

Minutes of the Tracking Session on June 26th, 2019

Presentation slides can be downloaded from the tracking session indico page (<https://indico.gsi.de/event/9012/>).

The session started with a welcome of two new Ph.D. students in the Tracking group: Akshay Malige in the FT group at the Jagiellonian University in Krakow and Gabriela Perez in the STT group at the Forschungszentrum Jülich.

Jerzy Smyrski gave a presentation about the status of the Forward Tracker activities in Krakow with the new Straw Tracker Station STS2 for the HADES upgrade. The installation of STS2 at HADES is planned for September. Then he discussed the issue of expected charge loads in the PANDA-FT stations for the high luminosity case with $2 \times 10^7 \text{ s}^{-1}$ interaction rate. The highest expected charge loads are about 0.65 C/cm/year in the FT1 at about 10 cm horizontally from the beam axis and a gas gain of 5×10^4 . He showed results of straw aging tests conducted with a ^{55}Fe radioactive source and with an accumulated charge of about 0.36 C/cm. The observed straw aging, characterized by a gas gain drop in the irradiated area of about 20%, has to be further investigated. Next steps were discussed.

Next, Akshay Malige reported about first results of the in-beam test of a Forward Tracker setup at COSY in Jülich in February this year. In addition further PANDA detector systems were set up and a common TRB3 data-acquisition with time synchronization. The FT setup consisted of eight double layers, four with vertical orientation and four with slight 5° vertical inclination, same as foreseen in the PANDA-FT. Detection efficiency and cross-talk are under investigation. The first results are very promising and show a high detection efficiency above 95% also for lower straw operation voltage and only minor cross-talk. The data analysis is ongoing.

Peter Wintz gave an update about the STT activities in Jülich with the set up of the new Straw Tracker Station STS1 for the HADES upgrade and a summary about the PANDA-STT project status and next steps. The installation of the STS1 is foreseen after summer this year. A major next project milestone for the PANDA-STT will be the production of all PASTTREC ASICs for the STT and FT together. Good news are the extension of the production lifetime of the 350nm CMOS technology by AMS beyond 2019, which was announced earlier to be expiring by 2019. For 2020 the assembly of a complete STT straw module sector in a prototype mechanical frame is foreseen. That also requires a freeze of the final STT dimensions with inner and outer radius, length and the half-barrel gap size for the target pipe and Central Space Frame.

The presentation by Gabriela Perez was about straw calibration and tracking methods developed in Jülich. She gave a brief overview about the PANDA-STT and HADES-STS straw systems and summarized the current status of the analyses of the testbeam data taken in 2016 and 2018 with proton and deuteron beams at COSY. She gave an outlook about the next planned analyses topics. Focus here is on the preparation of straw calibration and tracking with cosmic tests foreseen with the STS1 station in Jülich during this summer. The work will be relevant for both straw projects, the STT and the STS1.

The last presentation was by Pawel Kulesa about the status of the SADC-based readout system for straws. He explained the various hardware components developed in Jülich by IKP and ZEA-2 in the past and showed first results from the parasitic testbeam time in February. He discussed the possible next steps and minor hardware changes necessary.