

Minutes of the Tracking Session on June 6th, 2018

Three presentations were given and slides can be downloaded from the tracking session indico page (<https://indico.gsi.de/event/7329/>).

At first, Jerzy Smyrski gave a report about the work going on in Krakow for the Forward Straw Tracker. The main topics at current are the preparations of the straw modules for the HADES/PANDA Phase-0 straw setup. A testbeam request at COSY has been submitted with the aim to test eight straw modules with a similar setup (distances and angular orientations) as in (FT1, FT2) or (FT5, FT6). Then he discussed the results of a space charge study with the result that only a small amplitude drop is expected at highest particle rates (25 kHz/cm) in the FT and the related time walk effect (~ 0.1 ns) is much lower than the required drift time resolution (~ 1 ns) and therefore negligible. Next he presented cross-talk measurement results for the ASIC readout and saw a maximum cross-talk amplitude level of 0.6% for neighbour channels in the same ASIC on the front-end readout board. Cross-talk between straws by capacitive coupling was measured to be much lower. The observed cross-talk level is well below the typical minimal discriminator threshold (~ 10 mV) and is therefore not an issue for the detector operation and readout.

The next presentation was given by Andreas Erven about the status of the ADC-based data acquisition for the STT which is developed by ZEA-2 at FZ Jülich. He showed the new hardware readout boards which consists of an amplifier board connected to an ADC/FPGA readout board in a common custom developed crate, based on an openVPX standard. The boards, featuring a precise signal line length matching to avoid signal propagation differences for the channels within the boards, could be brought into first operation at the end of the last testbeam time end in April. Due to unexpected hardware mistakes by the board manufacturing company only a smaller number of channels could be readout (64 ch from the 160 ch nominal). A minor revision of the board layout will be necessary to get all nominal channels for the readout. Andreas showed first results for the particle tracking for the reduced readout.

The last talk by Peter Wintz was about a summary of the tracking and PID results for STT test systems achieved so far in the various in-beam tests. The obtained spatial resolution (isochrones radius) is better than $130 \mu\text{m}$ (σ) and well below the design goal of $150 \mu\text{m}$ for the PANDA-STT. Next he showed the PID results for the ASIC/TRB readout. A clear separation of different particle specific energy-loss in the straw gas is achieved by the signal time-over-threshold measurement. At the end a discussion of methods for a T_0 determination by the STT hits alone took place, for instance of interest for the hyperon tracking.