

Minutes of WP-meeting 205

Attendance:

DESY: Ties Behnke, Oleksiy Fedorchuk, Leif Jönsson, Claus Kleinwort, Felix Müller

Fuzebox: Paul Colas, Serguei Ganjour, Jochen Kaminski, Takeshi Matsuda, Dan Peterson, Amir Shirazi, Ron Settles, Akira Sugiyama, Jan Timmermans

General News:

Jochen, Takeshi, Leif and Paul shortly reported on the electronics expert meeting on the 18th of September in Bonn. The meeting brought together some detector physicists and electronics experts. First the requirements were discussed and a list of requirements by physics was established. The numbers given on this list have to be verified by simulation and people interested in doing this are very welcome. Also the benefits of different technologies were discussed and the benefits of implementing various parts of the electronics chains in those technologies: The prospect of the IBM-130nm process is unclear, since the process was sold to a different company. Therefore, the 65 nm process looks more promising.

Paul announced that from December 1-3, there will be the Linear Collider days in Grenoble. This workshop addresses the French scientific and political community. Here, the newest information on the international developments and the structure of ILD shall be exchanged.

PCMAG/LP setup, test beam:

Ties: PCMAG/TRACI/test beam area:

- After the 4th refurbishment of the test beam area floor, the result is satisfactory and the re-installment of the area has begun. The support structure of the TPC has been mounted in the PCMAG. Now, a load test and a survey have to be made. This is supposed to take 2 weeks. For being fully operational the cryocoolers have to be brought back, tested and connected to PCMAG. This will take about 4-6 weeks, then the area is again ready for use.

LP:

- The HV connectors for the new endplate have arrived, but still some connectors to mount it on the field cage are missing. Dan pointed out that new mounting frames were added to the endplate and should be available. There is also a website where the new mounting procedure, which resembles a ballet dance, is described. Finally, also the mounting tool has to be revised.

News from the groups:

Since lately changing the module size has been mentioned several times, Ron had looked into the implications of such a change. The current module size of the modules is given by the dimension of the LP and the specification, that a track should be measured by three modules to study the effect of gaps. But for the final design of the ILD TPC the module size (or shape) could be different. Enlarging the modules would have the positive effect, that fewer modules would have to be aligned and fewer gaps would lead to field distortions. On the other hand larger modules would lead to less mechanical stability and mounting the gating device (GEM gate or wire gate) would be more difficult. Dan had been asked to summarize his work on larger modules and for this he showed several transparencies of the Arlington LCWS and reminded everyone on the outcome back then. He first showed, that only little could be gained in rigidity if the thickness of the current endplate design was increased, but the

deflection would be increased quite a lot, if the strut design was made thinner. Then, Dan discussed the effect of out of tolerance modules. Here, the stress of such a module would propagate quite significantly to the endplate. This effect could be reduced by using not 4 dowel pins, but only two dowel pins placed on the same side of a module and not in the diagonal. In this way the stress of an out of tolerance module hardly propagates to the endplate. The effect of the different mounting possibilities (three vs. four points etc.) was not discussed. Finally, Dan had studied also the impact of increasing the size of the modules by a factor of two in each dimension (thus increasing the area by 4). The maximal longitudinal displacement of the endplate increases by a factor of 1.4. There are also local transverse deformations of the outer endplate which are not seen in the design with smaller modules. This could probably be avoided by increasing the thickness of the outer endplate and thus increasing the material budget by about 10%. But there are other positions, where some material could be removed.

Ron asked, what the maximum size of the GEM gate could be with the current technology. Takeshi said, this would depend on the production technique: He thinks that it is very difficult to judge the scalability of the laser drilling process, while the chemical etching seems to be limited to about 30×30 cm² because it is very difficult to control the important parameters over larger areas.

Takeshi mentioned also, that the ECFA DP had suggested to look into the use of low friction O-rings. It is still not clear, if this would be beneficial or contra-productive: The modules add to the rigidity of the endplate (which has not yet been taken into account by Dan yet) but out of tolerance modules could have a bad effect.

Takeshi informed that Ikematsu and colleagues are preparing another test of the gating GEMs which should start next week and last for about two weeks. The results will be presented in one of the next meetings.

AOB:

The next workpackage meeting will take place on October 16th.