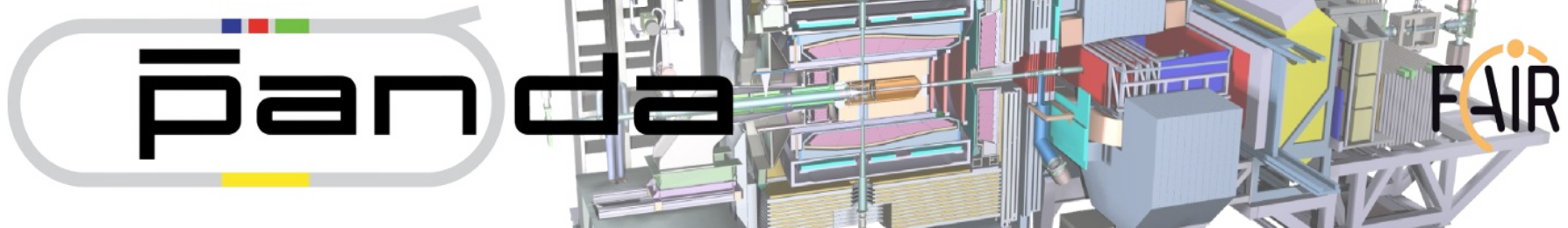


Status Barrel EMC of the



Target Spectrometer

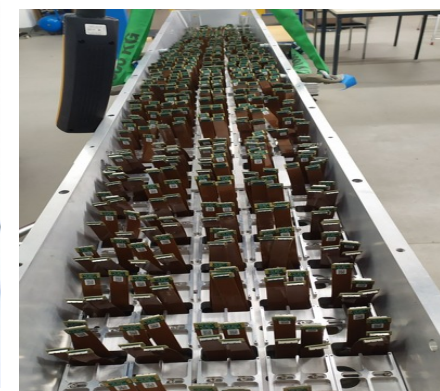
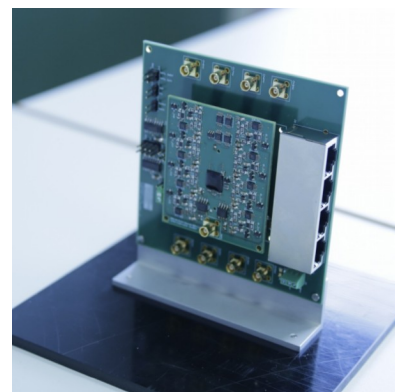
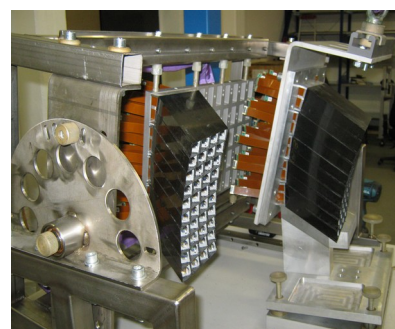
2nd Physics Institute, Giessen University, Germany

PANDA CM, June 2022

Envisaged milestone (M8): Assembly of 1st full Barrel EMC slice

- Infrastructure ✓
- Mechanics ✓
- 710 detectors ✓
 - 710 crystals in 11 different geometries ✓
 - 1420 APDS
 - Screening including irradiation ✓
 - Matching ✓
 - Glueing ✓
- Capsules ✓
- Wrapping ✓
- Assembly of 18 modules ✓
- Assembly of Supermodules ✓
 - 360 left and 360 right handed APFEL-ASIC with flex PCBs (✓)
 - ASIC housing or fixtures ✓
- Assembly of full 1st slice X
 - (Re-)design supportbeam ✓
 - Mod. preseries supportbeam ✓
 - Cooling & thermal insulation
 - Backplanes
 - Light pulser fiber coupling

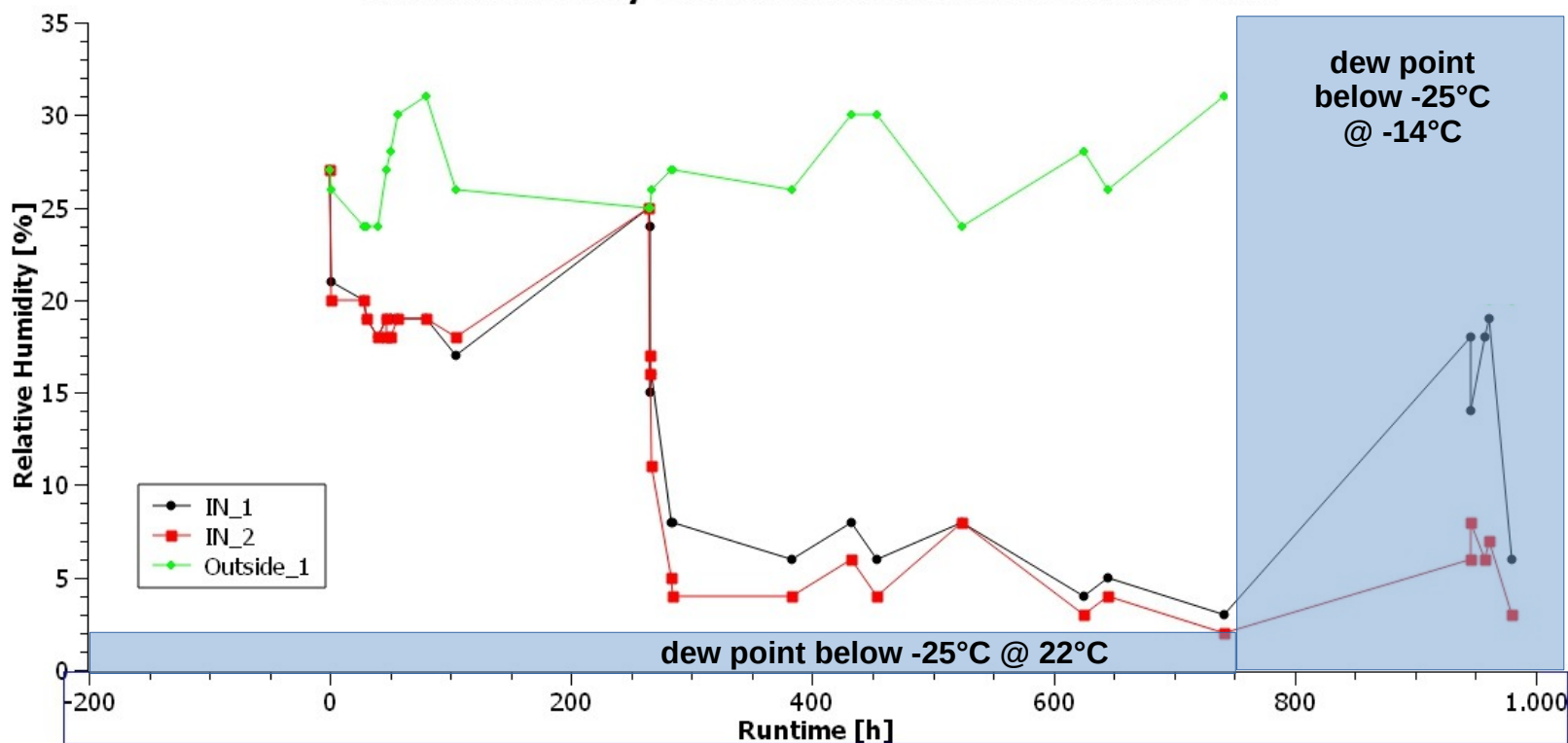
in progress
in progress
in progress



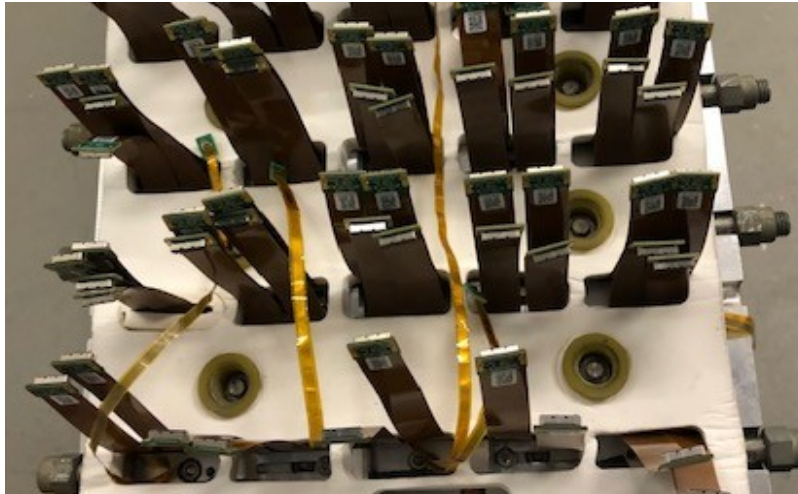
- First long term test
 - 100-120 l/min dried air
 - After 750 h cooling system switched on to -15°C inlet temp.
 - SHT21 inside close to the cooling pipe -14°C
 - 20% humidity @ 14°C → **dew point -32°C**



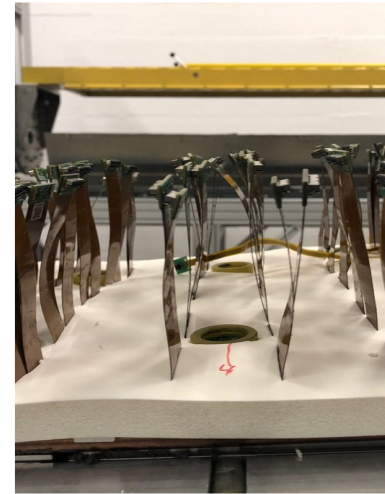
Relative Humidity in the Slice measured with PANDA THMP



- Proper sealing of all FlexPCB feed trough very tedious work



First iteration of insulation had cut-outs matching the super module plate surface




insulation material replaced with 0.5mm cutouts



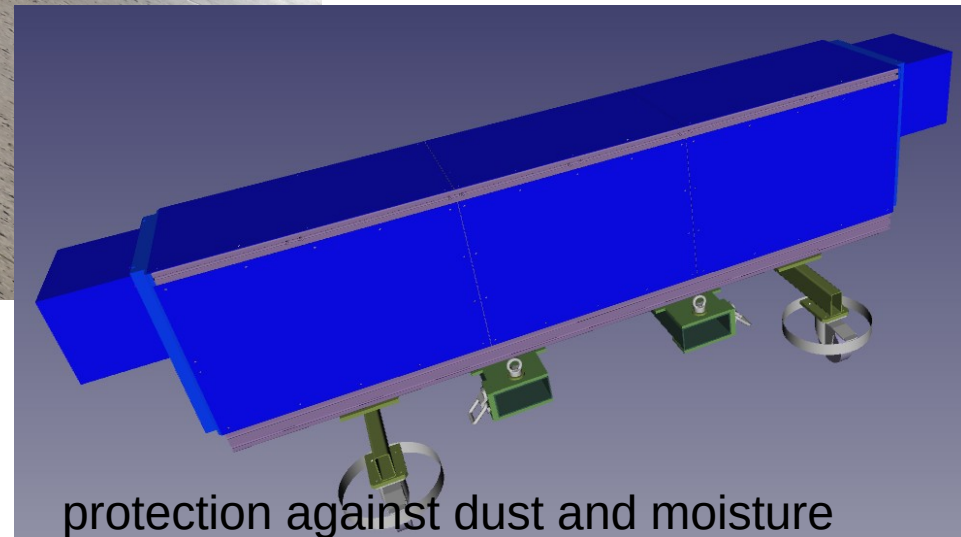
- Supportbeam installation much easier with new thermal insulation
- Full front cooling setup installed
- Panda ThinPT100 connected, approx half of them still usable (missing plugs, and erratic values on readout)
- Re-calibration is probably needed for old thinPT100
- Humidity/Temperature measurement with PANDA THMP, ThinPT100, additional PT100 and commercial SHT21 and DS18B20 via independent readout



 Next long term test soon



1st box is ready



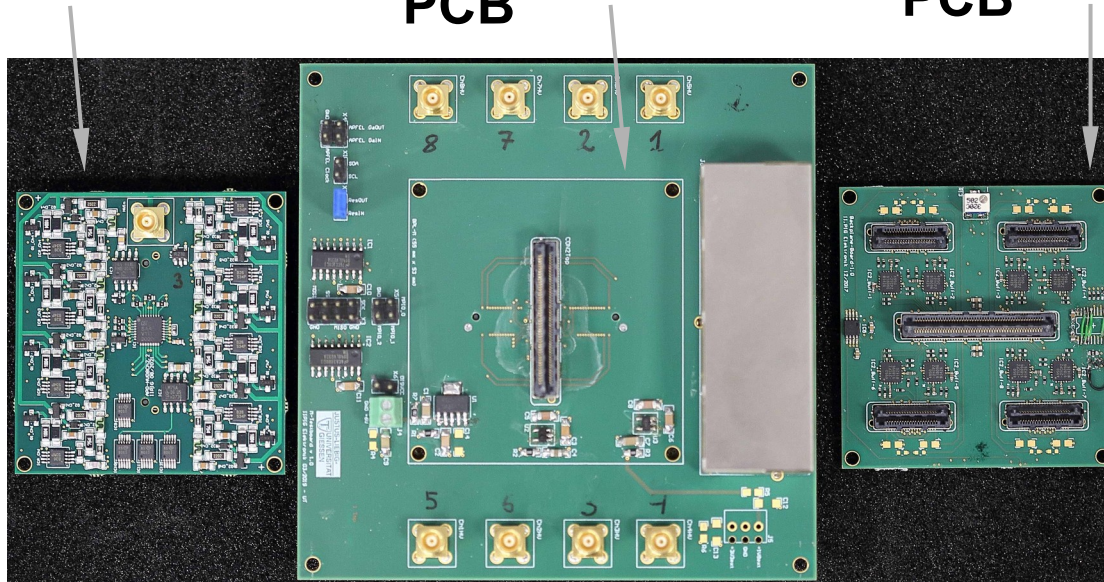
protection against dust and moisture

Two bachelor Students are currently introduced to the existing prototype setup consistion of

HV-PCB

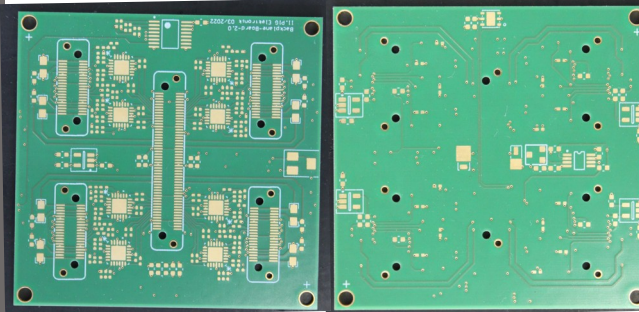
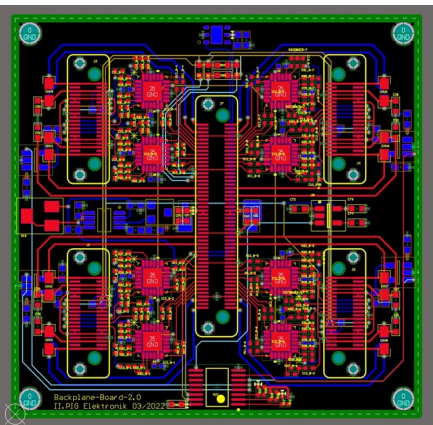
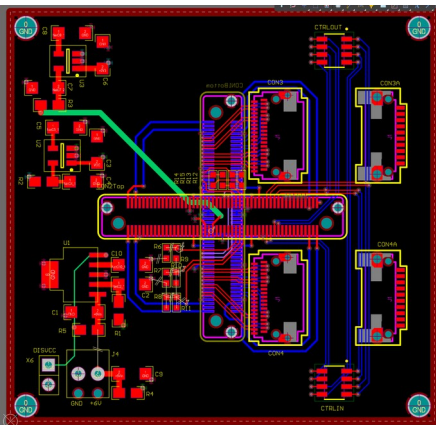
Interface-
PCB

Backplane-
PCB

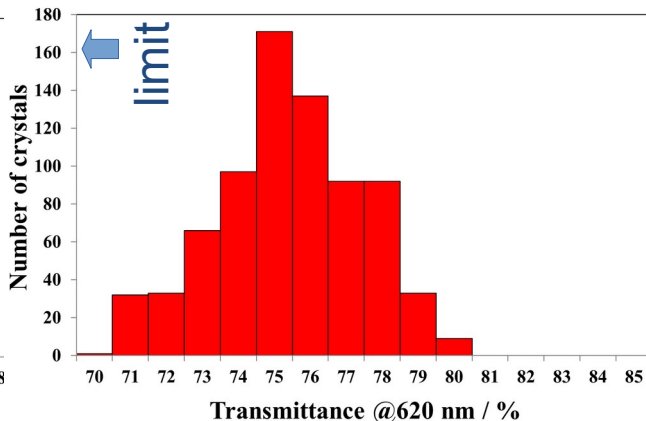
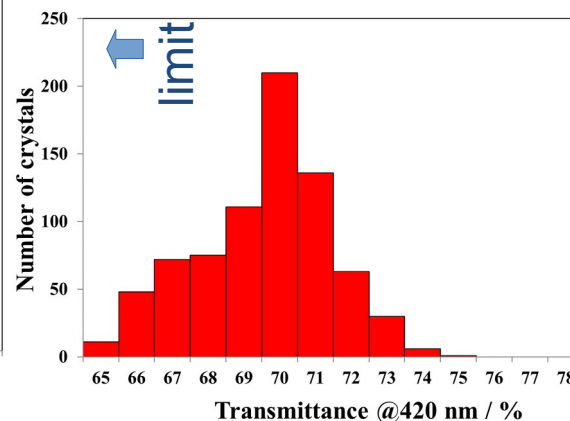
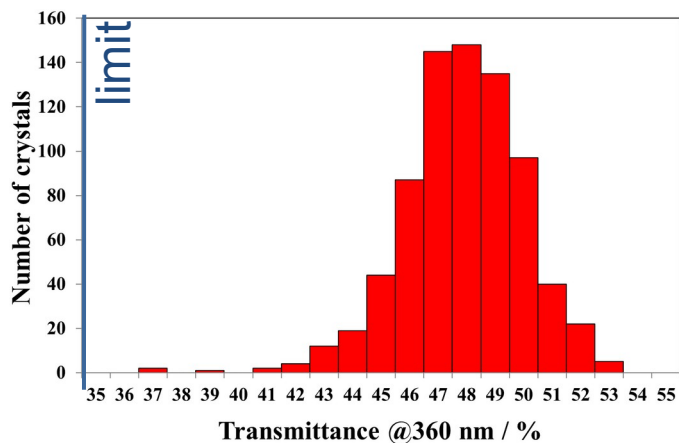
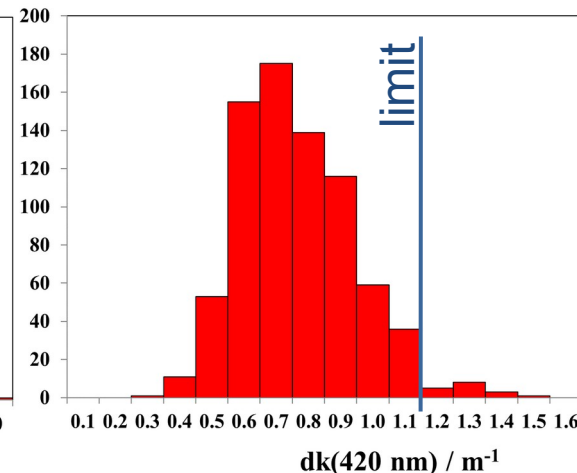
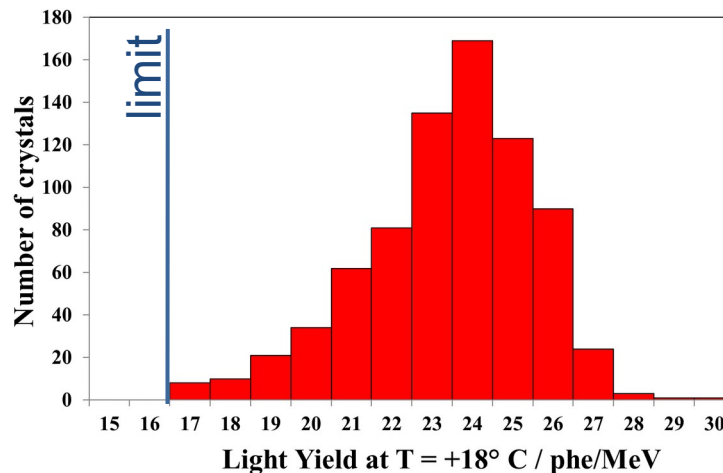


The setup will be used for series calibration of the HV-PCBs of the preseries slice

- HV-PCBs for the first slice have been delivered (KW 20)
- Interface-PCB for the first slice is in final design stage
- Final version of the Backplane-PCB is ready for assembly, three components are currently missing



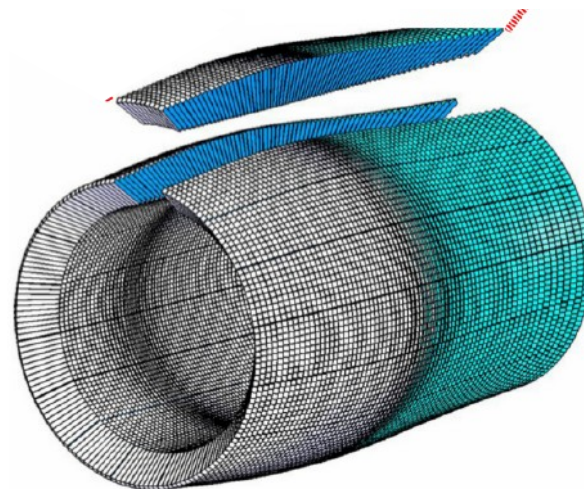
- Produced by CRYTUR: 756
 - Rejected due to dk limit: 15
- Current production: 59 for excess raw material
 - Delivered and accepted: 34
- New Prague contract: 52



Crystal Status



- Produced by CRYTUR: 756
 - Rejected due to dk limit: 15
- Current production: 59 for excess raw material
 - Delivered and accepted: 34
- New Prague contract: 52
- Missing crystals:
 - 3rd slice: 181
 - Day-1 (12 slices): 413
 - Full barrel: 6150



	SLice1		missed	tot	SLice2		missed	tot	SLice3		missed	tot	SLice4		missed	tot	SLice5		missed	tot
	L	R			L	R			L	R			L	R			L	R		
1	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0	
2	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0	
3	0	0	0		0	0	0		15	0	0		41	0	0		41	0	0	
4	0	0	0		0	0	0		19	20	0		41	41	0		41	41	0	
5	0	0	0		0	0	0		23	22	0		41	41	0		41	41	0	
6	0	0	0		0	0	0		17	23	0		41	41	0		41	41	0	
7	0	0	0		0	0	0		21	21	0		41	41	0		41	41	0	
8	0	0	0		0	0	0		0	0	0		21	21	0		21	21	0	
9	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0	
10	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0	
11	0	0	0		0	0	0		0	0	0		0	0	0		0	0	0	
tot	0	0	0	0	0	0	0	0	95	86	0	0	226	185	0	0	226	185	0	0
				0					181				411				411			

needed crystals each slice #

- **Cooling**
 - **Sufficient dew point reduction reached**
 - **Improved thermal insulation**
 - **Front cooling system installed**
 - **Next long term test soon**
- **Front End**
 - **HV-PCBs for the first slice have been delivered (KW 20)**
- **Crystal status**
 - **181 crystals for 3rd slice needed**
- **First slice transportation & storage box is ready**