



STT READOUT MEETING

7 FEB 2018 | PETER WINTZ

- STT News & Status
- Testbeam Program
- STT Readout
 - ASIC/TRB System (Greg)
 - ADC System (Andreas)
- Status Summary

PANDA DAY-1



- Day-1 experiment set up planning has started
- **Day-1 means** systems ready for installation by **end 2022**

- Update of **PANDA money matrix** ongoing
- Detailing detector systems costs
 - **cost updates & consolidation**
 - secured/unsecured funding
- **Identify open WP**
 - define fund-packages → proposals for new groups

- STT system completion (full STT from day-1 on)
 - define open WP & funding association
- FT layout definition for day-1

STT WP STATUS



- Secured funding
 - Straw & straw module assemblies
 - Electronic readout system (final cost updates soon)
 - Detector control & HV system

- Unsecured funding & open WPs
 - Mech. STT system
 - Gas system → synergies with FT
 - TS Central space frame structure
 - CSF for beam pipe + MVD + STT & installation rail system

 - to be determined soon

TIMELINES



Proposal:

- Mar/Apr 2018: beamtests (1+1week), ADC-system in April
- June 2018: decision final RO system: final cost update, WP association
- End 2018: finalize design, only minor design iteration
- 2019-21: production of readout system components (2 + ½ years)
- 2021/22: detector & RO system set up, final tests (1 year)
- End 2022: ready for installation at FAIR
- 2022: option: STT pre-assembly & commissioning

TESTBEAMS 2018



- Degrading MP, WP continuation challenging
 - Adjust test program, focus on certain items
- Delays in new HW production (new ADC system), reduced install time
- Changed testbeam schedule, split beamtimes from 1×2 weeks to 2×1 week
 - **Mar 12-18th: proton beam** → ASIC/TRB systems, further tests
 - **Apr 23-29th: deuteron beam** → ADC-system tests, ASIC/TRB completion
- New proposal for testbeam to be submitted by May, beamtime (Q4-18), Q1/2-19
- Discuss testbeam program, any proposals?

TESTBEAMS 2018



- Mar 12-18th

- Proton beam: 3.0 – 0.6 GeV/c \rightarrow dE/dx \sim 5 - 13 keV/cm
- ASIC/TRB system
- Unchanged straw & RO setup (1 TRB = 144 ch)

- Measurement program
 - Ar/CO2 mixture change (10% \rightarrow 20%)
 - $t_{\max} = 150\text{ns} \rightarrow 200\text{ ns}$ (= final PANDA @ 2 Tesla)
 - effect on resolution, better quenching at higher rates
 - mech. straw module alignment with beam tracks and reco tracks (iteration)
 - ToT re-calibration (done at MIP dE/dx in 2016), all channels
 - Final resolution

TESTBEAMS 2018



- **Apr 23-29th:**
 - Deuteron beam: 3.0 – 0.6 GeV/c → $dE/dx \sim 8 - 50$ keV/cm
 - ADC-system test, full chain:
 - Full system chain, ~ 400 channels, 3 RO boards
 - Grounding and shielding scheme
 - Waveform analysis real-time (FPGA)
 - Resolutions, calibration scheme
 - ASIC/TRB test completion
 - total dE/dx range covered ~ 5 - 50 keV/cm (proton & deuteron)
 - More channels (2 TRBs, 288 ch)
 - Add 4 stereo-layers (new straw setup), 3D tracking