Minutes of WP-meeting 371

Attendance:
Zoom: Paul Colas, Ralf Diener, Ulrich Einhaus, Serguei Ganjour, Leif Jönsson, Jochen Kaminski, Claus Kleinwort, Paul Malek, Shinya Narita, Huirong Qi, Oliver Schäfer, Ron Settles, Jan Timmermans, Maxim Titov

General News:
When discussing the general situation of the ILC, the last ILC-Europe meeting was mentioned, where Steiner Stapels discussed, how Europe could contribute to the 18 open urgent tasks and how one could start addressing them now by starting task forces. The current funding application in Japan requests a KEK budget of 10-15 M€, which would allow KEK to approach other research institutes (like DESY or CEA) and cooperate on the open tasks starting from April 2023. It was also discussed that CERN should join the next phase of preparation for the ILC. This would make it easier for other institutes to approach their funding agencies and get money. Currently 45 M€ are foreseen every year in the CERN budget to study future linear colliders in general. It might also help, if some of the money was earmarked for ILC only.

News from the groups:
Ralf reported that the field cage foil with the resistor chain was tested with HV and everything looks fine. When ramping for the first time the currents were checked and they agreed with the expected values. The foil was tested with 30 kV for about an hour and with 25 kV for 24 h. In this period the currents did not change. Therefore, the field strip foil was deemed good and the gluing of the field cage will start soon. Ralf and Oliver were asked about the spot, which was fixed. Oliver repeated in detail the repair work: The spot was detected, because the associated resistor showed values outside the specifications, when tested. After repeated exchanges of the resistor and tests Oliver studied the spot under the microscope and could identify a bad spot in the kapton where carbonization had taken place and the copper was detached. Before the repair work even sparks could be observed. Oliver cut therefore an area with a 3 mm diameter from the foil, filled the hole with epoxy and covered it with kapton from both sides. He finally added a metalization layer by painting a conductive glue, where necessary. Because of the pandemic, the foil could cure for more than a year. Paul C. reported, that the T2K group had copied the LCTPC design and made a 1m long field cage. Two prototypes of 0.5x0.5x1 m^3 were successfully tested and used in beam and cosmic tests in the recent years. However, the real-size half cage 2x1x1 m^3 drew too much current to be functional. The reason of the leakage currents is being investigated.

Discussion on Common Module:
Leif reported, that the FPGA issues are being addressed by an external person hired by Lund. The FPGA program has been developed by several persons over time, that is why the code is hard to read and work on and the improvements take some time. Once this is done, the testing of the packaged sALTRO-ASICs can continue before they will be mounted on the MCM-boards by the electronics group at DESY. The MCM boards have a size of 25x32.5 mm^2 and 8 sALTRO-ASICs with 16 channels each. 25 MCM boards would fit on an LP module and therefore 3200 channels would be available.
Jochen presented his vision of a common module with the slides of the CM2017. It foresees a standard size of the LP-modules, sALTRO electronics, a standardized padplane, a gating GEM and only a gas

amplification stage varying by the different groups.
Paul presented a new approach, where the module size should be increased by about a factor of 4 in area, with common electronics (sALTRO or AGET), a common cooling unit and a gating GEM.
Afterwards, there was a discussion, for which aspects the common module effort should be optimized: Going to a final design, more R&D studies (e.g. pad sizes) or preparation of the technology choice. In this context, Ralf suggested, that several aspects should be studied first in simulation. For example the pad size could be optimized much easier in simulation than experimentally, as less money would have to be spent. The common module could then be planned with the best pad sizes. Another aspect of the discussion was, if the realization of a common module would be feasible and who could work on it. Ideally each group could contribute some small aspect of the common module. Unfortunately, no group could promise any contributions neither for the hardware realization nor for the simulation effort, as no-one receives funding or can hire a PhD. student to implement the ideas.

AOB:
The next workpackage meeting will take place on May 19th.