

VMM measurements

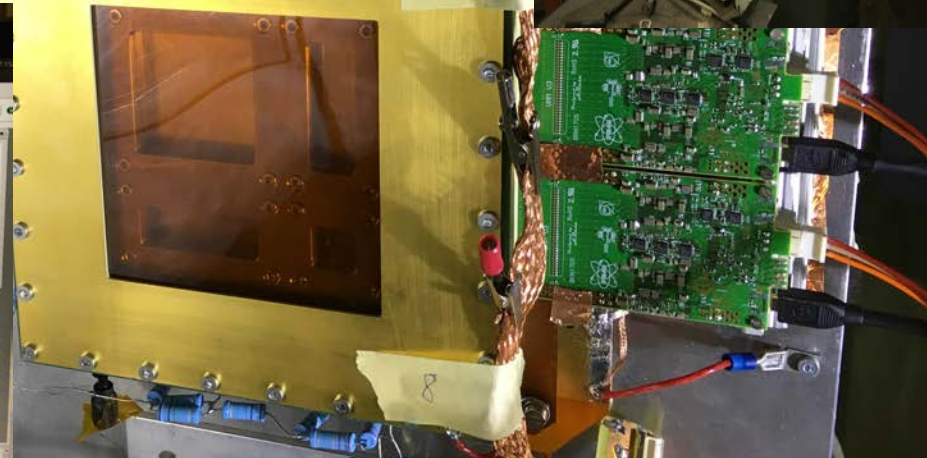
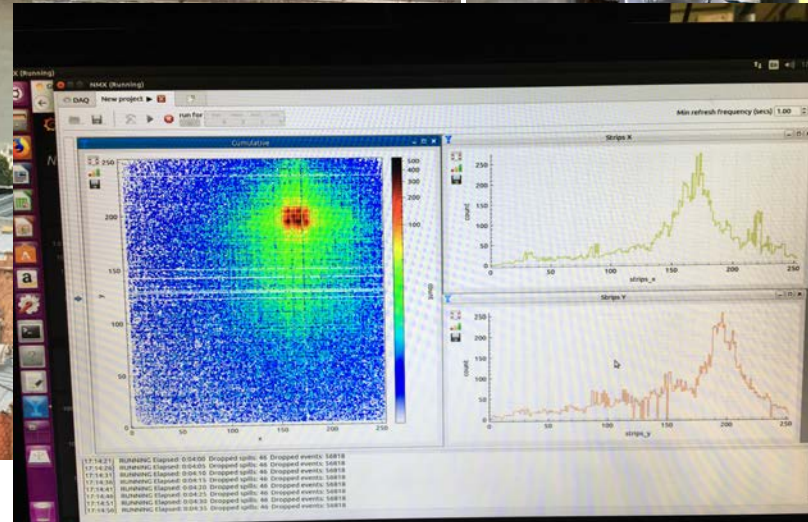
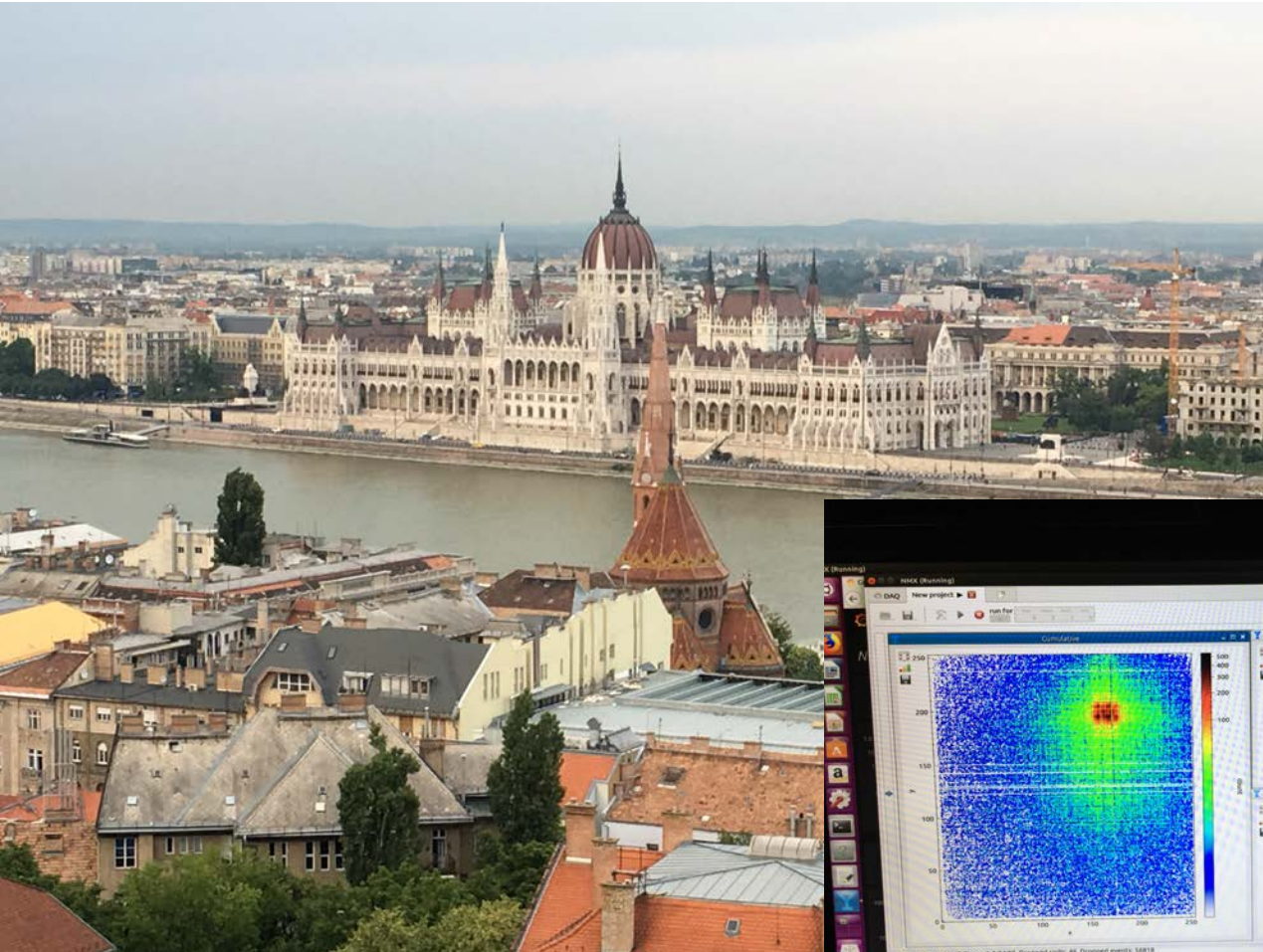
RD51 miniweek, CERN
December 6th

Dorothea Pfeiffer

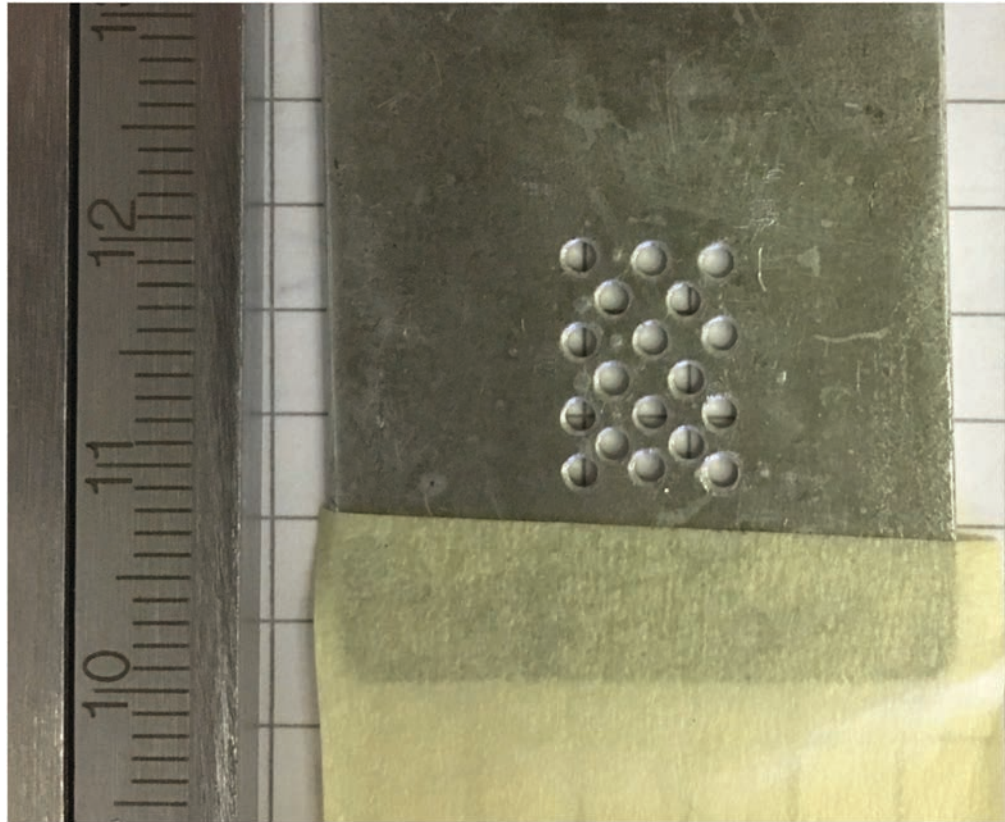
Patrik Thuiner

Michael Lupberger

Detector Test at BNC (July 2018)

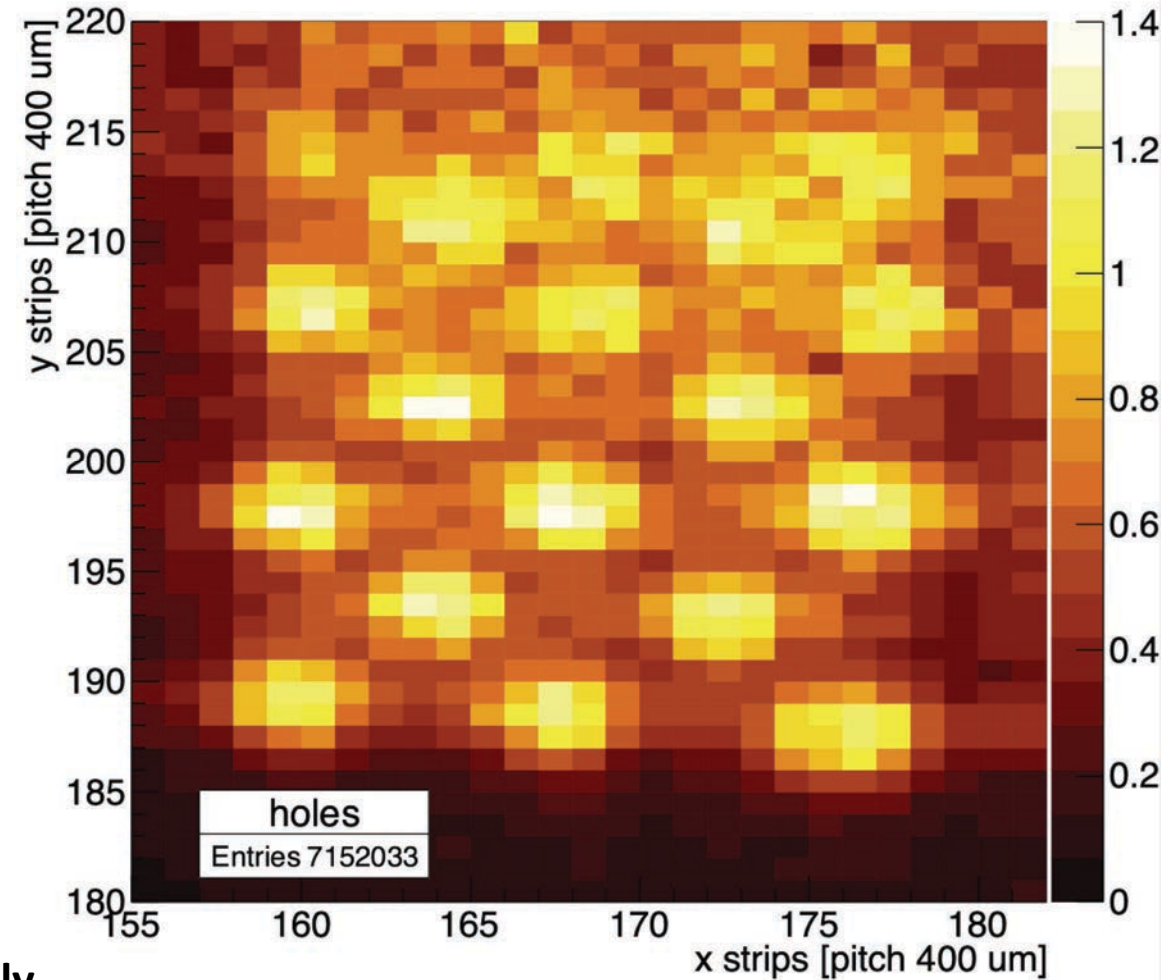


Cadmium Mask, 1.0 mm holes



The holes have a minimum separation (centre to centre) of about 2.0 mm horizontally, 1.6 mm vertically, and 1.3 mm diagonally.

Cd mask, 1mm holes, normalized, time corrected



The team

At the D-16 beam line

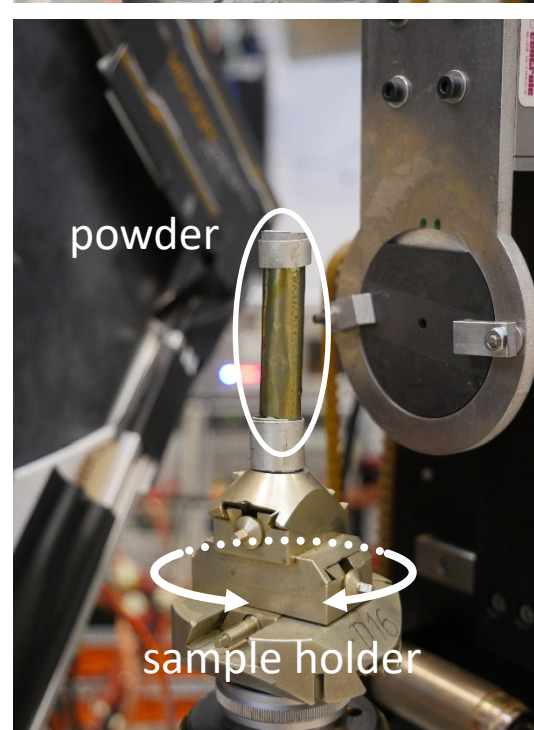
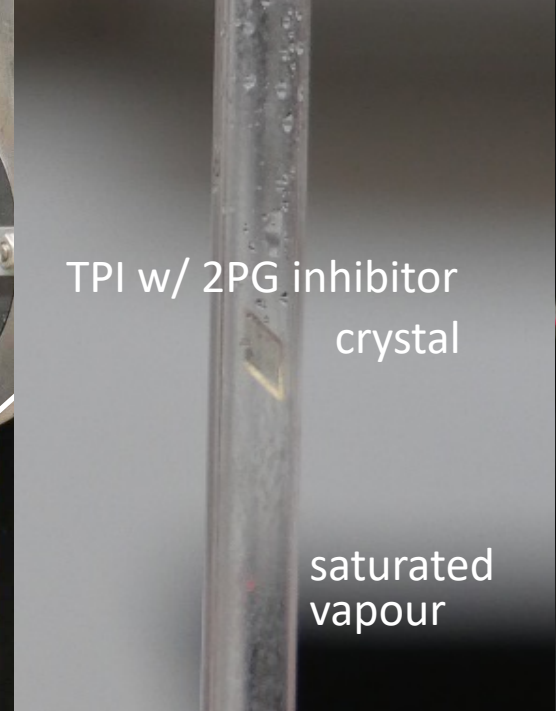
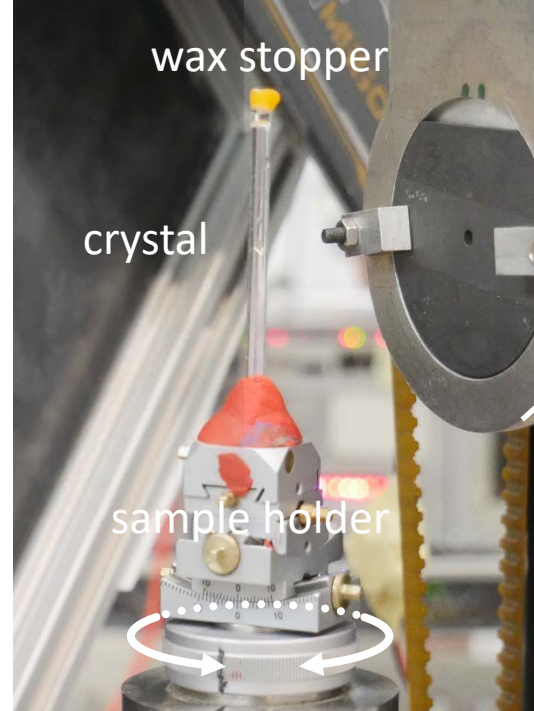
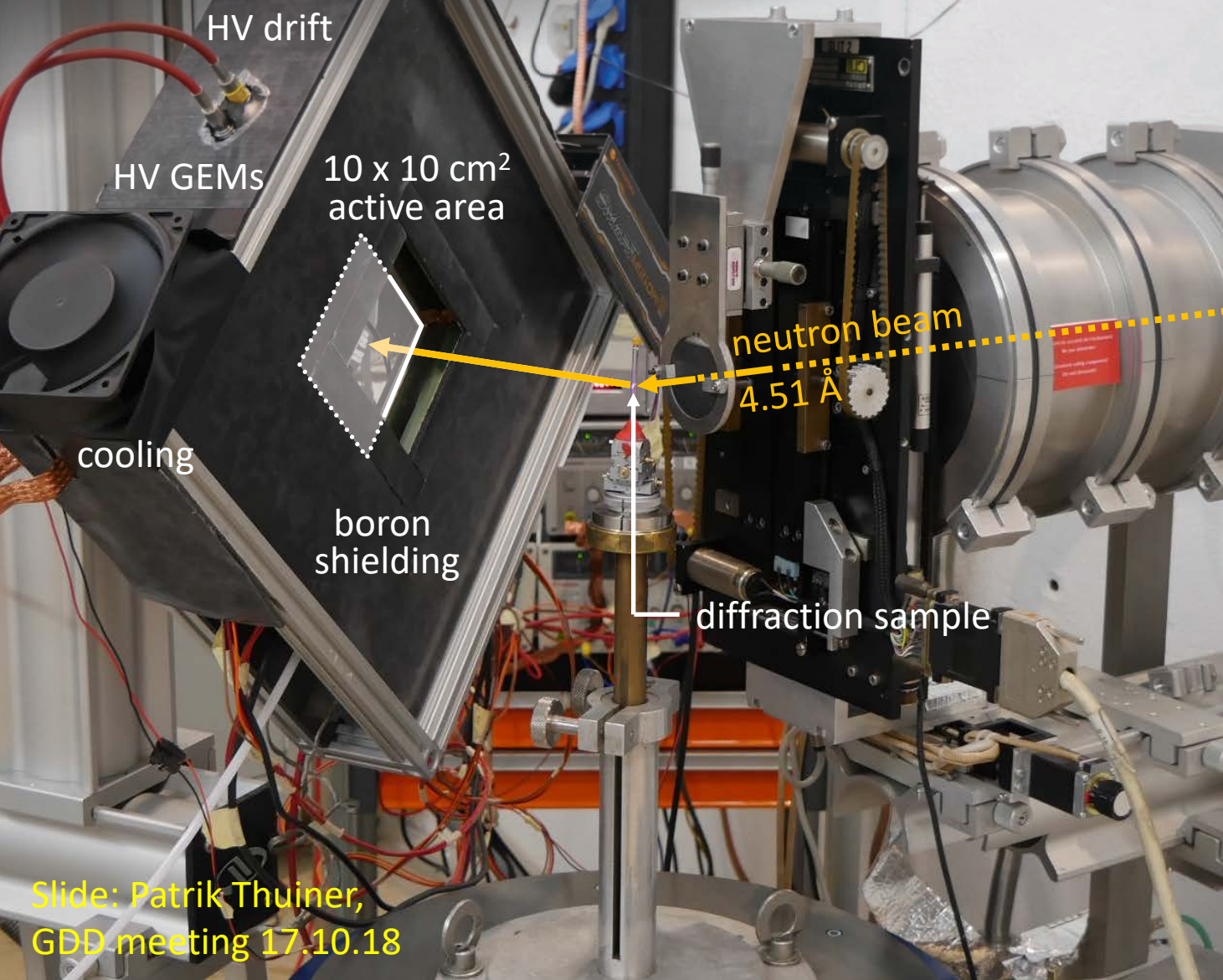
Not in picture:
Viviana Cristiglio
Olivier Aguetaz



Detector Franz

Slide: Patrik Thuiner,
GDD meeting 17.10.18

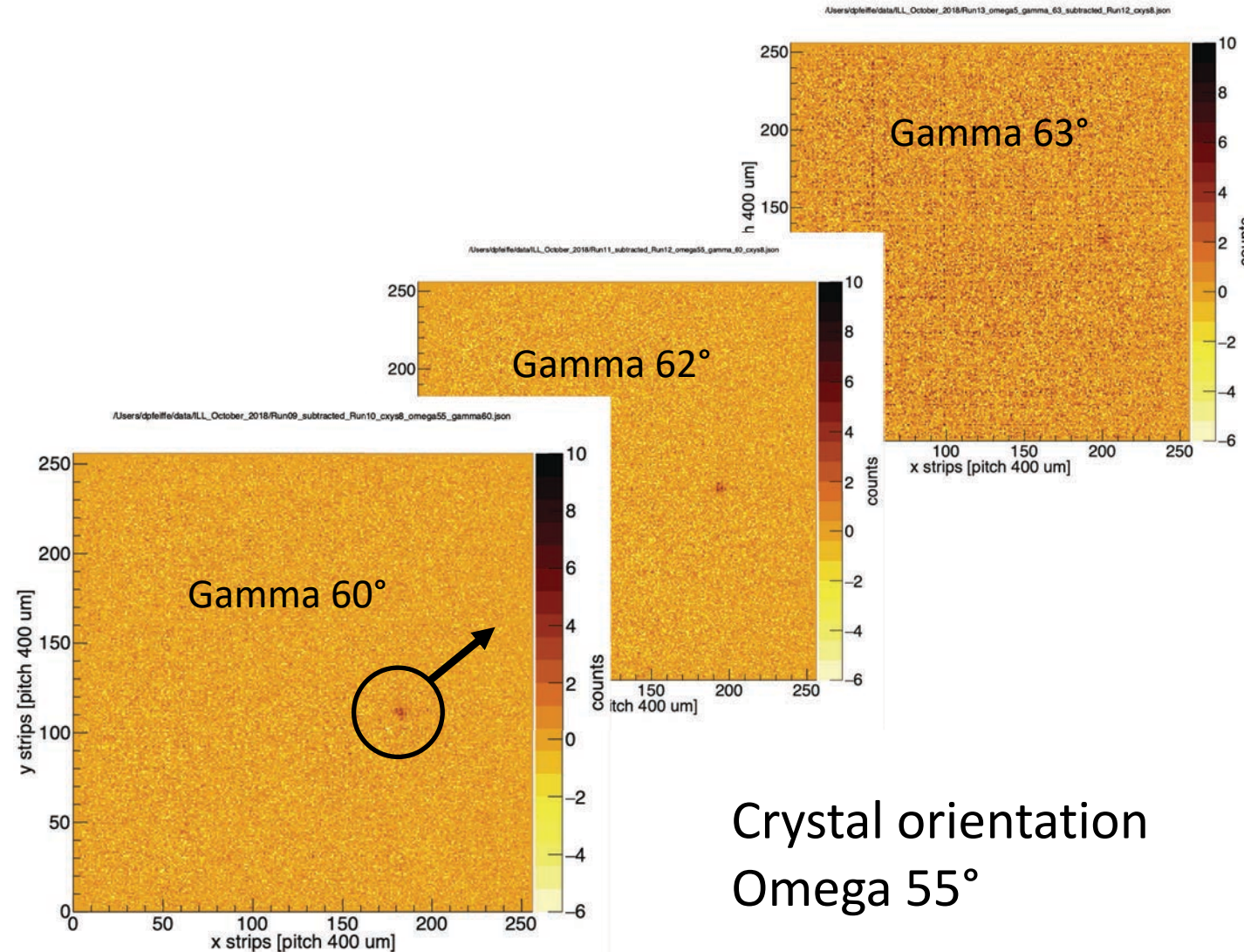
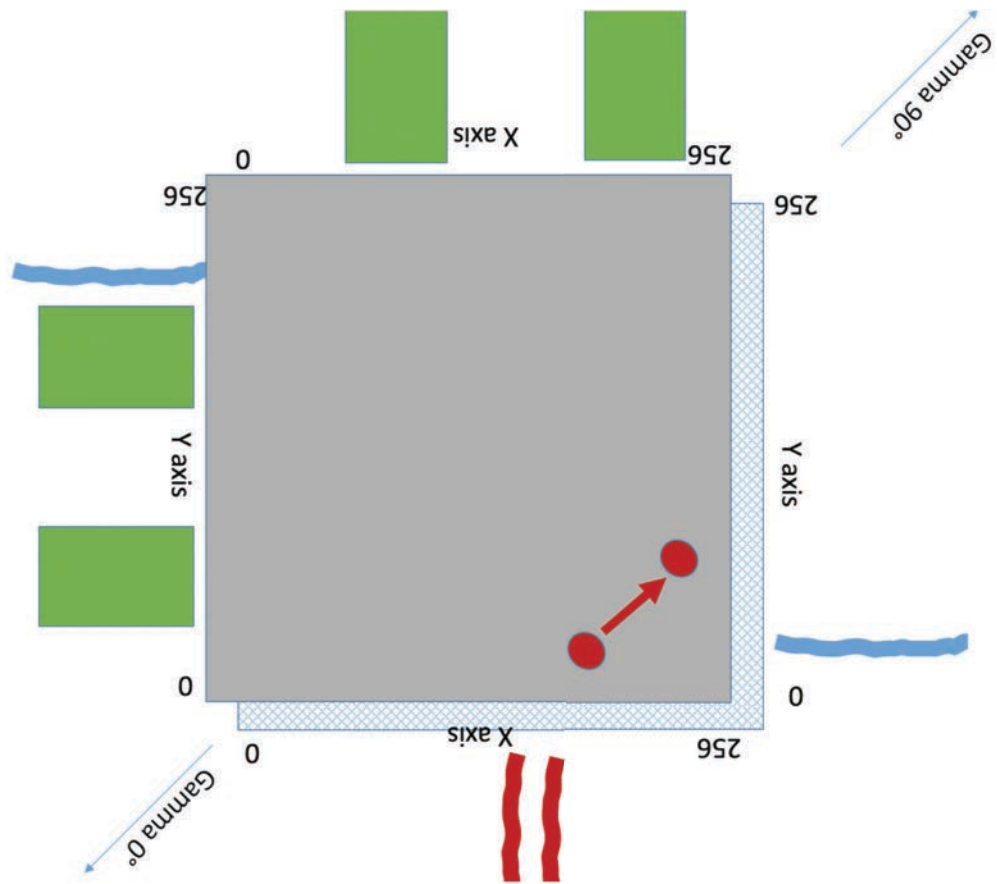
Experimental setup



Slide: Patrik Thüner,
GDD meeting 17.10.18

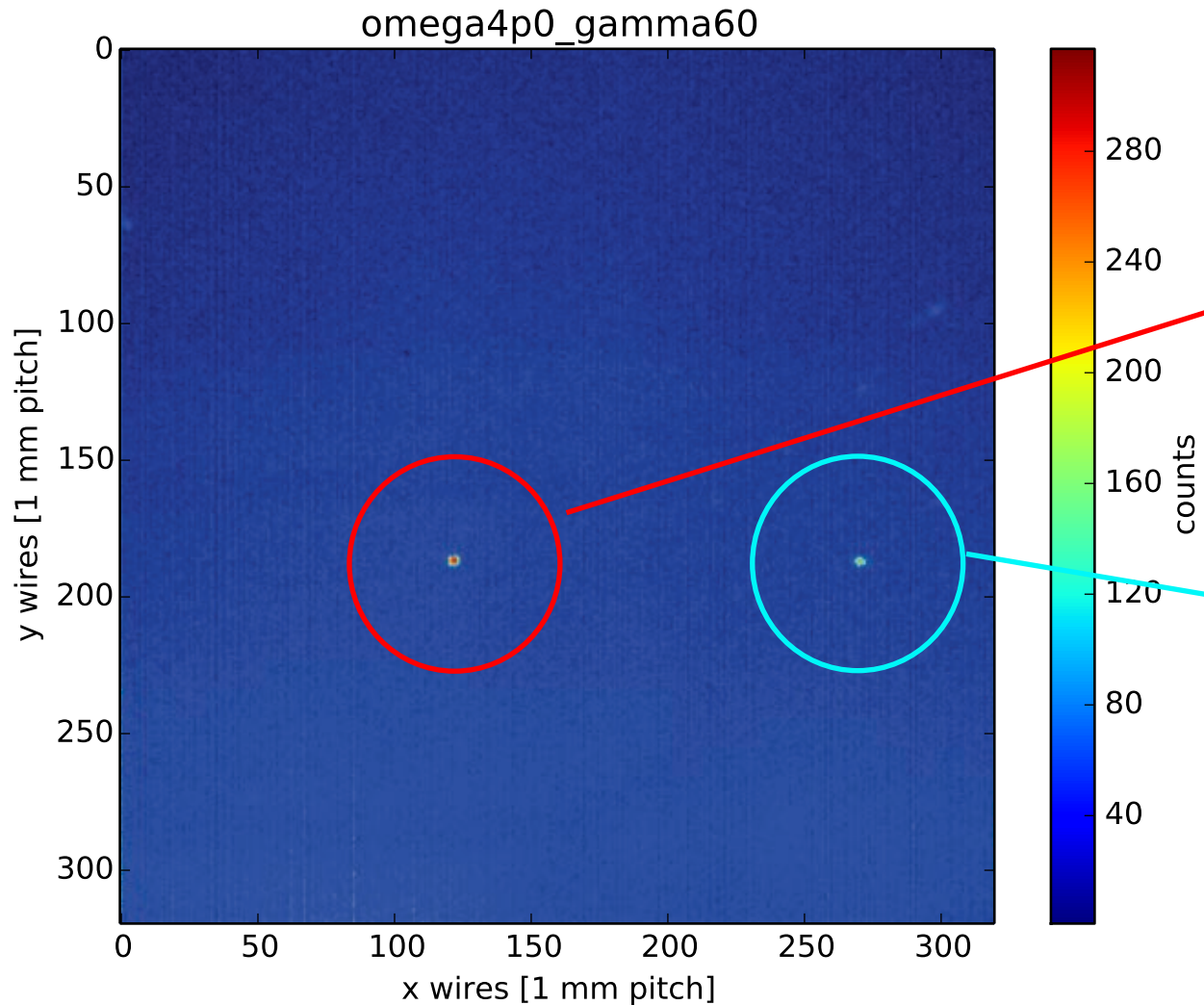
Crystal diffraction sample: Triose phosphate isomerase w/ 2-phosphoglycolate (2PG) inhibitor

Drawing: Patrik Thuiner,
GDD meeting 17.10.18

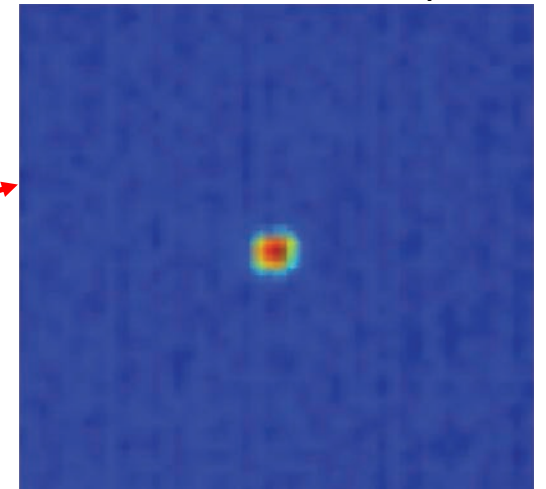


Crystal orientation
Omega 55°

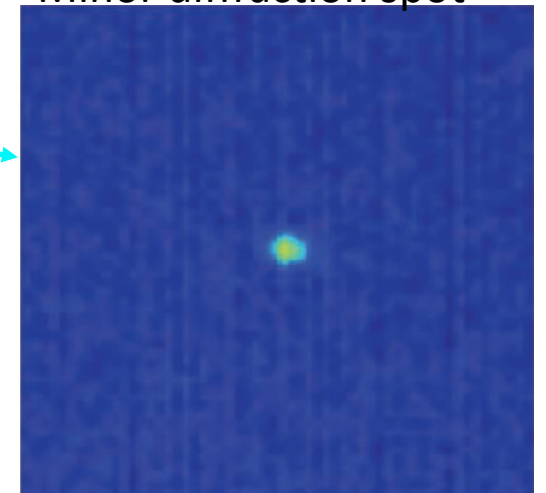
Comparison: He₃ wirechamber at D16



Intense diffraction spot

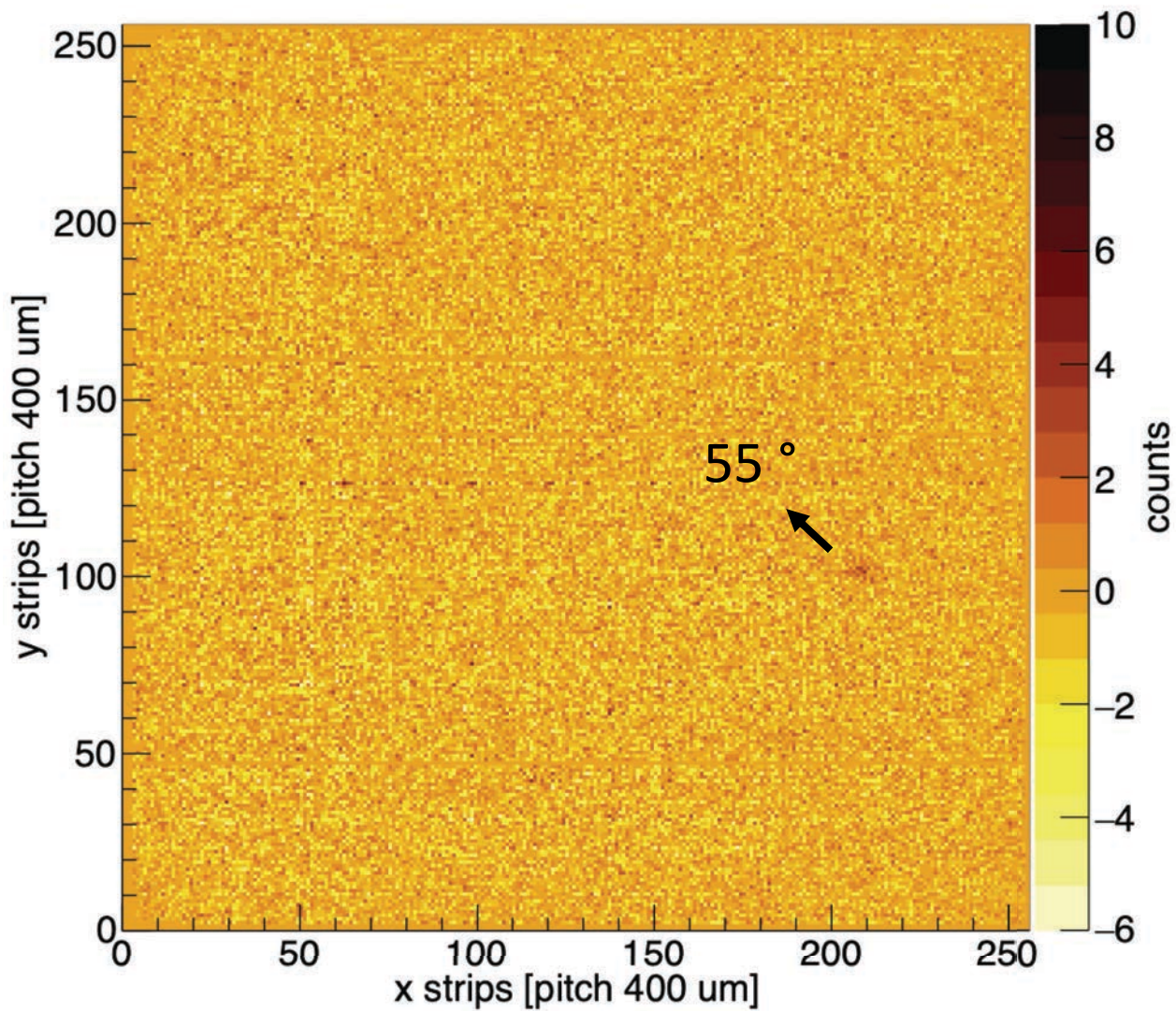


Minor diffraction spot



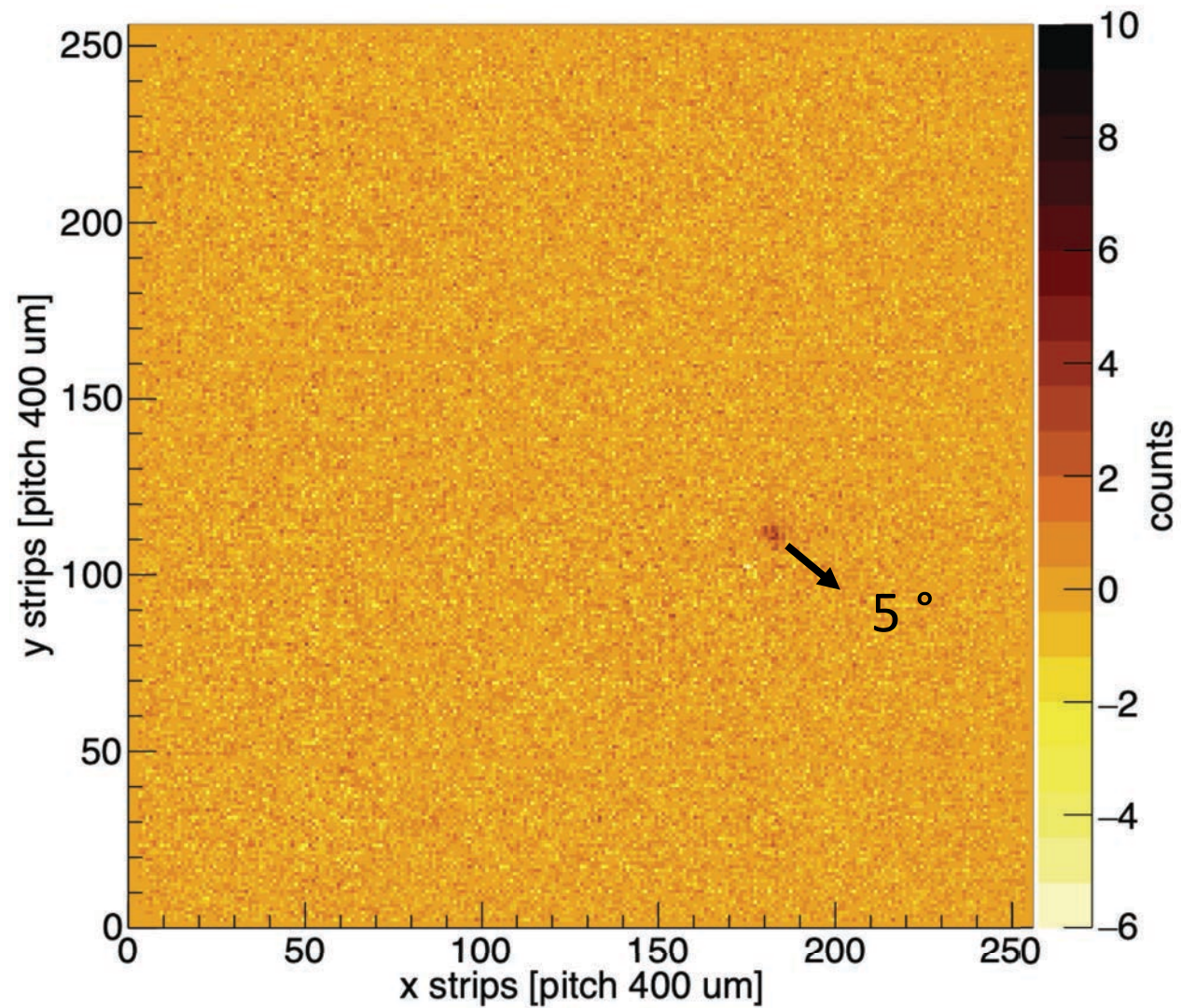
Gd-GEM detector 5° crystal orientation

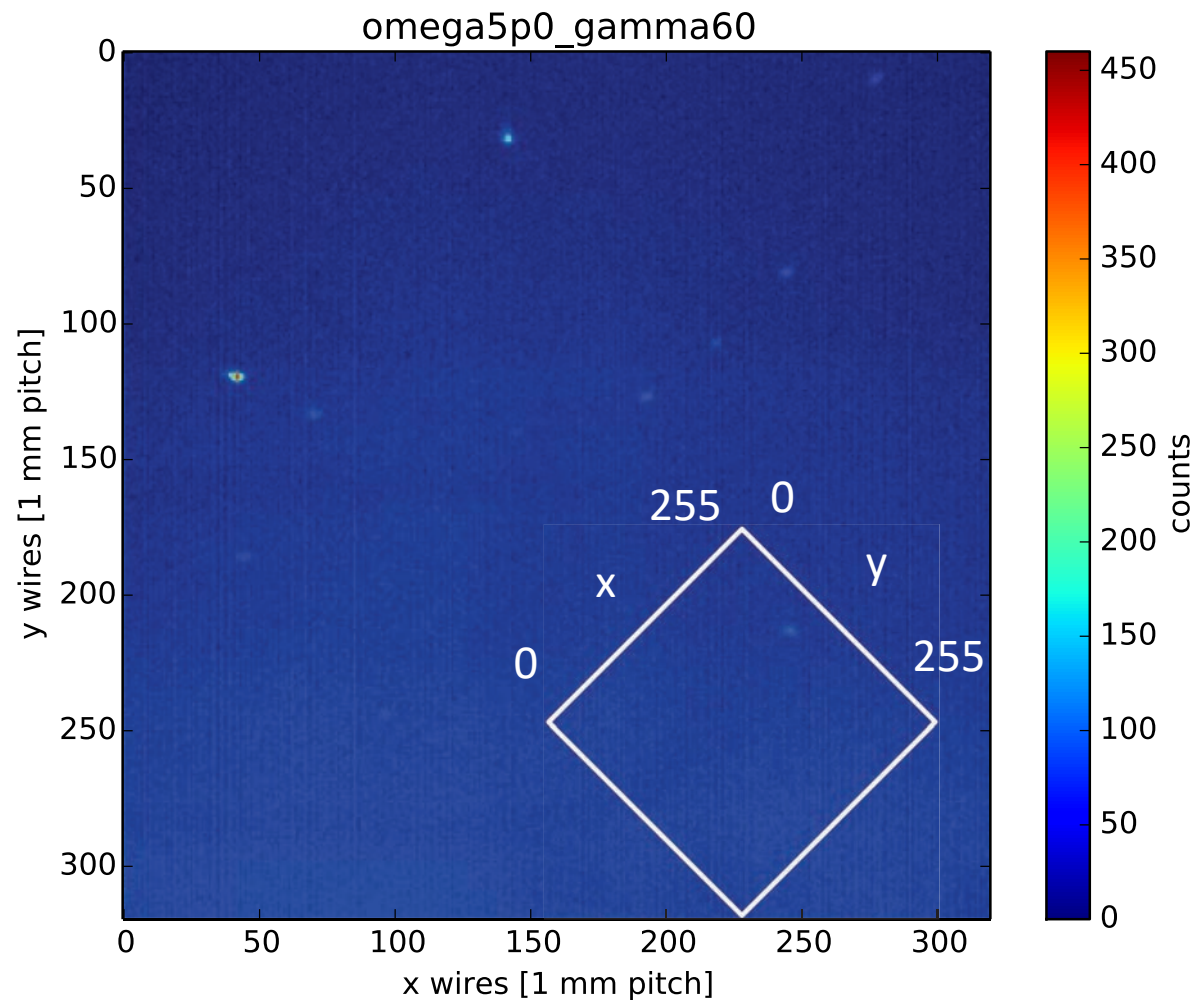
json



Gd-GEM detector 55° crystal orientation

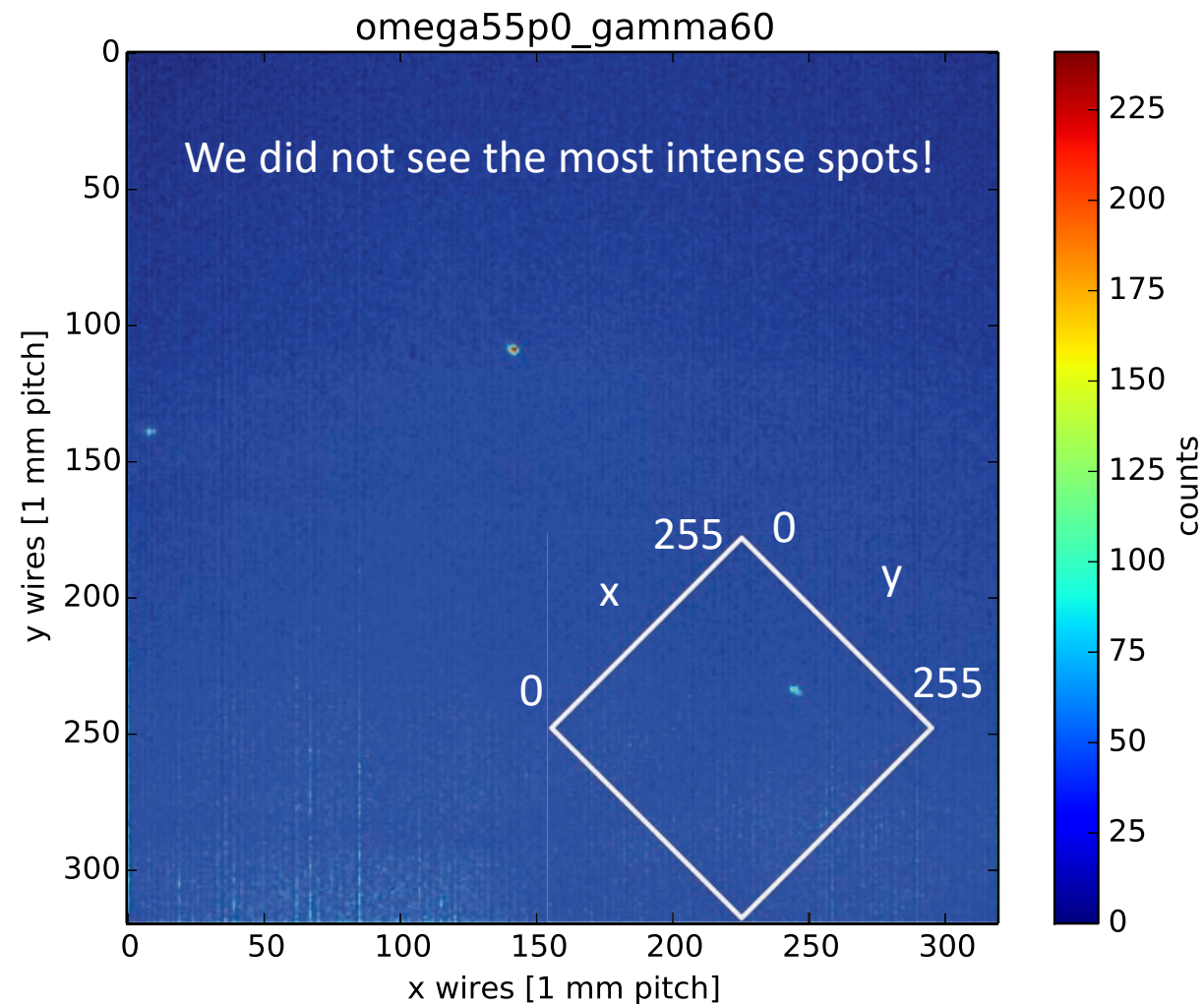
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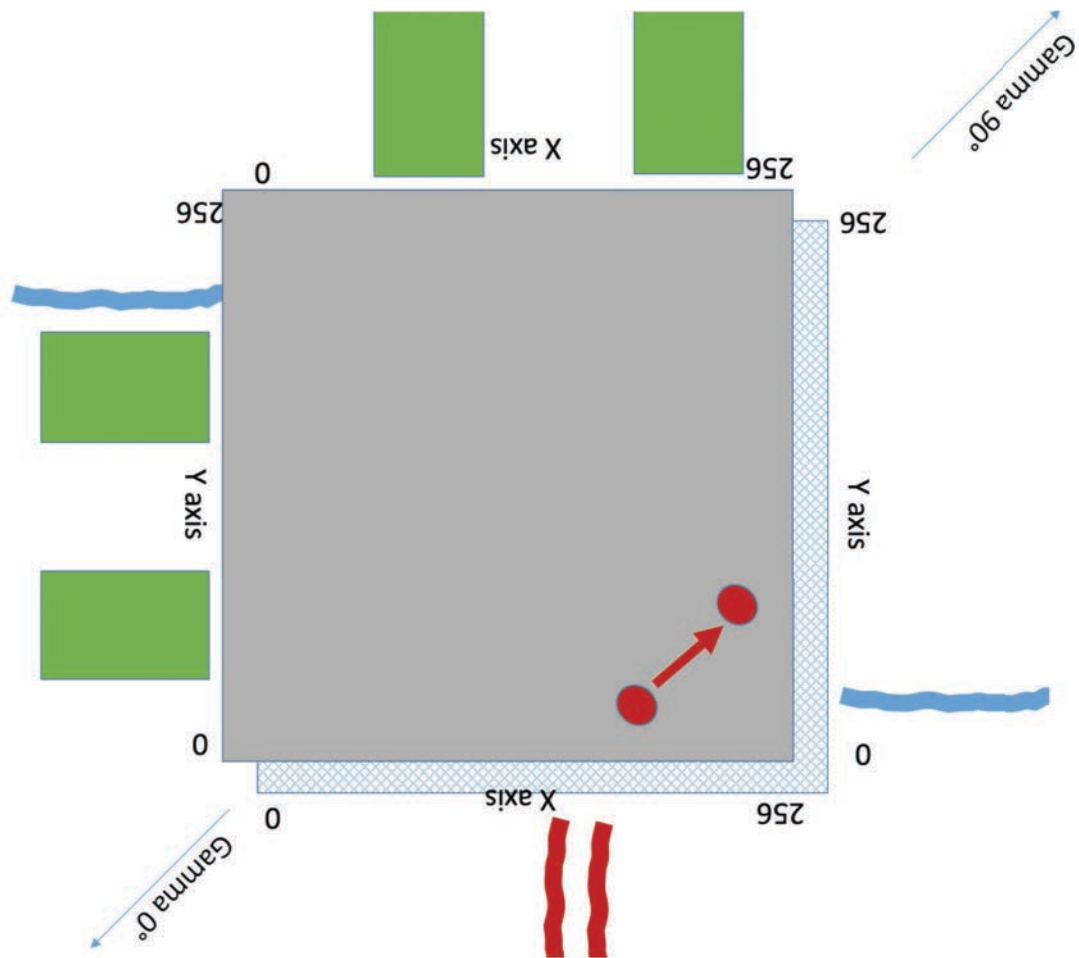
He3 detector
5° crystal orientation

He3 detector 55° crystal orientation

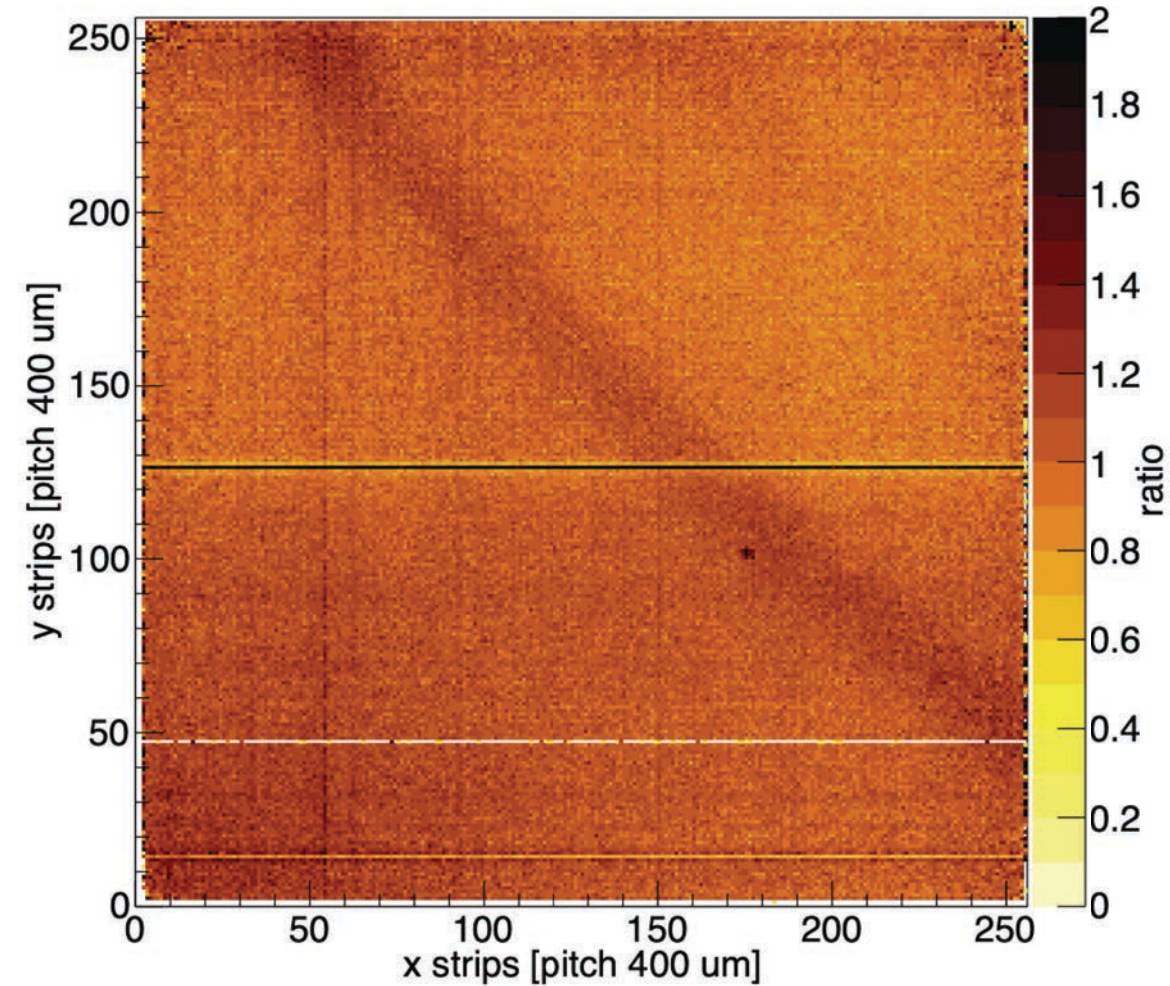


Powder diffraction with YIG powder in container

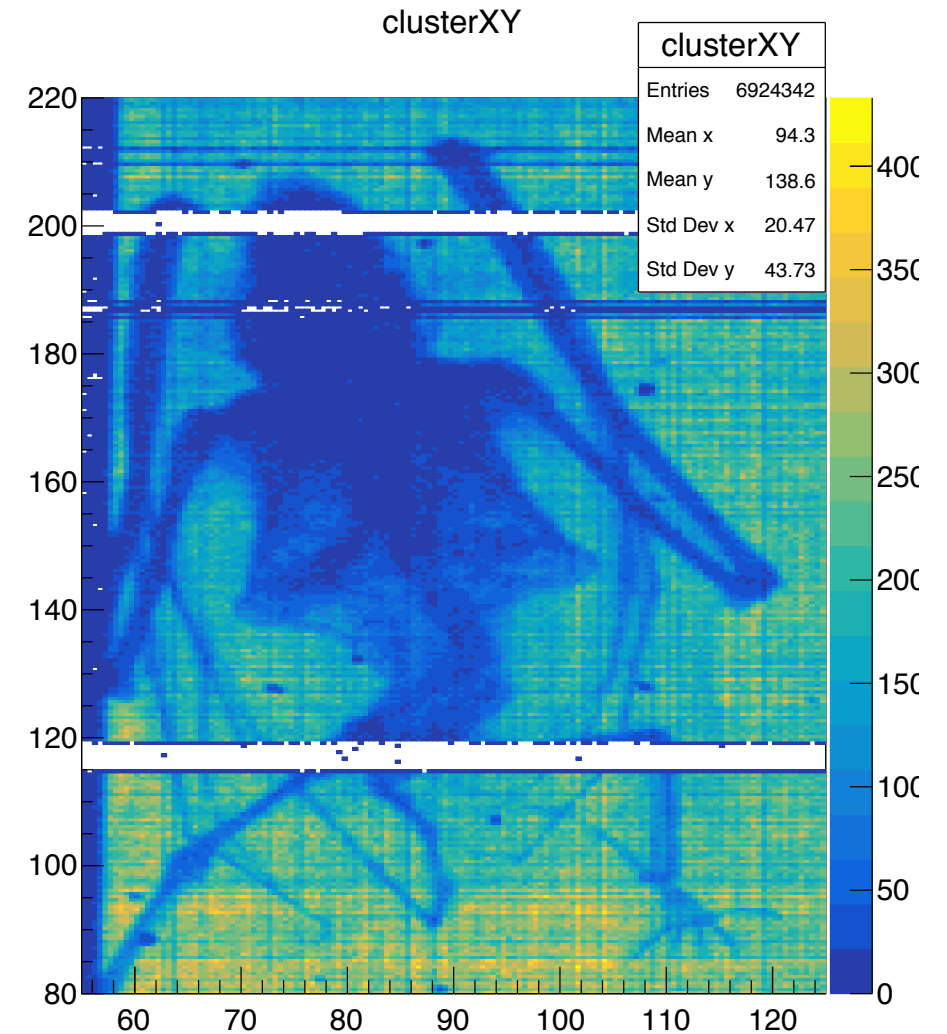
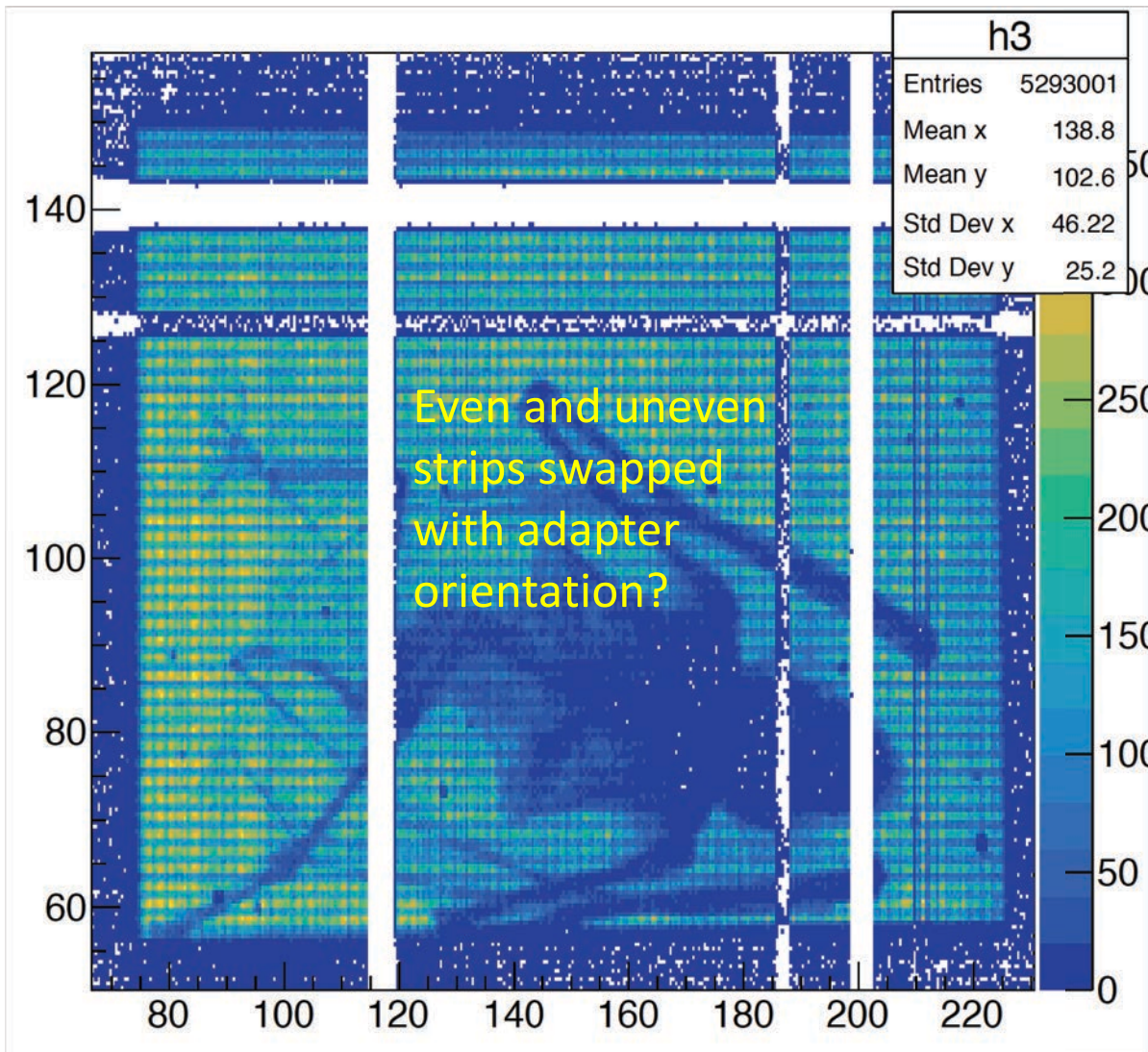
Drawing: Patrik Thuiner,
GDD meeting 17.10.18



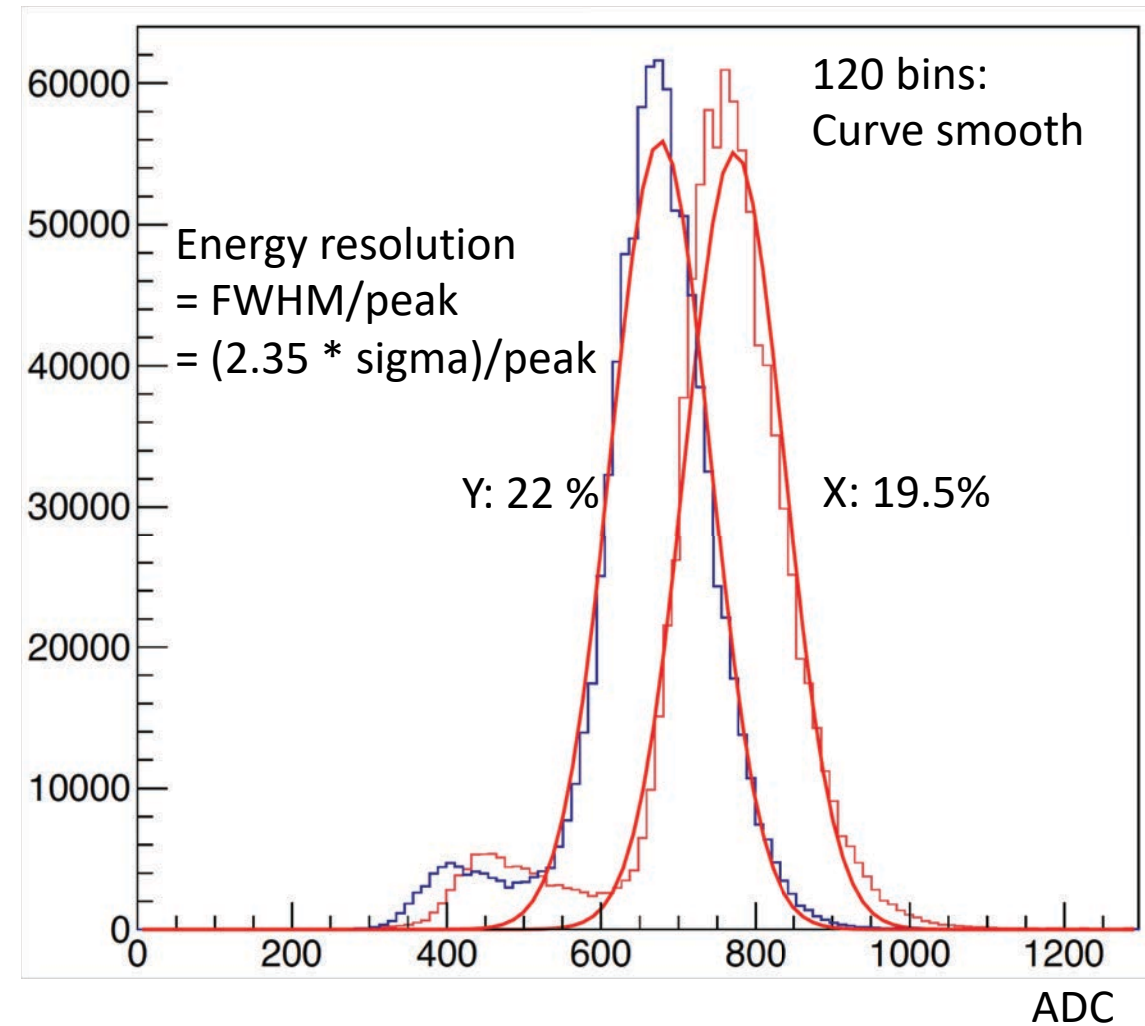
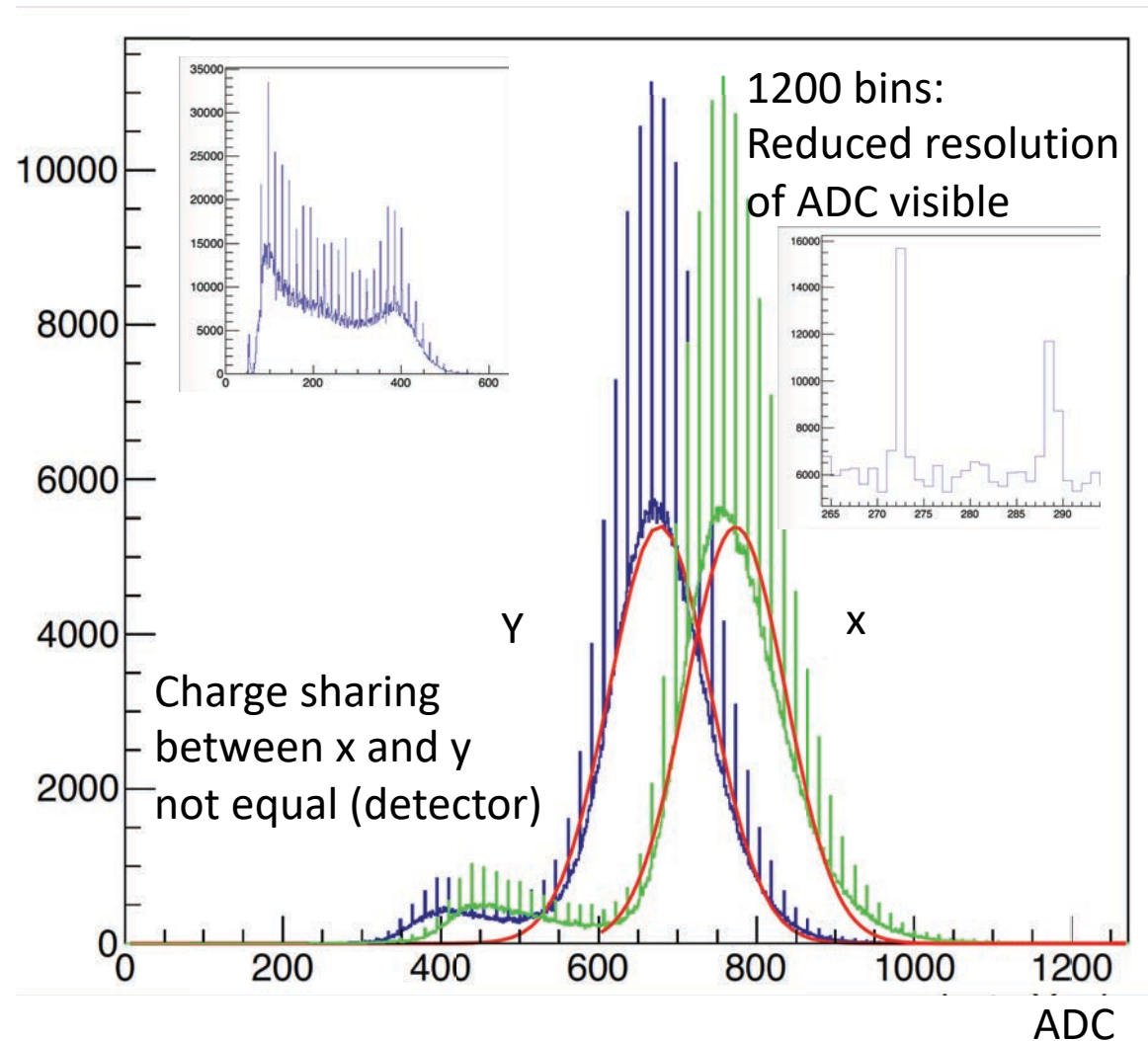
/Users/dpfeiffe/data/ILL_October_2018/Run29_normalized_Run27_gamma_60_cxys8.json



Cu X-ray measurements with Triple-GEM detector

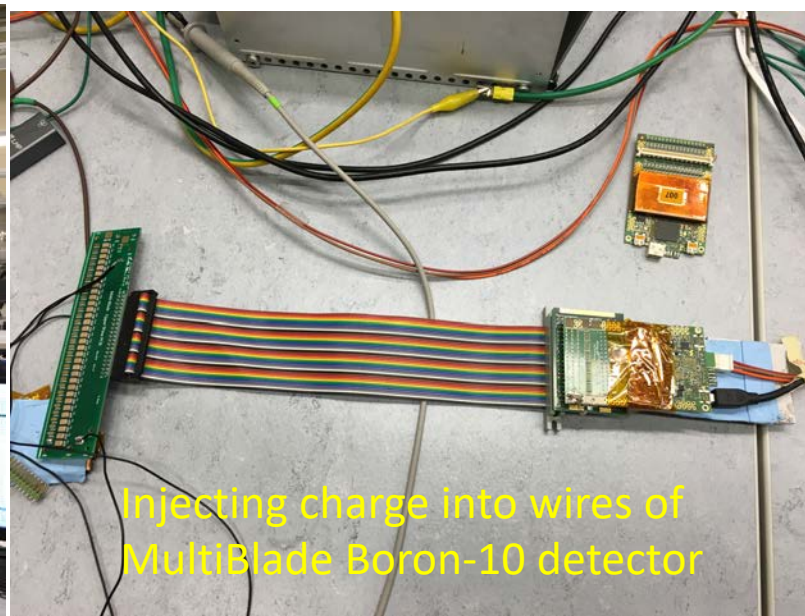
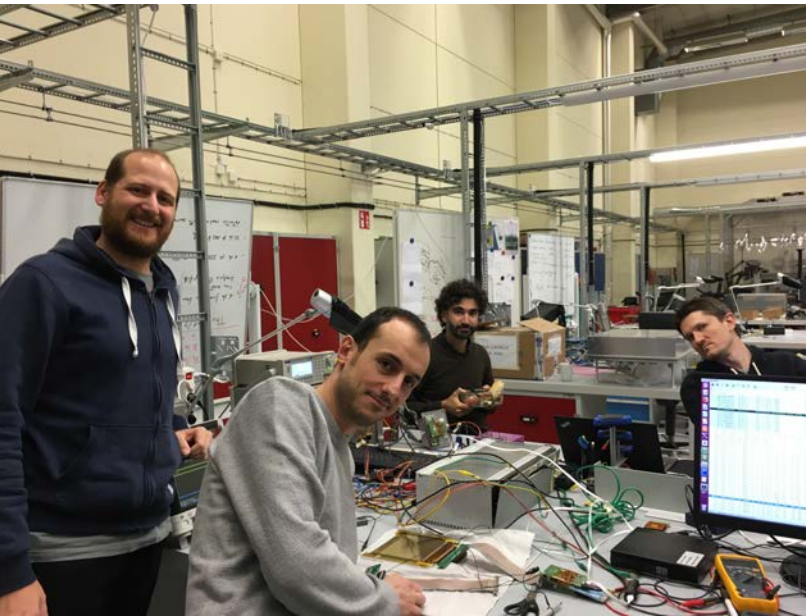
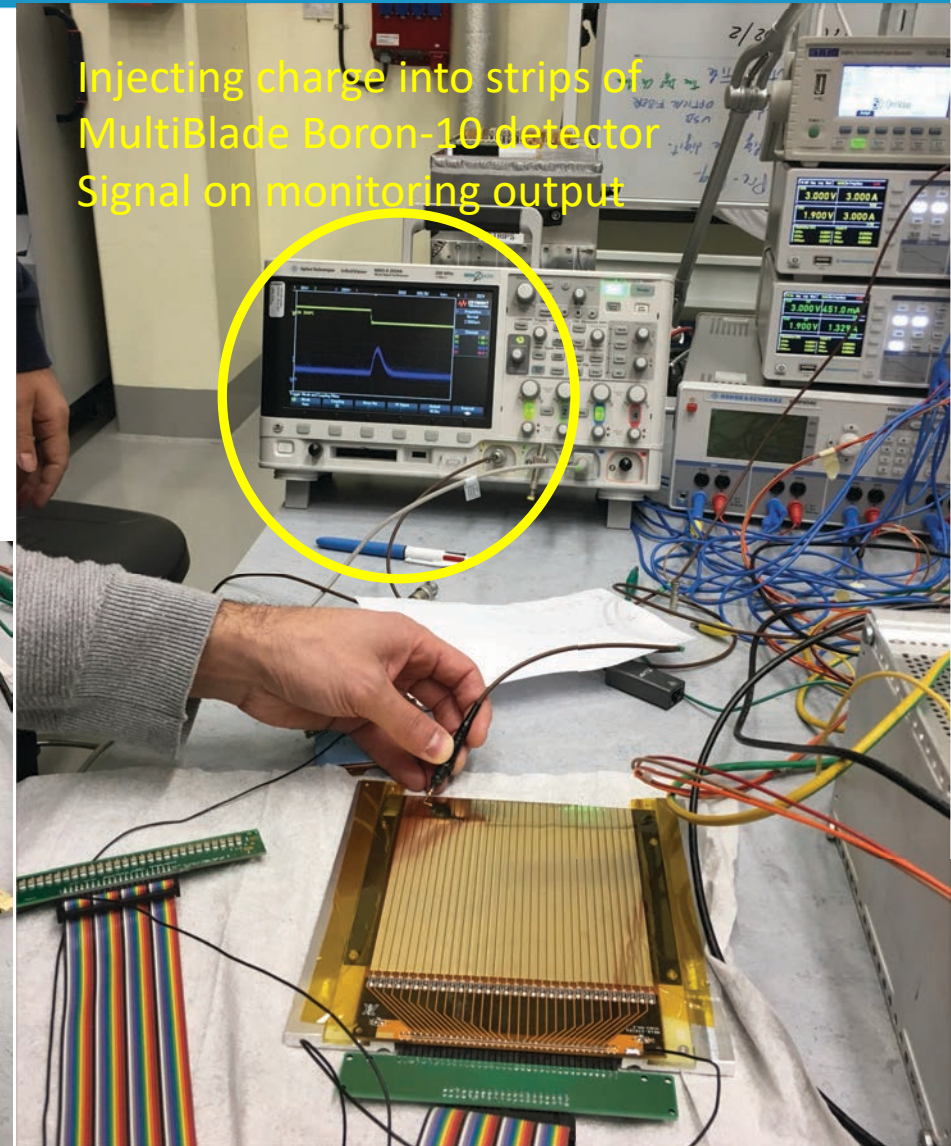


Fe 55 spectra with Triple-GEM detector

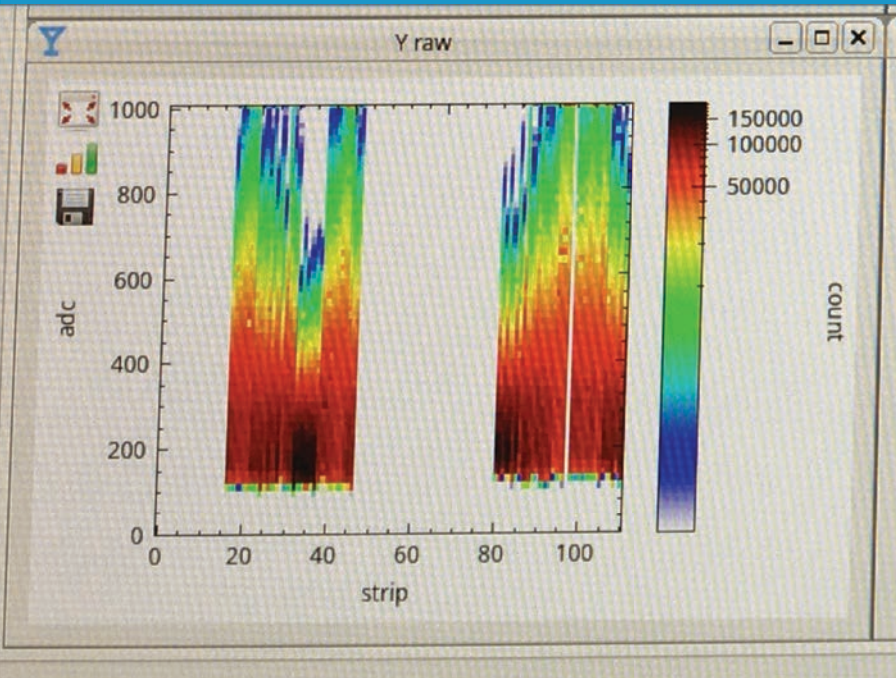


Dissemination: RD51 VMM3a hybrids used for other gas detectors (Cathode Strip chamber MultiBlade)

- Successful test of VMM3a hybrid with neutron detectors in Lund
- Charge injection into:
 - Wires (negative polarity, AC coupled)
 - strips (positive polarity, DC coupled)
- Successfully read out with VMM3a via analog monitoring output and digital data in continuous mode
- Gain 1 mV/fC , 200 ns shaping time



Summary SRS Detector Readout and Tools



- Improved firmware and data format: 48 bit per hit
- Maximum hit rate: 20 Mhits/s per FEC (Gbit ethernet)
- New visualization features like “ADC per strip” histogram
- Clustering can be disabled in DAQ to increase throughput
- **In progress:** Scale system from 2 FECs to 8+ FECs
- **In progress:** Update DAQ, visualization and analysis scripts
- **In progress:** Calibration software for VMM3a

23	11.835888391	10.0.0.2	10.0.0.3	SRSVM...	8992	FEC: 2, Hits: 155, Markers: 1334
24	12.019396764	10.0.0.1	10.0.0.3	SRSVM...	8992	FEC: 1, Hits: 151, Markers: 1338
25	12.897597381	10.0.0.2	10.0.0.3	SRSVM...	8992	FEC: 2, Hits: 191, Markers: 1298
26	13.153187947	10.0.0.1	10.0.0.3	SRSVM...	8992	FEC: 1, Hits: 105, Markers: 1384
27	13.965853185	10.0.0.2	10.0.0.3	SRSVM...	8992	FEC: 2, Hits: 187, Markers: 1302
28	14.300088772	10.0.0.1	10.0.0.3	SRSVM...	8992	FEC: 1, Hits: 88, Markers: 1401
29	14.783163097	10.0.0.2	10.0.0.3	SRSVM...	8992	FEC: 2, Hits: 489, Markers: 1000
30	14.783683854	10.0.0.1	10.0.0.3	SRSVM...	8992	FEC: 1, Hits: 890, Markers: 599
31	14.789648144	10.0.0.1	10.0.0.3	SRSVM...	8992	FEC: 1, Hits: 1481, Markers: 8
32	14.791152590	10.0.0.2	10.0.0.3	SRSVM...	8992	FEC: 2, Hits: 1481, Markers: 8
33	14.795216144	10.0.0.1	10.0.0.3	SRSVM...	8992	FEC: 1, Hits: 1481, Markers: 8
34	14.804722176	10.0.0.2	10.0.0.3	SRSVM...	8992	FEC: 2, Hits: 1471, Markers: 18

Thanks for your attention!

