

Minutes of WP-meeting 416

Attendance:

Zoom: Paul Colas, Ritsuya Hosokawa, Jochen Kaminski, Claus Kleinwort, Peter Kluit, Kohei Oikawa, Huirong Qi, Oliver Schäfer, Ron Settles, Aiko Shoji, Jan Timmermans, Maxim Titov

General News:

Huirong announced that finally the TPC was chosen as a baseline tracker for the CEPC physics and detector TDR. After the TPC/DC mini-review meeting, there was discussion in the Tracking Detector Group. The groups pointed out that in case of a successful CEPC mega-project application in the 15th 5-year-plan, the detector must be deliverable immediately to TDR document. The detector design of LCTPC is far advanced and could be implemented with slight modifications. The driving requirements of the PID are particularly important for the Z-pole running, which will be performed for 2 years after the Higgs running (10 years) and the detector could still be optimized during the Higgs running. The geometry of the TPC varies slightly from the ILD design, as the inner radius is 60cm and the total length is 2x2.9m. The FEA calculations started in March at IHEP have yielded first results for the deflection of the endcap due to the overpressure, but optimization still is ongoing. There are also considerations to replace the honeycomb structure with carbon fibers to reduce the material budget. Huirong finally gave a list of key issues to be simulated and validated:

- Material budget at endcap/barrel
- Occupancy and hit density
- Improved $dE/dx+dN/dx$
- Ion backflow suppression
- Reasonable channels and power consumption
- Running at 2 Tesla
- Beamstrahlung and distortion
- Cost estimation

In particular the doublemesh performance regarding the IBF were discussed. There was an initial paper, about 10 years ago, where a reduction of 10^{-4} was quoted. However, this value could not be confirmed by other authors, in particular the ALICE collaboration tried to measure it and did not succeed. Therefore, also the expected performance of the doublemesh-GridPixes has to be confirmed. Max Chefdeville had measured 0.1-0.3% for single mesh InGrids. A detailed study on IBF of Micromegas was published in 2002.

Huirong also explained the timeline for the TDR: There will be a first review in July 1st, where a prediscussion will be evaluated. Then in November a first complete draft will be reviewed. In a third meeting in January 2025 the final draft will then be scrutinized probably in combination with the Hong Kong University of Science and Technology conference. The TDR will be released shortly afterwards.

Huirong has submitted an abstract to the ICHEP in Prague and will attend the conference.

The 8th Conference on MPGD detectors will take place at the USTC Hefei from October 14th to October 18th (<https://mpgd2024.aconf.org/>).

The next CEPC-WS will take place at Hangzhou from October 23rd to October 27th. More information are here: <https://indico.ihep.ac.cn/event/22089/>.

There will be an ILD technical coordinator meeting on 17.5. Paul will attend.

News from the groups:

Paul is currently in Japan and taking part in the commissioning of the T2K top TPC. The TPC is installed in JPARC along with the TOF detector and has started to take data with cosmic muons. The magnet closing will start on the 20th of May and data taking with beam will start in about 1 month. Though the challenges and requirements of T2K are much less stringent, it is still a good exercise in preparation of the ILD TPC.

Paul also mentioned that Serguei has finished the paper draft and the Micromegas paper will be circulated in a few days.

Oliver has submitted an abstract to the LCWS, where he wants to present the work on the second field cage. The proceedings will serve as a documentation of the work.

AOB:

The next workpackage meeting will take place on June 6th.