JPS meeting is ongoing and all Japanese colleagues were attending this meeting. The preparations for the test beam at the end of October is going well, the gating GEMs have been delivered and a first one has been glued and also the electron transmission has been checked. Ties asked, that Akira should contact the DESY group regarding the mini-WS on Gating.

Dimitra said that Hamamatsu has not yet made an official statement regarding the production of the sensors for the external tracking device. But first discussions show, that they are interested.

Alain brought up a short discussion on double hit/double track identification and the necessary algorithms for this. This will be discussed offline by the people interested. If you are interested contact him to remain in the loop.

Paul reported on the ILD technical conveners meeting which took place the day before. There was a question, whether the pad size would be changed, if the outer radius of the TPC was changed. During the discussion a consensus was clear that the pad size is only determined by the diffusion and the track

multiplicity close to the inner field cage. Both numbers are independent of the outer field cage and thus the pads should not be changed by changing the radius.

Paul also suggested to update the background estimate done by Adrian Vogel several years ago, in particular since this is an important input for the other ongoing debate: anti-DiD – yes or no. Finally, the interfaces and number of cables were of interest to study the cable trays. Jochen had an old presentation by Catherine and thus the old number given before could be reproduced.

Finally a short discussion on the calibration/Z-pole running was started. During this Madhu reported on his OPAL experience. The jet chamber of OPAL had 24 sectors in  $r\phi$  with about 4000 anode wires in total. Of course Z-pole running was important after commissioning, but the second main calibration tool were two Nd: YAG lasers for generating tracks in the two half sectors of the jet chamber. The lasers were operated also during data taking to track the influence of T and p changes with regard to the drift velocity, which is a crucial parameter for a jet chamber.

Jan added his experience from Delphi, where a  $N_2$  lasers were used for calibrating the intermediate jet chamber and the TPC: 90 % of the laser power went into the TPC, which had a few static mirrors guiding the laser beam first parallel to the anode and then with one long track towards the inner radius at the central cathode. In this way the drift velocity could be measured with high precision. 10% of the laser power went into the jet chamber, where a complicated system of pneumatically moved mirrors could guide the laser track to various places. The complicated infrastructure was shortly after installation, but once tracks from e+e- collisions were available the merging of tracks from inner detectors gave much better results and the laser system was basically abandoned. Jan showed also some estimates regarding the precision based on the required momentum resolution. A residual internal systematics within the TPC of less than  $22\mu\text{m}$  and an overall positioning of the TPC within  $10\mu\text{m}$  with respect to the other tracking detectors has to be reached.

AOB:

The next workpackage meeting will take place on October 6<sup>th</sup>.