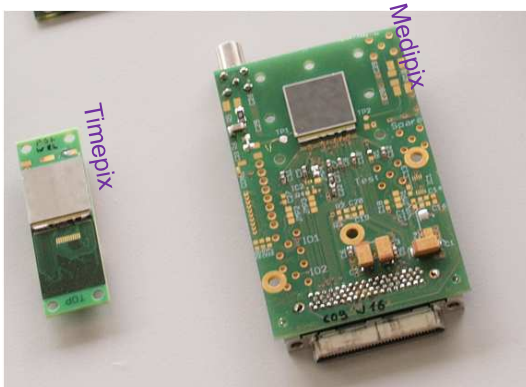## KIT
Karlsruher Institut für Technologie

Development of X-KIT: a Versatile Readout System for Medipix 2 and Timepix Detectors

Especially Tailored for Synchrotron Radiation Applications

Andrea S. Brogna[KIT], Matthias Balzer[KIT], Julius Hartmann[KIT], Stefanie Smale[KIT], Andreas Zwerger[FMF], Alex Fauler[FMF], Elias Hammann[KIT], Tilo Baumbach[KIT], Marc Weber[KIT], Michael Fiederle[FMF]

Versatile adapter hosting different pre-existent boards:

– Medipix and Timepix compatible
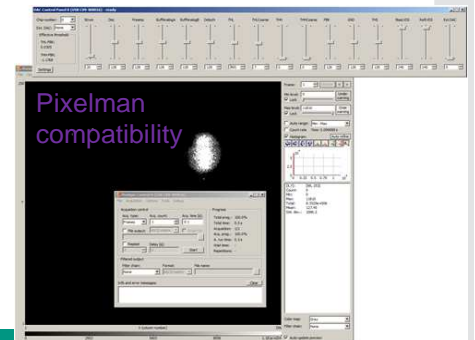– USB Interface

- FPGA controlled (Xilinx Virtex-6)
- Fast serial readout 100 MHz
- Hardware trigger (In/Out)

- Application Programming Interface and driver available for Pixelman 2.0.6
- Simple protocol API for any presentation software

High-speed communication links:
- 1 Gb Ethernet interface
- PCIe interface
- Optical interface

Overview of the X-KIT and Hexa-Module System

- Very compact, including system diagnostics and High-Voltage monitor
- Vacuum-proof housing
- Peltier cooling, HV-supply and communication interface
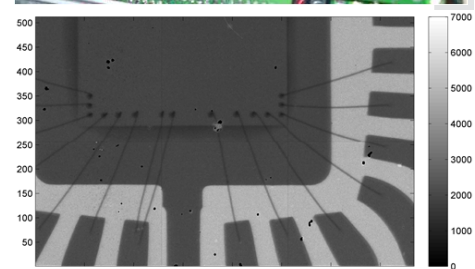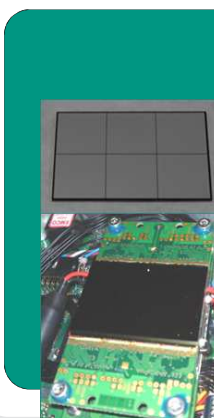- >10 Gb/s high speed communication link

- Matrix of 3 x 2 chips („Hexa" = 6)
- Pixel size 55 µm x 55 µm
- Active area: 43 mm x 28 mm
- 512 x 768 pixels
- Sensor materials: (Si), CdTe, GaAs
- Fast acquisition of 6 serial channels simultaneously read at 150 MHz

Image recorded with existing CdTe Hexa assembly