AGH University of Science and Technology

Testbeam preparation
(in Krakow)

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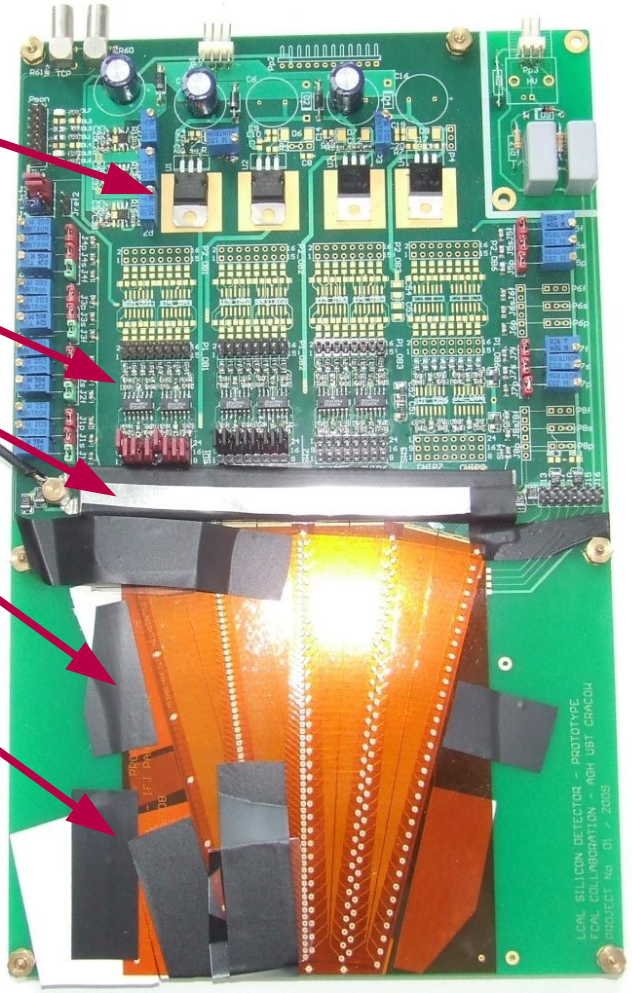
Agenda

- Testbeam PCB assembly status
- Test setup
- First results
  - With pulse generator
  - With radioactive source
- Summary

Board assembly status

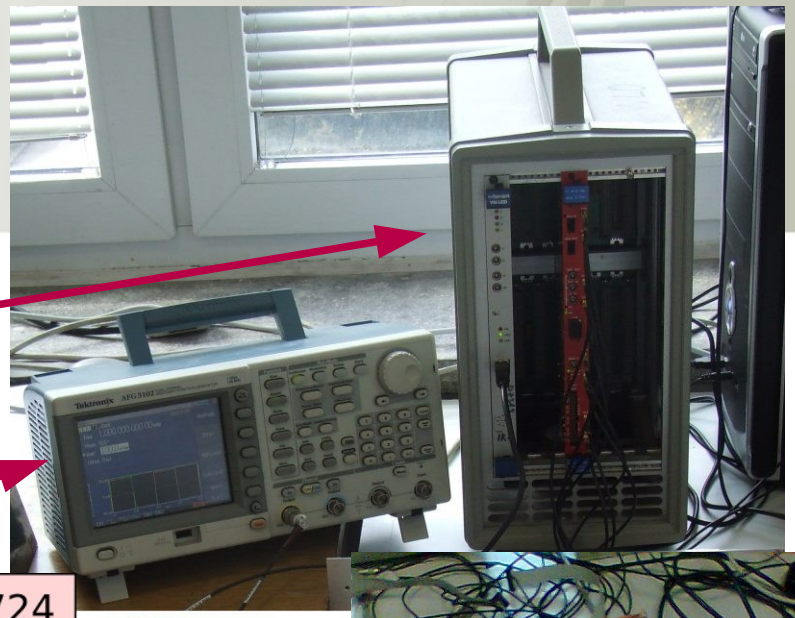
- Biasing & power blocks √
- Output bufers (line drivers) √
- **5 chips bounded** √
- Sensor & fanout glued √
- 8 sensors pads bounded √

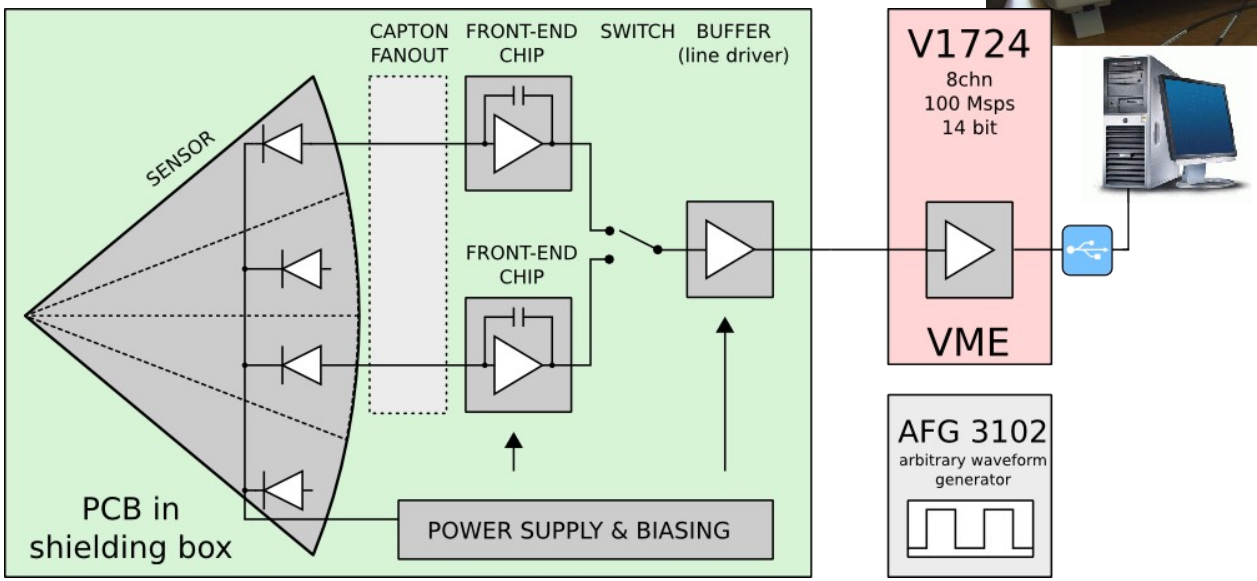
- **All essential components mounted**
  (first test show that they are working)



Setup configuration

- **Sampling ADC** **V1724**
  - **Up to 100Msps / 14bit**
- **Arbitrary waveform generator**
  AFG3102





- **During testbeam we would like to use DESY DAQ (both HW&SW)**

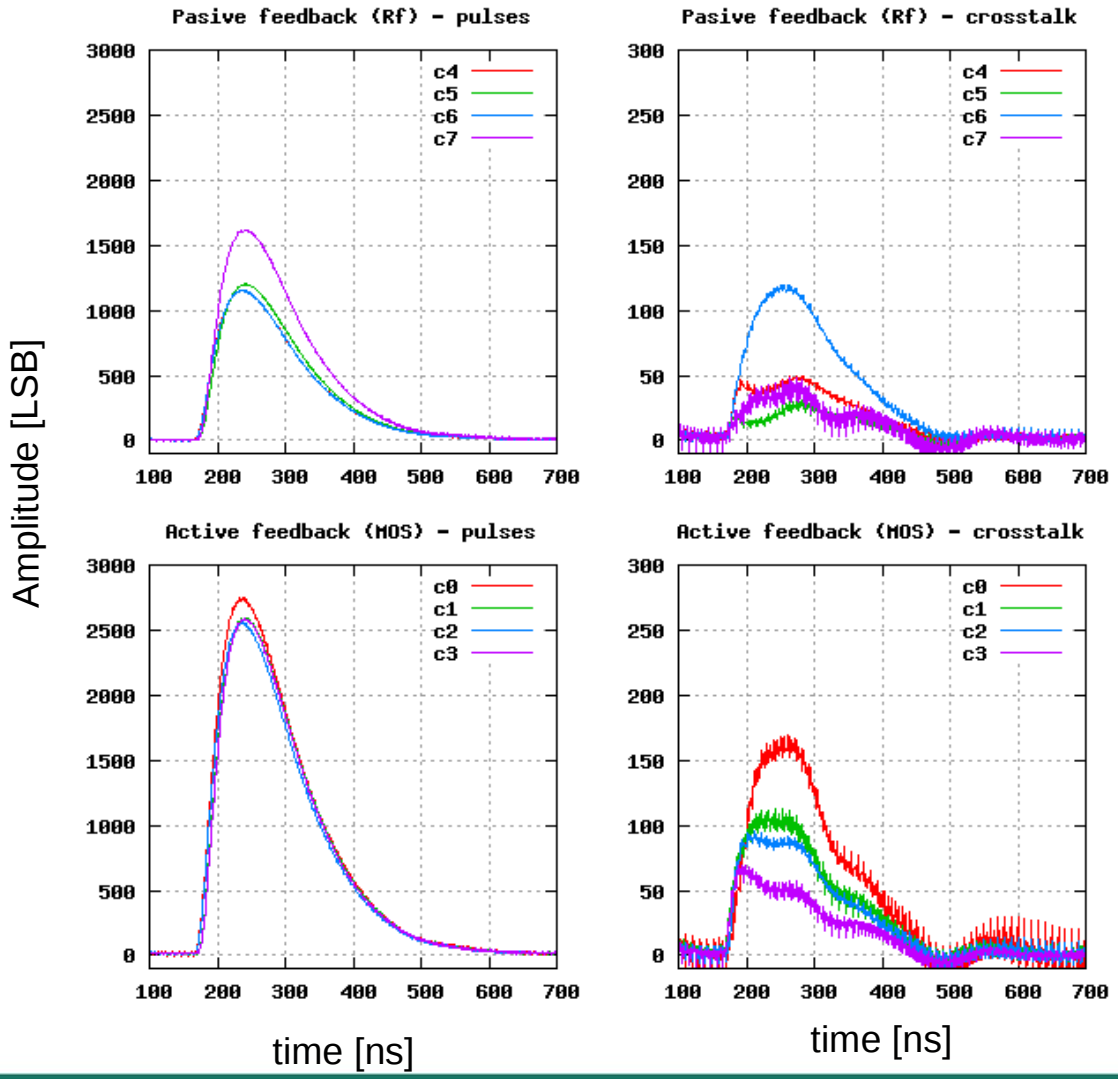
testbeam box (DESY)

Data taking

- **Simple DAQ software was prepared → allows to read out data from CAEN Sampling ADC v1724**
  - Sampling rate up to 100 Msps
  - 14bit resolution
  - Up to 2Msaples per channel
  - Data transfers up to 3MB/s
    → should work with event rate up to ~ 1k event per second (not tested yet)
  - Data are stored to files for further analyses

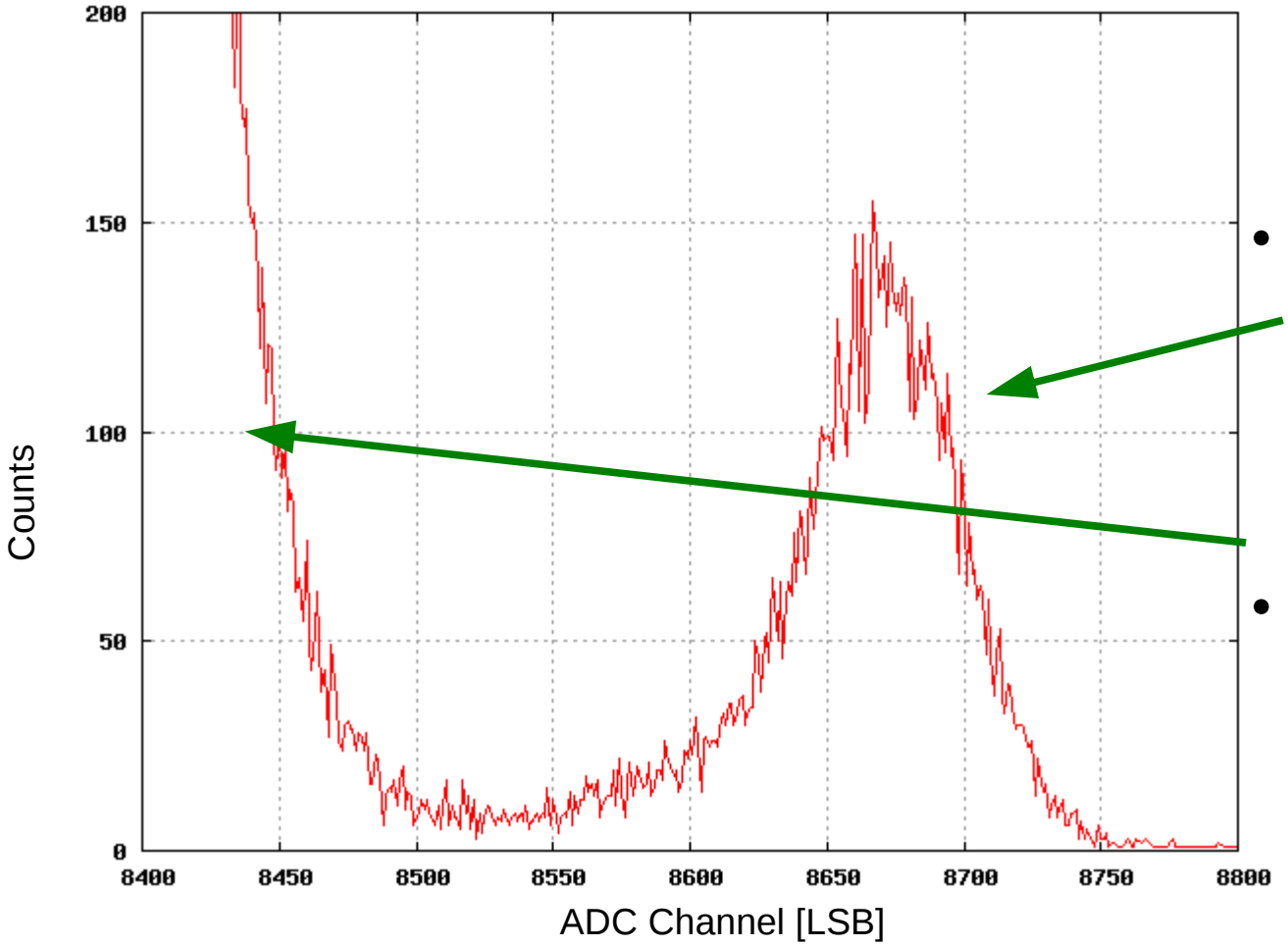
- **Post processing scripts written in Python**
- **This software probably can not be used during testbeam**

Measurements with test pulses



- All 8 channels work
- Pulses shapes consistent with previous measurements and simulations
- “cross talks” ~ 4%
- Detailed noise parametrization needed

Measurements with Americium radioactive source



- Gamma (59.5 keV) ~3fC = ~3/4 MIP

SNR ~ 15
(for MIP should be ~20)

- Neptun lines (13.9 keV, 17.7 keV, 20.7 keV) + pedestal

Summary

- Board (sensor+frontend) in DESY testbeam box seems to work fine
- Simple DAQ based on CAEN v1724 sampling ADC prepared (not tailored to testbeam requirements)
- We would like to use DAQ (SW&HW) prepared in DESY