

Minutes of the Tracking Session on June 23rd, 2020

Presentations can be downloaded from the session indico page (<https://indico.gsi.de/event/10735/>)

Jerzy Smyrski (JU Krakow) – Forward Tracker Status

Jerzy discussed the recent straw aging measurements in comparison to last year's results. Again, four new straws were assembled and this time a different 2-component epoxy glue (Araldite instead of UHU) was used. The observed gas gain drop measured for signals of a ^{55}Fe source is smaller this time, but still present. The next foreseen tests will investigate the influence of the straw gas supply pipes made of PVC medical grade.

Then, he gave an update of the FT1/2 mechanical designs. The contract for the order of the straw film tubes is in progress and will be confirmed by the manufacturing company LAMINA (UK) hopefully soon.

Peter Wintz (FZ Jülich) – News about STT and STS1 for Phase 0

Peter gave an update of the STT and STS1 status and recent developments. The Central Systems Frame for the STT, MVD and beam pipe will be now associated and taken over by the PANDA infrastructure team. The PASTTREC ASIC chip for the STT and FT will be ordered soon. The chip contacting on the front-end board will be done via a new chip housing instead of a direct bonding so far. More details about the PASTTREC status were given in the FEE session by M. Idzik (AGH Krakow) and A. Maligne (JU Krakow). For pre-testing of the STS1 system, a new TRB3 data-acquisition system was set up in Jülich. The necessary baseline tuning of each individual ASIC chip and channel was done and verified by a measurement of drift times and time-over-threshold for β -tracks from a ^{90}Sr source moved along the detector. A comparison with spectra measured during the former STT tests with proton beams at COSY show almost identical distributions. Therefore, the ^{90}Sr source tests can replace or at least shorten the time consuming test procedure of the STS1 and future STT with particle beams.

Gabriela Perez (FZ Jülich) – STT Data Analysis Results

Gabriela reported results about the straw measurement efficiencies for the STT in-beam tests conducted in 2018 at COSY. She obtained a radial straw efficiency of 98% and efficient straw diameter of 9.91 mm for the minimum ionizing 2.5 GeV/c protons. That has to be compared to the straw inner diameter of 10.00 mm (without pressure) and straw pitch of 10.14 mm. The radial efficiency result still includes a small hit loss due to a too narrow time window (1 μs) set in the online hit processing for very late signal trailing edge times (Landau tail). Therefore, for the STT a very high hit efficiency above 98% for a single straw tube seems to be possible.

Pawel Kulessa (FZ Jülich) – News about TRB Readout for STS1 and ADC Readout for Straws

Pawel discussed the ASIC tests and baseline tuning for the STS1. He has set up a test stand and new HW components to test the individual ASIC front-end boards before connecting them to the detector. His test procedure allows tuning the channel individual baselines, identifying bit errors and bad channels. All ASIC boards have been tested for the STS1 and five to six boards (from 50) were rejected due to malfunctions. No single spare board is available for the STS1.

The readout crate for the STS1 has been set up with four TRB3 boards and with the newest firmware and current developments using an intrinsic TRB3 readout trigger are going on.

Then he showed the new modified amplifier cards for the SADC readout, which now allow to use all 160 channels of the SADC cards.