

## Minutes of WP-meeting 264

### Attendance:

DESY: Ralf Diener, Ulrich Einhaus, Oleksiy Fedorchuk, Leif Jönsson, Uwe Krämer, Paul Malek, Dimitra Tsionou

Vidyo: Keisuke Fujii, Qi Huirong, Jochen Kaminski, Kees Ligtenberg, Tomohisa Ogawa, Ron Settles, Akira Sugiyama, Jan Timmermans

### General News:

The ILD meeting at Lyon was discussed. One of the new suggestions is a different anti-Did magnet, which is weaker and closer to the beam pipe. The design needs more details and studies, since it currently seems to introduce too much material close to the beam pipe, which is problematic for some physics cases. During the software meeting, it was discussed, that a bug had been found in the background simulations. The error is in a fixed expectation of the order of the coordinates of the field map in the simulation. When the latest field maps were used, some field was stored in a different coordinates order and hence the wrong fields resulted. An error occurred and the magnetic fields are not added up correctly. So, all the background simulations are wrong and have to be redone. As far as the TPC is concerned a major issue raised and also discussed during yesterdays executive meeting was the outer radius. The thicknesses of the ECAL layers were estimated too optimistic and the current best estimates are that 3 cm more are needed for the complete ECAL. The discussion shows, that pushing the outer radius 3 cm to the outside is quite difficult and needs a significant amount of replanning. Reducing the outer radius of the TPC is easier, since we have included a 6cm wide uninstrumented ring between the last pad row and the field cage. This area was foreseen for services (e.g. laser) as well as for improving the field homogeneity in the instrumented region with respect to close to the field cage. A smaller area seems possible, but has to be discussed. As far as the endcaps are concerned, it seems less likely that we can give up 3 cm. At the same time it is easier to push out the HCAL and muon system, which is the preferred solution.

Ralf made a pre-announcement of a DESY test beam workshop in the fall. The DESY management wants to have feedback from the user community about the future needs and wishes regarding the test beam. That is why a representative of each experiment will be asked to give a report – also LCTPC. We will have to find someone to give this presentation and discuss our future needs.

### PCMAG/LP setup, test beam

Ralf: PCMAG/TRACI/test beam area:

- The area is being prepare for an ECAL test beam, which will take place soon.

### News from the groups:

Leif reported on the status of the SALTRO-read out electronics. He has found a company in France, which can package the SALTRO chips in 9x12 mm<sup>2</sup> packages. Since this eliminates the current bonding and globtapping problems, this is the preferred way. A first test batch of 35 chips was ordered and will be delivered in June. The development board is being adapted to the substrate with a new test socket. If everything is submitted mid- end of May, the board will be ready in time to start testing. The company asks 11,500 € for packaging all 850 ASICs we need. This money has to be given by groups, since Lund can not pay for it. To better understand the later financial needs of the project Leif was

asked to estimate all expected costs including PCB and major components.

Leif also reported on some side activity of Lund within AIDA2020 which is cooling. Lund has contact to a group in Pisa studying the micro-channel cooling. In the Pisa method Spaghetti-like pipes are fixed on the silicon which is then cooled by water. The silicon has to be brought into thermal contact with the chips. It has been demonstrated for similar projects, that the temperature can be kept stable to 1° C with such a system. Leif has received a thermal mockup of 5 MCM boards from Takahiro Fusayasu for tests and the Pisa group will develop a cooling system.

Kees showed the presentation of his simulation regarding the comparison of a pad and a pixel TPC. He explained first his simulation tool and how he generates the hits for pads and pixels. He then uses Clupatra for trackfinding both for pads and the extended Kalman-filter for track fitting. For pixels he uses a Hough Transformation, since Clupatra would take too long. He then showed the dependence of the momentum resolution on the dip-angle  $\theta$ . The pixels are better by a factor of 2-6. Kees also showed some control plots with the pull and the error on the pull which indicate no distortions. The results were discussed and a few suggestions were given.

Dimitra showed her slides of the ILD meeting. Most of them had been discussed in the WPmtgs before, but some questions had been raised in the meeting. We have to verify also, if the doubled hit resolution is correct, we should introduce dead space between the modules to make the model more realistic, and we have to check if the services are correctly implemented (cables, cooling pipes, etc.). In particular it was asked, if the services are already included in the 25 %  $X_0$  of the endcap. This was confirmed during the meeting. Finally, Jan had spotted an error in the implementation of the single point spatial resolution formula. Since it was late, it was decided to continue the discussion by email and in the next WPmeeting.

AOB:

The next workpackage meeting will take place on June 1<sup>st</sup>.