Minutes of WP-meeting 158

Attendance:
DESY: Stefano Caiazza, Ralf Diener, Isa Heinze, Felix Müller, Astrid Münnich, Christoph Rosemann, Jochen Kaminski
Webex: David Attie, Paul Colas, Philippe Gros, Martin Killenberg, Dan Peterson, Ron Settles, Wenxin Wang

General News:
Paul shortly summarizes the Krakow meeting. He mentions that the Japanese proposed to build the ILC in Japan and an official statement will be made very soon. This proposal was greeted with positive support, also from the CERN side, which has traditionally been more supportive of the CLIC project. So, the overall prospect of the ILC is currently more favorable than ever before and a start of the project in 2014 or 2015 seems possible.
An energy upgrade for the LHC was also discussed at Krakow and it was stated that R&D for the magnets will last for about 10 years. Also a larger diameter is discussed.

PCMAG/LP setup, test beam:
Christoph: LP:

- On 27.8. a thorough test had started to investigate the HV-problems of the LP. The standard setting for operation with GEMs is to put the cathode to 15-15.5 kV. In this configuration the HV tripped after 12h. To investigate the source the 8 shields and the 7 dummy modules were connected to individual HV channels and it was observed, that shield 8 caused trips. The cable connected to the HV feed through was identified as sparking to the aluminum anode plate. By shortening the cable and adding shrinking tube the problem was solved on Monday. On Tuesday shield 5 tripped and also here the cable was too long and damaged while closing the LP. So the cable was shortened. On Wednesday the cable connecting ring 7 caused problems since the insulation between the cable and ring 1-6 was damaged during opening and closing. The insulation was finally completely redone on Thursday, when additional layers of Kapton and epoxy were used. On Friday HV at shield 4 could not be raised above 1200 V. So the HV connection between the feed-through and the shield was cleaned, shortened and shrinking tube was added for all the remaining shields. At many places carbon deposits were found suggesting, that many sparks from the HV cable (through its Teflon insulation) occurred to ground. The field cage then stood the nominal voltage of up to 16 kV for more than 10 hours. A false setting at the HV power supply and subsequent sparking required opening and cleaning of the LP one last time on Monday before the preparation of the test beam started. The HV problem has to be investigated further. One thing to investigate is the trip threshold of the power supply for the shields which was set to 20 µA and a minimum duration of 100 ms. This seems to be too high, since the power supply rarely tripped. Additionally, protective resistors for both the shields and the dummy modules were discussed to prevent the full charge stored in the supply to discharge inside the detector. Several options were discussed and it was preferred to add a single resistor in the distribution box before the lines are split. In this case all modules/shields trip and no voltage difference between modules/shields will be possible.
- ALICE had to cancel their test beam in September. They will send 8 FECs to DESY to be used in the current test beam. But they asked if they could have ten FECs again for a test beam at the end of November/beginning of December. The decision on this is up to the

Japanese colleagues, who have reserved both the ALTRO and the LP for this period.

Test beam schedule:

- The DESY group is currently setting up their module.
- Paul would prefer to make a second test beam before the Japanese. He would like to start on the 5th of November and will need about 10-14 days. Whether this is possible depends on the starting date of the Japanese who have reserved the test beam and LP starting from mid of November until the end of the year.

News from the groups:

Felix reported on the current test beam campaign with the DESY module. After the problems with the field cage only one module was placed in the detector to be on the safe side in case the discharges on the anode side restart. If the detector can safely be operated over the weekend then the remaining 2 modules will be added. The 152 Kapton cables were connected to the detector and 41 FECs on Tuesday. Currently there are, however, problems to communicate with the RCU properly. This is because of problems with the termination of the ALTRO-bus on the backplane. But this is expected to be solved soon.

David reported on the 7 module test beam of the Micromegas group in July. Since the ordered modules were not delivered from the CERN shop in time three different kind of detectors were used: 4 of the new series, one of the pre-series from last year and one prototype produced 2 years ago. All modules have a resistive layer of C-loaded Kapton with a resistivity of 3 MΩ/□. All modules were mounted in 2 h. A few issues were notice during the mounting. First an about 4 mm long metal piece was found in the field cage and removed. It is likely to be scraped of a module during (un)mounting. A suggestion to prevent this in the future is to close the screw holes with a tape during mounting of the modules. Another issue is the wide gaps of 3 mm between the modules and the shields, which could lead to field distortions. David showed several events with cosmic ray tracks and beam events. Only very few channels were dead, but there was a connection problem and many more channels did not show any signals.

Wenxin showed a first very preliminary analysis with some plots from this test beam: At first she showed an occupancy plot from a cosmic ray overnight run. The channels with a bad connection to the readout electronics are clearly visible. Then Wenxin showed two event displays with tracks and the fitted tracks. Finally, she showed the residuals of each pad row from the three central modules. Deviations of up to 1 mm can be observed at the edges of the modules indicating field distortions. One modules is significantly worse than the others because the is a ~5 mrad tilt. The next steps of the analysis will be to properly align the modules and then to determine the momentum resolution.

Christoph gave a short status report on MarlinTPC. A new release (v-00-10) has been published recently and there are still many contributions both in the pad as well as in the pixel branch. The documentation is still work in progress and regular meetings will start soon again. Christoph reminded people, that they don't need the full ILCsoft installation, if they only want to use MarlinTPC. A short description on a minimal installation is given on the MarlinTPC-wiki (the url can be found in Christoph's presentation). He also asked everyone to put the data of all test beam campaigns on the grid and also add Meta data and everything. He showed a list of all campaigns with the status of the data uploading. An instruction for uploading is also available on the MarlinTPC-wiki.

AOB:

Paul mentioned that the AIDA report is soon due and that he would like to have comments and

additional contributions to the text he has written.
The next workpackage meeting will take place on September 27th.