

Minutes of the Tracking Session on November 6th, 2019

Presentation slides can be downloaded from the tracking session indico page (<https://indico.gsi.de/event/9538/>)

Topics of the session were the status of the two new straw stations STS1 and STS2 for the PANDA/HADES phase-0 experiment, an update of the STT project status with reports about the STT controls development, about the ongoing in-beam test data analysis and an overview about STS1 and straw electronic readout developments.

At first, Jerzy Smyrski gave a status report about the STS2 straw station with a discussion of the various conducted tests at the Jagiellonian University (JU) in Krakow concerning detector gas tightness, electronic noise level and gas gain uniformity. Then he presented a method and results of the STS2 straw geometry check by a laser scanner and by the measured time-over-threshold and drift time spectra. The STS2 consisting of 1024 straws arranged in four double-layers with azimuthal orientations of 0°, 90°, +45° and -45° will be operated at 2 bar with a gas mixture of 10% CO₂ in Argon. A low gas gain of 2×10^4 for the detector operation seems to be sufficient due to a very low noise level and low discriminator threshold. Tests of the STS2 in Krakow will be completed soon and shipment to GSI is foreseen for second half of November this year.

Next, Peter Wintz gave an overview about the workpackage status for the STT. The assembly of the STT straw modules will start soon in Julich and will require a freeze of the STT radial dimension and final clarification with the surrounding detector systems. The in-kind contracts for the STT and FT combined electronic readout between the AGH and JU groups in Krakow and FAIR is submitted and final signature from FAIR is expected soon. When the in-kind budget will be available the PASTTREC ASICs will be ordered. He mentioned an interesting future synergy with the HADES-MDC group at Frankfurt University and GSI, interested in the PASTTREC chip and developing new TRB5 hardware with better capabilities, i.e. higher bandwidth and FPGA. The assembly of the STS1 station will be completed soon and system functional tests including cosmic ray data-taking will be conducted till January next year. Installation of the system in HADES is foreseen for next February and testbeam at HADES is scheduled for early June next year.

Stefan Ghinescu (IFIN-HH Bucharest) gave an update about the development of the STT control and monitor system for the low and high voltage supply and for a generic gas system line consisting of pressure and mass flow controllers and meters. The system is based on EPICS and CS-studio is used for the user interface. The voltage supply hardware is a Wiener MPOD crate. The structure of the software program is based on macros which allows easy changes and extensions of the system and hardware components.

Then, Gabriela Perez reported about her ongoing analysis of the STT in-beam test data from 2018. Topics are the optimization of the calibration and tracking methods for the STT, straw efficiency control and inputs to the STT simulation, e.g. hit digitization. So far, she obtained a spatial resolution (isochrones radius) of about 100 to 125 μm in a proton momentum range from 0.3 to 2.5 GeV/c using an unbiased, global calibration.

Pawel Kulesa presented the status of the TRB3/PASTTREC readout for the phase-0 straw station STS1. The system is currently set up in Julich. Some broken TRB3 hardware was noticed and repair or exchange of boards is ongoing. Then he showed first promising results of a test setup with the high-voltage decoupling and PASTTREC-board located backend after 8m long cables which are directly connected to the straws. The status of the test system with a sampling ADC readout was reported with a slight hardware design modification of the amplifier board what was discussed and decided after the beam test in February this year.