## MTCA in photon science

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December 5, 2018



### **Beamline P24**

- Chemical crystallography beamline, PETRA extension
- 2 Experimental stations at 84m and 90m
- Optical elements at  $55 \pm 5m$





## P24 under construction (in early 2017)





## Four circle diffractometer in EH2



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### Typical control electronics



Mostly VME or NIM modules: Counter, Timer, GPIO, ADC, DAC, HV supplies, filter amplifiers, discriminators... Lots of motor controllers!

Current amplifiers:





### Beam position monitor

Old Keithley electronics and NIM HV supply has been replaced by CAENels PICO-8 and HV-Panda:





Advantage: HV supply and current amplifier in the same crate Outlook: One Pico-1M4 FMC can be replaced by a SFP/SFP+ FMC



## Piezo control for monochromator stabilisation

Beam position will be send from PICO-8 to piezo controller via optical fiber:



CAENels FMC-2SFP+

DRTM-PZT4

Position correction will be done by fine tuning the monochromator angle with a piezo.



### NAT-AMC-TCK7

Data processing AMC with 8 SFP+ interfaces, Kintex 7 FPGA Possible application: Camera readout + image processing



Tests for beam position monitoring are planned at P24  $\Rightarrow$  Talk by Sven Stubbe!



## Struck SIS3302



- VME module
- 4 or 8 channels, 16 bit 100MSPS
- General purpose ADC
- Spectroscopy firmware (energy dispersive detectors)
- Raw data histogramming (VFC replacement)
- Synchronization with other devices



### Struck SIS8300-L



### $\Rightarrow$ Poster by Jan Timm!



### Vadatech AMC 520



#### Similar specs as the Struck board



# Counter: Struck SIS3820

- 32 channel, 32 bit counter
- Synchronization with motor controller:
  - Step signal
  - Quadrature encoder
- Sync. output for ADC
- Fast shutter control
- Continuous scans





### Replacement: Struck SIS8800

- Similar features as SIS3820, but MTCA.4
- 16 channels on front panel
- 16 channels via RTM
- Synchronization with other devices via backplane?





## Multi axis motor controller

### OMS MAXv

- 8 axis controller
- Stepper or servo motors
- Step/Direction output or analog output
- Encoder, limit switch input
- GPIO

### No alternative for MTCA!, yet!





### Multi axis motor controller

### Proposed DAMC-MC8

- 8 axis stepper motor controller
- Encoder and limit switch input
- Step/Direction output, compatible to Phytron ZMX or SINCOS
- Similar user interface as OMS MAXv
- Synchronization of more than one module via MTCA backplane
- ▶ Synchronization of other modules (e.g. SIS8800, SIS8300, ...)

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Development will start in 2019...

