

ARES Operation Meeting

Summary of week 29 / 2023

Max Kellermeier, on behalf of the ARES crew

Summary of week 20

Achievements

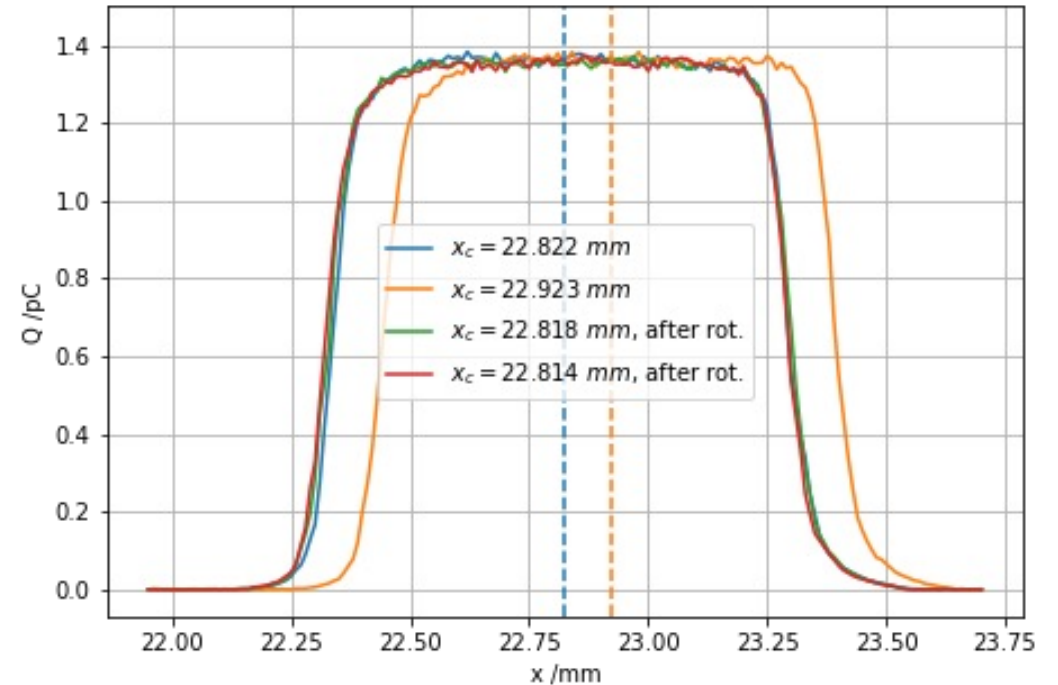
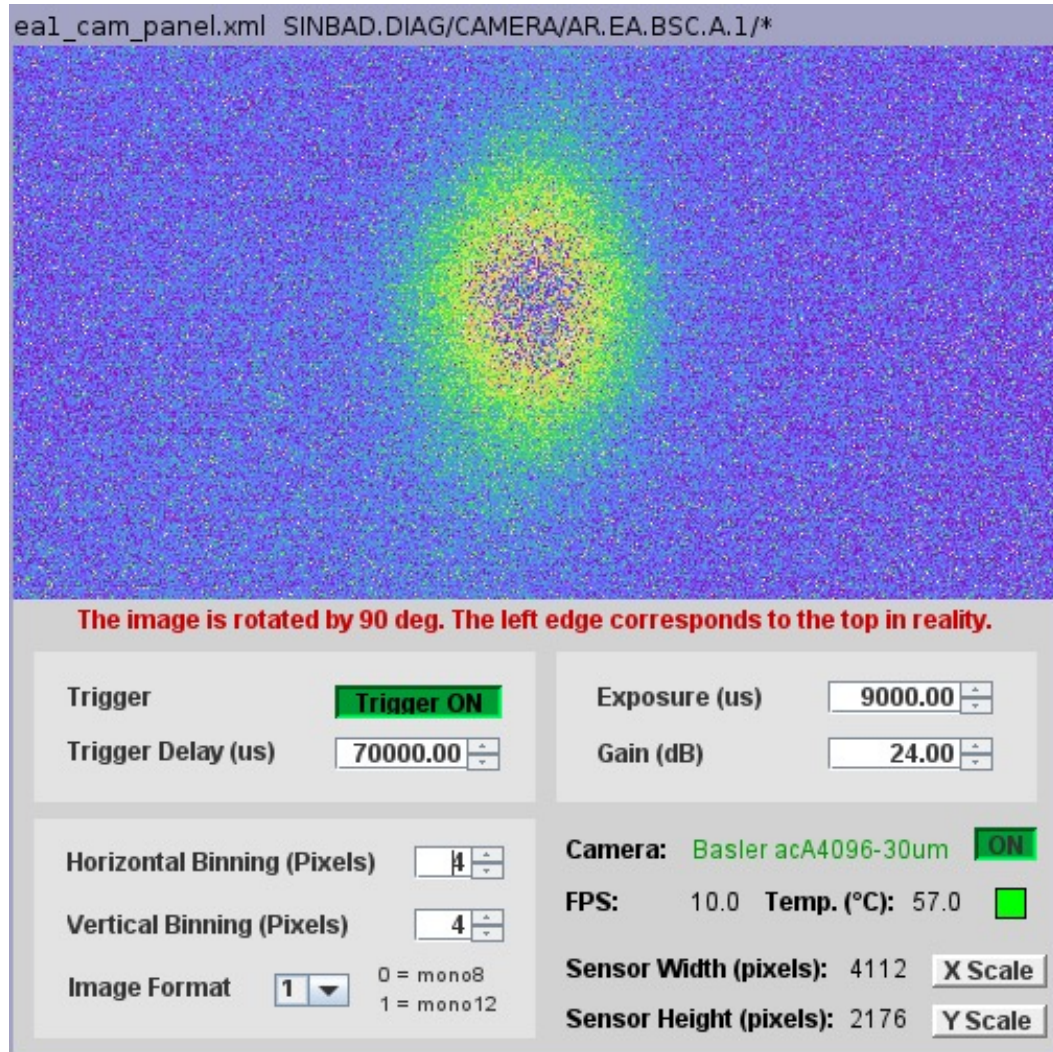
Difficulties

Notes

Mon. 17 th July	Tue.	Wed.	Thu.	Fri. 21 st July
	<ul style="list-style-type: none"> 20pC beam for MDI shift: calibration work necessary X-band conditioning continued TWAC WP1: <ul style="list-style-type: none"> alignment between beam and holder channel successful with low charge Fine angle scans non-significant 2D-angle scan overnight 	<ul style="list-style-type: none"> Improved beam shape in EA chamber with 10 pC, using smaller UV aperture; orbit studies Alignment scans for determining angle between beam and channel 	<ul style="list-style-type: none"> Angular correction confirmed Set up Velocity Bunching WP (WP2) Repeated alignment procedure 	<ul style="list-style-type: none"> Tested wakefield influence of alignment channel Set up Low Energy WP (WP3), 20 MeV
	<ul style="list-style-type: none"> Communication with Tectronix scope uncomfortable "Communication problem" with X-band modulator, caused by renaming of server 	<ul style="list-style-type: none"> Clipping of "improved beam", i.e. 85% transmission → new undulator beam pipe 		
<ul style="list-style-type: none"> Tunnel open 			<ul style="list-style-type: none"> Public holiday 	<ul style="list-style-type: none"> X-Band conditioning over the weekend

Alignment with initial WP1

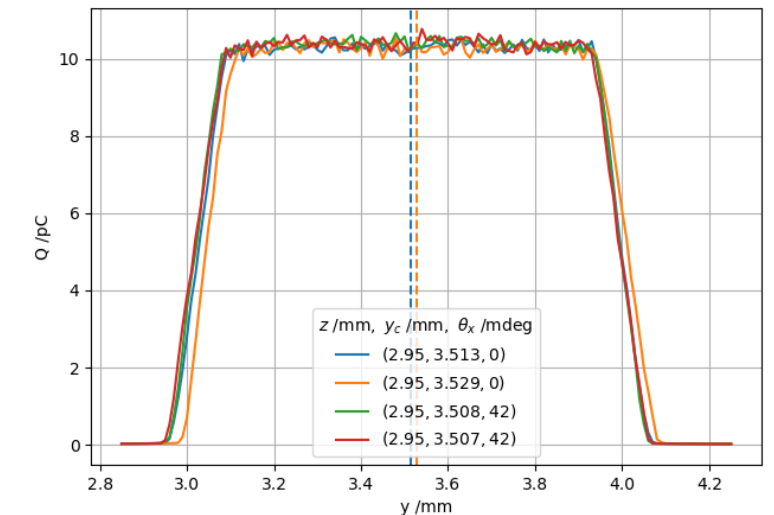
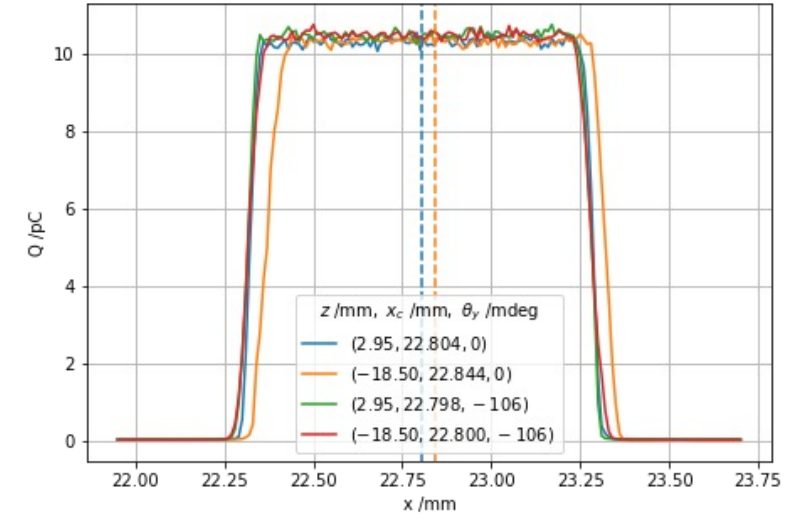
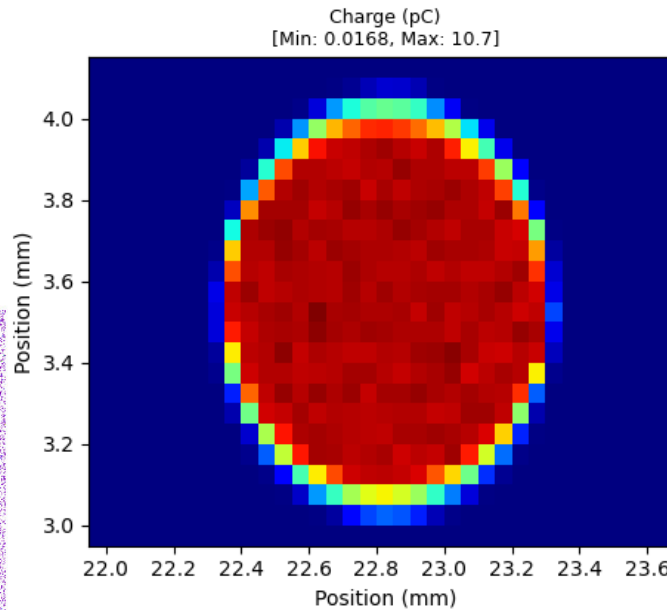
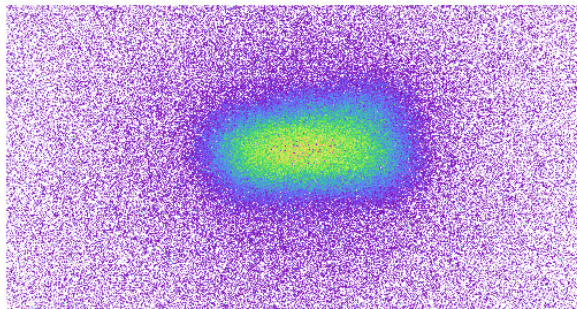
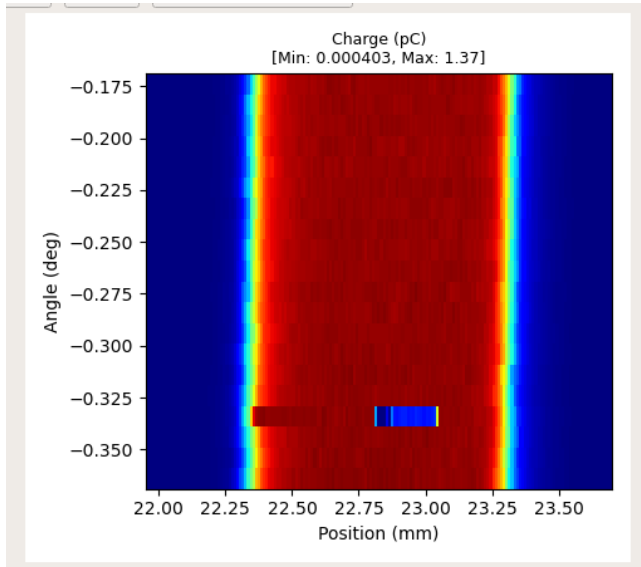
Tuesday



- Rotation angle between beam and channel confirmed and corrected (rot. around y-axis)

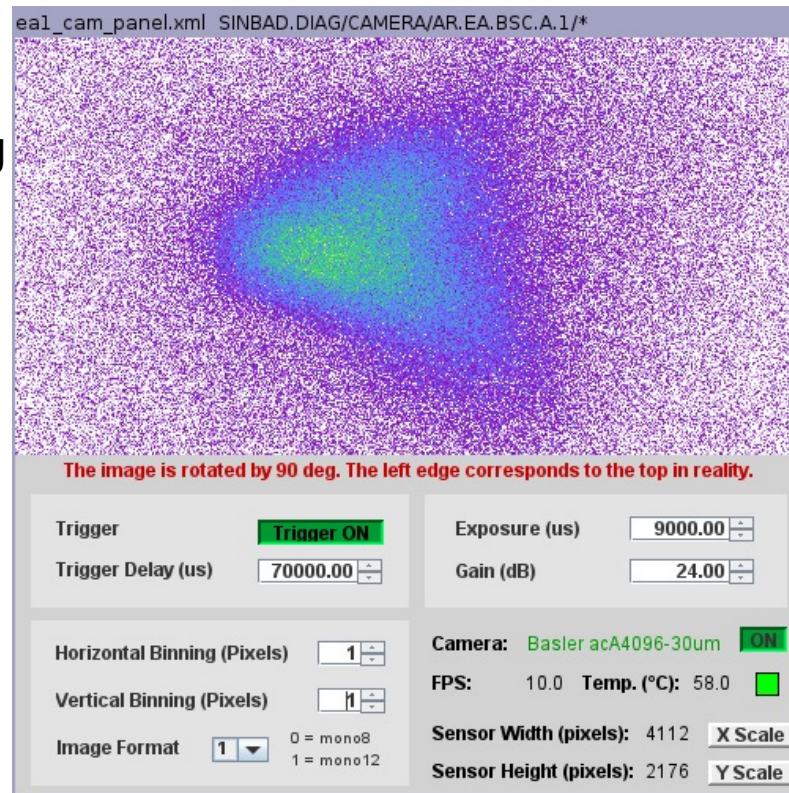
10 pC, triple on-crest WP (WP1)

- Fine angle scan ran overnight (low charge)
- New machine settings for nice 10 pC beam in EA chamber:
~ 64 μm x 27 μm
→ 2D scan on alignment channel
- 1D scans to correct angle

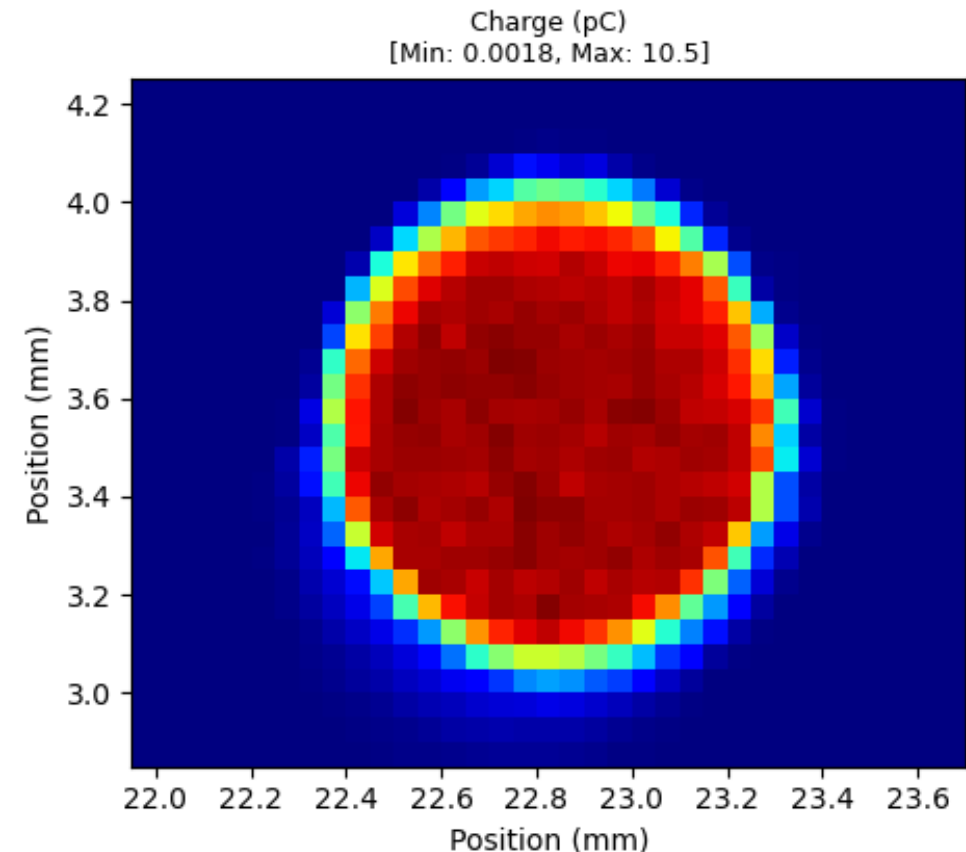


High energy velocity bunching WP

- TWS phases adjusted manually (not optimized experimentally): TWS1 off-crest for VB, TWS2 correction for lower energy
- 10 pC
- 106.6 MeV avg

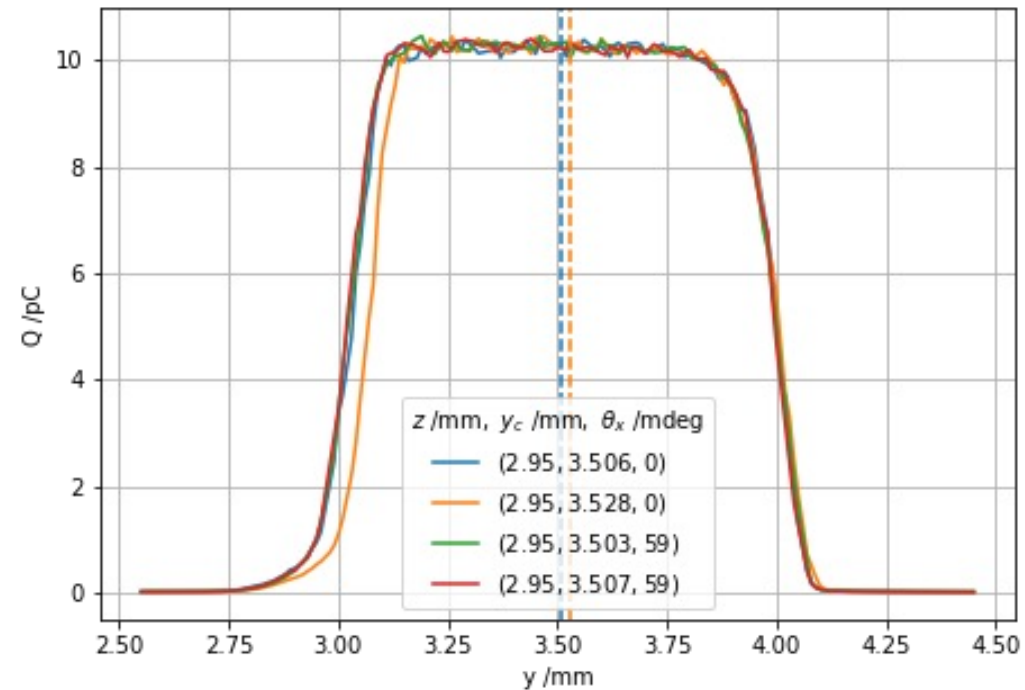
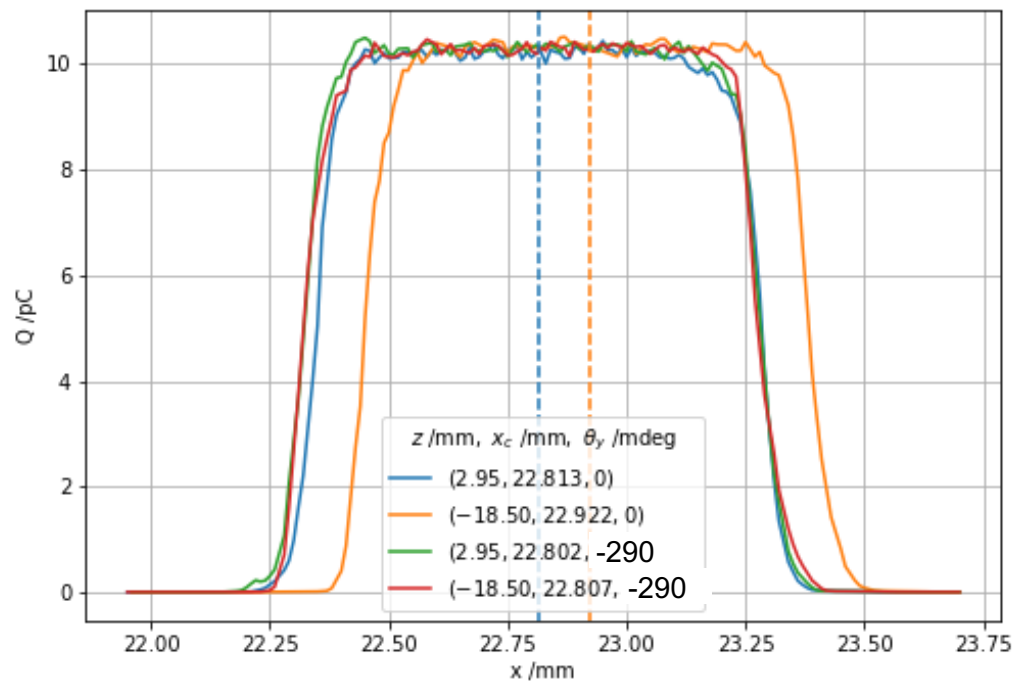


- 2D scan, 1D scans for angular alignment



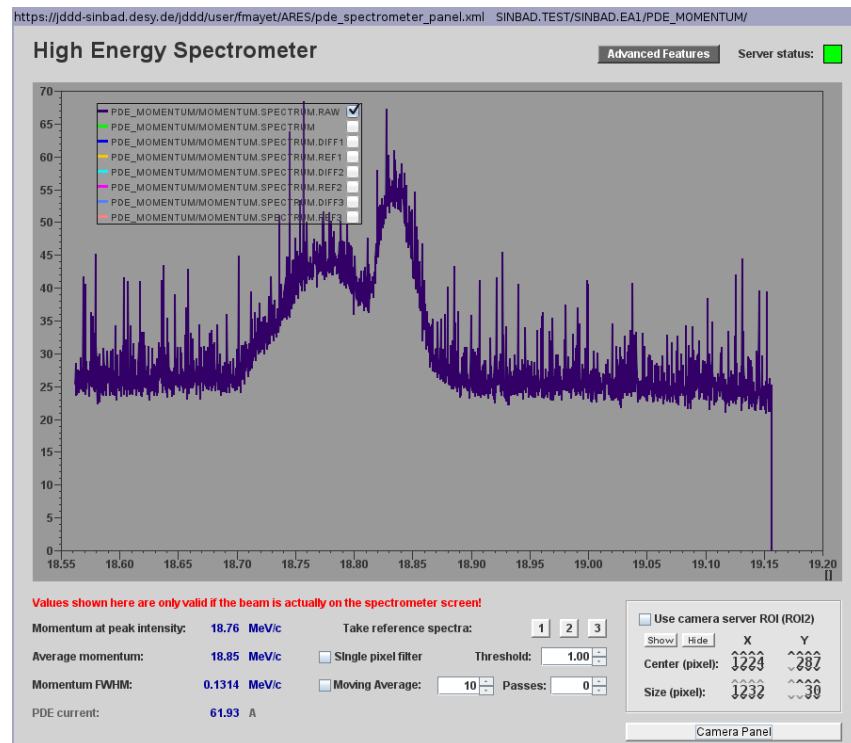
Angular alignment

10 pC, VB

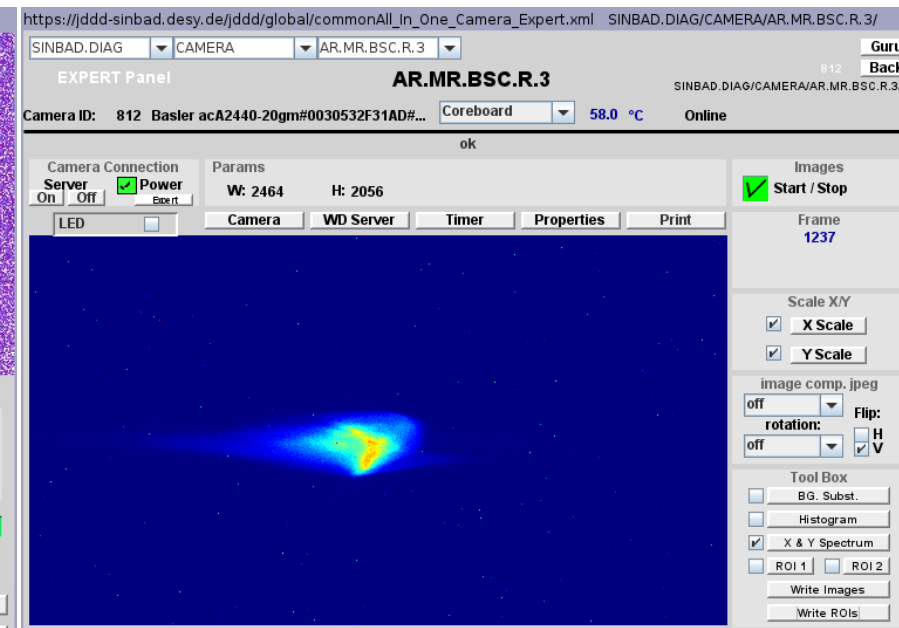
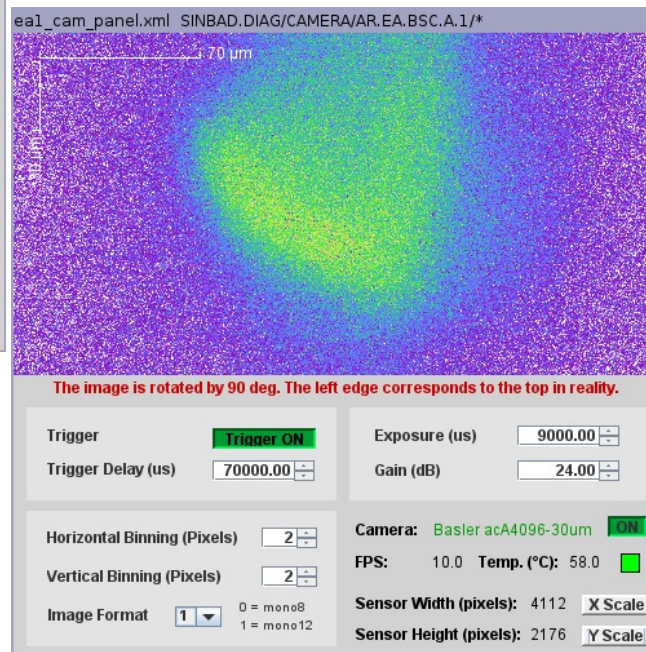


Low energy working point

WP3

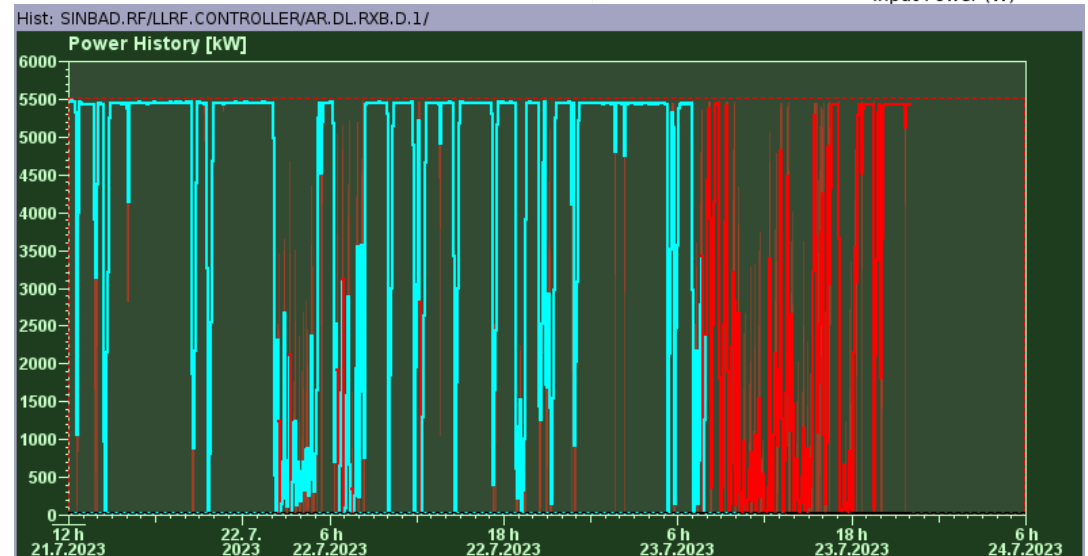
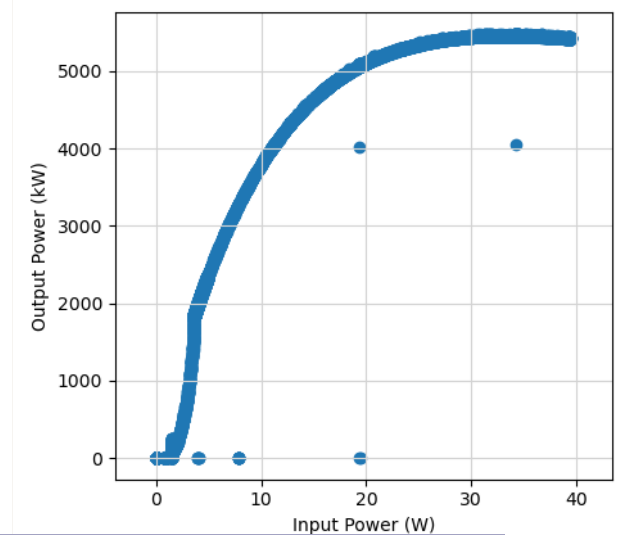
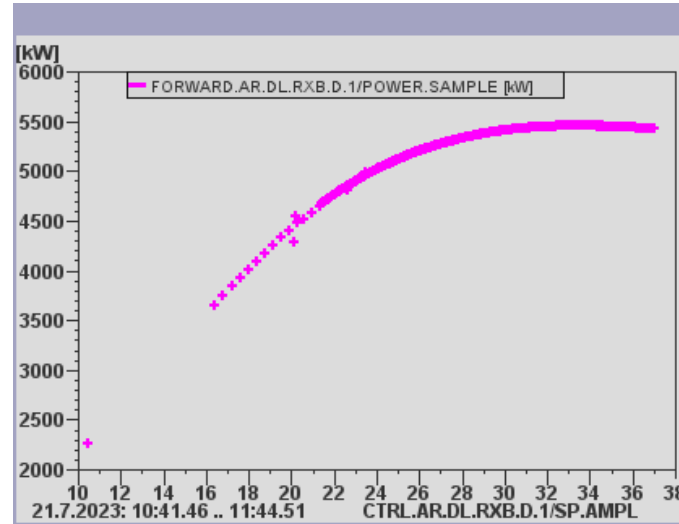
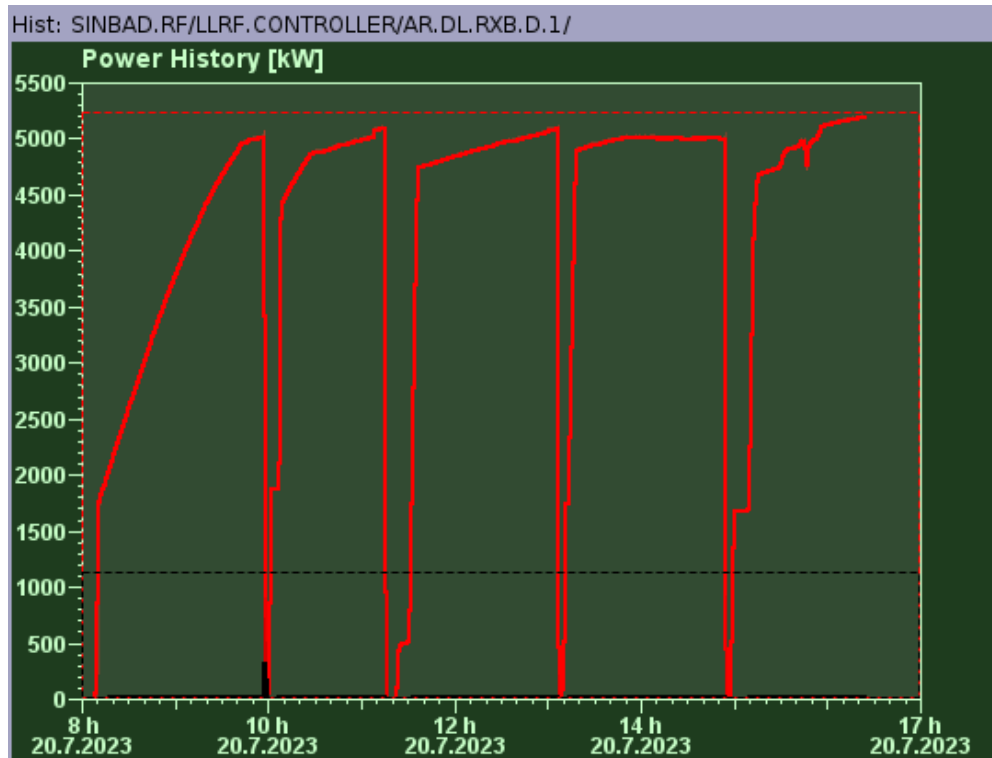


- TWS2 off
- Beam on PDE → gradually decreased amplitude in steps of ~ 5 MV/m
- Steerer based momentum measurement: (19.6 ± 0.4) MeV



X-band klystron conditioning ongoing

- 5 MW reached
- Pulse length now increased to 0.5 μ s flattop (0.7 μ s total)



Schedule

Week 30

Date	Shift Leader
24.07.	--
25.07.	--
26.07.	--
27.07.	--
28.07.	--

Week dedicated to ACHIP Laser work: Willi, Frank

If you want to learn or join the shift: please give the shift leader a call (BKR 2840 / SINBAD Box 2454)