

PITZ participation in XFEL shifts (Week15)

Report from Yves Renier

Summary of the week 15 at XFEL:

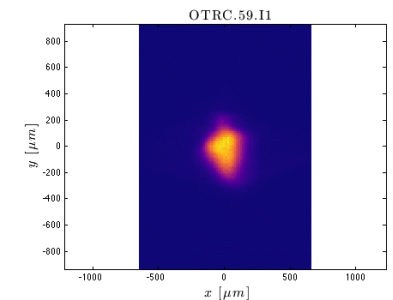
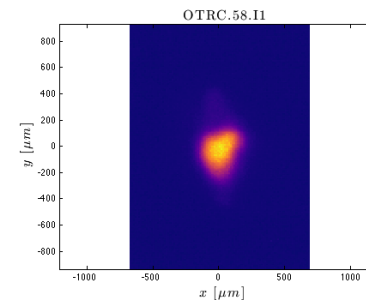
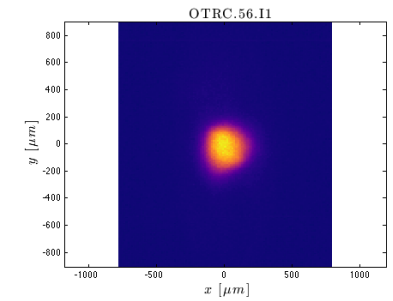
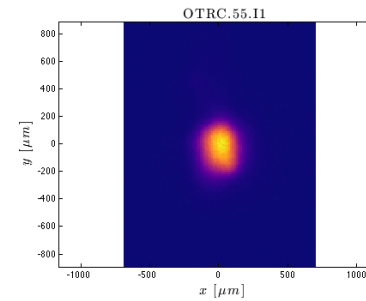
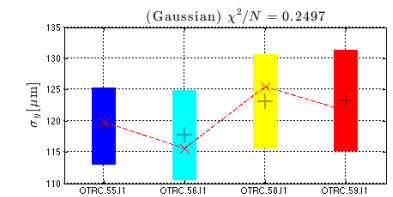
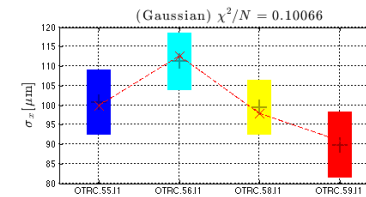
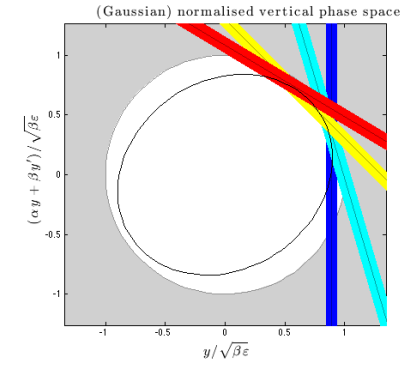
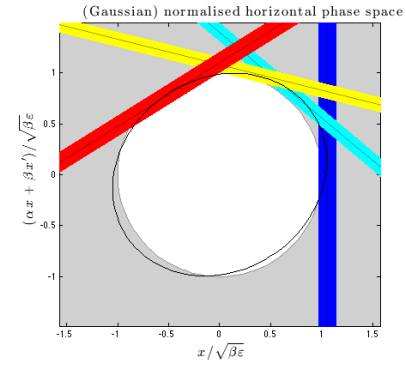
- Not much happened this week (beam was limited to the injector section, and a modulator test), mostly finding machine parameters for best emittance at different charge (0.1, 0.25 and 0.5 nC). The precision of the emittance measurement was nice, which allowed fine scan:

http://ttfinfo.desy.de/XFELelog/show.jsp?dir=/2017/15/11.04_a&pos=2017-04-11T19:37:00

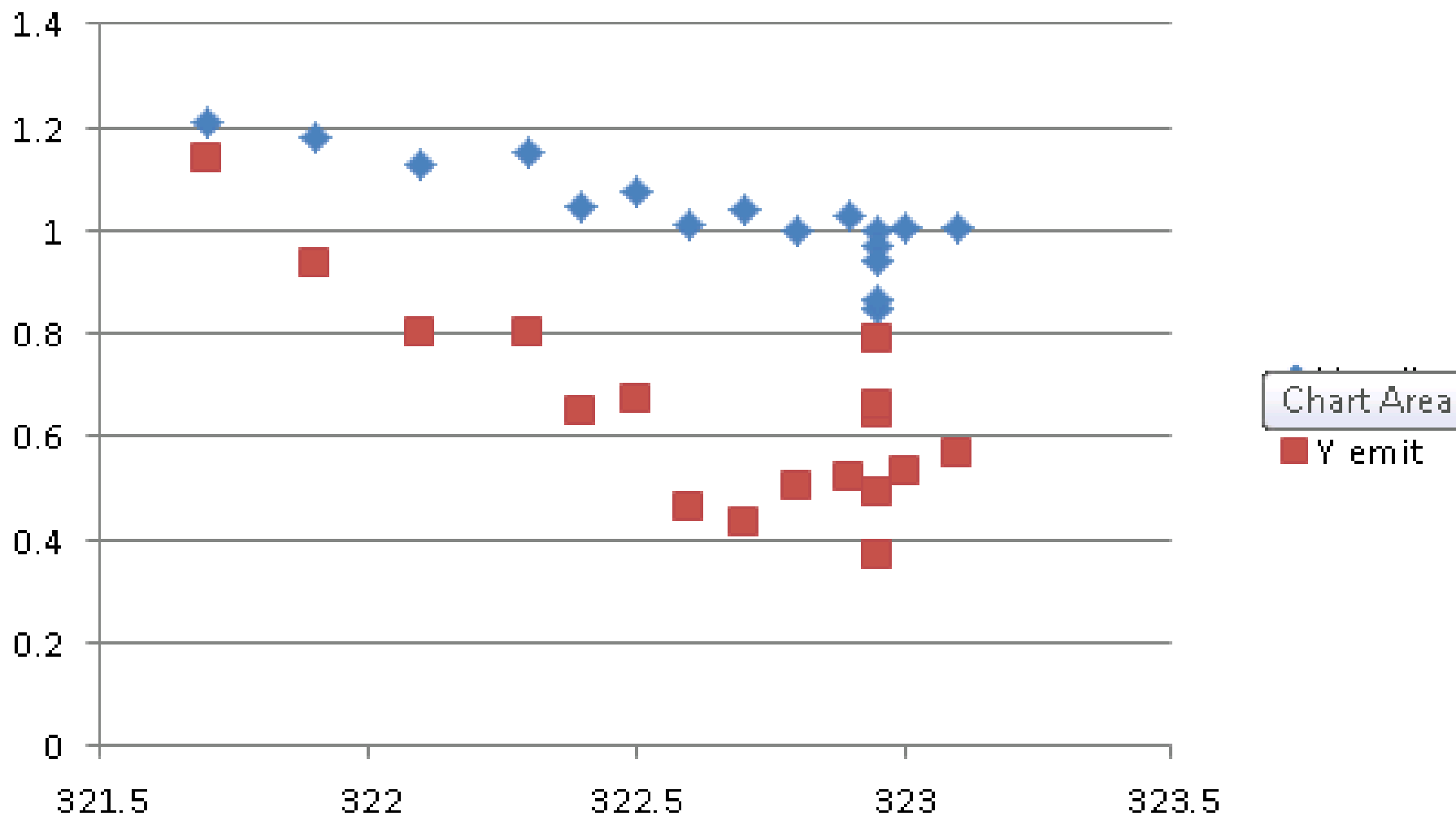
- Another nice measurement was the sensitivity of the gun phase to the mismatch (http://ttfinfo.desy.de/XFELelog/show.jsp?dir=/2017/15/11.04_a&pos=2017-04-11T20:07:52). The measured sensitivity is quite high.
- Last week XFEL reached 12GeV at the end of the linac. the should try to repeat this next week (from Tuesday or Wednesday). They are aiming at sending the first beam to undulators the week after that.

500pC, 1mm BSA

Gaussian	norm. emittance [mm mrad]	beta [m/rad]	alpha	BMAG
horizontal	1.032±0.092	2.45±0.30	0.96±0.16	1.16±0.25
vertical	0.74±0.25	4.9±1.5	-1.94±0.89	1.2±1.0



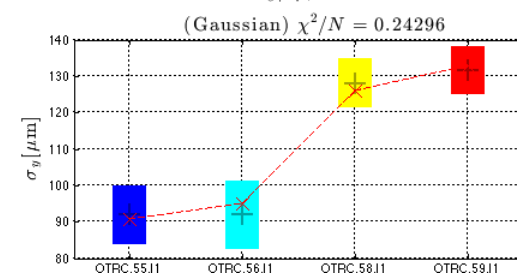
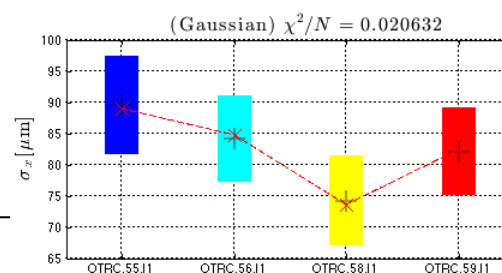
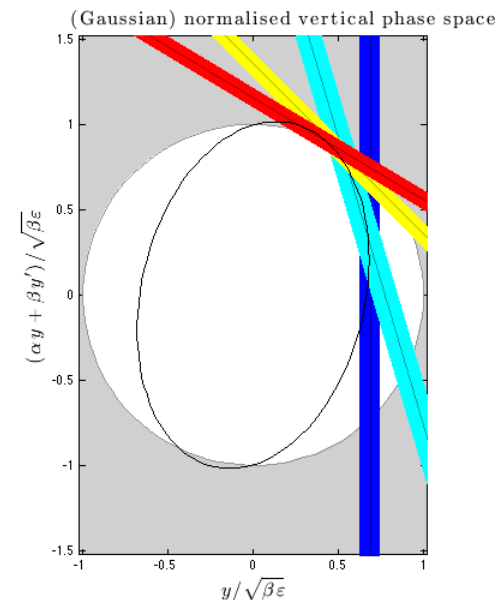
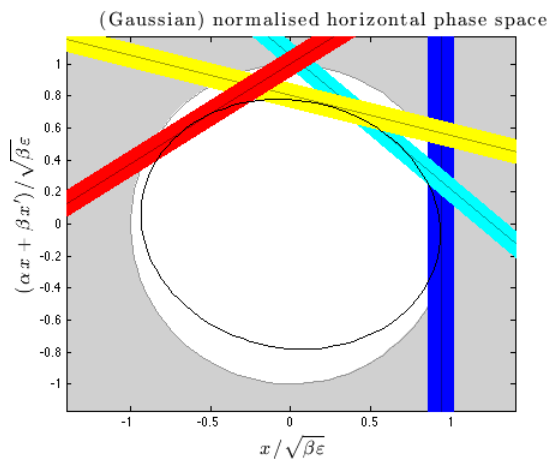
250pC optimization, 1mm BSA



250pC optimized

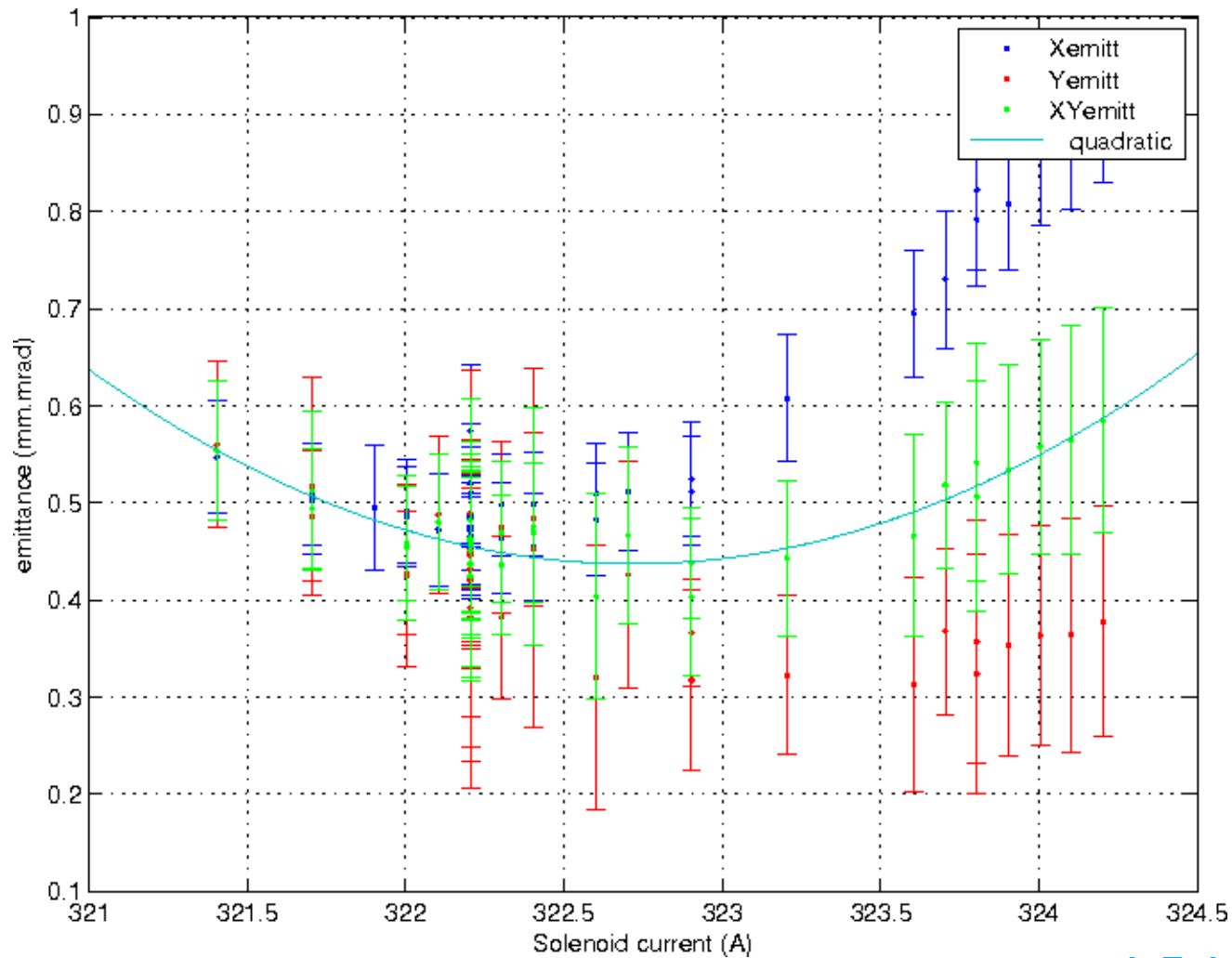
Gaussian	norm. emittance [mm mrad]	beta [m/rad]	alpha	BMAG
horizontal	0.728+-0.064	2.77+-0.38	1.31+-0.20	1.22+-0.12
vertical	0.68+-0.20	3.10+-0.67	-1.32+-0.62	1.57+-0.83

$I_{\text{main}}=322.4\text{A}$
BSA=1mm



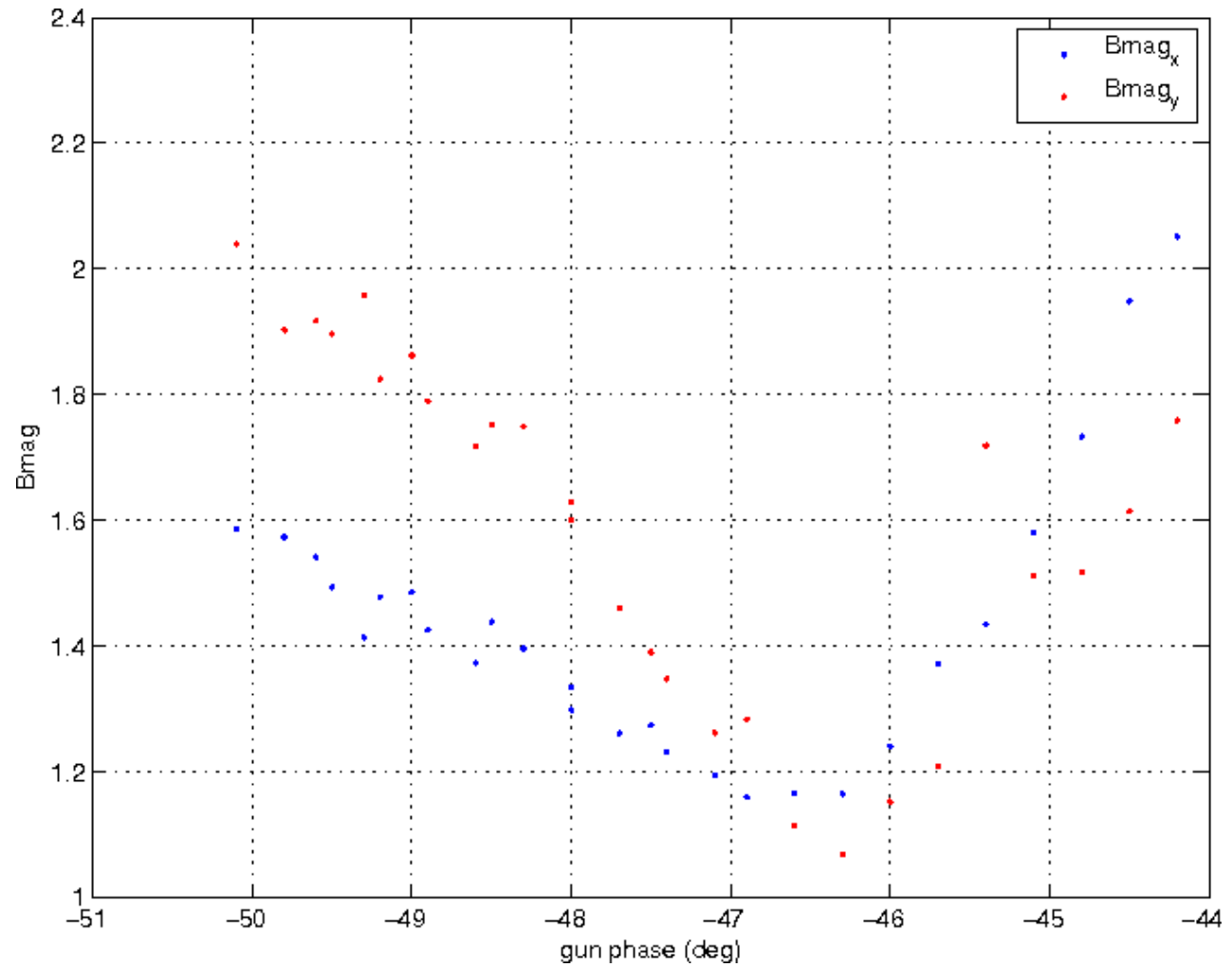
BSA 0.5 mm, 100pC

- Detailed and smooth.



Bmag during phase scan

> VERY sensitive !!!



- Later was noticed than saturation was present.

