

### AMBER DAQ News

#### Igor Konorov on behalf of DAQ group

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**TUM Department of Physics** 

Technical University of Munich

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## DAQ for Antiproton Production Run in 2023

#### Plans of DAQ group with assumption that run starts in May

- Switch on DAQ and all detectors in beginning of April
- Vladimir should come in April as well
- Full list of detectors is needed
- CEDAR commissioning
  - Installation and test of iFTDC with new firmware (synchronous with TCS clock)
  - Earlier tests with new preamplifier-discriminator board are needed. When?

# AMBER HLT

- Network bandwidth from 888 to IT will be upgraded to 200 Gb
- Proposal to move HLT to IT
  - No AMBER investments needed
  - Outsourcing maintenance and upgrade of computers
  - Flexibility with available computing resources
- Discussion with IT
  - Standard for IT solution
  - AMBER request is small and has no impact on IT computing purchase plan
  - HLT computing resources is about 128 cores it will be part of AMBER computing resources quota
  - IT requires 2-3 days of local data storage in case of network problems during weekend
  - HLT test will start in March-April



## Plan for Hardware Production I

Production of Optical adapters

- Finally all components have been delivered
- Production will be completed this year

Production of DAQ MUX and TCS controllers for MWPC and standalone DAQ

- 5x TCS controllers
- 8x MUX modules

Problems with production due to lack of some components

- 5x TCS controller
  - Change of schematic and layout done
  - Work on preparation for production
  - Cost estimate is about 1.2 kEuro/pc
  - I will order 4 TCS controllers on behalf of AMBER in order to be able to offer them to other groups (Mainz, GSI,..)
- 8x DAQ MUX
  - Si5338B clock recovery chip is not available needed for L0 MUX but still can be used as L1 MUX
  - Plan to produce 8 modules wo Si5338B and exchange them with L1 MUX, we have about 15 MUX modules for AMBER DAQ
  - Proposal to develop new MUX module with modern and available components



## Plan for Hardware Production I

Xilinx shorted delivery time from 52 to 20 weeks but price is higher by 8%

We are ordering 80x Artix7 FPGAs for iFTDCs from DAQ money for Mainz detectors and some other detectors

Cost 80x60 = 4.8k

Module production will be done as soon as money available

New DAQ MUX module

- TUM purchased 4 of Kintex Ultrascale FPGAs
- Schematic will be completed by me
- PCB layout will be done by external company
- I plan to use 6kCHF from COMPASS budget to order the layout



## Plans for DAQ Computing in 2023 to

Available computing:

- 1 AMBER type + 2 COMPASS type RO Engine workstations
- 2x External Disk Storage for ~300TB each
- 2x HLT workstations
- Juniper high performance switch

Order plan for 2023

- 3x AMBER type RO Engines 10k
- 2x Disk Storage 16(20)k
- 2x Juniper switches 8k



## THANK YOU

Igor Konorov

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