Topics for Today

- Proposal testbeam in Q2/Q3-2018

- Follow-up last meeting / CM
  - Hit sorting & multi-hit

- Readout & data concentrator
  - Hit sorting $\rightarrow$ Greg
  - Hit timing by STT $\rightarrow$ Peter

- Status readout systems
  - ASIC/TRB: results from 2016 beam tests $\rightarrow$ Peter
  - ADC:

- Data analysis methods (off-line) $\rightarrow$ postpone to next meeting
- AOT?

Testbeam Time

- Allocated beamtime: March 12 – 25th, 1 week proton, 1 week deuteron

beam time schedule 2018, 1st half

Week	1	2	3	4	5	6	7	8	9	10	11	12	13
	01/01/18	08/01/18	15/01/18	22/01/18	29/01/18	05/02/18	12/02/18	19/02/18	26/02/18	05/03/18	12/03/18	19/03/18	26/03/18
Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday	Maintenance	Maintenance	Maintenance	Maintenance	MD	FAIR CBM (D004)	MD	JEDI p-data (E004)		MD	FAIR PANDA STT (D002)		

- Discuss interest for testbeam in Q2/Q3-2018
- Testprogram: STT + PANDA-DAQ, STS pre-commissioning .. ?

- Submission deadline by Nov-6th, CBAC meeting in December

Topics From Last CMs

- Some STT specific points under discussion in simulation groups (Uppsala)

  - Multi-hit capability and spiraling tracks (hyperon decays)

  - Reference time for STT hits (isochrone calculation)

  - Timing from MVD/SciTil limited (secondary tracks)

- Presented STT internal timing method (beamtest data)

STT Data Readout Chain

- Data concentrator (DC)
  - Hit data: channel, time(s), ΣA_i, ..
  - Reference time by SODANET
    - HESR burst signal ~ 2µs (+ 400ns)
    - Superburst 256× burst ~ 500µs
  - Hit sorting
    1. Channel: 1 → 4224
    2. time per channel
  - Fake hit rejection (simple criteria!)
  - Hit cluster information
  - STT L/R splitting: 2× 2112 channels

- Compute nodes
  - Data from other systems (MVD, SciTil, ..)
  - Time information (ref. time, tof, ..)
  - Hits to track to event association, tracking, ..
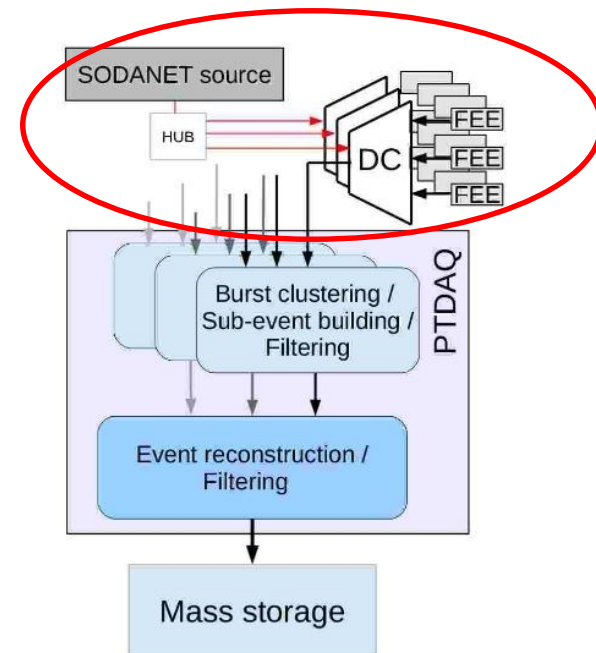 - Event building, SW trigger & mass storage ..

Figure 6.2: Simplified PTDAQ read-out scheme.

From M. Wagner (Ph.D. thesis, Giessen)

Data Rates

Item	PANDA Phase-1*	PANDA Phase-2	Remarks
Interaction / event rate	1×10^6 s^{-1}	2×10^7 s^{-1}	Phase 2 full luminosity
Max. no. hits / straw	8×10^4 s^{-1}	8×10^5 s^{-1}	Innermost layer with ~100 straws
Min. no. hits / straw	$< 4\times 10^4$ s^{-1}	$< 4\times 10^5$ s^{-1}	Outermost layer with ~230 straws
Avg. #events per 2 µs	4	40	
Avg. #tracks per 2 µs	12-16	120-160	3-4 tracks per event (simulation)

*Phase-1 with factor 20 less luminosity than nominal