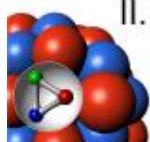


MVD Strip Part

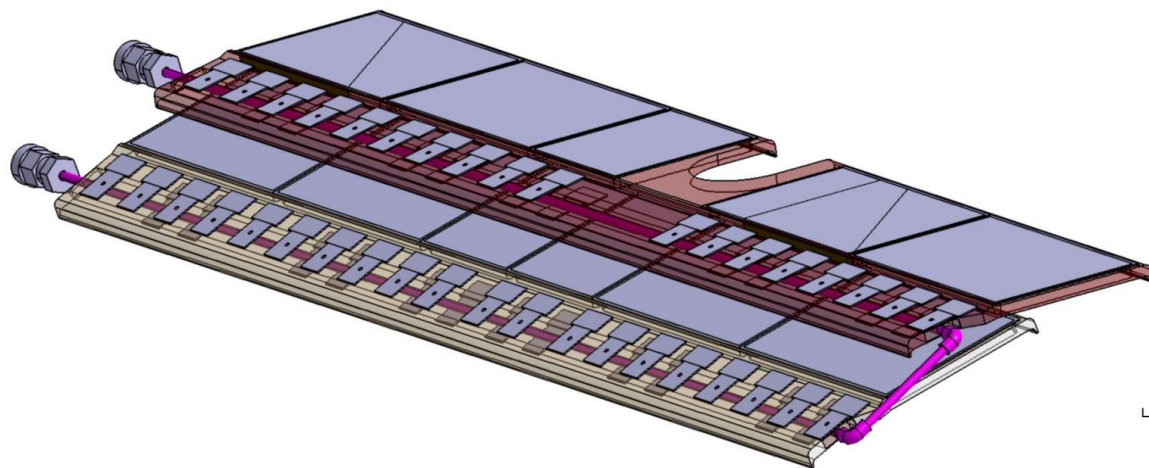
Robert Schnell

on behalf of

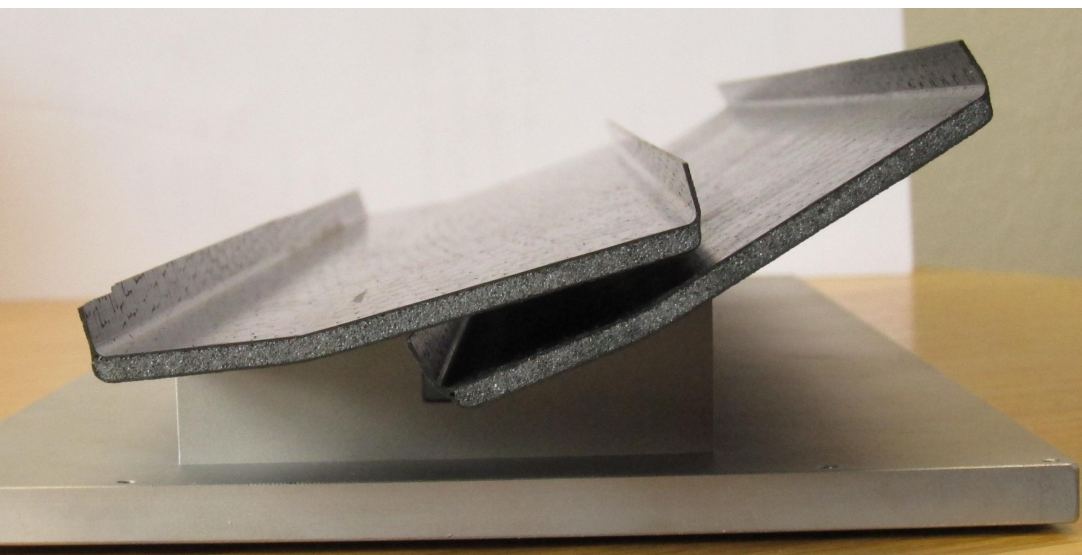
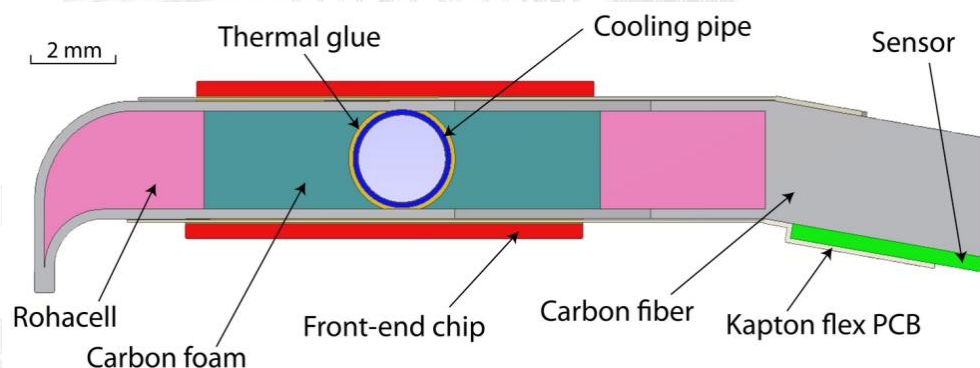
**II. Physikalisches Institut,
Justus-Liebig-Universität Gießen
Helmholtz-Institut für Strahlen- und Kernphysik,
Universität Bonn**



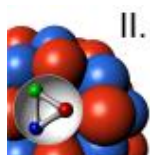
Mechanics - Strip Stave test assembly



CAD design of Barrel Layer 4



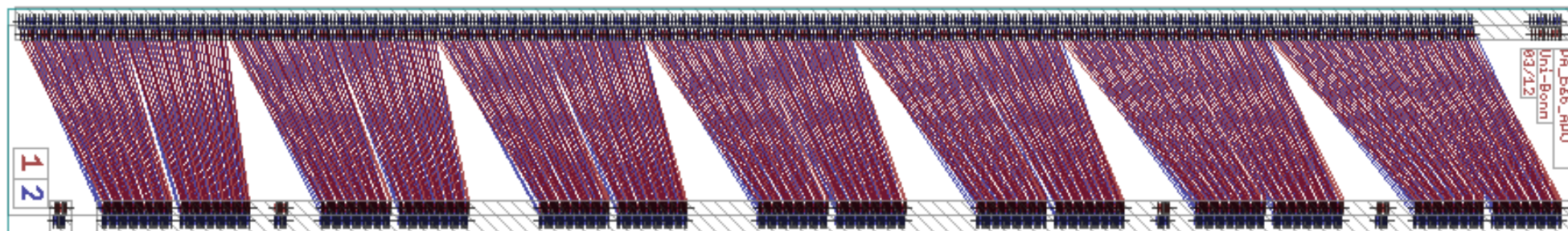
- 2 prototype staves of Barrel Layer 4
- represents space available at the MVD
- helps to identify possible clashes



Flex-Pitch-Adapters

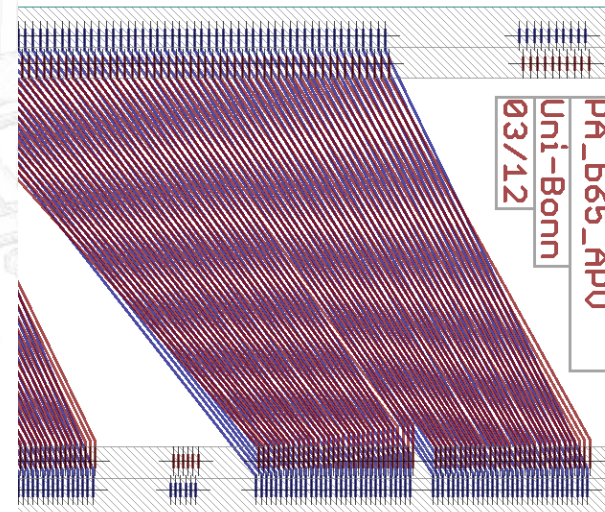
- **goal:**

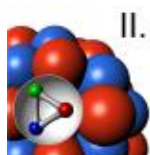
find a cheap alternative to thin film technology based on
"standard" PCB-technology with low material budget
→ Flex-PCB



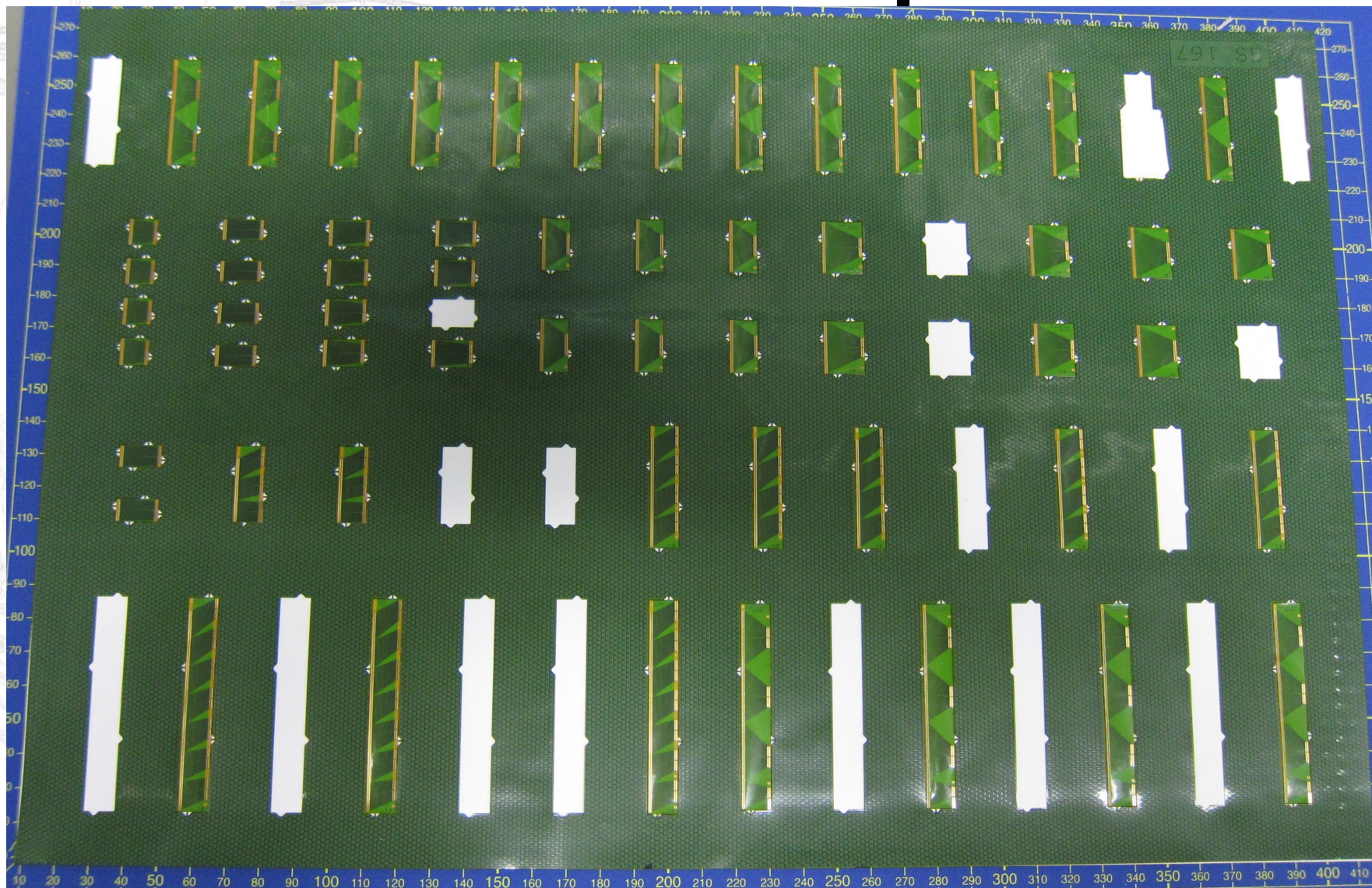
Manufacturer: GS Swiss PCB

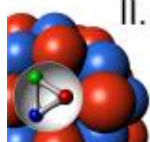
- 2 layer Flex-PCB
- dielectricum thickness: 50µm polyimide
- laser drilling: 50µm
- smallest wire: 35µm
- smallest distance between wires: 35µm
- copper thickness: 2x12µm
- surface chem. Ni/Au for bonding



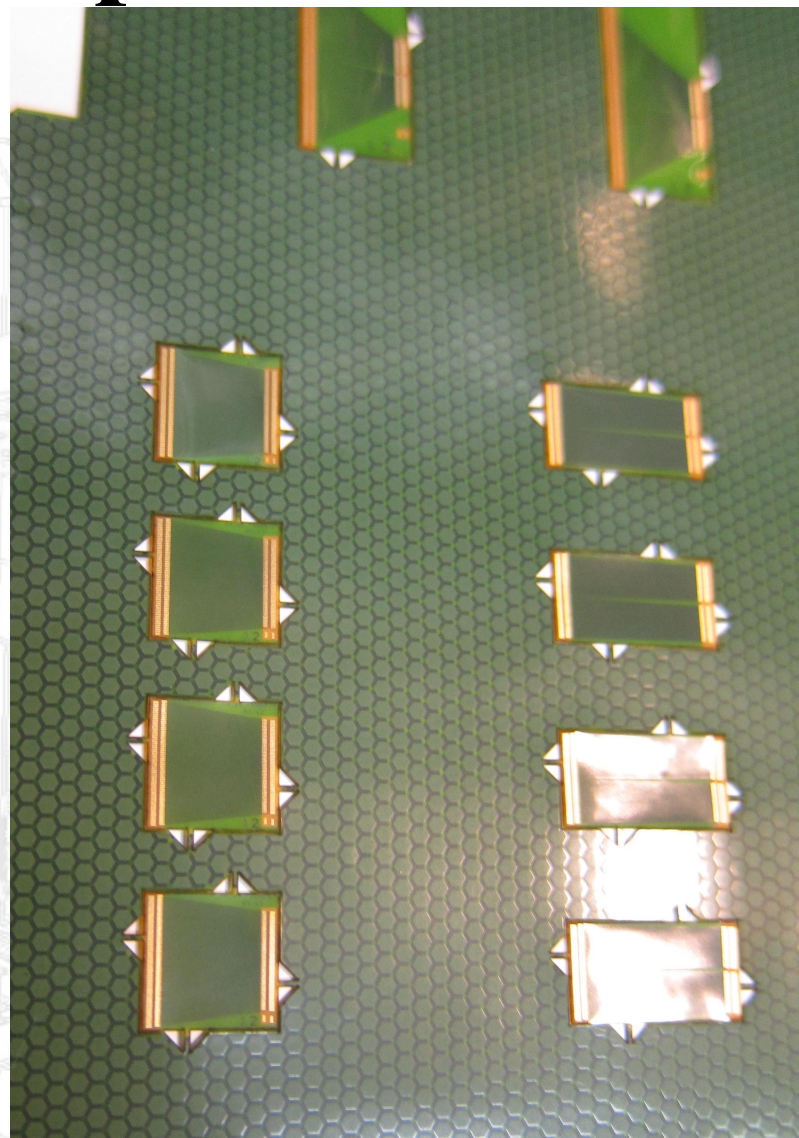
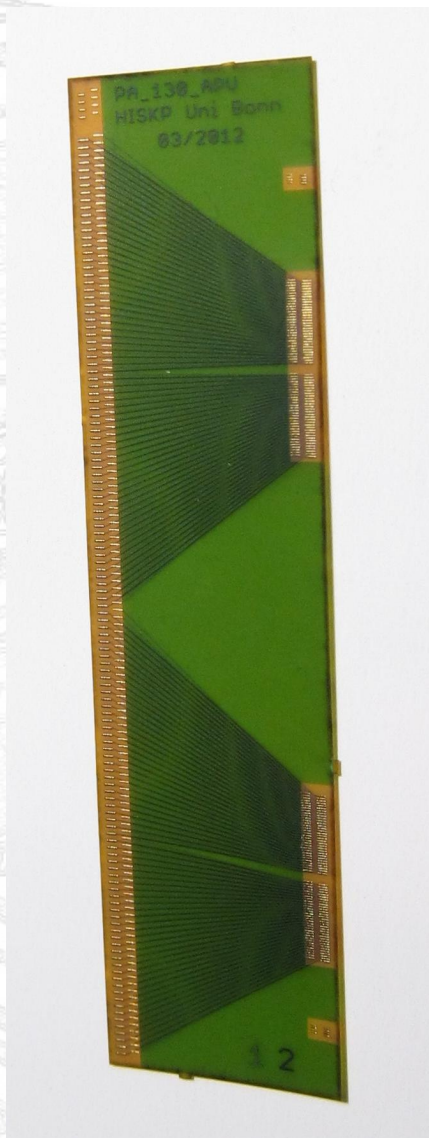
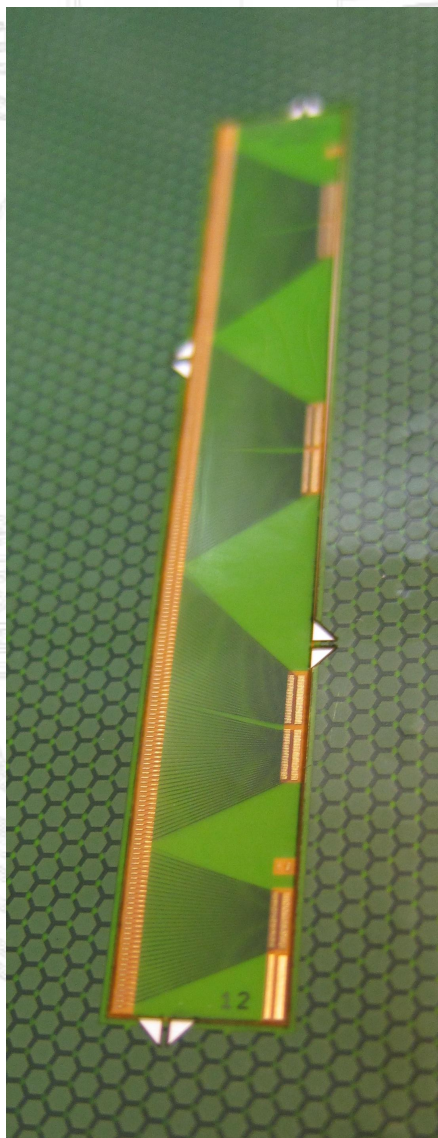


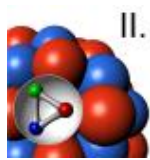
Flex-Pitch-Adapters



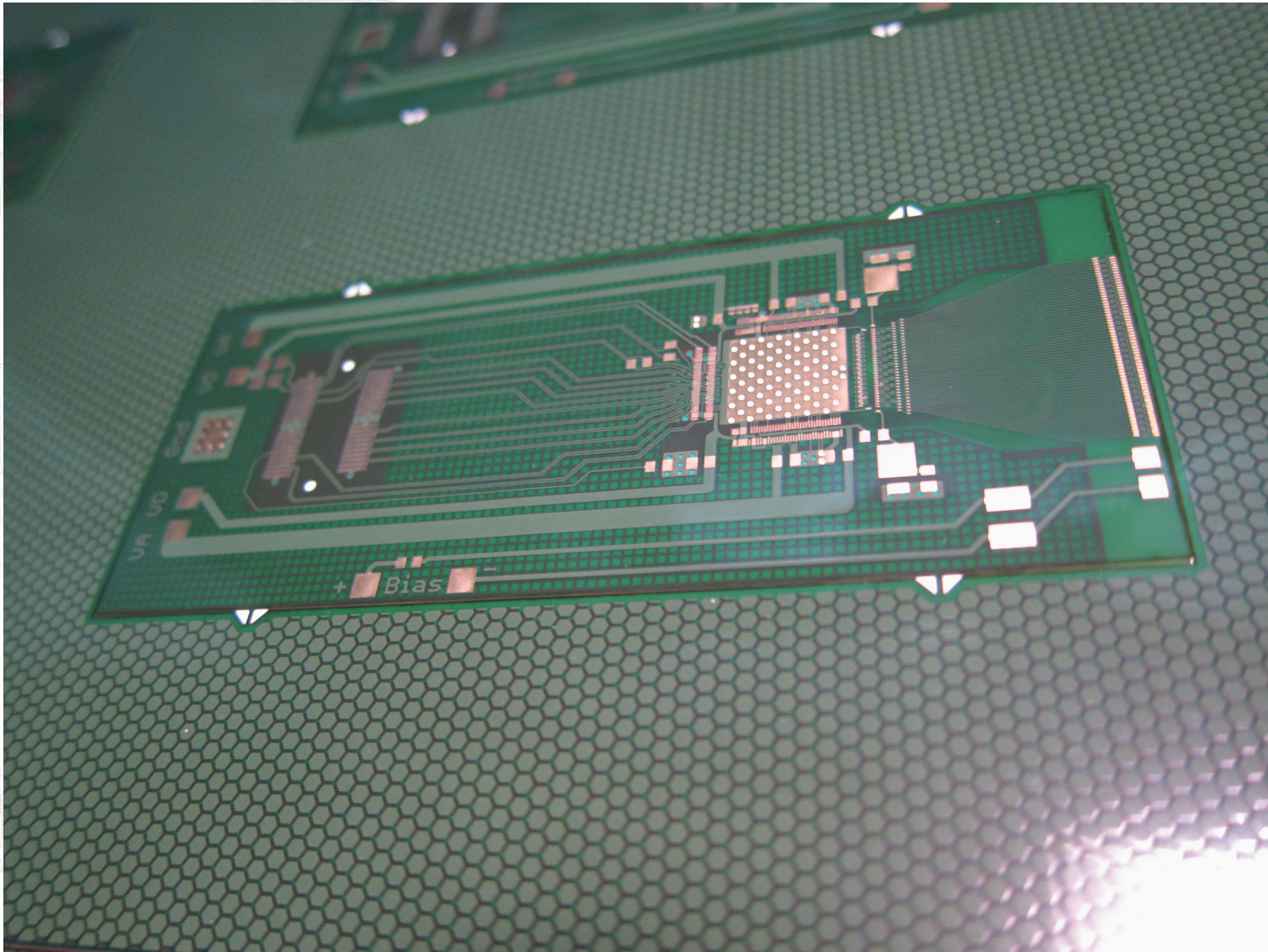


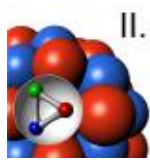
Flex-Pitch-Adapters



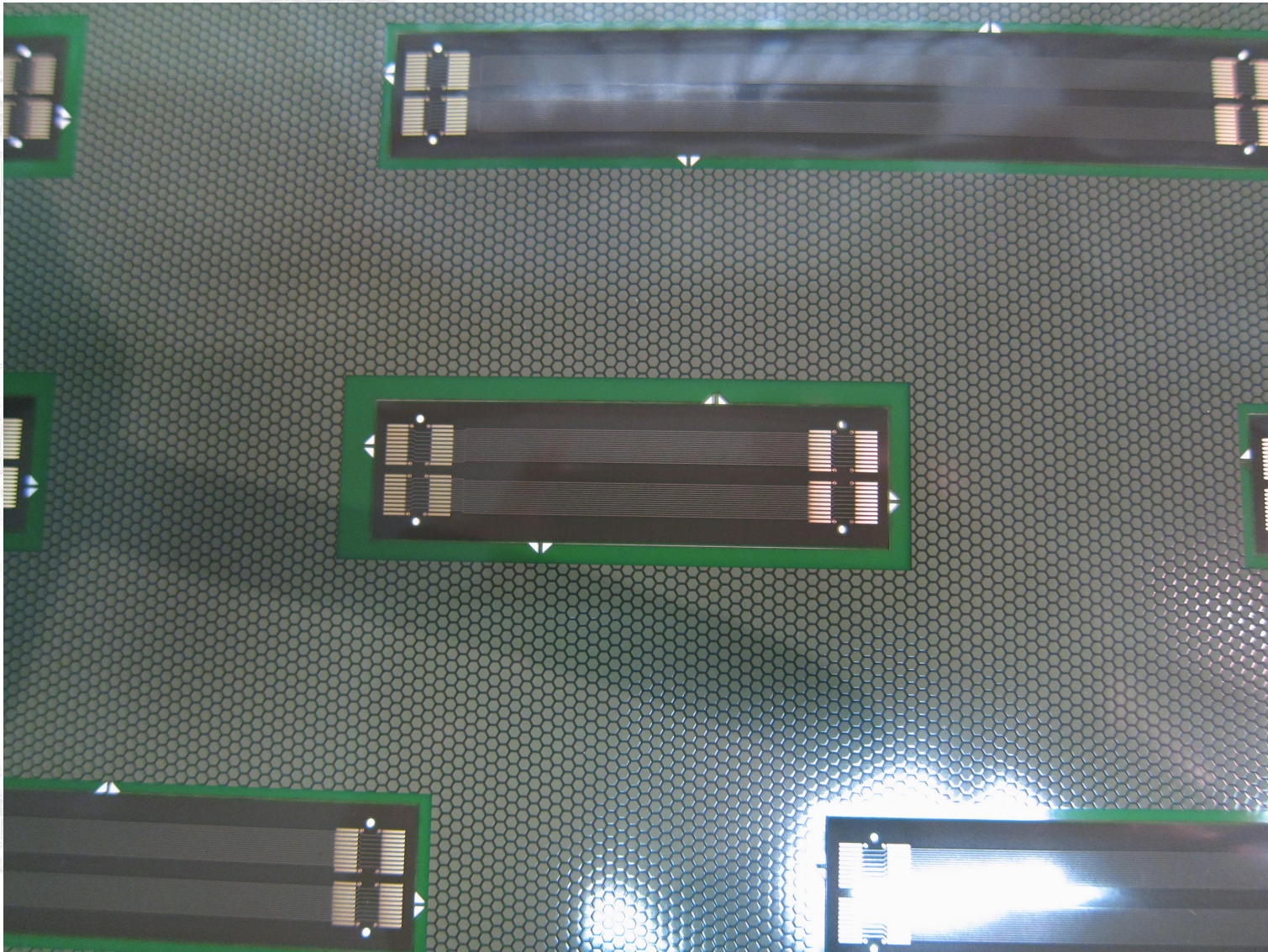


Flex-Boards

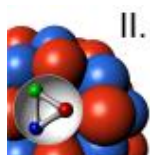




Flex-Cables

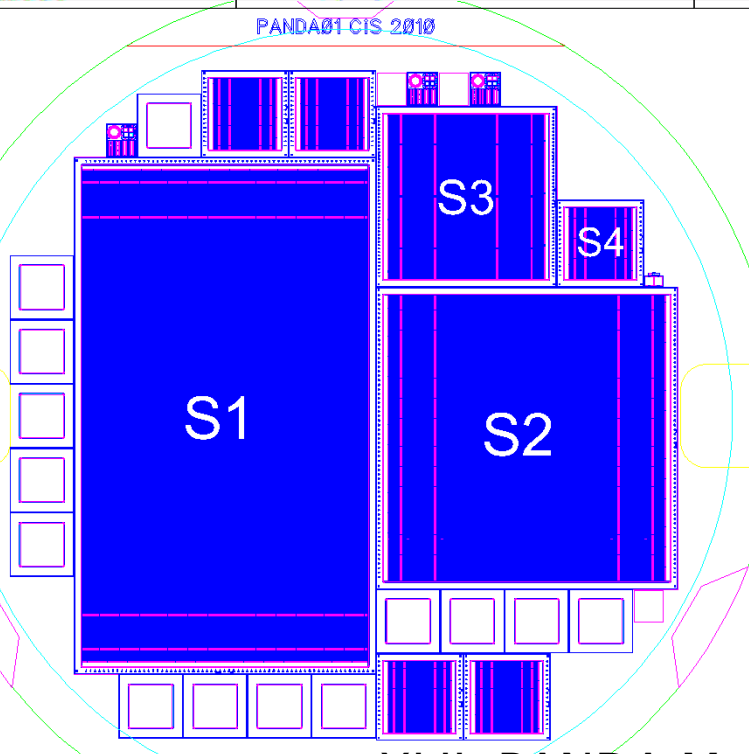
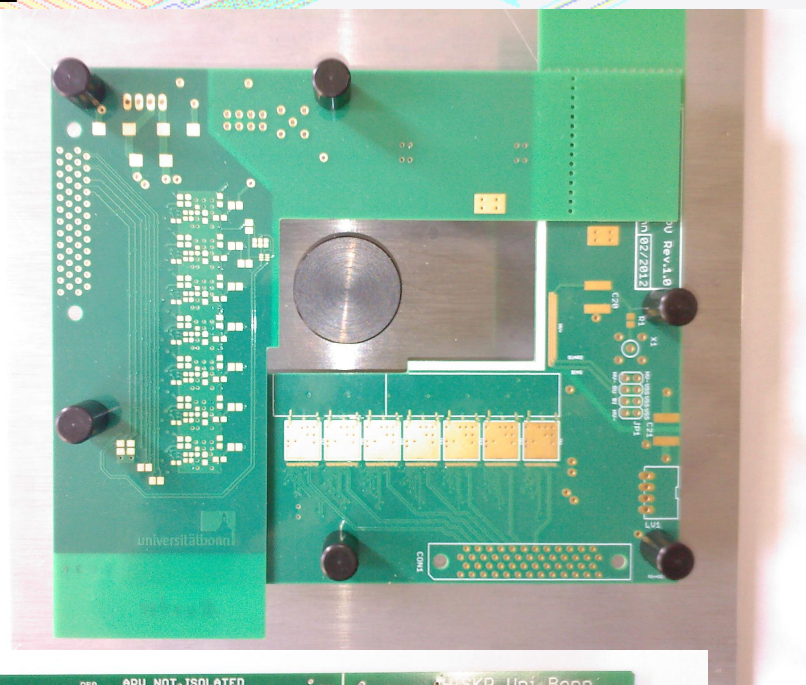


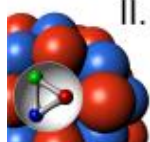
XLII. PANDA Meeting, Paris - September 11, 2012



PANDA Prototype Sensors

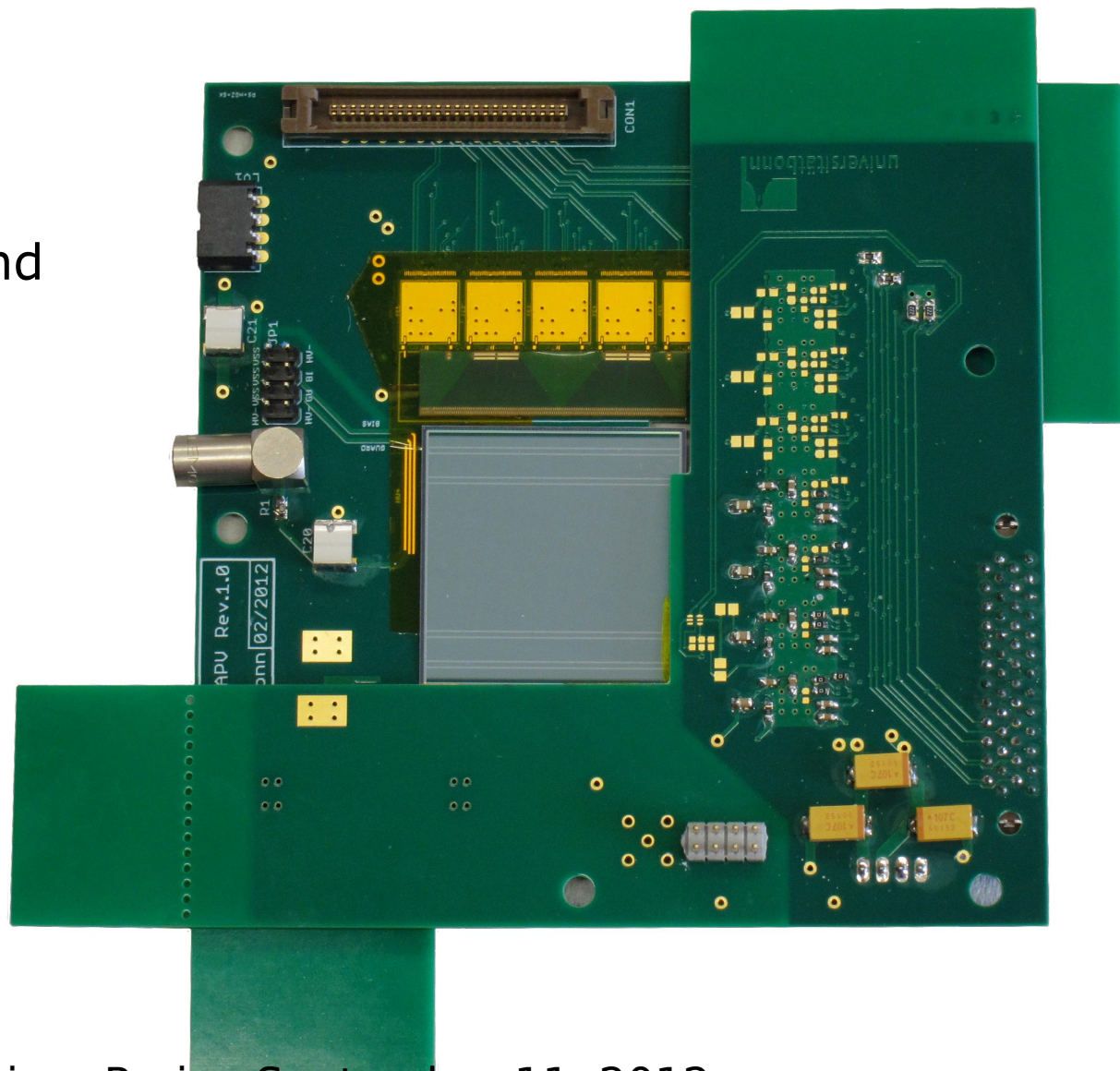
Sensor	Active Area/mm ²	# Strips
S1	58.275 x 33.315	896 x 512
S2	33.315 x 33.315	512 x 512
S3	19.230 x 19.230	384 x 384
S4 "Baby"	6.410 x 6.410	128 x 128

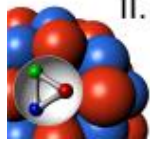




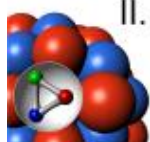
PANDA Prototype Sensors

new Sensor Modules with
PANDA Prototype Sensors
are currently assembled and
bonded at the
GSI Detector Lab

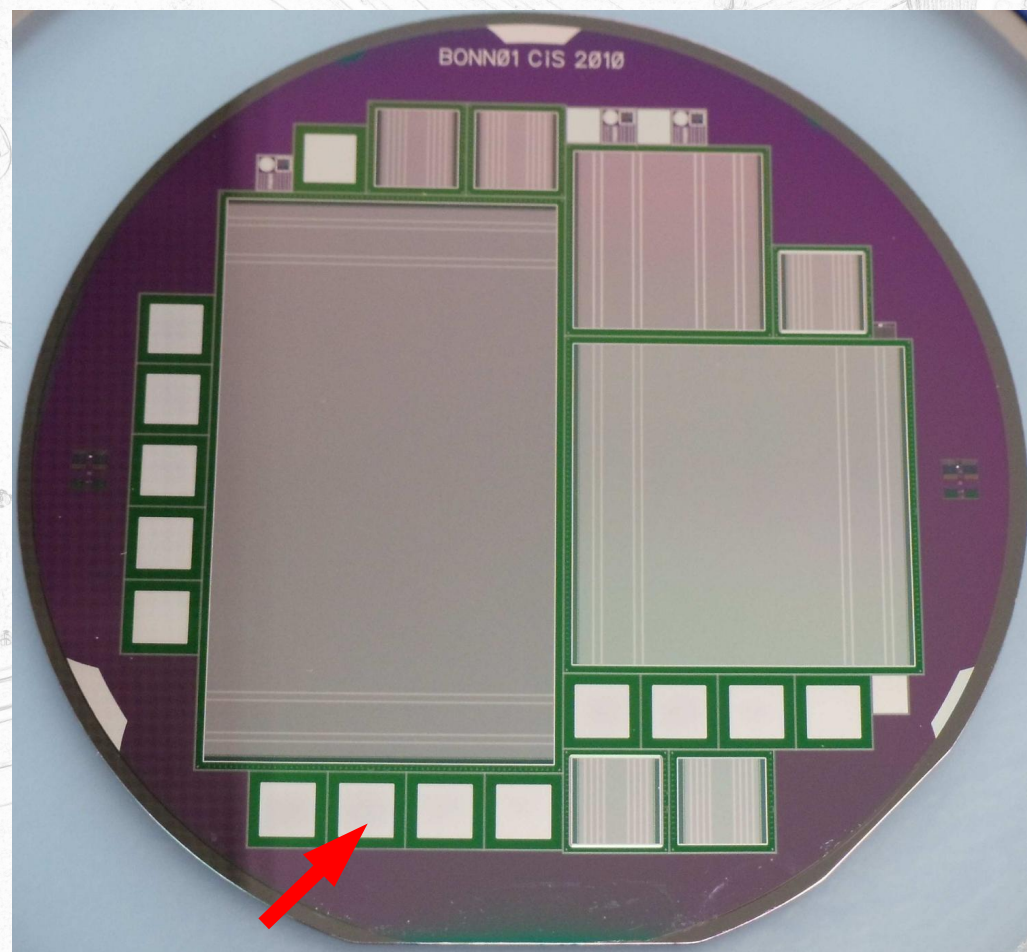
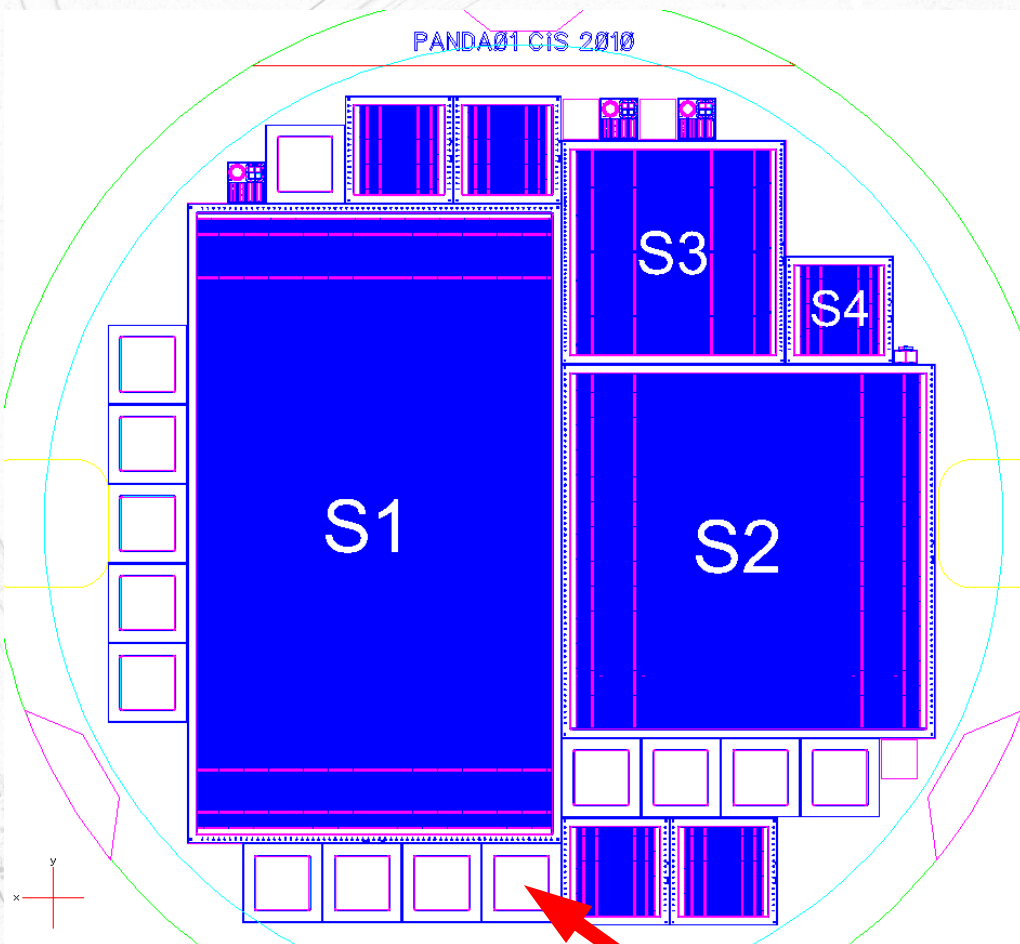




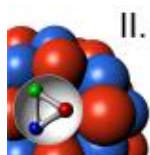
Irradiation



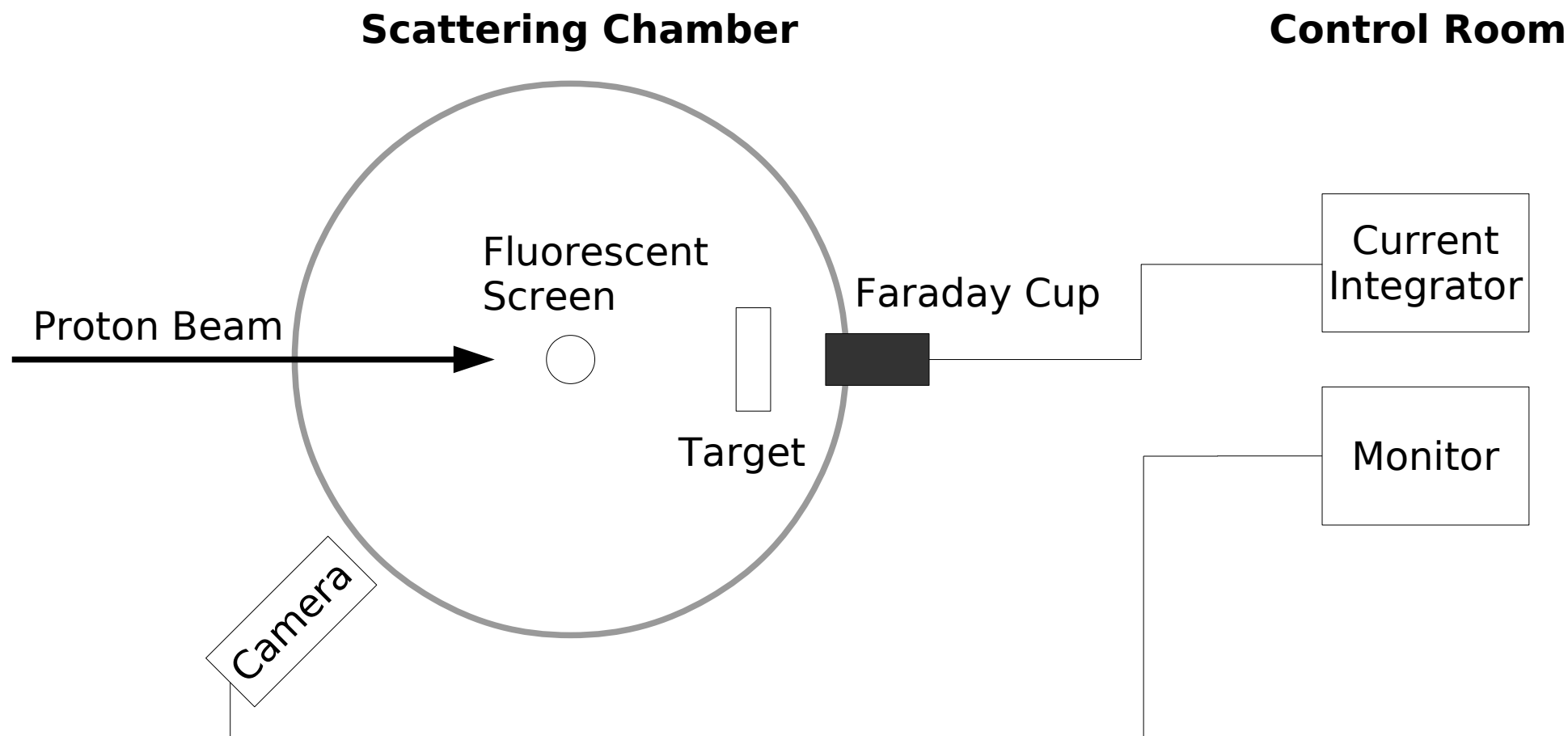
Silicon Strip Sensors

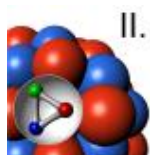


Dose Level Diodes

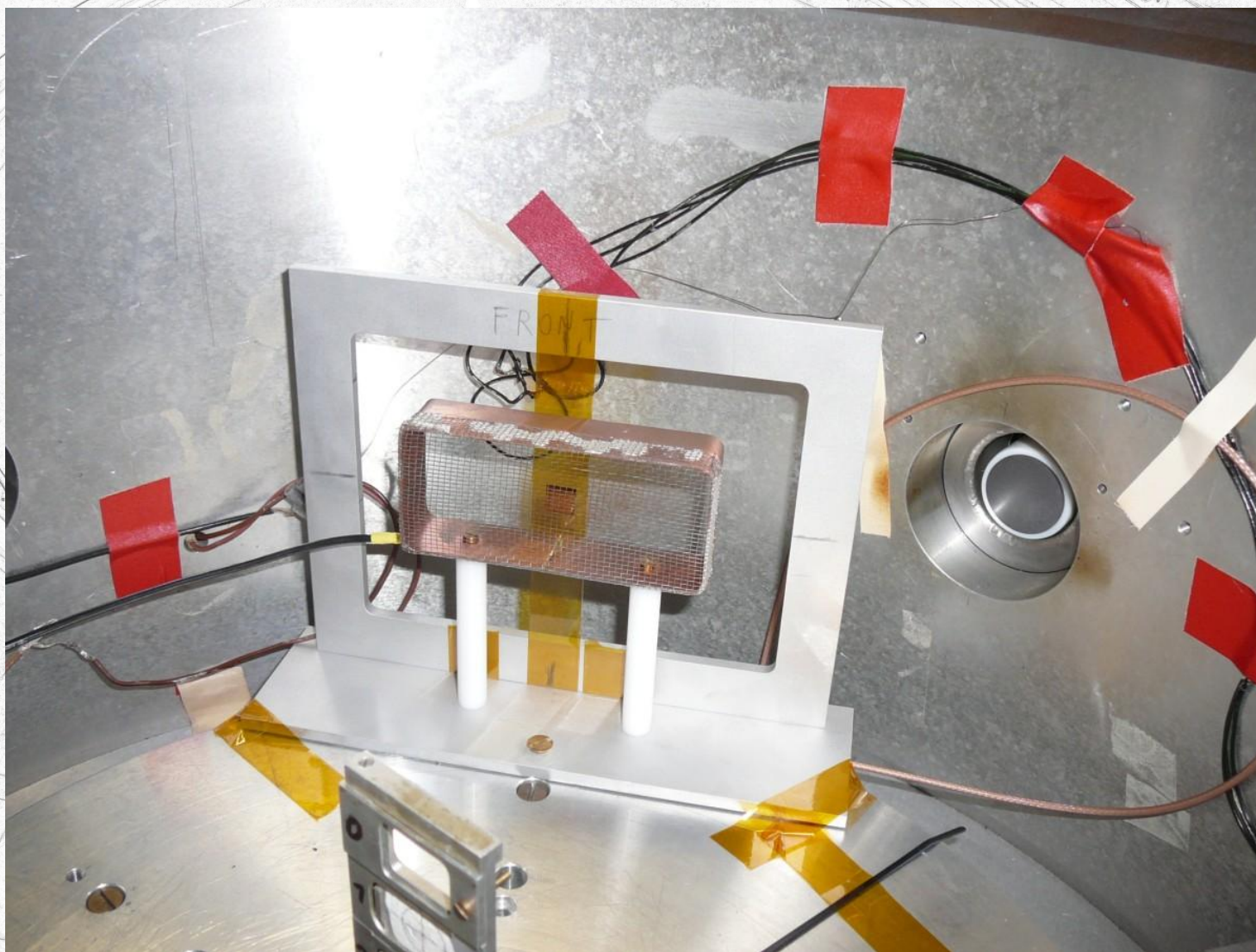


Experimental Setup at the Cyclotron



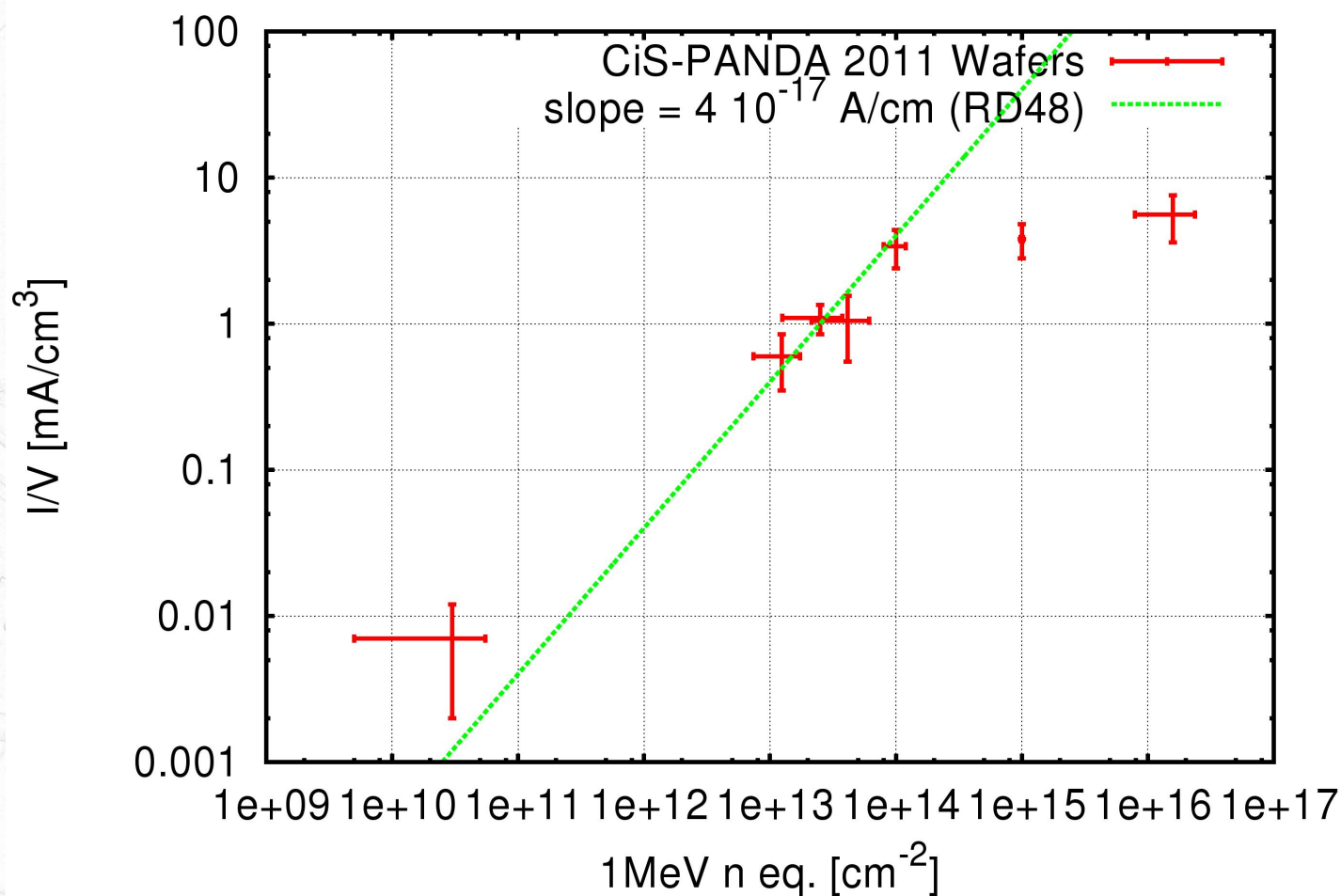


Experimental Setup at the Cyclotron



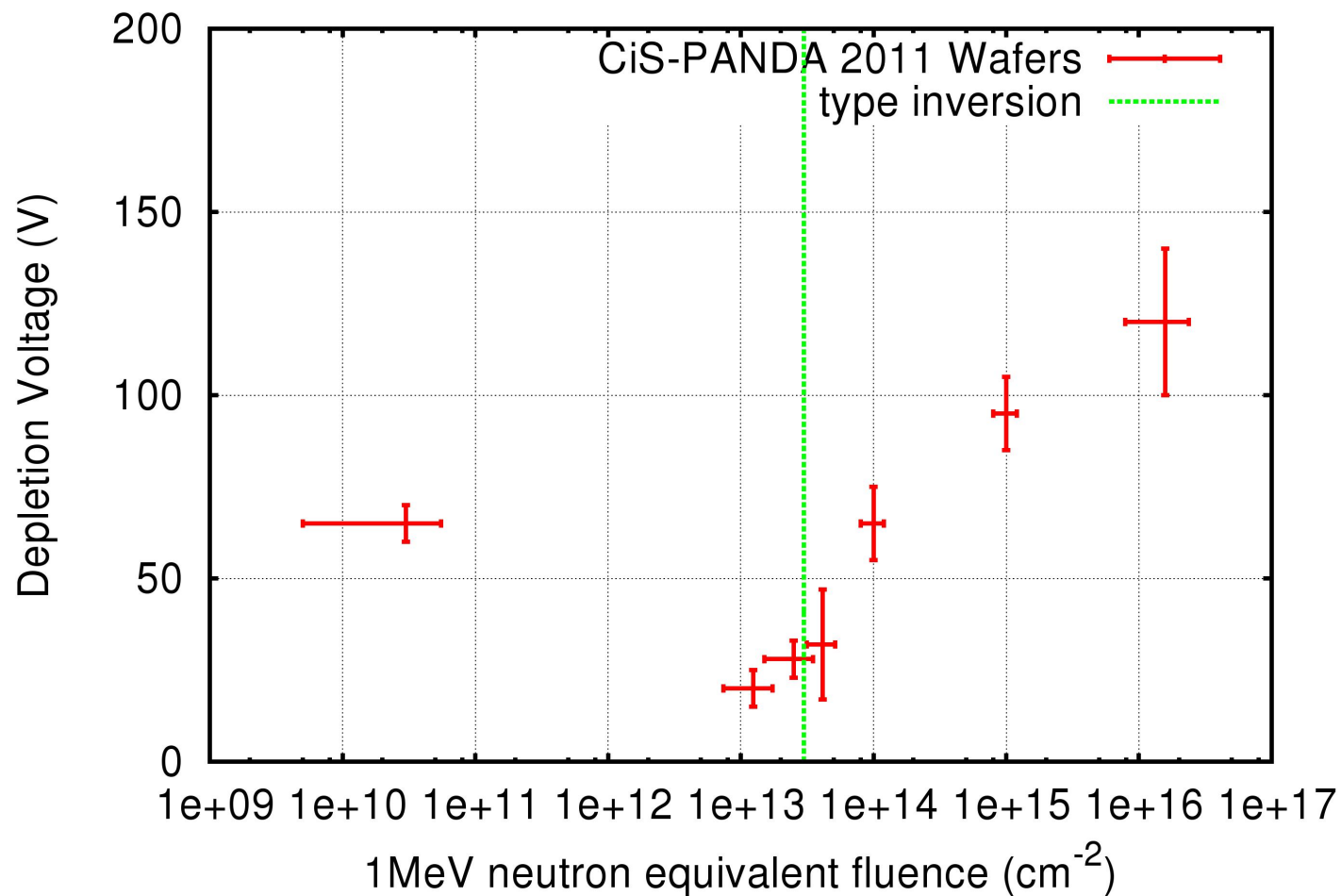
Results

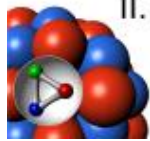
- Leakage current vs. Fluence



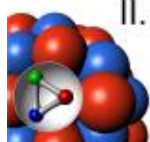
Results

- Depletion voltage vs. Fluence

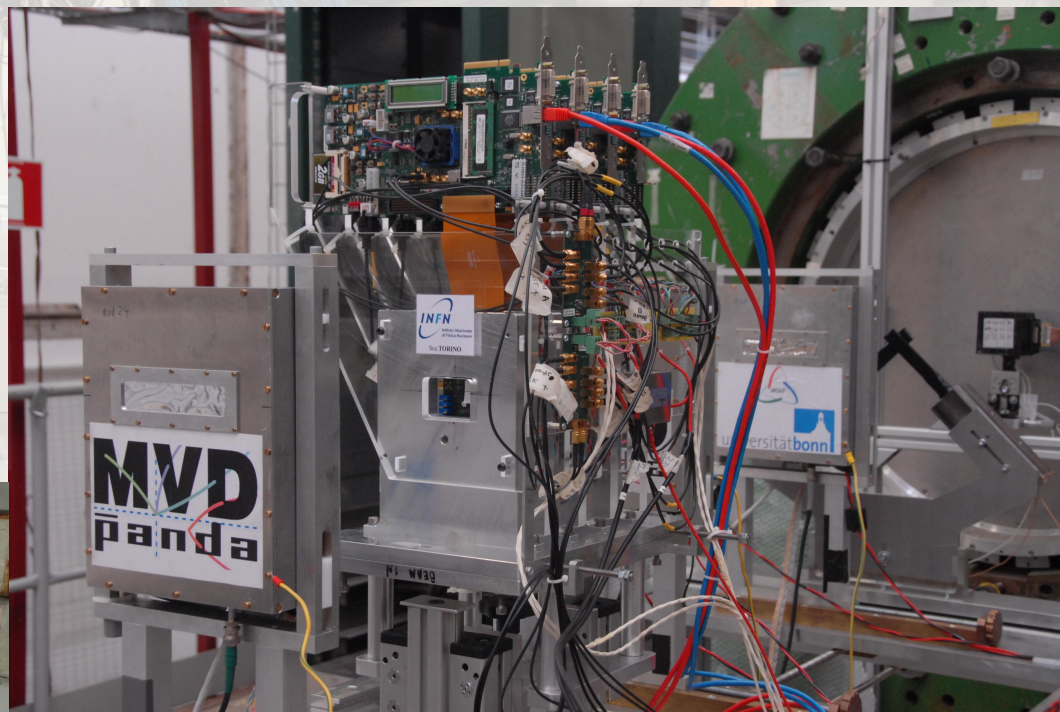
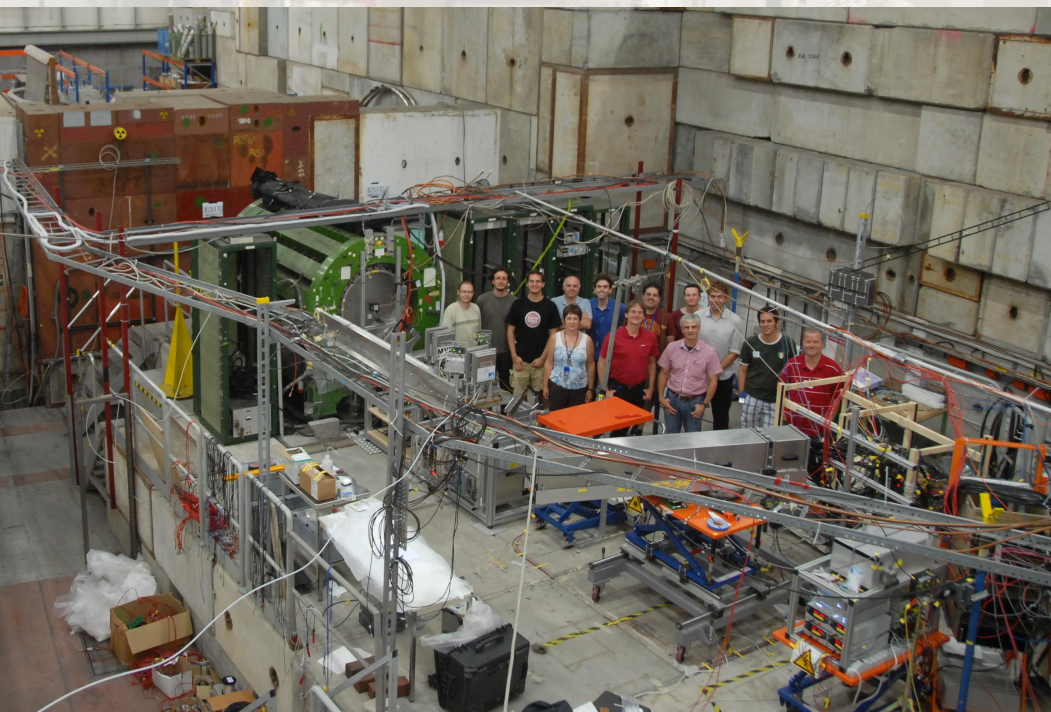




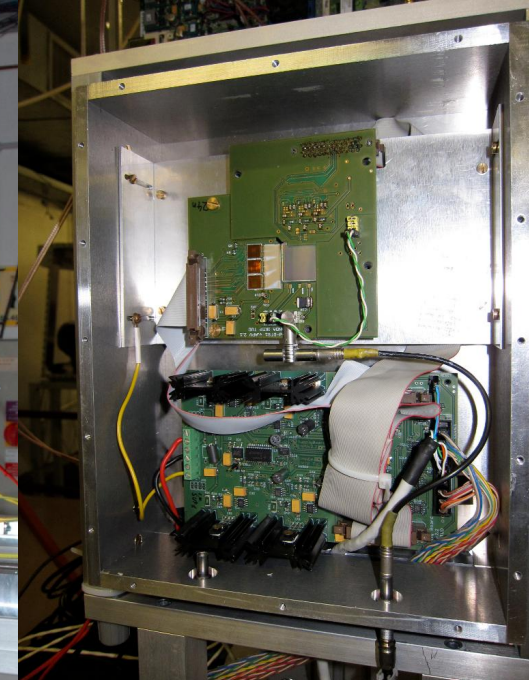
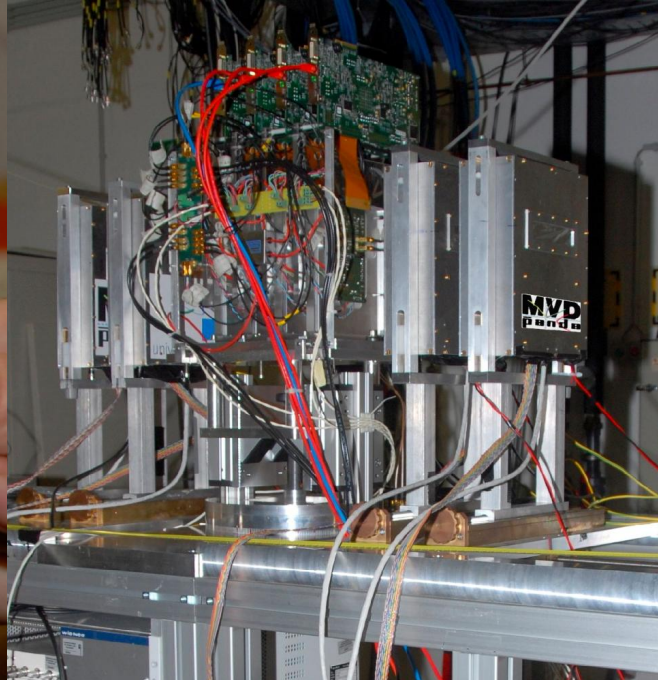
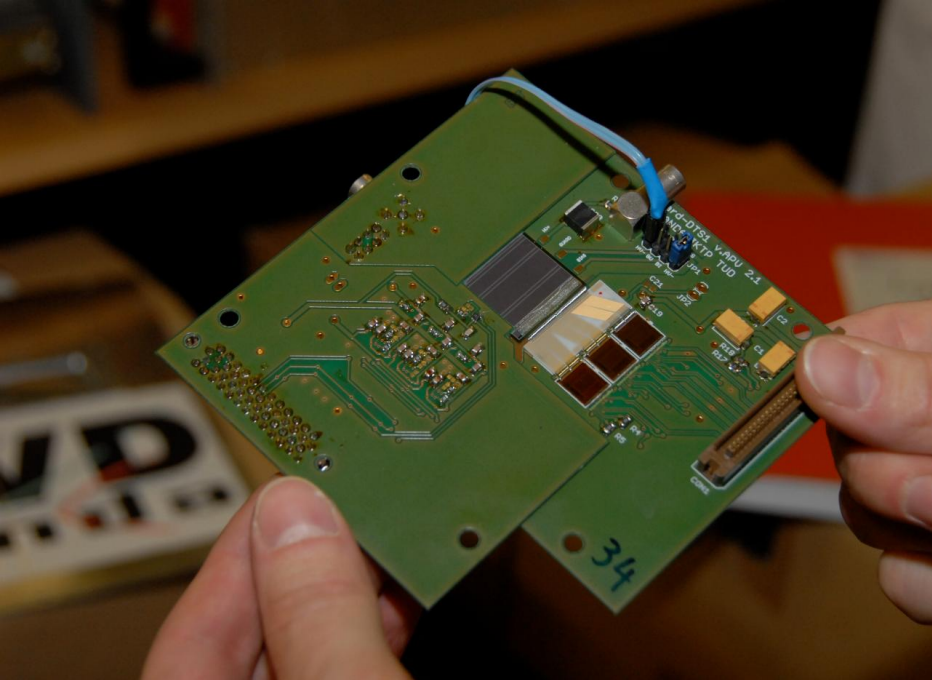
Bonn-Tracking-Station + Pixel-Tracking-Station



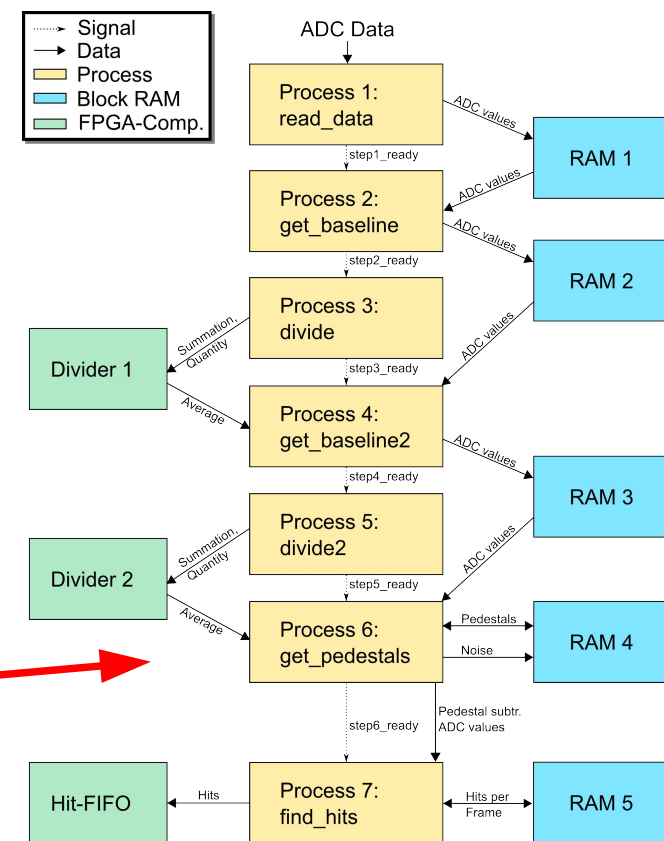
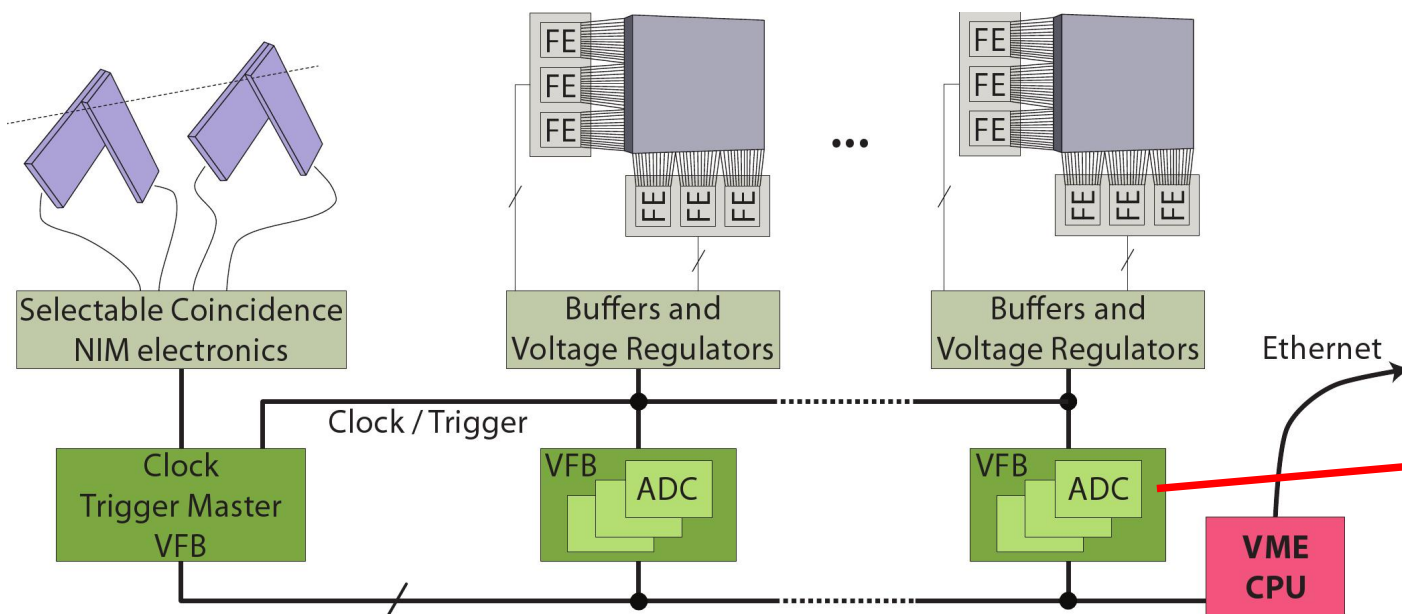
PANDA CERN test beam
@CERN PS, T9
together with GSI DIRC group



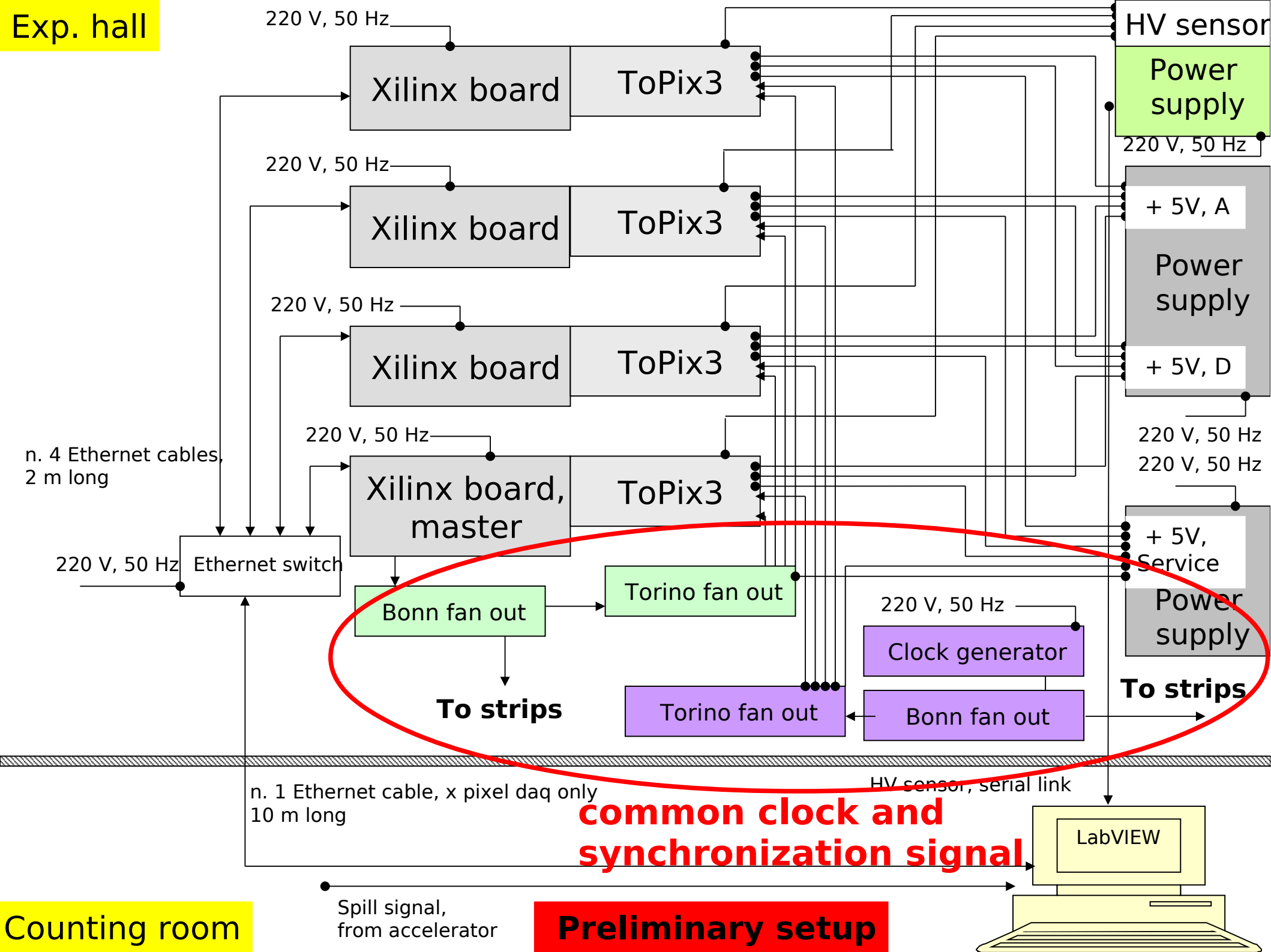
MVD group operated
double-sided silicon strip detectors
together with
ToPix3 pixel detector assemblies



- double-sided silicon strip detector
- $2 \times 2 \text{ cm}^2$, 90° stereo angle, $50 \mu\text{m}$ pitch
- PANDA prototype run from CiS, Erfurt
- read out with APV25-S1 and FPGA-based DAQ



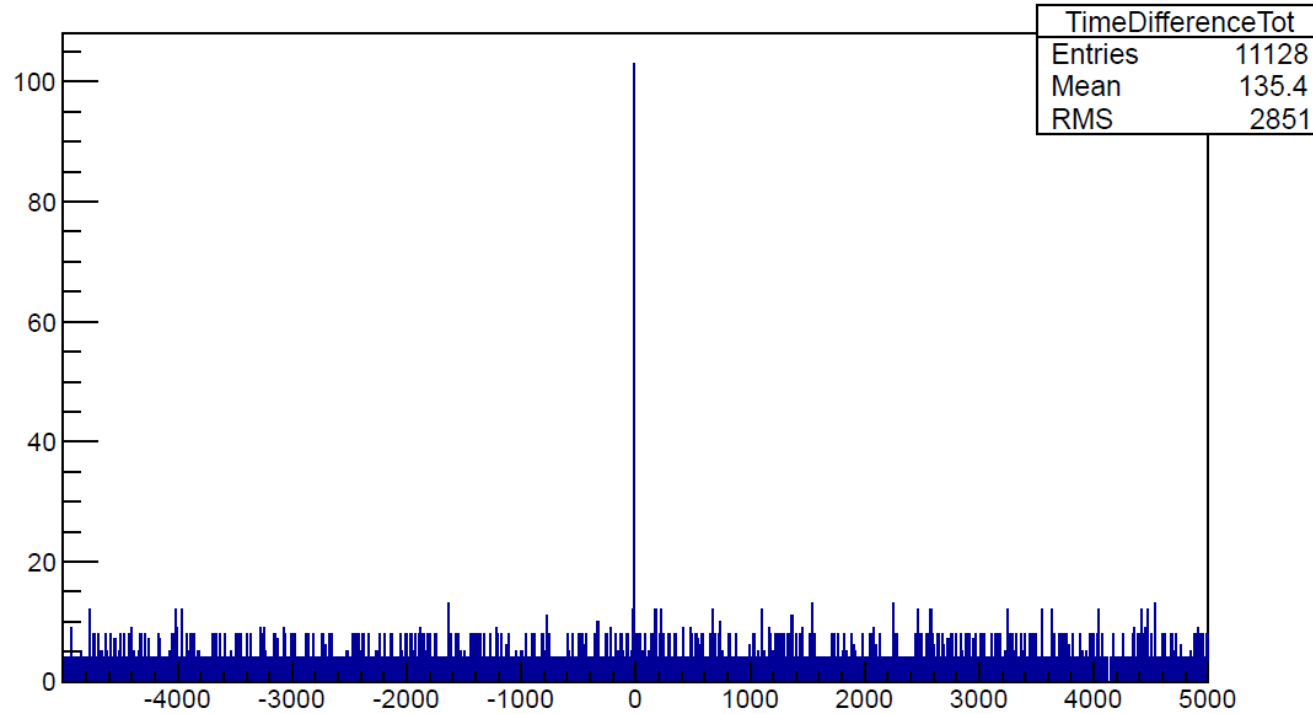
Exp. hall



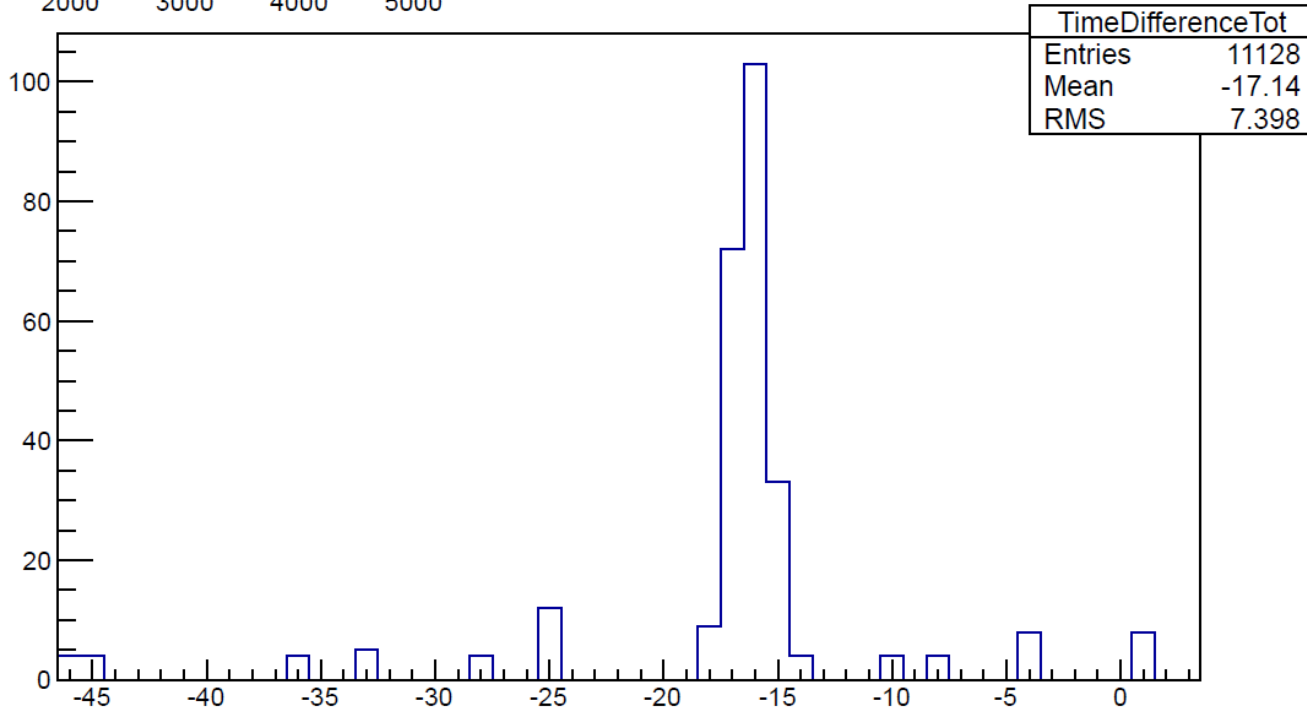
Counting room

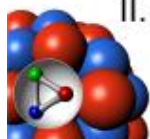
Time Match

TimeDifferenceTot



ieDifferenceTot





**Thank you for
your attention**