PAUL SCHERRER INSTITUT

PSI

Florian Löhl :: Paul Scherrer Institut

Run coordinator report
July 20 – 25, 2020

SwissFEL Exchange Meeting, 27.7.2020

PAUL SCHERRER INSTITUT

PSI

W30	Mon 20	Tue 21	Wed 22	Thu 23	Fri 24	Sat 25
all-day	RC: Simona (until Tue AM), Florian (from Tue AM), Ph. Co.: Chris M.					
	Remote Work	Remote Work	Remote Work		Remote Work	
01:00	Bernina experiment (7.5 keV)		Alvra experiment 12.4 keV, 50 Hz	Alvra experiment 12.4 keV, 50 Hz	Alvra experiment 12.4 keV, 50 Hz	Alvra experiment 12.4 keV, 50 Hz
02:00						
03:00						
04:00						
05:00						
06:00						
07:00		07:00 (... Alvra experiment 12...	07:00 (... Alvra experiment 12.4 keV, 5...	07:00 (... Alvra experi...	07:00 (... Alvra experiment 12.4 keV, 5...	07:00 (07:00 CEST) Alvra experiment 12.4 keV, 50 Hz
08:00	Blocked	Blocked	Blocked	Blocked	Blocked	
09:00				ASA S... ASA ht...		
10:00	Reserviert	STC W...			Reserviert	
11:00		SPM ...	10:45 SIM M... Termin...			
12:00						
13:00	SEM					
14:00	14:00 (... Ch. Kittel 14:00 Group...	Zoom-Meeting Sy...		Lasersafety in WL...	Jourfixe Florian-...	
15:00		15:00 (1... PPDR... Alvra experiment 12.4 keV, 50 Hz	15:00 (15:00 CEST) Alvra experiment 12.4 keV, 50 Hz	15:00 (15:00 CEST) Alvra experiment 12.4 keV, 50 Hz	15:00 (15:00 CEST) Alvra experiment 12.4 keV, 50 Hz	15:00 (15:00 CEST) Alvra experiment 12.4 keV, 50 Hz
16:00						
17:00						
18:10						
19:00						
20:00						
21:00						
22:00						
23:00		Alvra experiment...	Alvra experiment...	Alvra experiment...	Alvra experiment...	

Summary

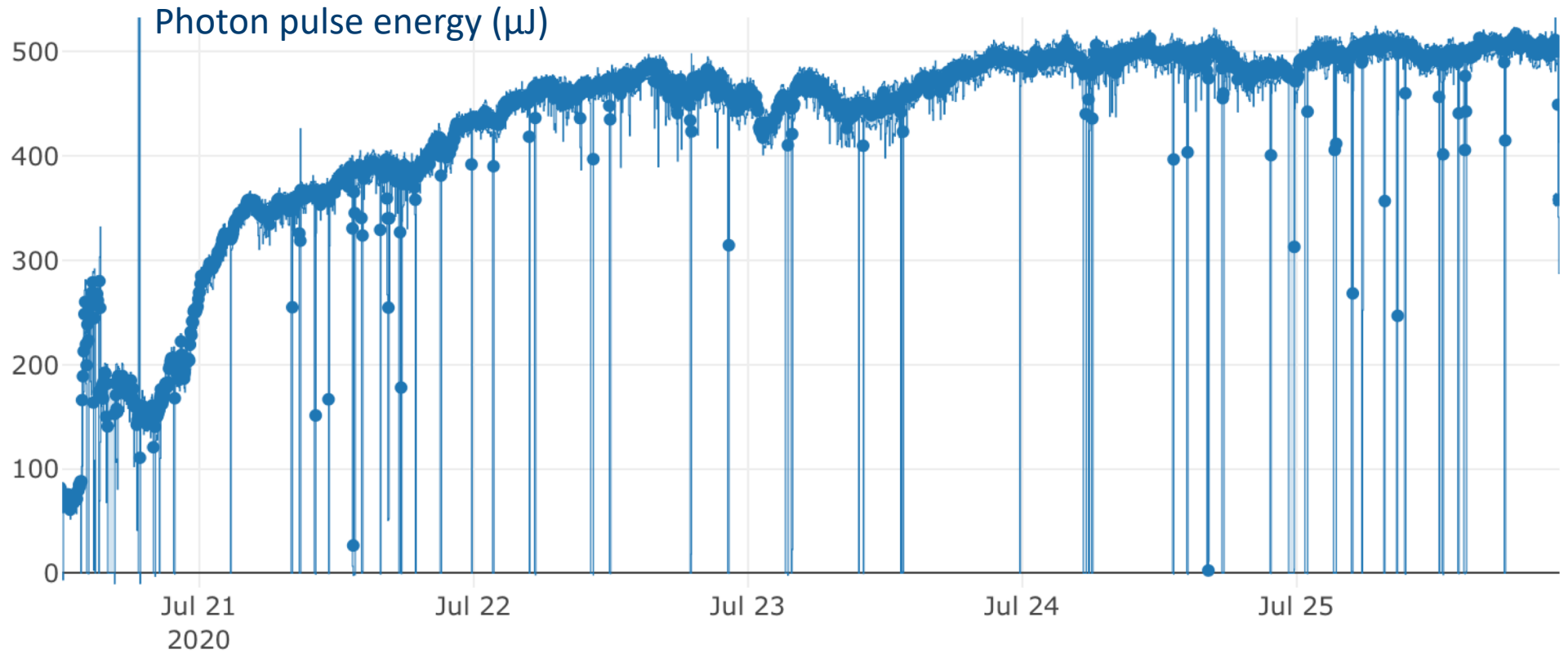
- Beam setup on Monday (S. Bettoni, F. Loehl. C. Kittel)
  Photon energy changed from 7.5 keV to 12.05 keV
  Maintained short pulse duration (< 30 fs rms)
- 50 Hz operation during the entire week
- No major issues during the entire week
- Timing jitter between FEL pulses and pump-laser most of the time very good
  (down to 19 fs rms for 500 – 1000 shots – new record at Alvra!)

Smaller issues

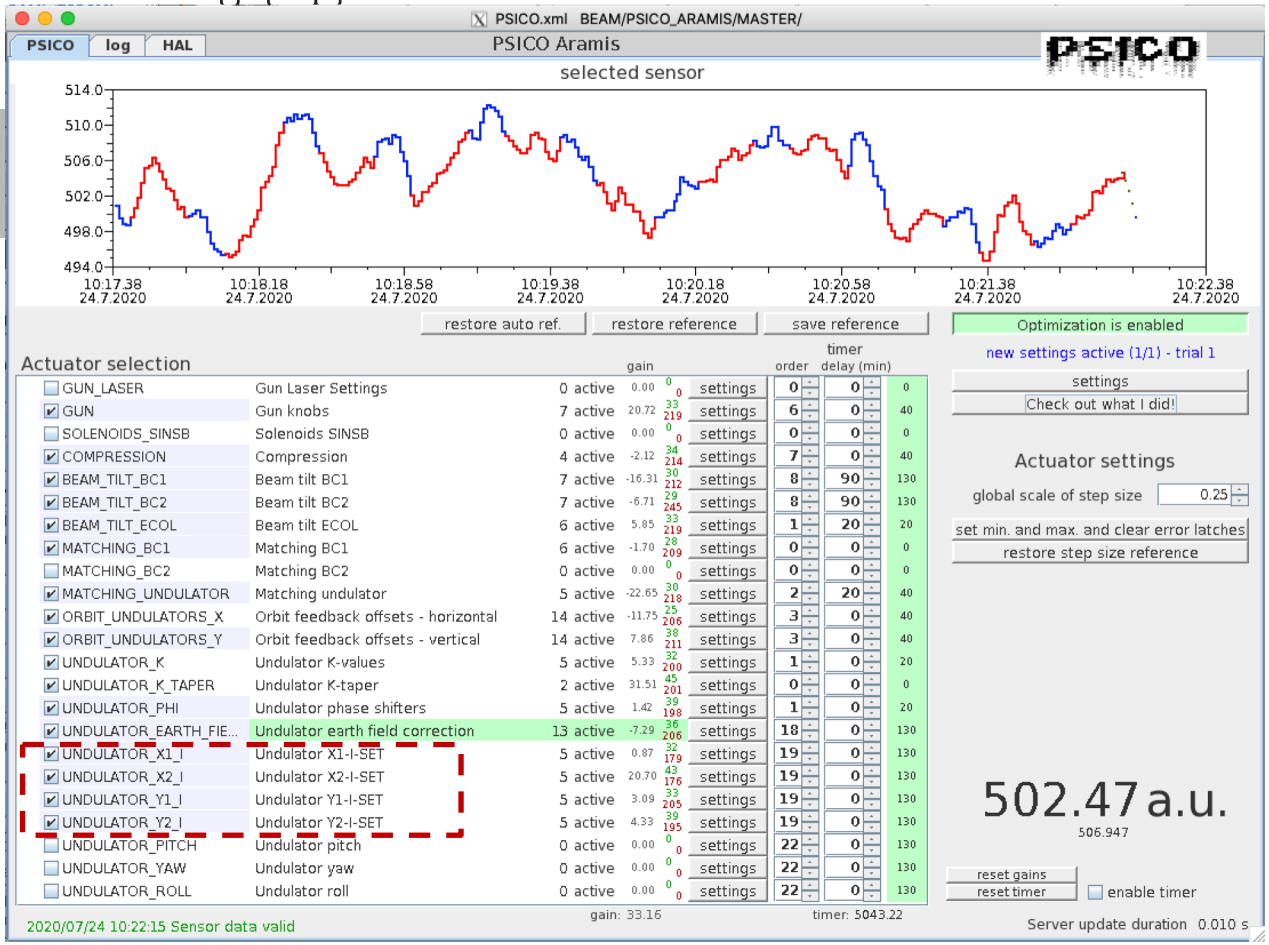
- BAM observed large timing jitter at some periods of time
  → Possibly issues with OMO1 or OMO2, will be investigated during the shutdown
- Did not run FEL pointing feedback due to problems with gas detector
- Undulator movers not available due to PLC problems

Achieved ~ 500 µJ of pulse energy most of the week.

Photon pulse energy during the week



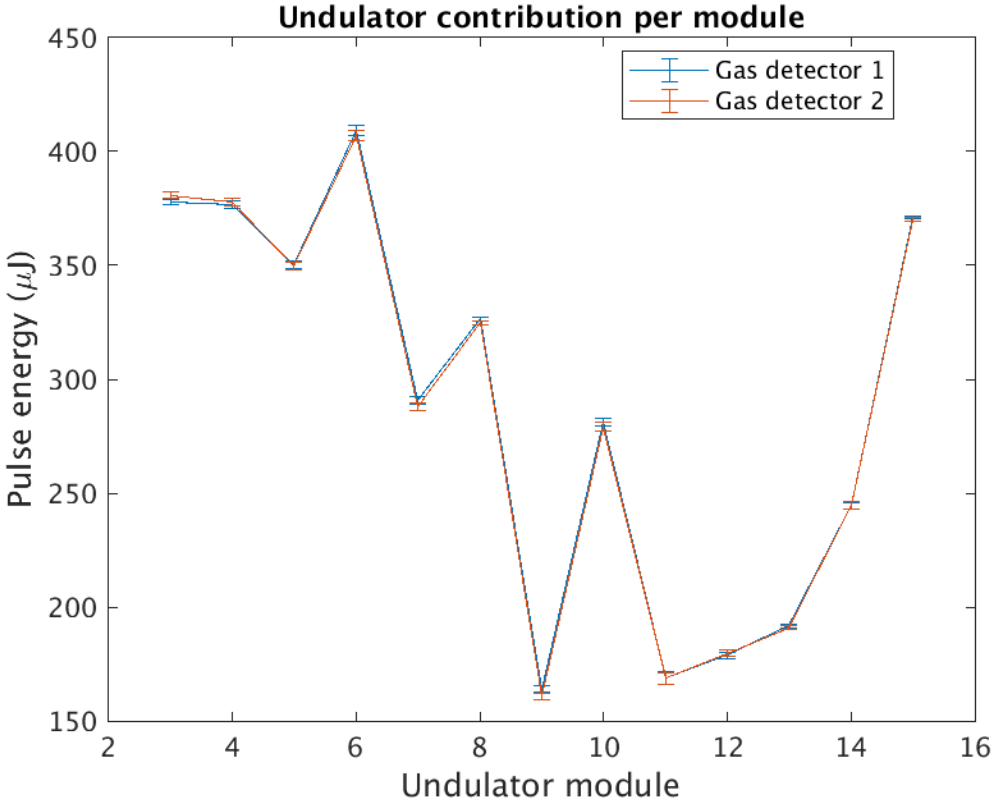
Undulator contributions



We always had problems with the first undulator segments not contributing to the lasing.

→ Tried optimizing the undulator kick corrections with PSICO.

Undulator contributions



Starting point: ~ 500 µJ

First segments do now contribute!
(Not all segments by the same amount yet)

Thanks to E. Ferrari and E. Prat for running the script!