Minutes of WP-meeting 214

Attendance:
DESY: Mikael Berggren, Ralf Diener, Oleksiy Fedorchuk, Paul Malek, Felix Müller
Fuzebox: Alain Bellerieve, Deb Sankar Bhattacharya, Madhu Dixit, Keisuke Fujii, Takahiro Fusayasu, Serguei Ganjour, Katsumasa Ikematsu, Jochen Kaminski, Dean Karlen, Takeshi Matsuda, Rashid Mehdiyev, Supratik Mukhopadhyay, Amir Shirazi, Ron Settles, Akira Sugiyama, Jan Timmermans

Optimization Meeting:
Mikael repeated the presentation on the tracking performance of the tracker with various ILD geometries he gave in the ILD optimization meeting on February 11th. The trigger for this study is the optimization study of ILD in which the cost should be reduced. Since the ECAL is the cost driving element reducing its size would reduce the cost of ILD significantly. Of course the size of the tracking detector would also have to shrink. The effect on the higgs recoil mass measurement was studied with the fast simulation tool SVG. Mikael first explained the input parameters such as the behavior of the point resolution of the TPC and the expected outcome based on back of the envelope calculations. He then made 300 different ILD tracker models with various lengths, diameters, aspect ratios and magnetic fields and simulated the events. The first observation was that as expected the cone of back scattered particles can be reduced by higher magnetic fields. He then compared the momentum resolution for several tracker models with the current base line model. The behavior was as expected, that means with higher magnetic field the momentum resolution improves, while with smaller detector diameters the momentum resolution decreases. There is also a characteristic behavior for different drift distances. He then compared the impact of the various models on the error of the helix parameters. Finally he compared the measured recoil mass of the Higgs at a center of mass energy of 350 GeV. As a conclusion the reduction in size down to R=160cm and Z= 190 cm does not degrade the momentum resolution if the magnetic field is increased at the same time (R=160 cm is still significantly larger than SiD's outer tracking diameter). This does of course not include other effects such as dE/dx of the track finding efficiency in backgrounds, 2 track resolution or the effects of systematic errors on the measurements. In the following discussion different aspects of the cost reduction were mentioned: For one the ECAL becomes smaller and reduces the cost, but then the coil must sustain higher currents for higher magnetic fields and also the return yoke must be higher to return the higher flux. The scaling of the costs was not clear during the meeting.
Mikael said he would refine some parts of the analysis by including for example the background.
In this context also the effect of shortening L* was discussed. Currently it is studied, if a vacuum pump could be moved futher to the outside and the LHcal could be shortened a bit. This would allow to leave the remaining detector untouched and the shorter L* could still be implemented. If however the vacuum pump can not be moved, the detector has to be shortened.

General News:
Jan said that he was asked by Juan Fuster to participate in a discussion on a possible application to the RISE program within Horizon 2020. This program is aimed to exchange staff between institutions. The program requires that persons will visit other institutes at least one month or multiples of months and it pays up to 540 person months. The idea is that the detector community will also make an application to send people to Japan. The accelerator community and Belle 2 have already submitted similar requests. It is however not clear yet, if Japan is eligible at all, or if only countries of the EU and associated

countries (US and Japan do not count as such) are eligible. The grant will pay about 2000€ of subsistence per person-month (staff unit cost), "institutional unit cost" of 1800 € for research, training and networking costs (e.g. conference fees) and 700 €/month/person overhead (management costs). There is already interest of 80 – 100 person months. Jan suggested that everyone interested in the project should contact Juan.

Ron was contacted by Yasuhiro because the accelerator community had included in the resource estimate we filled out last December also the human resources in universities and institutions. Ron was therefore asked that the estimated 35 FTEs we assumed for the construction of the TPC should be broken down in various personnel types (physicists, engineers, technicians, post-docs and administrative stuff). Ron had prepared already some suggestion which was discussed. The general feeling was that 15 % administrative staff (5 FTEs) was too much and it was suggested to lower this number to 3 FTEs as the management category suggests. The rest was approved and Ron will send the table to Yasuhiro.

Test beam:

Ralf: TRACI/test beam area:

- The test beam area is being prepared for the upcoming test beams. Traci will be moved, but the piping for the new position is not ready. If this should not be finished before Paul's test beam, the old position and piping can be used, since the old piping could not be reused anymore and is still available.

News from the groups:

Jochen mentioned that the preparations of the Bonn test beam are going well 23 Octoboards have been prepared and are largely working electronically. On all Octoboards at least 7, mostly 8 InGrids can be read out. HV test are starting now. All other parts are already in house or have been ordered.

Deb Sankar reported that the tests of the modules for the MM test beam are going on. This was very successful at CERN and data with Fe55 sources and cosmic rays were taken. Two modules showed shorts, probably from metallic dust. They could be repaired at CERN and tests will continue at Saclay. Some modules show 5-10 pecent of disconnected pads because of the problems with the connectors. Paul, David and Deb will try to fix as many as possible before the test beam.

AOB:

The next workpackage meeting will take place on March 5th.