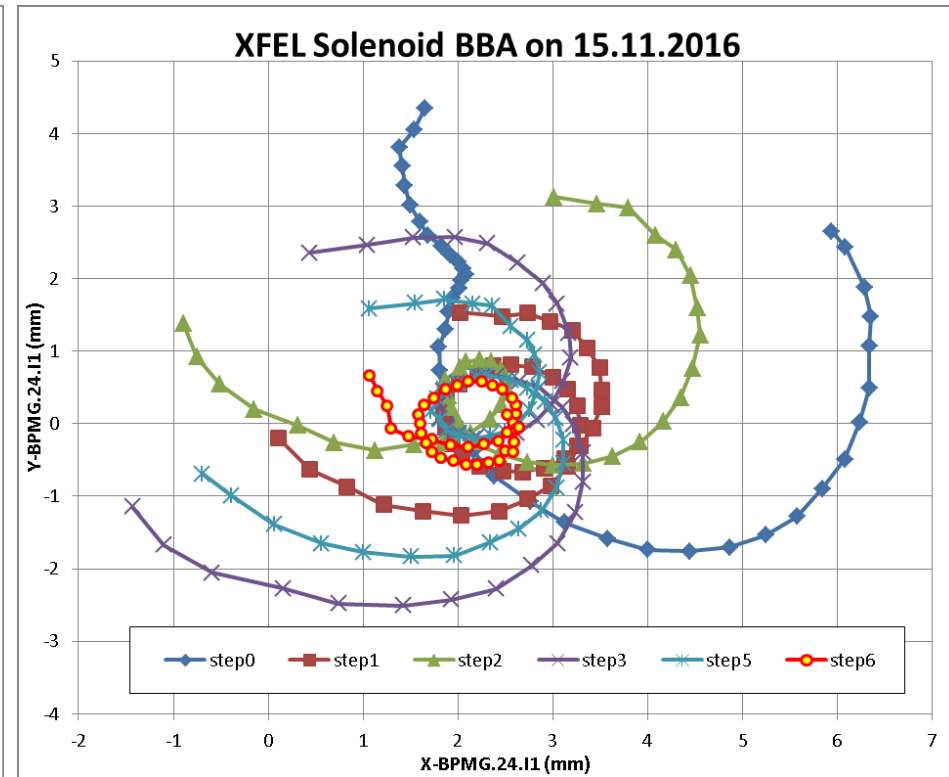
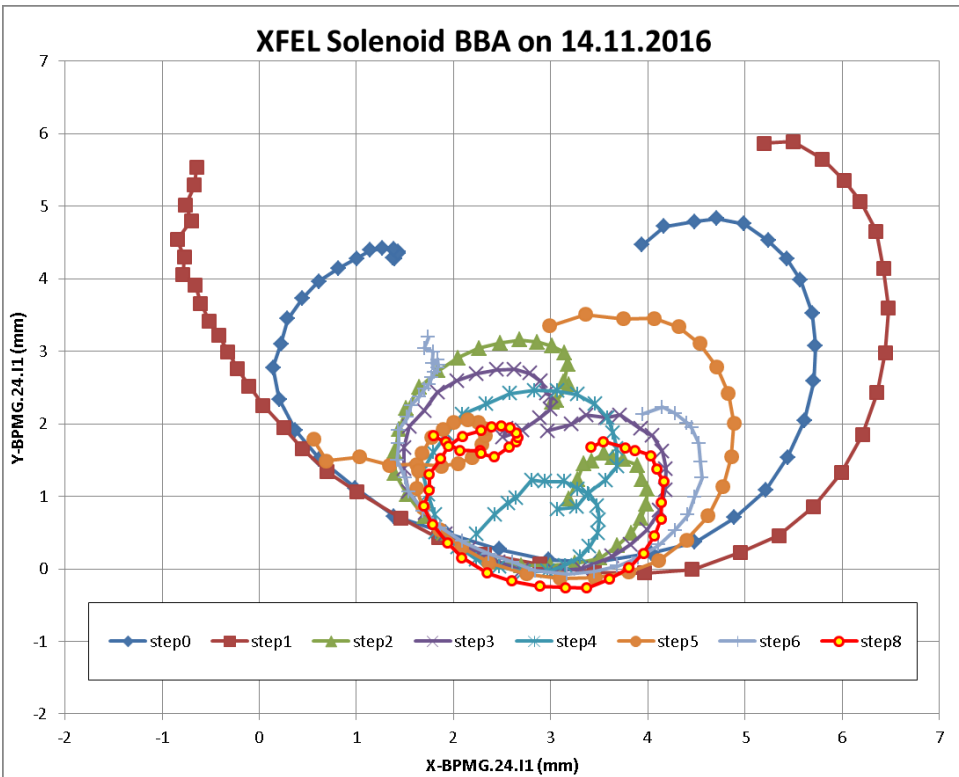


Solenoid BBA at XFEL and remarks from the XFEL recommissioning in 2016-2017

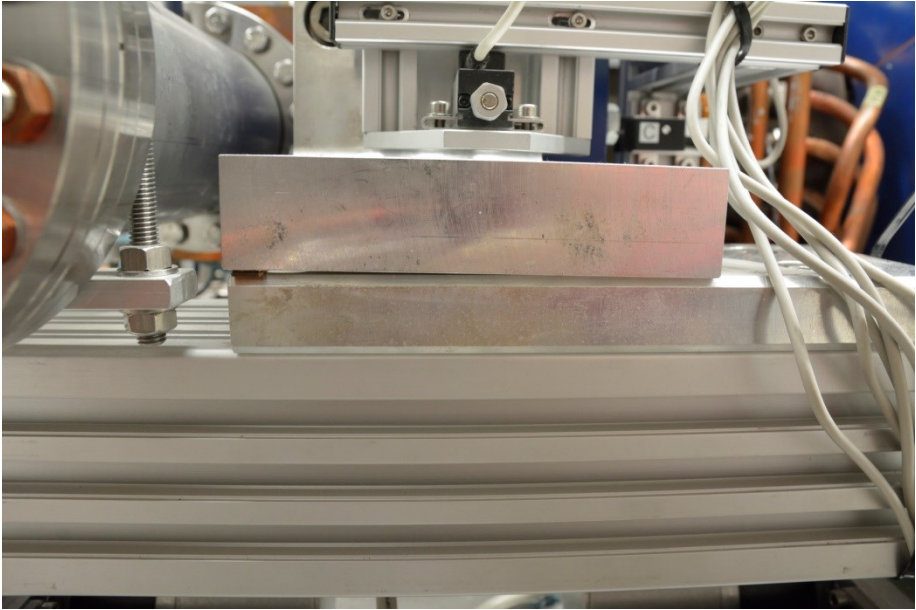
M. Krasilnikov, PPS, 10.1.2017

XFEL Solenoid BBA on 14-15.11.2016



I_{main}=-400A...step (10)20A...+400A

Mechanical “intervention” to correct the pitch angle

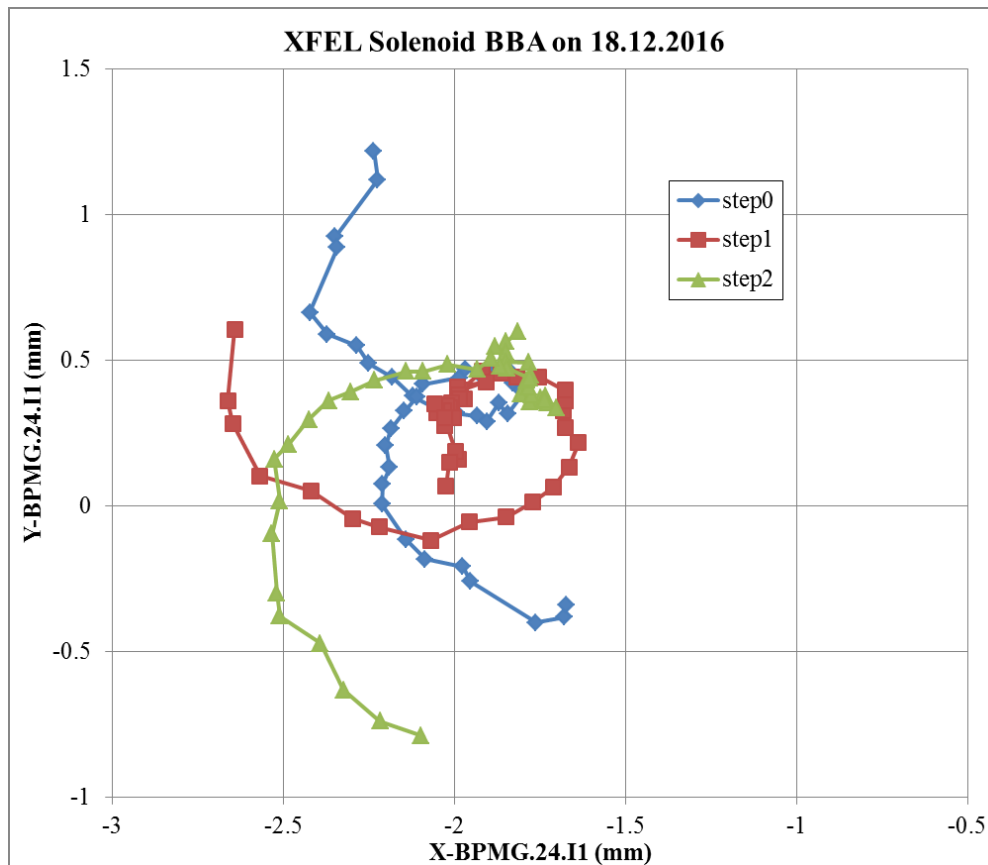
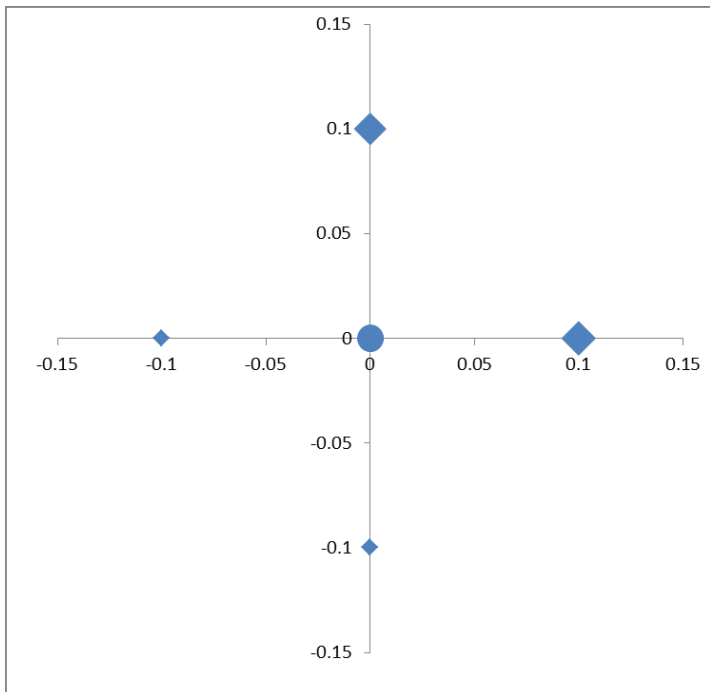


XFEL Injector solenoid BBA on 18.12.2016

M. Krasilnikov, Y. Kot

Raw data

roll	0 mrad
yaw	3.4422 mrad
pitch	-1.6778 mrad
x_off	-0.7 mm
y_off	-0.1 mm

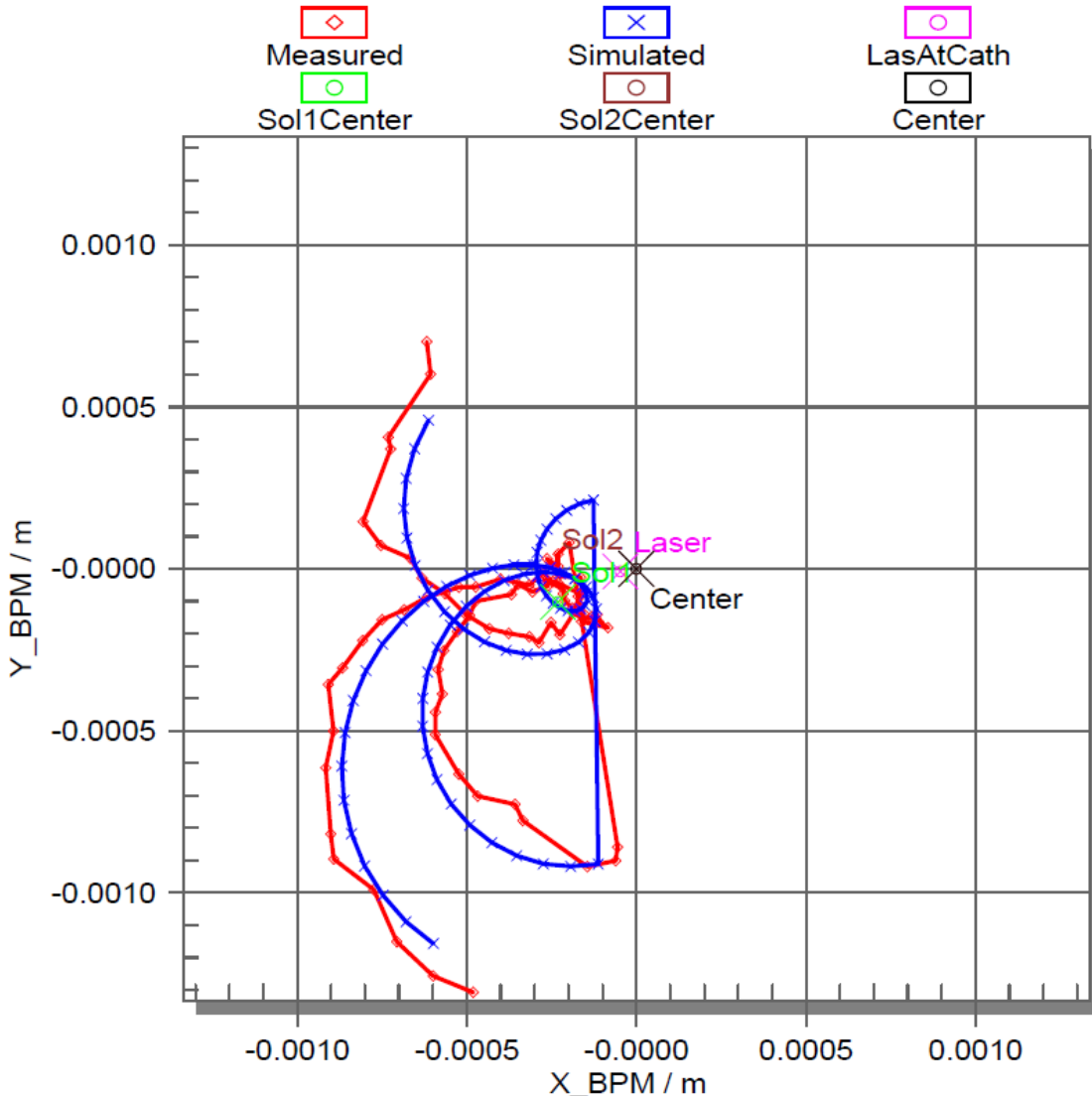


colour	roll	yaw	pitch	x	y	file	DXsol	DYsol	steps
cyan	-2	3.15	-2.1	-0.755	-0.03	2016-12-18T152436	-0.1	0	
blue	-2	3.15	-2.1	-0.655	-0.03	2016-12-18T153012	0	0	step0
green	-2	3.15	-2.1	-0.555	-0.03	2016-12-18T153605	0.1	0	step1
red	-2	3.15	-2.1	-0.655	-0.13	2016-12-18T154319	0	-0.1	
black	-2	3.15	-2.1	-0.655	0.07	2016-12-18T154914	0	0.1	step2

Simultaneous simulations of 3 steps

BPM1 vs Solenoid1 Current

nocomment // 20.12.2016 (07:48)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = -0.00558 deg

RF-GunPITZ : AngleYSolMain = -0.00516 deg

RF-GunPITZ : Laser_Beam_CenterX = -4.74e-005 m

RF-GunPITZ : Laser_Beam_CenterY = -7.6e-006 m

RF-GunPITZ : XSolMainCenter = -0.000232 m

RF-GunPITZ : YSolMainCenter = -0.000102 m

Offsets List / [m]

X_BPM = 0.000214002

Y_BPM = 6.30967e-005

Fixed (for these simulations):

Ecath=30MV/m

Phase=-153deg

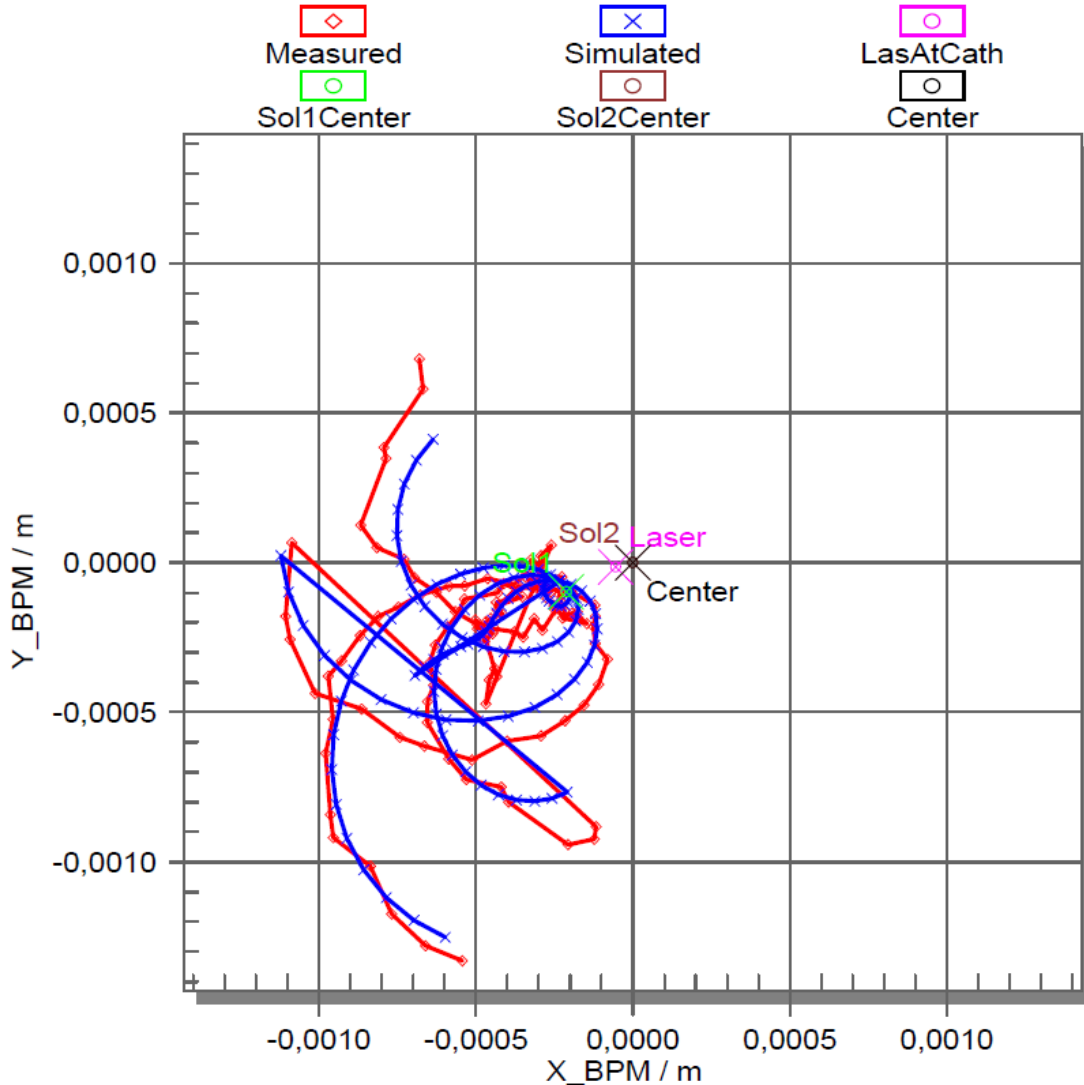
→ <Pz>=3.56MeV/c (?)

→ Try to (slightly) fit them as well?

Simultaneous simulations of 3 steps (+ 2RF parameters)

BPM1 vs Solenoid1 Current

nocomment // 20.12.2016 (18:09)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = -0.00667 deg
RF-GunPITZ : AngleYSolMain = -0.00527 deg
RF-GunPITZ : Ez_Field_At_Cathode = 25.5 MV/m
RF-GunPITZ : Initial_Phase = -146 degree
RF-GunPITZ : Laser_Beam_CenterX = -5.45e-005 m
RF-GunPITZ : Laser_Beam_CenterY = -1.41e-005 m
RF-GunPITZ : XSolMainCenter = -0.000212 m
RF-GunPITZ : YSolMainCenter = -9.73e-005 m

Offsets List / [m]

X_BPM = 0.000275784
Y_BPM = 8.53563e-005

→ $\langle P_z \rangle = 3.05 \text{ MeV/c (?)}$

Current conclusions

- Based on measurements from 18.12.2016
- Obtained misalignment list:

Fit Parameters List

RF-GunPITZ : AngleXSolMain = -0.00558 deg
RF-GunPITZ : AngleYSolMain = -0.00516 deg
RF-GunPITZ : Laser_Beam_CenterX = -4.74e-005 m
RF-GunPITZ : Laser_Beam_CenterY = -7.6e-006 m
RF-GunPITZ : XSolMainCenter = -0.000232 m
RF-GunPITZ : YSolMainCenter = -0.000102 m

Offsets List / [m]

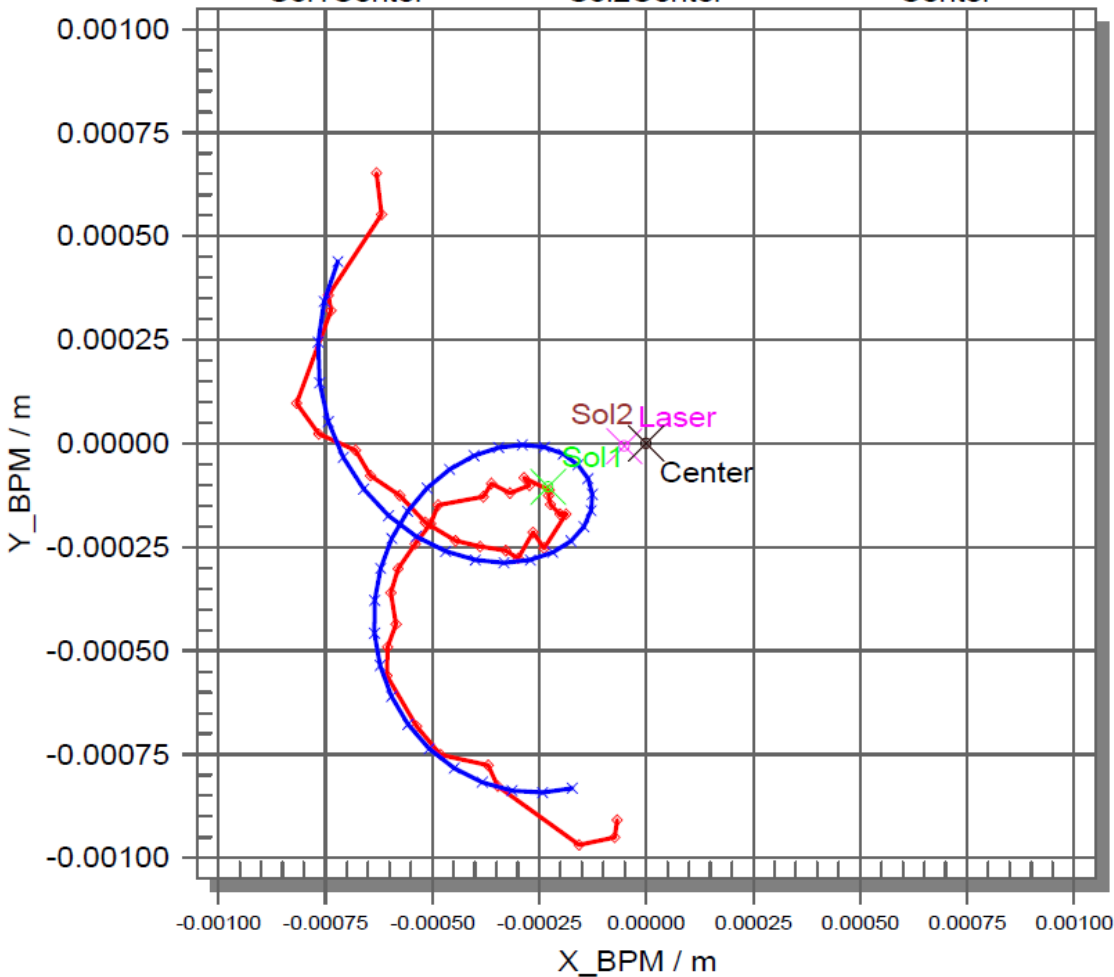
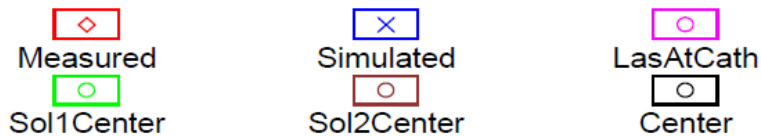
X_BPM = 0.000214002
Y_BPM = 6.30967e-005

- Recommendations:
 - DXsolenoid=+230um
 - DYsolenoid=+100um

Step0 only

BPM1 vs Solenoid1 Current

nocomment // 20.12.2016 (16:34)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = -0.00615 deg

RF-GunPITZ : AngleYSolMain = -0.00514 deg

RF-GunPITZ : Laser_Beam_CenterX = -5.06e-005 m

RF-GunPITZ : Laser_Beam_CenterY = -6.6e-006 m

RF-GunPITZ : XSolMainCenter = -0.000229 m

RF-GunPITZ : YSolMainCenter = -0.000105 m

Offsets List / [m]

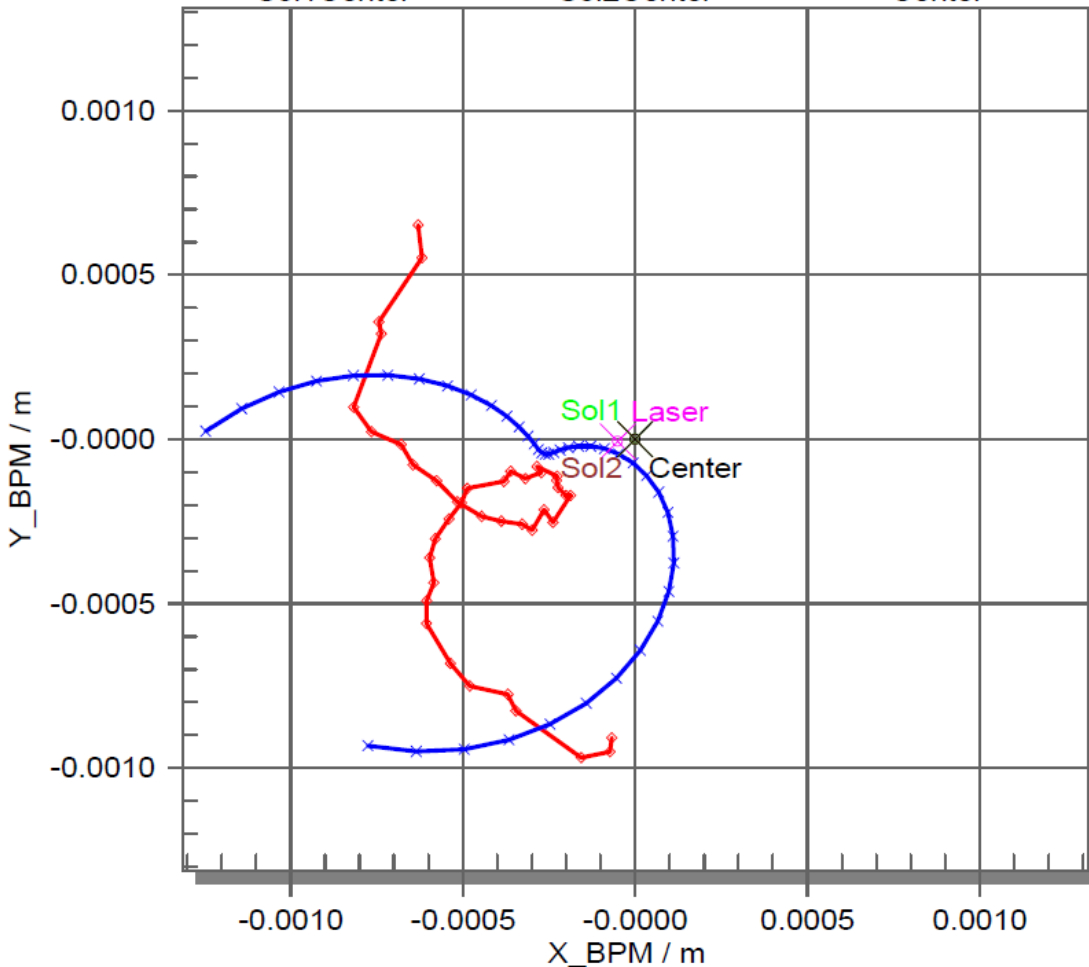
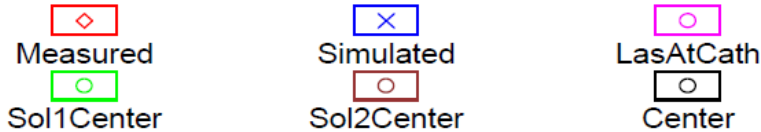
X_BPM = 0.000226217

Y_BPM = 0.000112075

Expected: Step0 → +solenoid offsets=0

BPM1 vs Solenoid1 Current

nocomment // 20.12.2016 (16:34)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = -0.00615 deg

RF-GunPITZ : AngleYSolMain = -0.00514 deg

RF-GunPITZ : Laser_Beam_CenterX = -5.06e-005 m

RF-GunPITZ : Laser_Beam_CenterY = -6.6e-006 m

RF-GunPITZ : XSolMainCenter = 0 m

RF-GunPITZ : YSolMainCenter = 0 m

Offsets List / [m]

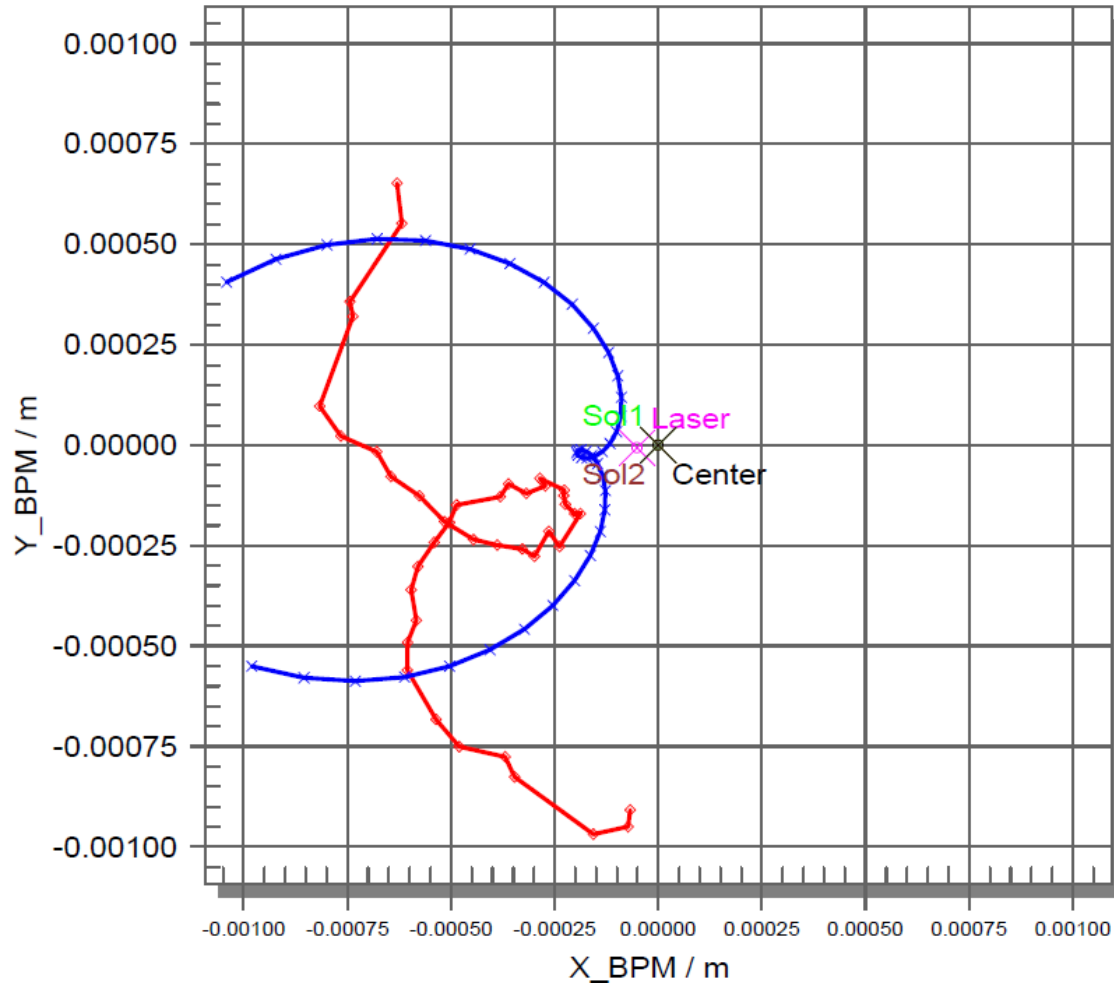
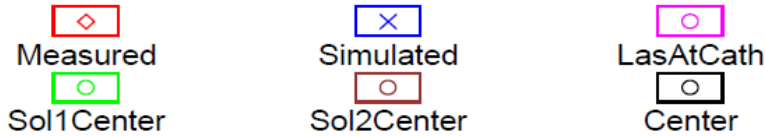
X_BPM = 0.000226217

Y_BPM = 0.000112075

Expected: ...+Pitch → 0

BPM1 vs Solenoid1 Current

nocomment // 20.12.2016 (17:07)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = -0.00615 deg

RF-GunPITZ : AngleYSolMain = 0 deg

RF-GunPITZ : Laser_Beam_CenterX = -5.06e-005 m

RF-GunPITZ : Laser_Beam_CenterY = -6.6e-006 m

RF-GunPITZ : XSolMainCenter = 0 m

RF-GunPITZ : YSolMainCenter = 0 m

Offsets List / [m]

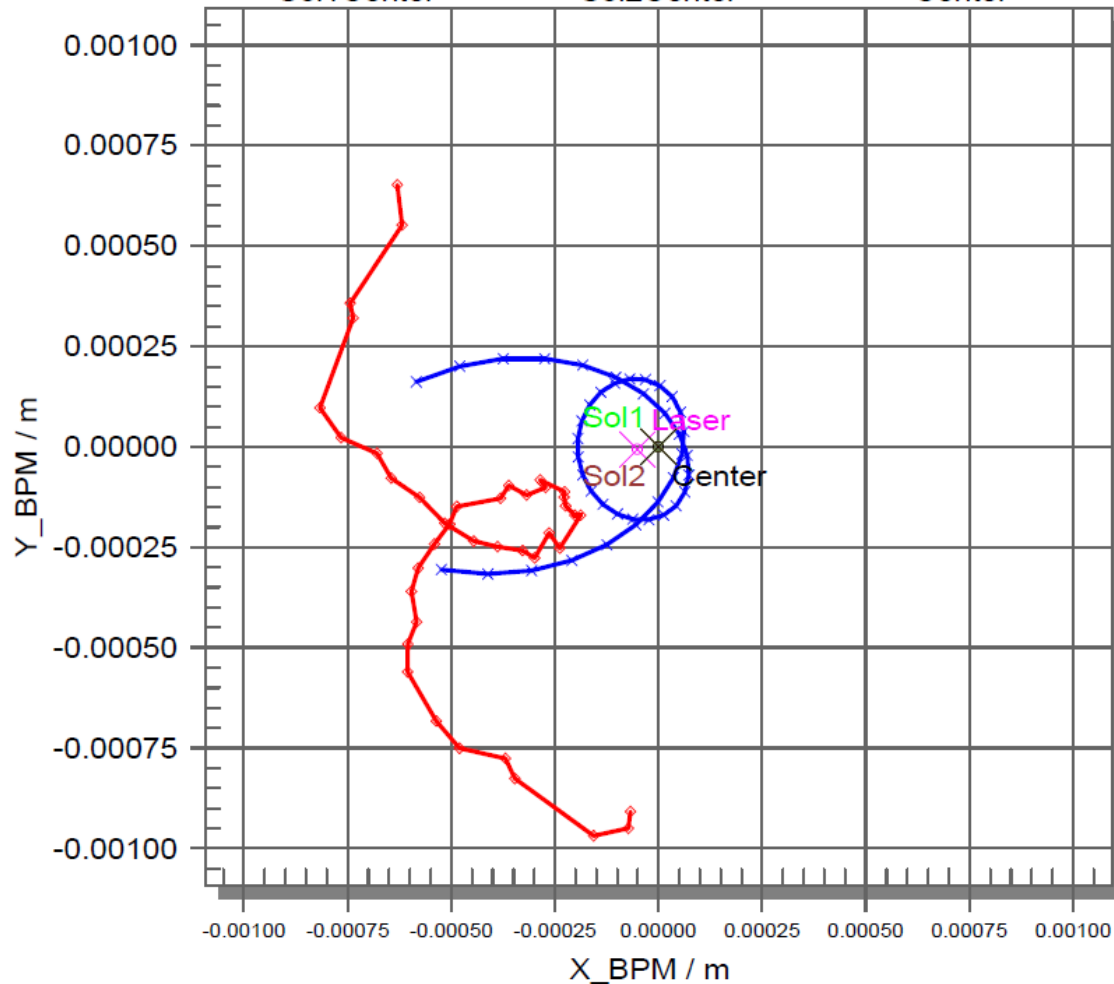
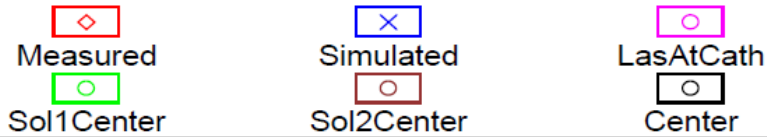
X_BPM = 0.000226217

Y_BPM = 0.000112075

Expected: ...+Yaw \rightarrow 0

BPM1 vs Solenoid1 Current

nocomment // 20.12.2016 (17:07)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = 0 deg

RF-GunPITZ : AngleYSolMain = 0 deg

RF-GunPITZ : Laser_Beam_CenterX = -5.06e-005 m

RF-GunPITZ : Laser_Beam_CenterY = -6.6e-006 m

RF-GunPITZ : XSolMainCenter = 0 m

RF-GunPITZ : YSolMainCenter = 0 m

Offsets List / [m]

X_BPM = 0.000226217

Y_BPM = 0.000112075

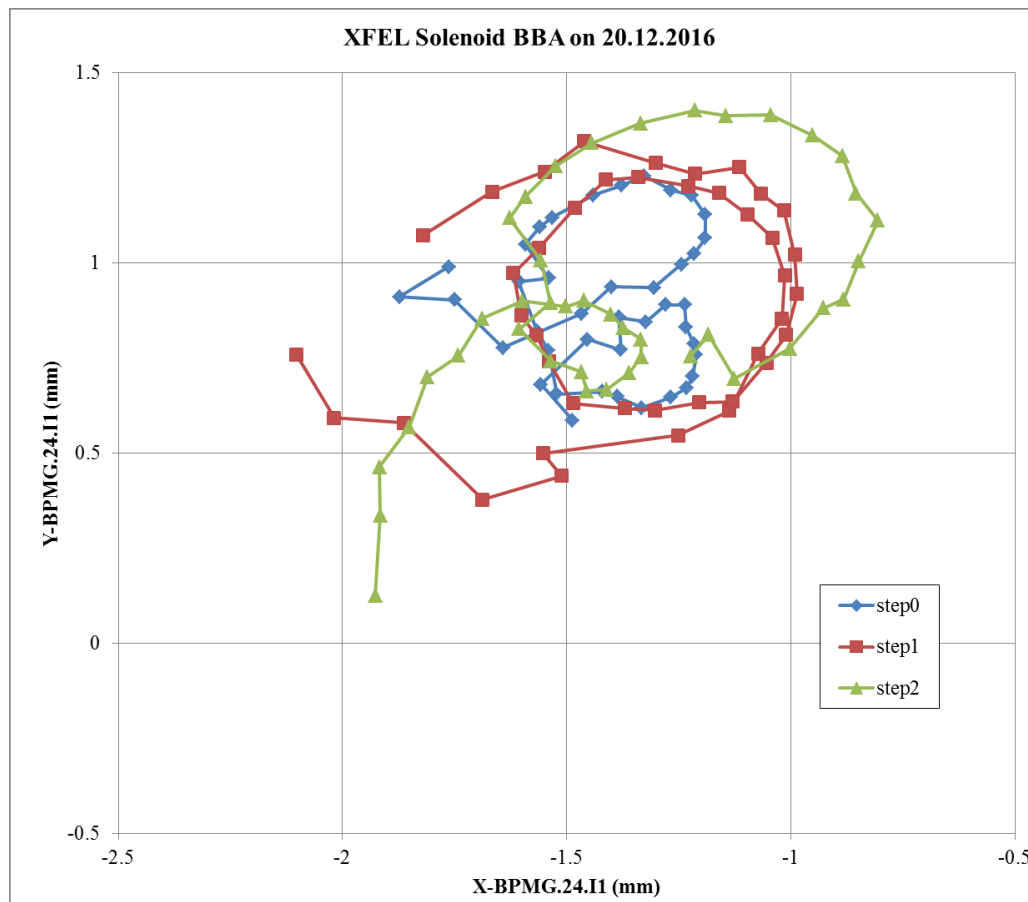
NB: Only laser misaligned

**XFEL PI Solenoid BBA:
next iteration on 21-22.12.2016**

M, Krasilnikov, Y. Kot

Measurements 21.12.2016N

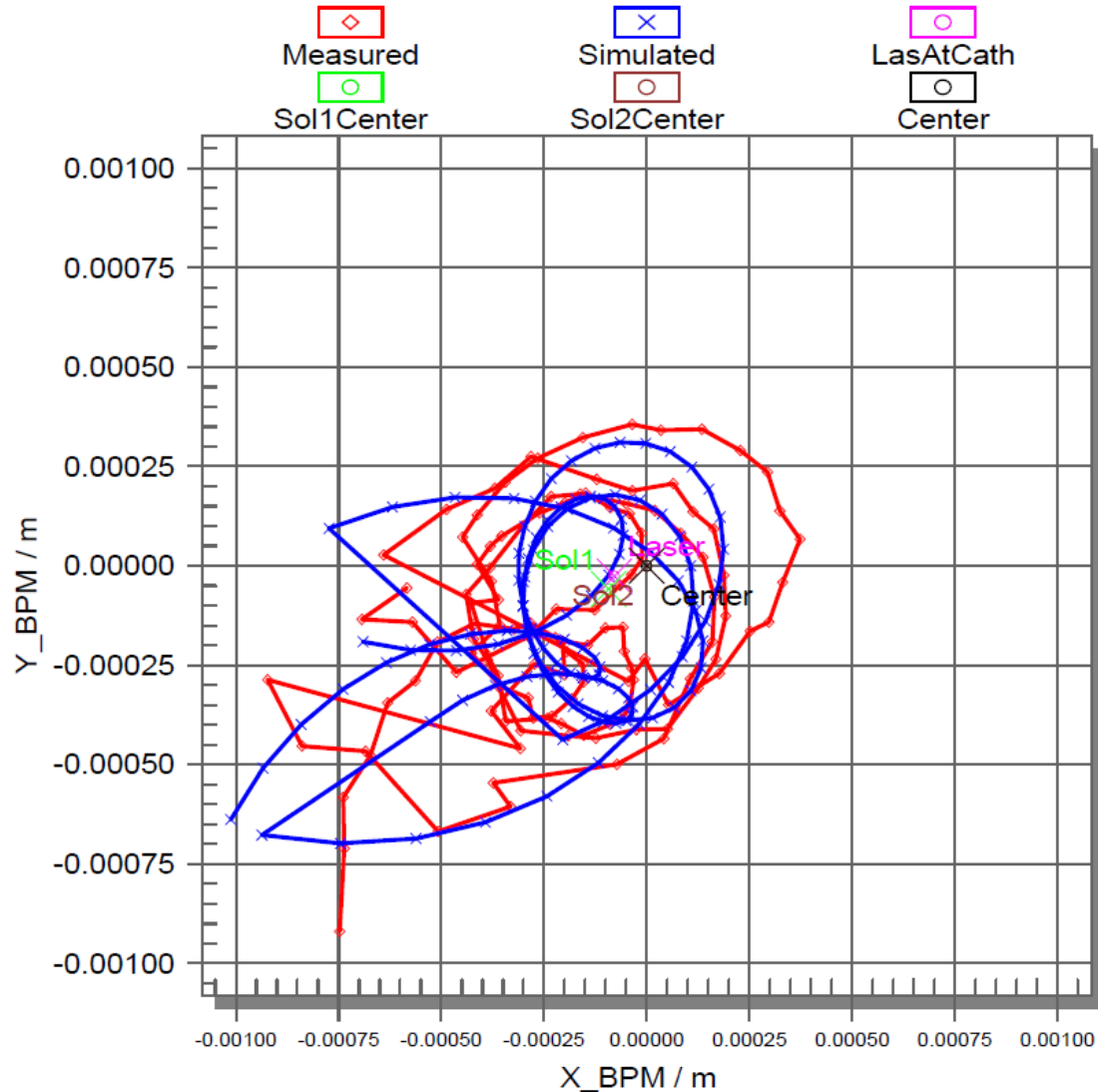
roll	yaw	pitch	x	y	file	DXsol	DYsol	steps
-2	2.1	-2.95	-0.27	0.22	2016-12-22T042904	0	0	step0
-2	2.1	-2.95	-0.17	0.22	2016-12-22T051855	0.1	0	step1
-2	2.1	-2.95	-0.27	0.32	2016-12-22T054553	0	0.1	step2



Simulations (Ez=30MV/m, Phi=-153deg → fixed)

BPM1vsSolenoid1 Current

nocomment // 22.12.2016 (12:35)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = 0.000312 deg

RF-GunPITZ : AngleYSolMain = -0.00196 deg

RF-GunPITZ : Laser_Beam_CenterX = -7.87e-005 m

RF-GunPITZ : Laser_Beam_CenterY = -2.64e-005 m

RF-GunPITZ : XSolMainCenter = -9.29e-005 m

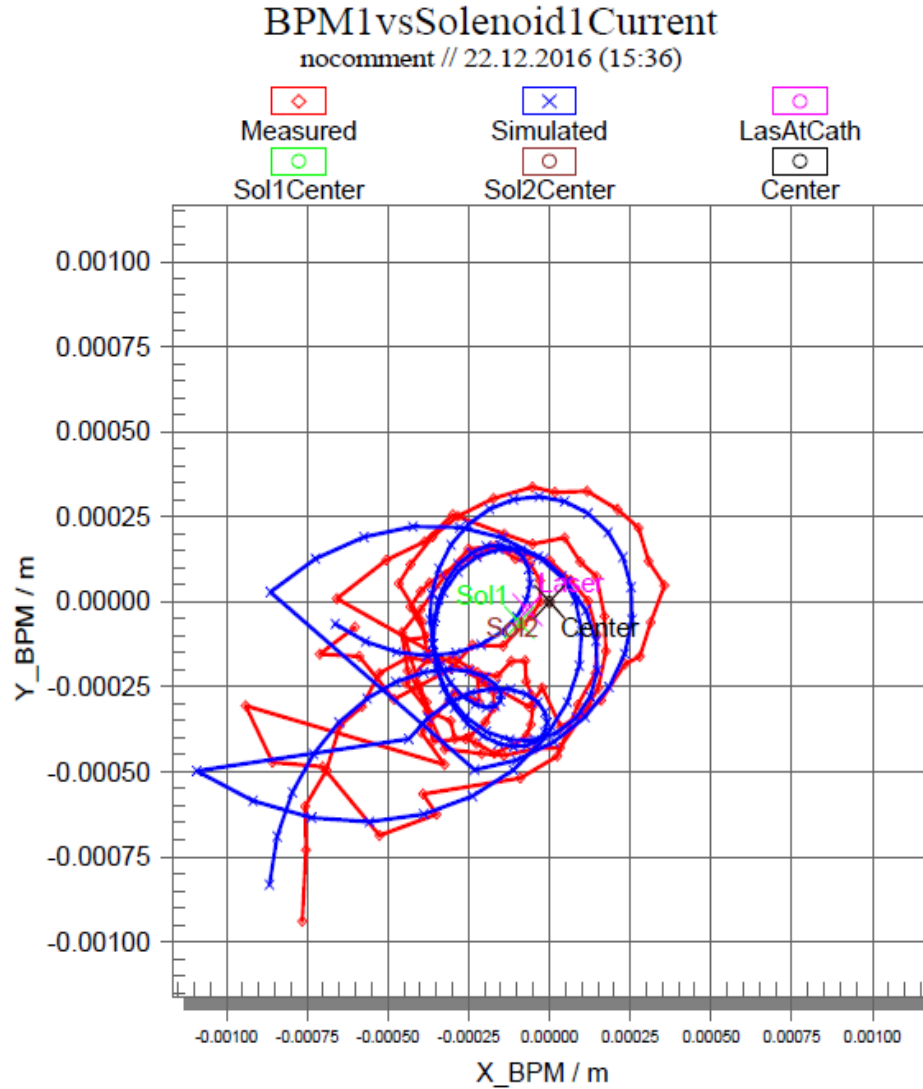
RF-GunPITZ : YSolMainCenter = -5.92e-005 m

Offsets List / [m]

X_BPM = 0.000653181

Y_BPM = 0.000590166

Simulations (Ez, Phi → tuned)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = 0.00107 deg
RF-GunPITZ : AngleYSolMain = -0.00176 deg
RF-GunPITZ : Ez_Field_At_Cathode = 30 MV/m
RF-GunPITZ : Initial_Phase = -117 degree
RF-GunPITZ : Laser_Beam_CenterX = -6.77e-005 m
RF-GunPITZ : Laser_Beam_CenterY = -2.34e-005 m
RF-GunPITZ : XSolMainCenter = -9.33e-005 m
RF-GunPITZ : YSolMainCenter = -6.11e-005 m

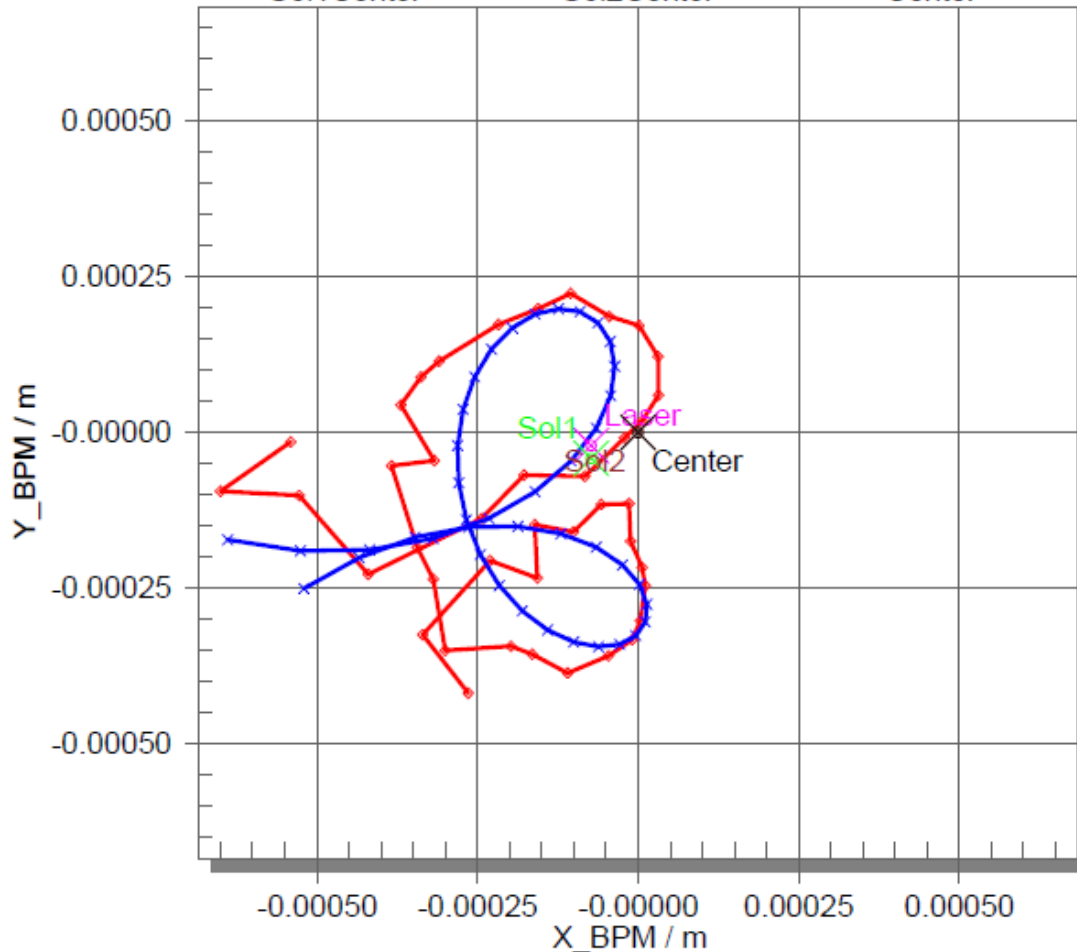
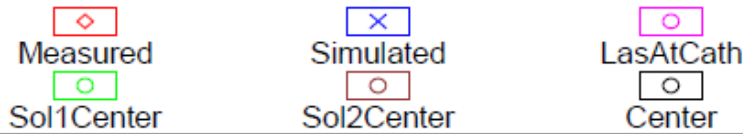
Offsets List / [m]

X_BPM = 0.000670787
Y_BPM = 0.000609132

Simulations: step 0 only ("best")

BPM1 vs Solenoid1 Current

nocomment // 22.12.2016 (15:39)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = 0.000524 deg
RF-GunPITZ : AngleYSolMain = -0.00112 deg
RF-GunPITZ : Laser_Beam_CenterX = -7.36e-005 m
RF-GunPITZ : Laser_Beam_CenterY = -2.12e-005 m
RF-GunPITZ : XSolMainCenter = -7.28e-005 m
RF-GunPITZ : YSolMainCenter = -4.16e-005 m

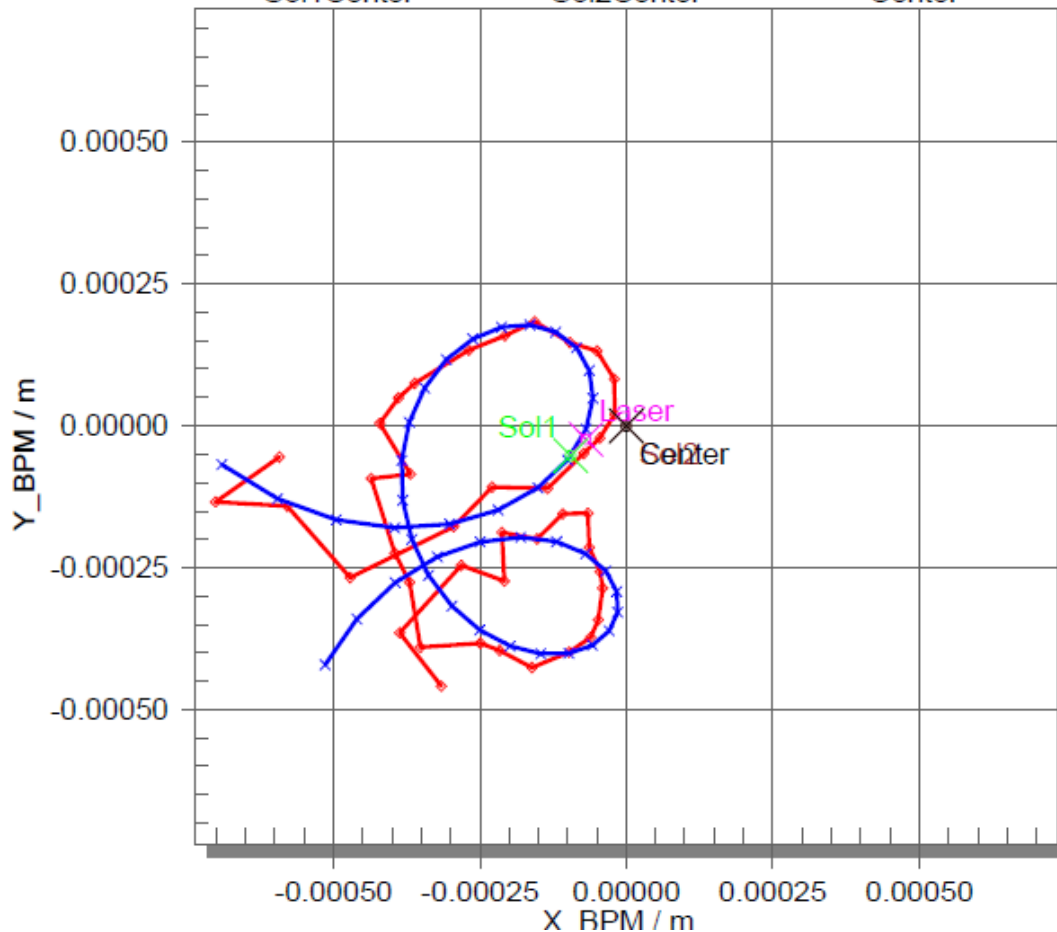
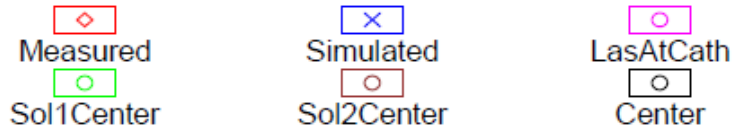
Offsets List / [m]

X_BPM = 0.000609963
Y_BPM = 0.000549828

Simulations: step 0 only (“best”, Ez,Phi tuned)

BPM1vsSolenoid1Current

nocomment // 22.12.2016 (15:40)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = 0.000959 deg
RF-GunPITZ : AngleYSolMain = -0.00141 deg
RF-GunPITZ : Ez_Field_At_Cathode = 31.9 MV/m
RF-GunPITZ : Initial_Phase = -106 degree
RF-GunPITZ : Laser_Beam_CenterX = -6.91e-005 m
RF-GunPITZ : Laser_Beam_CenterY = -2.36e-005 m
RF-GunPITZ : XSolMainCenter = -9.5e-005 m
RF-GunPITZ : YSolMainCenter = -5.23e-005 m

Offsets List / [m]

X_BPM = 0.000661434
Y_BPM = 0.00058932

Next Steps (?)

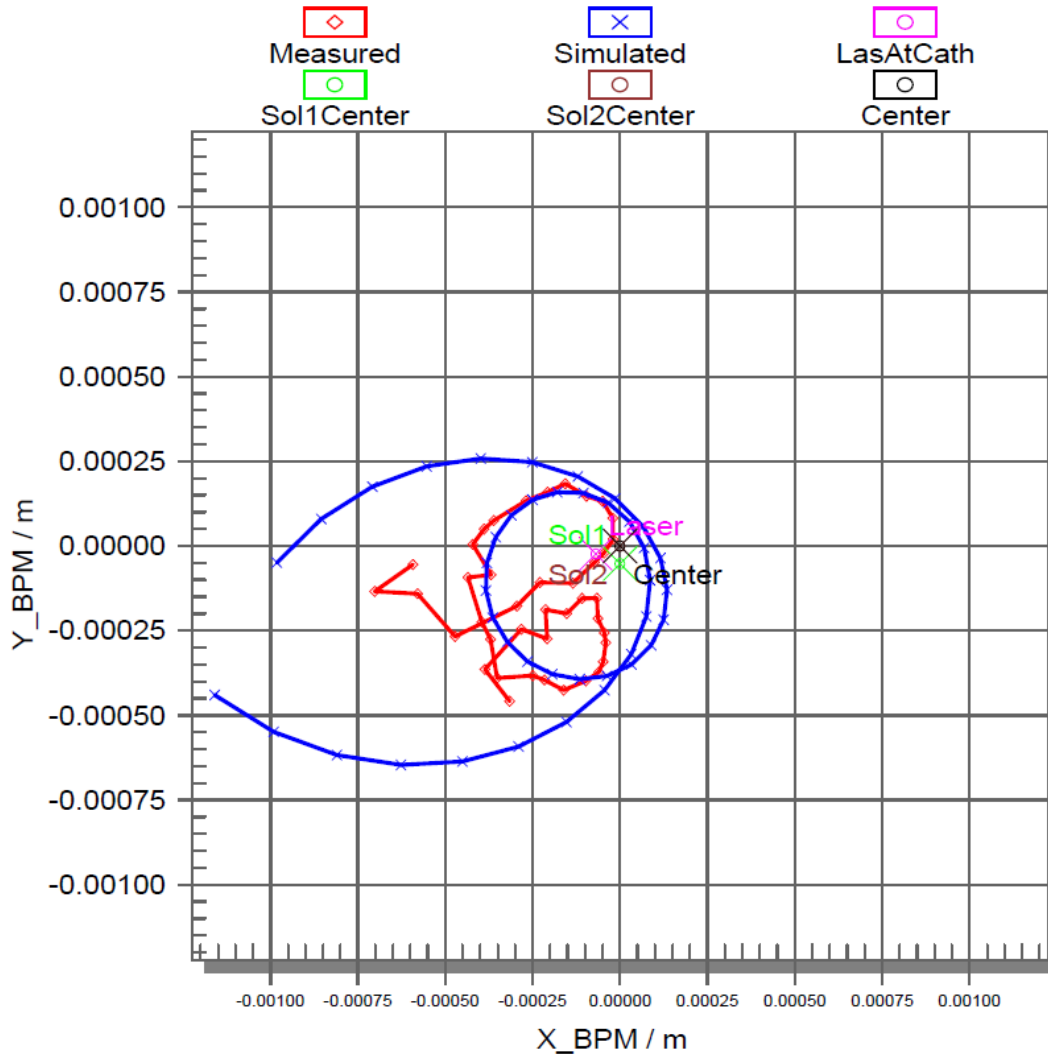
- We are probably coming to systematic limit of the procedure (measurements + solenoid positioning)
- Angles ~ 0.001 and smaller, offsets $< 100\mu\text{m}$
- Improve stability/reliability of BPM measurements (curves should be smoother). ?Increase BSA to 1-1.2mm?
- ?try 2D (Xsol,Ysol), step 50 μm scan w.r.t. the actual position?

Simulations: step 0 only:

Xsol→0

BPM1vsSolenoid1Current

nocomment // 22.12.2016 (15:40)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = 0.000959 deg
RF-GunPITZ : AngleYSolMain = -0.00141 deg
RF-GunPITZ : Ez_Field_At_Cathode = 31.9 MV/m
RF-GunPITZ : Initial_Phase = -106 degree
RF-GunPITZ : Laser_Beam_CenterX = -6.91e-005 m
RF-GunPITZ : Laser_Beam_CenterY = -2.36e-005 m
RF-GunPITZ : XSolMainCenter = 0 m
RF-GunPITZ : YSolMainCenter = -5.23e-005 m

Offsets List / [m]

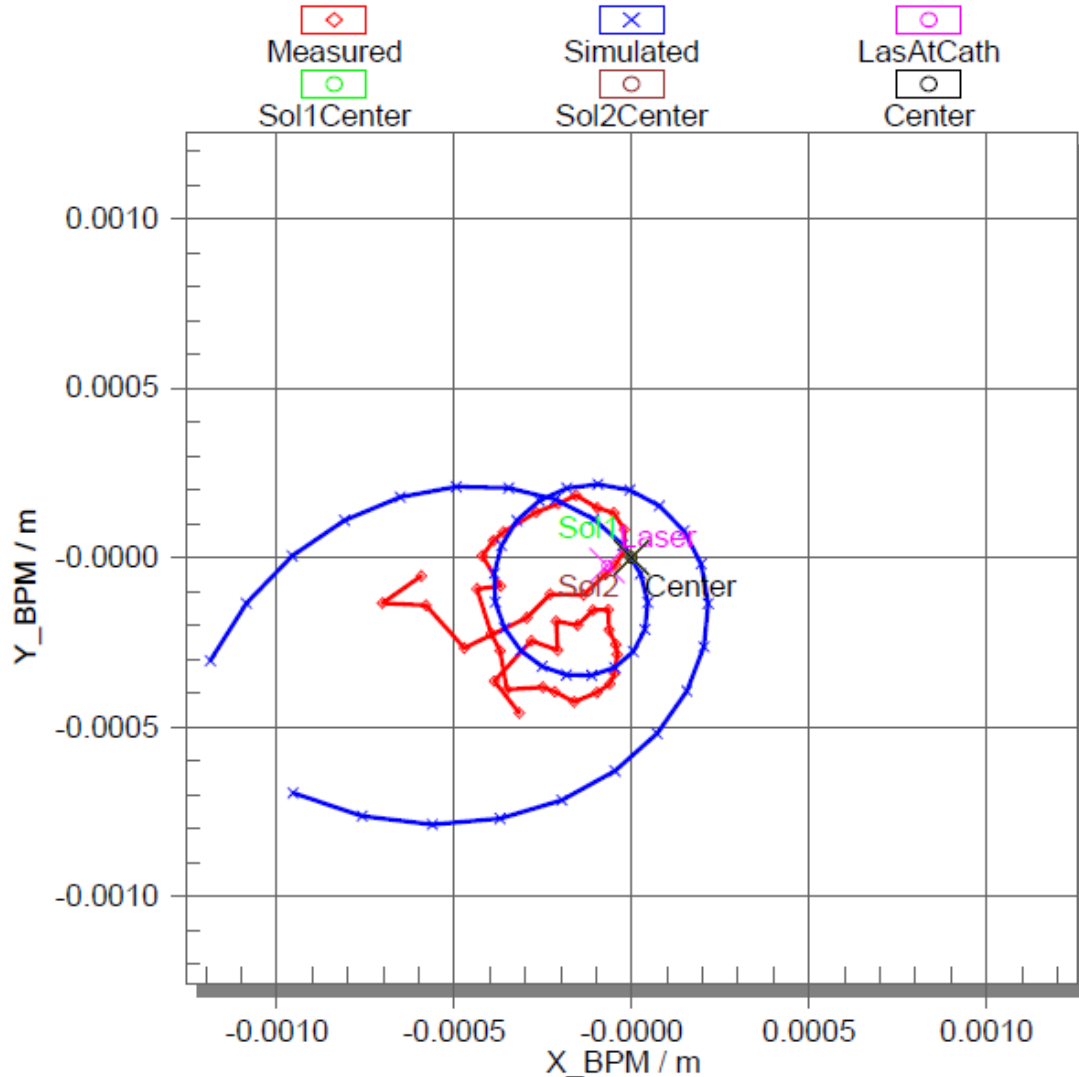
X_BPM = 0.000661434
Y_BPM = 0.00058932

Simulations: step 0 only:

$X_{sol} \rightarrow 0$; $Y_{sol} \rightarrow 0$

BPM1 vs Solenoid1 Current

nocomment // 22.12.2016 (15:40)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = 0.000959 deg
RF-GunPITZ : AngleYSolMain = -0.00141 deg
RF-GunPITZ : Ez_Field_At_Cathode = 31.9 MV/m
RF-GunPITZ : Initial_Phase = -106 degree
RF-GunPITZ : Laser_Beam_CenterX = -6.91e-005 m
RF-GunPITZ : Laser_Beam_CenterY = -2.36e-005 m
RF-GunPITZ : XSolMainCenter = 0 m
RF-GunPITZ : YSolMainCenter = 0 m

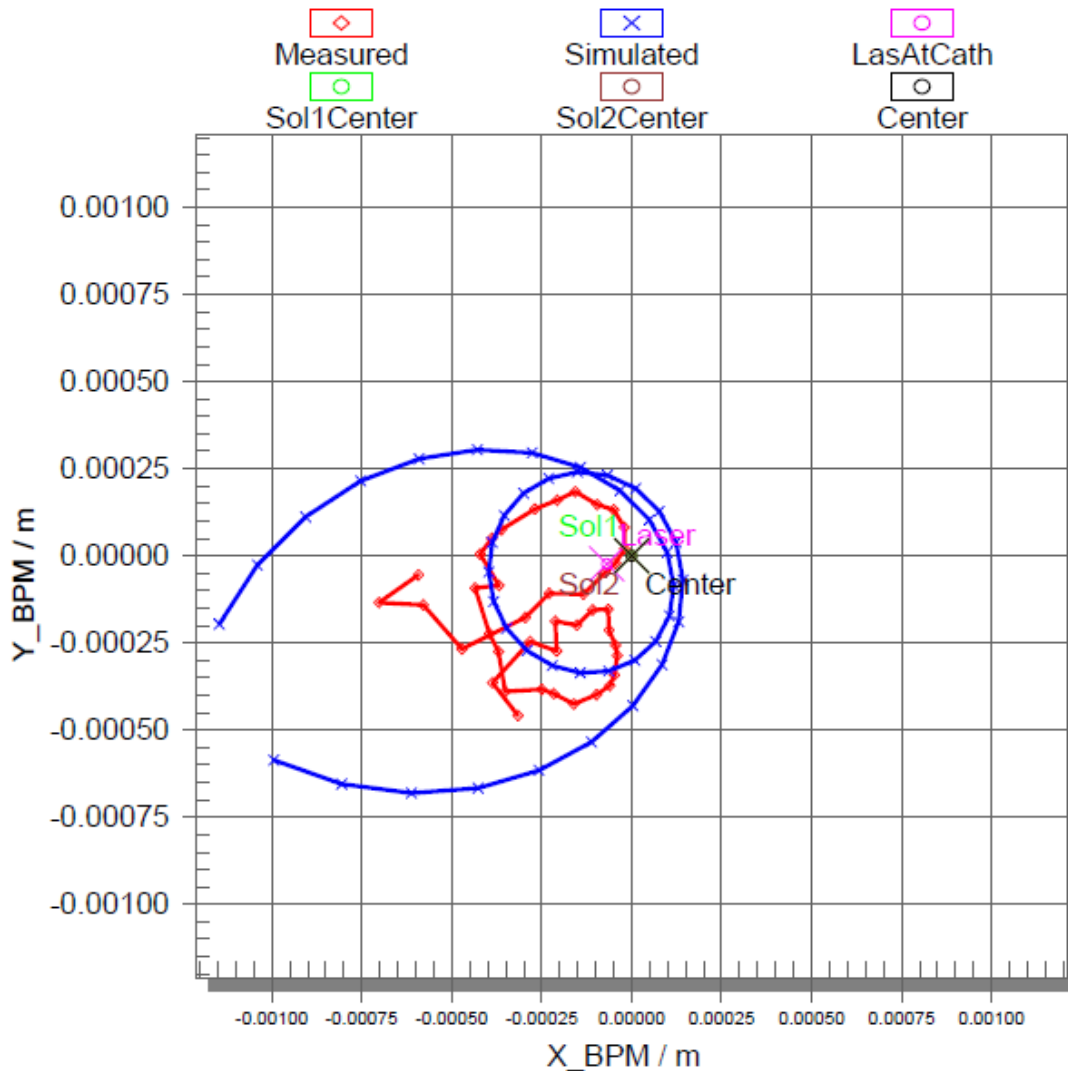
Offsets List / [m]

X_BPM = 0.000661434
Y_BPM = 0.00058932

Simulations: step 0 only: $X_{sol} \rightarrow 0$; $Y_{sol} \rightarrow 0$; $Y\text{-angle} \rightarrow 0$

BPM1 vs Solenoid1 Current

nocomment // 22.12.2016 (15:40)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = 0.000959 deg
RF-GunPITZ : AngleYSolMain = 0 deg
RF-GunPITZ : Ez_Field_At_Cathode = 31.9 MV/m
RF-GunPITZ : Initial_Phase = -106 degree
RF-GunPITZ : Laser_Beam_CenterX = -6.91e-005 m
RF-GunPITZ : Laser_Beam_CenterY = -2.36e-005 m
RF-GunPITZ : XSolMainCenter = 0 m
RF-GunPITZ : YSolMainCenter = 0 m

Offsets List / [m]

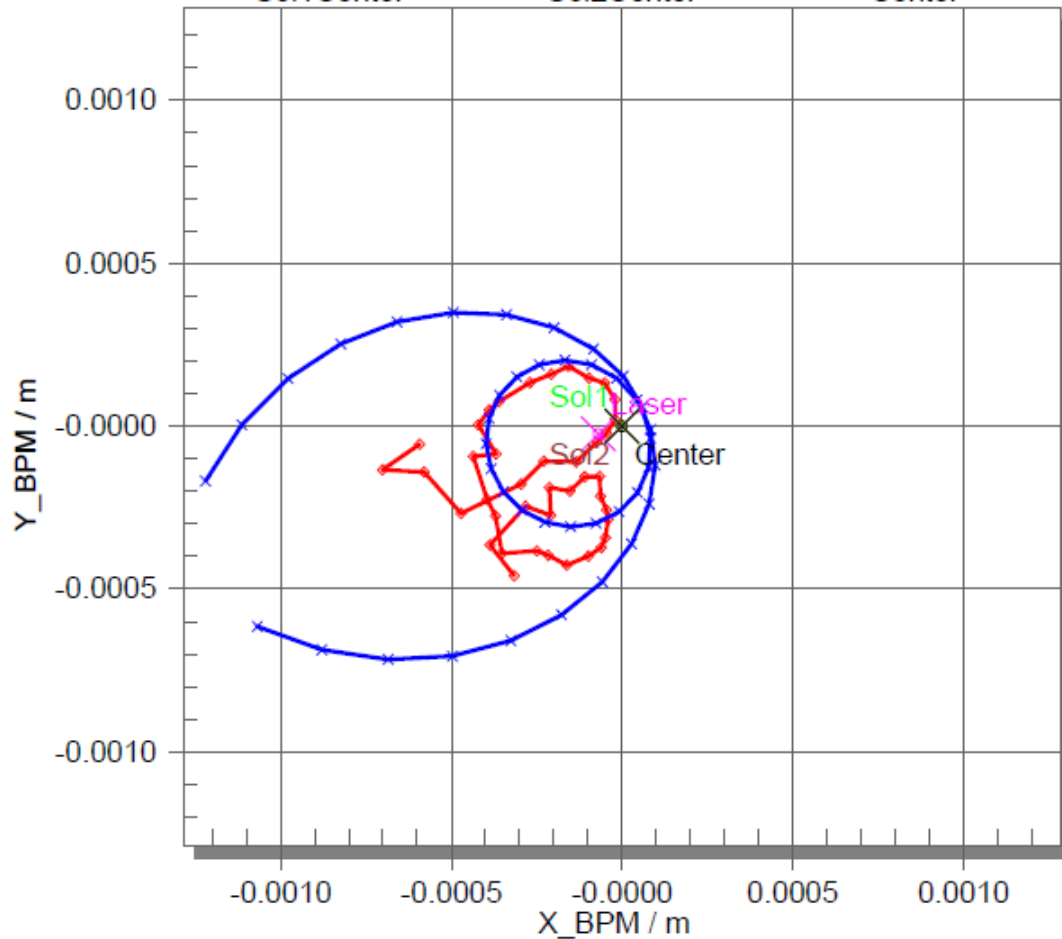
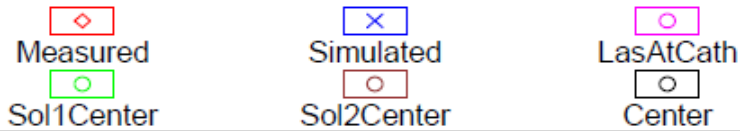
X_BPM = 0.000661434
Y_BPM = 0.00058932

Simulations: step 0 only:

$X_{sol} \rightarrow 0$; $Y_{sol} \rightarrow 0$; Y-angle $\rightarrow 0$; X-angle $\rightarrow 0$

BPM1 vs Solenoid1 Current

nocomment // 22.12.2016 (15:40)



Fit Parameters List

RF-GunPITZ : AngleXSolMain = 0 deg

RF-GunPITZ : AngleYSolMain = 0 deg

RF-GunPITZ : Ez_Field_At_Cathode = 31.9 MV/m

RF-GunPITZ : Initial_Phase = -106 degree

RF-GunPITZ : Laser_Beam_CenterX = -6.91e-005 m

RF-GunPITZ : Laser_Beam_CenterY = -2.36e-005 m

RF-GunPITZ : XSolMainCenter = 0 m

RF-GunPITZ : YSolMainCenter = 0 m

Offsets List / [m]

X_BPM = 0.000661434

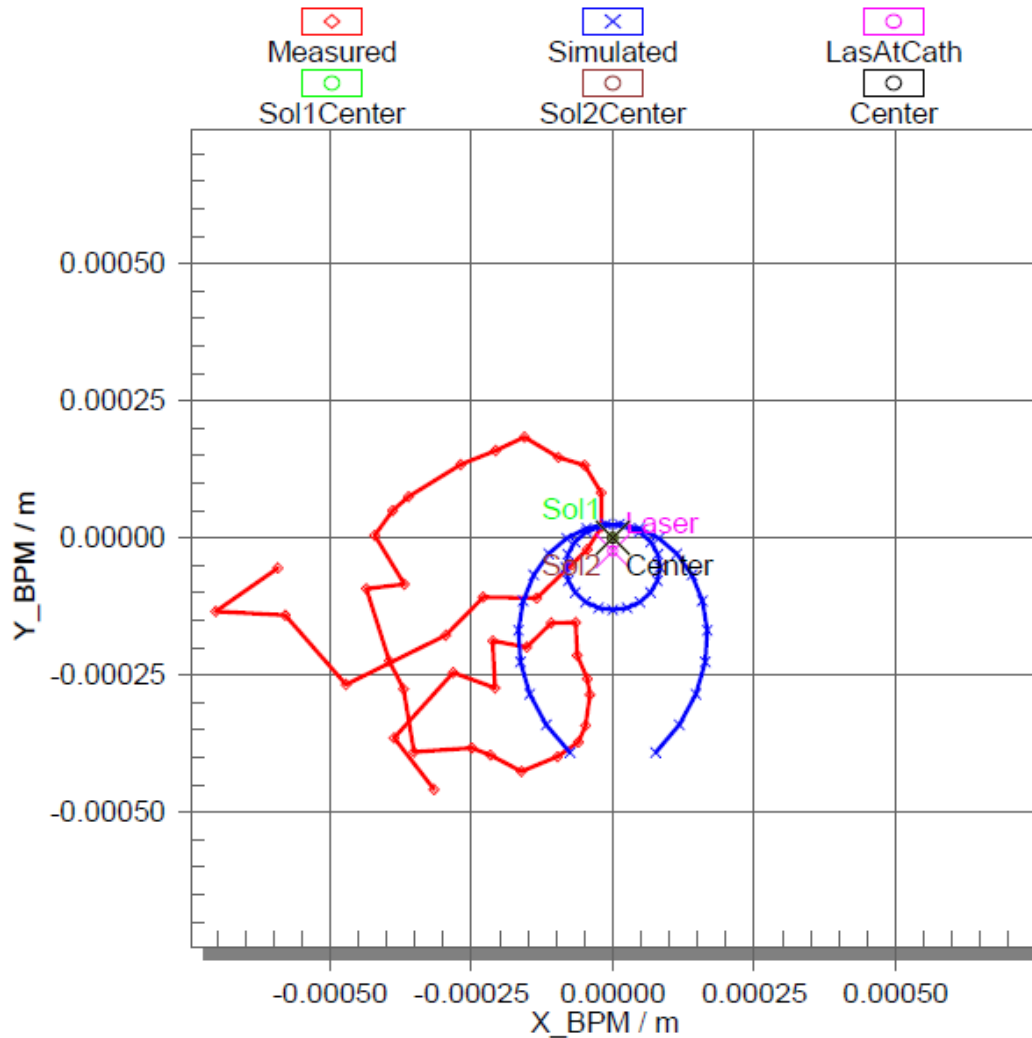
Y_BPM = 0.00058932

Simulations: step 0 only:

$X_{sol} \rightarrow 0$; $Y_{sol} \rightarrow 0$; $Y\text{-angle} \rightarrow 0$; $X\text{-angle} \rightarrow 0$; $Y\text{-angle} \rightarrow 0$; $X_{las} \rightarrow 0$

BPM1 vs Solenoid1 Current

nocomment // 22.12.2016 (15:40)



Fit Parameters List

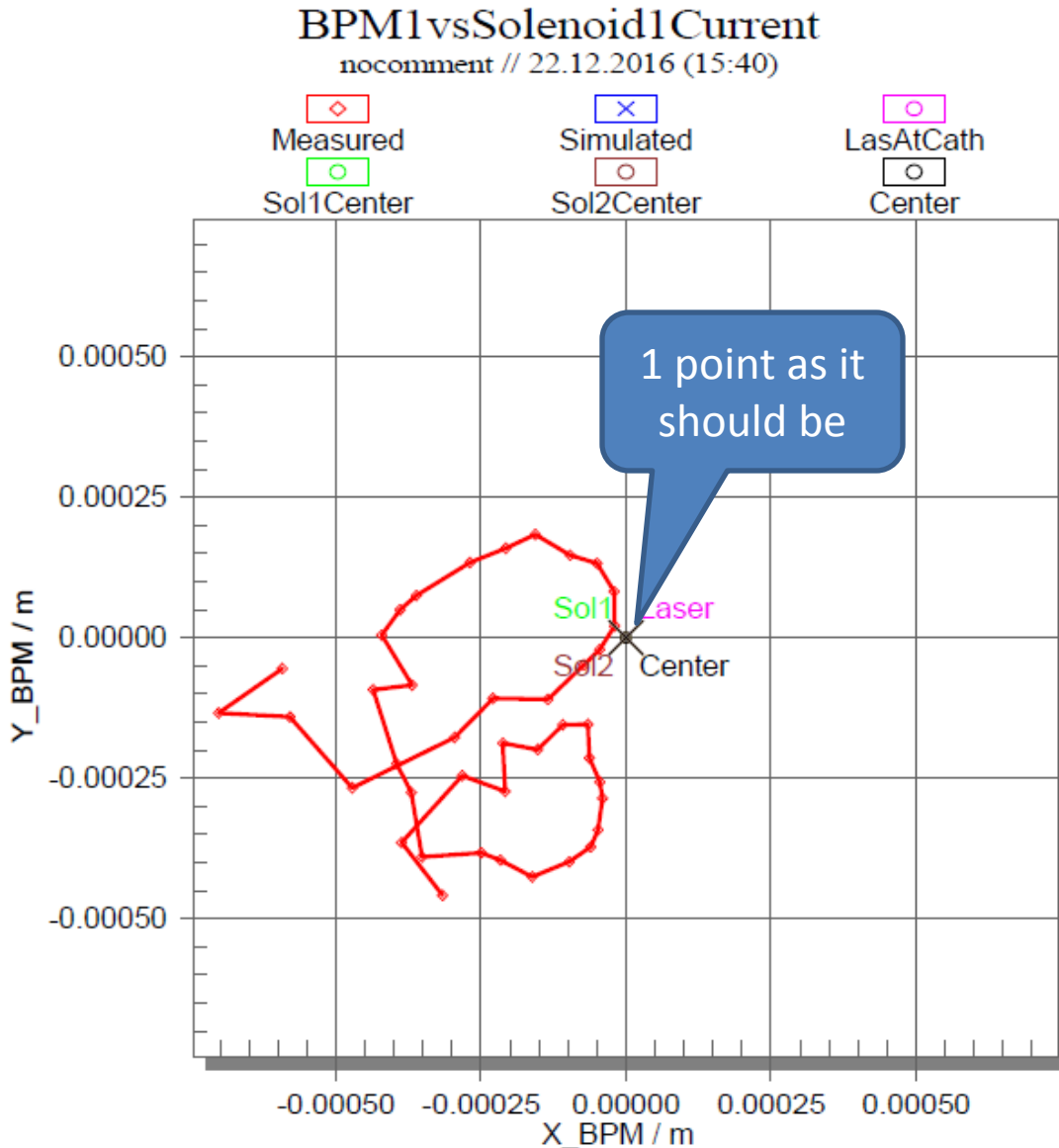
RF-GunPITZ : AngleXSolMain = 0 deg
RF-GunPITZ : AngleYSolMain = 0 deg
RF-GunPITZ : Ez_Field_At_Cathode = 31.9 MV/m
RF-GunPITZ : Initial_Phase = -106 degree
RF-GunPITZ : Laser_Beam_CenterX = 0 m
RF-GunPITZ : Laser_Beam_CenterY = -2.36e-005 m
RF-GunPITZ : XSolMainCenter = 0 m
RF-GunPITZ : YSolMainCenter = 0 m

Offsets List / [m]

X_BPM = 0.000661434
Y_BPM = 0.00058932

Simulations: step 0 only:

$X_{sol} \rightarrow 0$; $Y_{sol} \rightarrow 0$; $Y\text{-angle} \rightarrow 0$; $X\text{-angle} \rightarrow 0$; $Y\text{-angle} \rightarrow 0$; $X_{las} \rightarrow 0$; $Y_{las} \rightarrow 0$



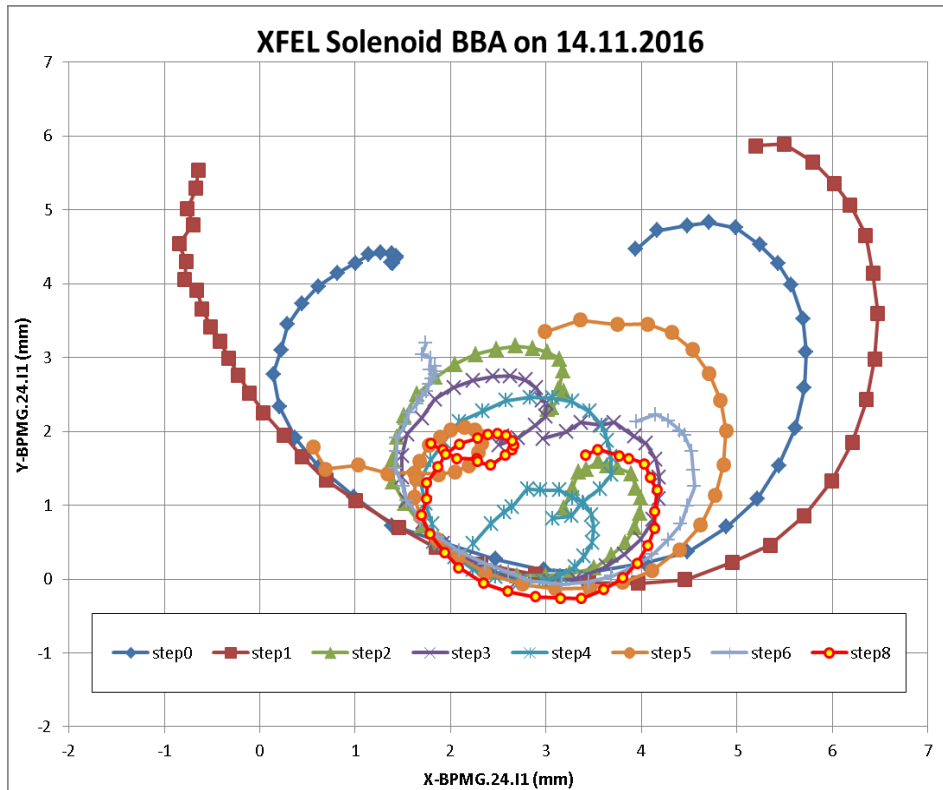
Fit Parameters List

RF-GunPITZ : AngleXSolMain = 0 deg
RF-GunPITZ : AngleYSolMain = 0 deg
RF-GunPITZ : Ez_Field_At_Cathode = 31.9 MV/m
RF-GunPITZ : Initial_Phase = -106 degree
RF-GunPITZ : Laser_Beam_CenterX = 0 m
RF-GunPITZ : Laser_Beam_CenterY = 0 m
RF-GunPITZ : XSolMainCenter = 0 m
RF-GunPITZ : YSolMainCenter = 0 m

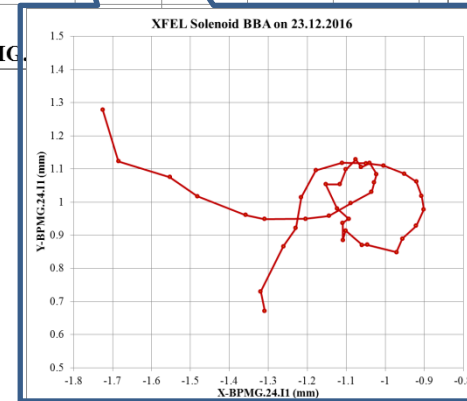
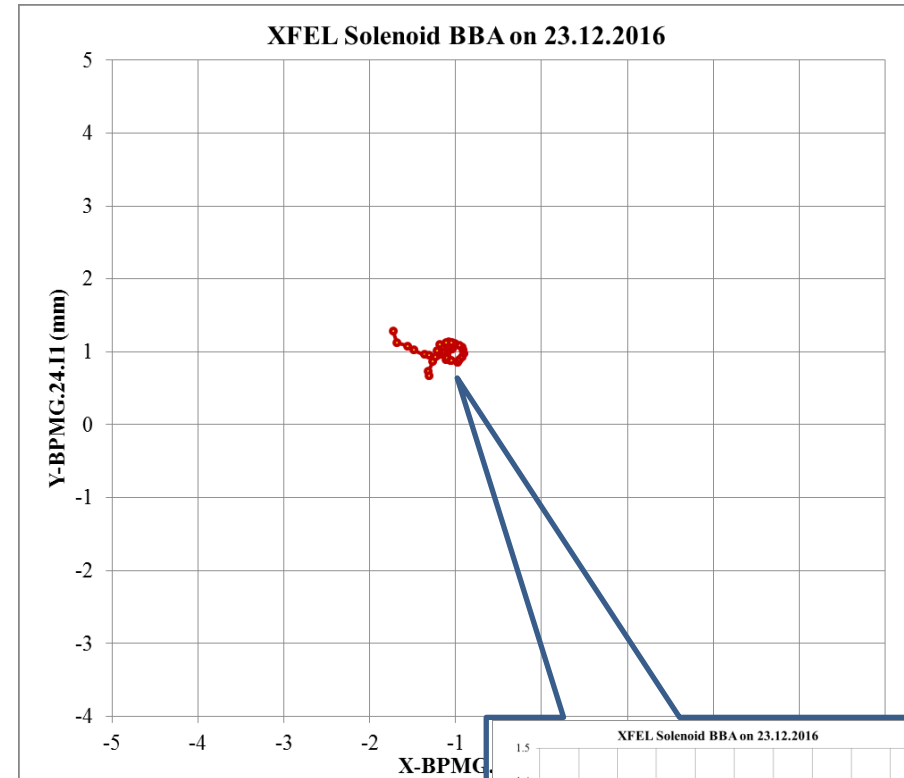
Offsets List / [m]

X_BPM = 0.000661434
Y_BPM = 0.00058932

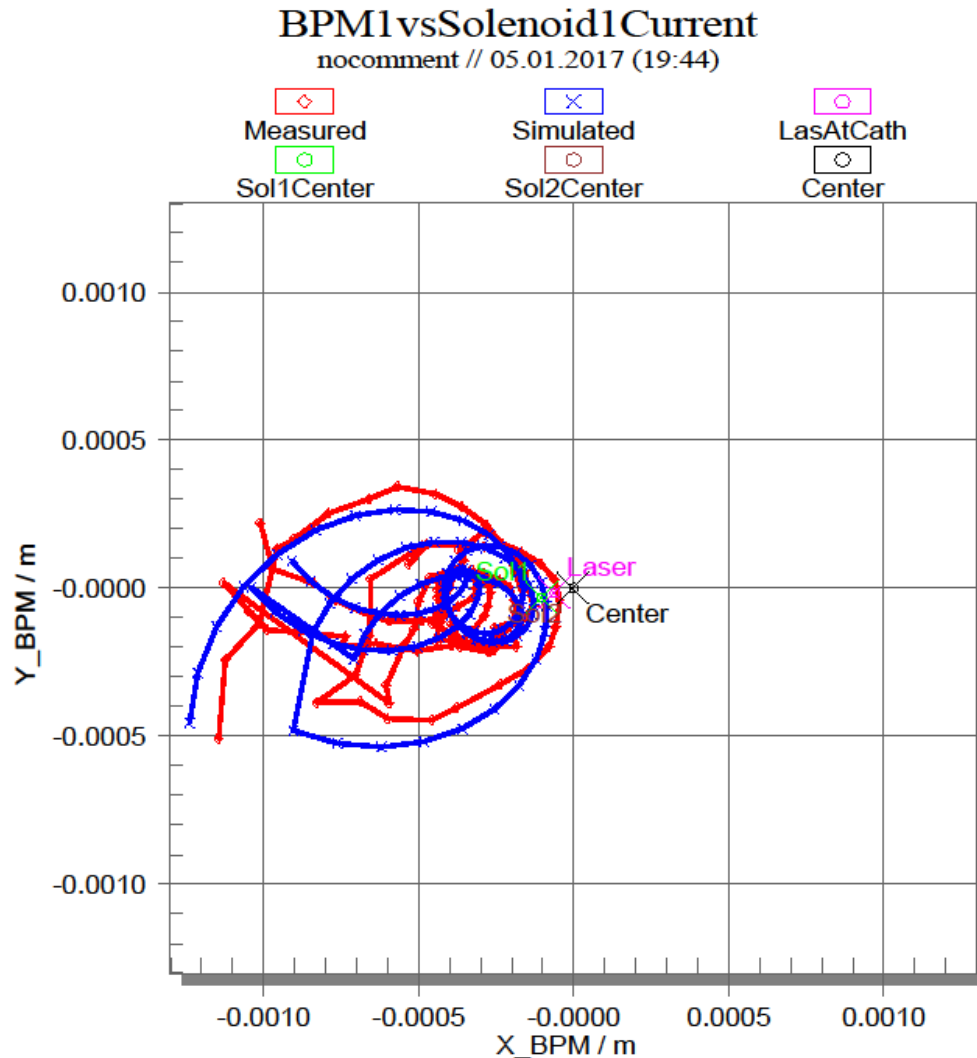
Final measurements on 23.12.2016



I_{main} = -400A...step 20A...+400A



New implementation: Static homogeneous magnetic field



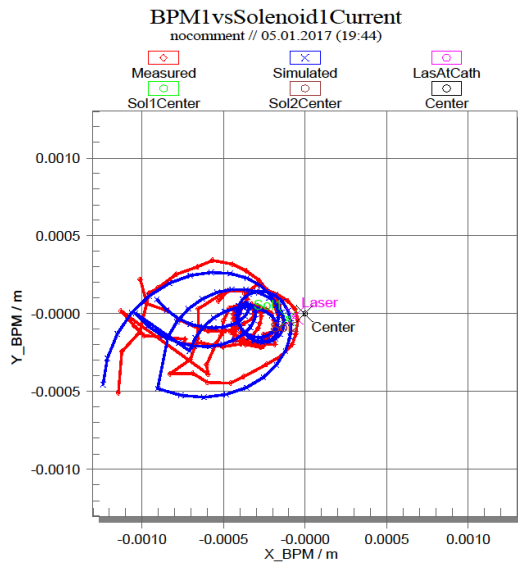
Fit Parameters List

RF-GunPITZ : AngleXSolMain = -0.00309 deg
RF-GunPITZ : AngleYSolMain = 0.000477 deg
RF-GunPITZ : Ez_Field_At_Cathode = 30.4 MV/m
RF-GunPITZ : HxEarth = 0.000848 T
RF-GunPITZ : HyEarth = -0.0105 T
RF-GunPITZ : HzEarth = 0 T
RF-GunPITZ : Initial_Phase = -108 degree
RF-GunPITZ : Laser_Beam_CenterX = -6.07e-005 m
RF-GunPITZ : Laser_Beam_CenterY = -1.57e-005 m
RF-GunPITZ : XSolMainCenter = -0.000102 m
RF-GunPITZ : YSolMainCenter = -3.23e-005 m

Offsets List / [m]

X_BPM = 0.00111726
Y_BPM = 0.000603668

But: To be combined with BPM offsets

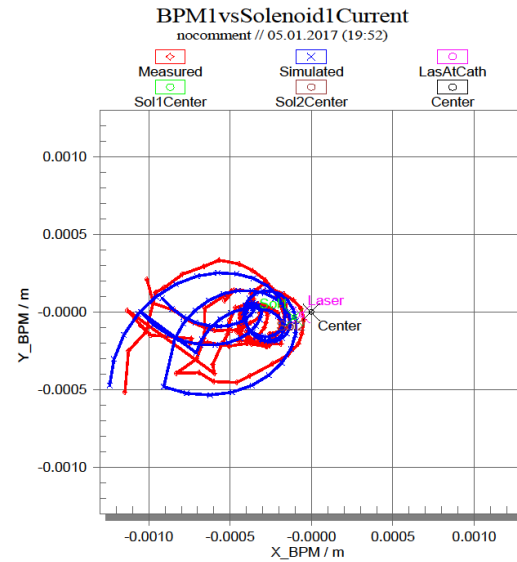


Fit Parameters List

RF-GunPITZ : AngleXSolMain = -0.00309 deg
 RF-GunPITZ : AngleYSolMain = 0.000477 deg
 RF-GunPITZ : E_z Field At Cathode = 30.4 MV/m
 RF-GunPITZ : HxEarth = 0.000848 T
 RF-GunPITZ : HyEarth = -0.0105 T
 RF-GunPITZ : HzEarth = 0 T
 RF-GunPITZ : Initial_Phase = -108 degree
 RF-GunPITZ : Laser_Beam_CenterX = -6.07e-005 m
 RF-GunPITZ : Laser_Beam_CenterY = -1.57e-005 m
 RF-GunPITZ : XSolMainCenter = -0.000102 m
 RF-GunPITZ : YSolMainCenter = -3.23e-005 m

Offsets List / [m]

X_BPM = 0.00111726
 Y_BPM = 0.000603668



Fit Parameters List

RF-GunPITZ : AngleXSolMain = -0.00317 deg
 RF-GunPITZ : AngleYSolMain = 0.000401 deg
 RF-GunPITZ : E_z Field At Cathode = 29.9 MV/m
 RF-GunPITZ : HxEarth = 0.00167 T
 RF-GunPITZ : HyEarth = -0.00959 T
 RF-GunPITZ : HzEarth = 0 T
 RF-GunPITZ : Initial_Phase = -110 degree
 RF-GunPITZ : Laser_Beam_CenterX = -6.16e-005 m
 RF-GunPITZ : Laser_Beam_CenterY = -1.61e-005 m
 RF-GunPITZ : XSolMainCenter = -0.000105 m
 RF-GunPITZ : YSolMainCenter = -3.41e-005 m

Offsets List / [m]

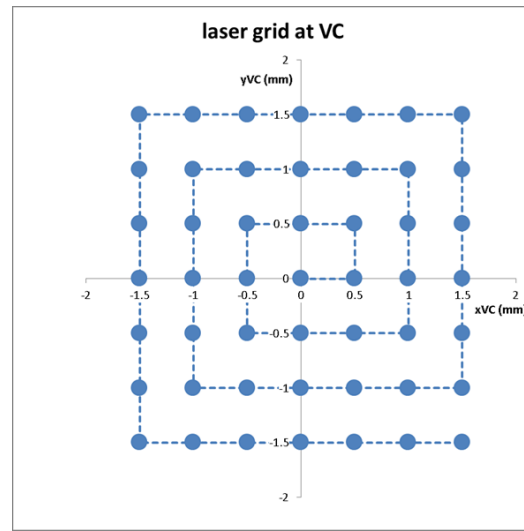
X_BPM = -0.000713545
 Y_BPM = 0.00106762

(HxEarth, HyEarth, HzEarth) \leftrightarrow X_BPM, Y_BPM offsets

Proposals to measure RF-gun coupler kick at EXFEL

M. Krasilnikov (12.12.2016)

1. Power in the gun: 1.5 MW (~like for the laser and solenoid BBA), FB=On (if possible)
2. Solenoids and steerers are off, solenoid degaussed
3. Cathode laser: BSA=0.5mm (or smaller)
4. Laser BBA is (roughly) done → record the laser position (image) at the VC camera
5. Bunch charge ~ 50pC(?) – 1st BPM should deliver reliable measurements (position and bunch charge)
6. Gun phase scan in the low energy dispersive arm → Pz vs. SP Phase → MMMG phase
7. Basic measurement: beam position and bunch charge (1st BPM) vs. gun SP Phase
8. Scan cathode with 0.5 mm step (XY-grid)
 1. Record laser beam at the VC camera
 2. Gun phase scan: beam position and bunch charge (1st BPM) vs. gun SP Phase
9. (If time) Repeat 1-8 with 5 MW in the gun (nominal).



RF-gun coupler kick measurements at EXFEL

13-14.12.2016

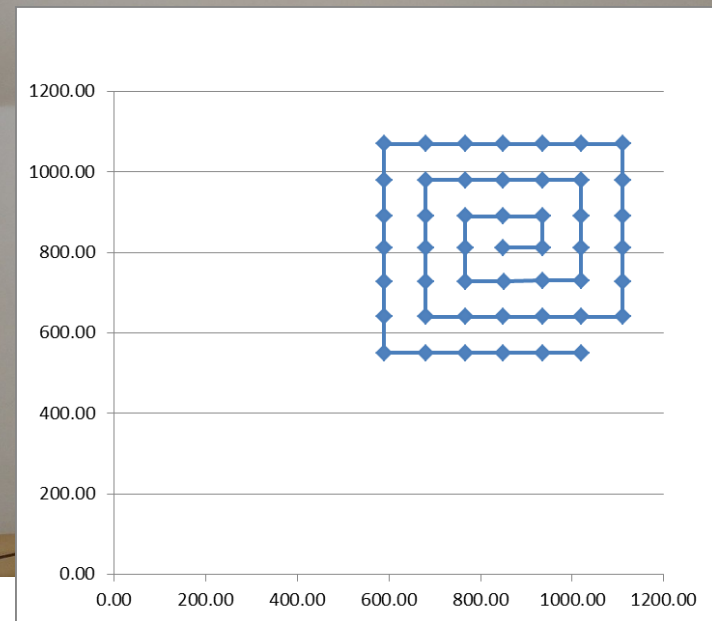
13.12.2016

-19 -3

#	xVC goal	yVC goal	xVC measured	yVC measured	xBPM1 (MMMG)	yBPM1 (MMMG)	Phase scan file	comment
1	0	0	850	812	-2.50	0.06	2016-12-12T155411	14T13K0
2	0.5	0	935	812	-2.60	1.65	2016-12-12T171430	14T13
3	0.5	0.5	932	890	-1.04	1.81	2016-12-13T103800	
4	0	0.5	850	890	-1.08	0.22	2016-12-13T104649	
5	-0.5	0.5	767	890	-1.00	-1.39	2016-12-13T105550	
6	-0.5	0	767	810	-2.48	-1.41	2016-12-13T110237	
7	-0.5	-0.5	767	728	-3.92	-1.55	2016-12-13T121720	
8	0	-0.5	852	728	-3.97	0.09	2016-12-13T122518	
9	0.5	-0.5	935	730	-3.99	1.72	2016-12-13T123311	
10	1	-0.5	1020	731	-4.02	3.11	2016-12-13T123949	
11	1	0	1020	810	-2.74	3.10	2016-12-13T124649	
12	1	0.5	1022	890	-1.29	3.22	2016-12-13T125421	
13	1	1	1021	980	0.89	3.21	2016-12-13T130602	
14	0.5	1	935	880	0.88	1.91	2016-12-13T131811	
15	0	1	850	980	0.91	0.33	2016-12-13T132500	
16	-0.5	1	767	980	0.92	-1.46	2016-12-13T13327	
17	-1	1	680	980	0.93	-3.15	2016-12-13T134019	
18	-1	0.5	680	890	-0.34	-3.14	2016-12-13T134705	
19	-1	0	680	810	-2.48	-3.11	2016-12-13T135642	
20	-1	-0.5	680	728	-3.85	-3.02	2016-12-13T140302	
21	-1	-1	680	640	-5.26	-2.89	2016-12-13T140959	
22	-0.5	-1	767	640	-5.14	-1.62	2016-12-13T141702	
23	0	-1	850	640	-5.16	-0.03	2016-12-13T142352	
24	0.5	-1	935	640	-5.22	1.56	2016-12-13T143009	
25	1	-1	1020	640	-5.21	2.89	2016-12-13T143659	
26	1.5	-1	1110	640	-4.82	3.77	2016-12-13T144314	
27	1.5	-0.5	1110	729	-4.10	4.00	2016-12-13T144932	
28	1.5	0	1110	812	-2.75	4.06	2016-12-13T153244	
29	1.5	0.5	1110	890	-1.34	3.91	2016-12-13T153856	
30	1.5	1	1110	980	0.56	4.06	2016-12-13T154529	
31	1.5	1.5	1110	1070	2.46	4.21	2016-12-13T155143	
32	1	1.5	1020	1070	2.50	3.24	2016-12-13T155923	
33	0.5	1.5	935	1070	2.71	1.85	2016-12-13T160724	
34	0	1.5	850	1070	2.89	0.13	2016-12-13T161550	
35	-0.5	1.5	767	1070	3.01	-1.49	2016-12-13T162248	
36	-1	1.5	680	1070	3.07	-3.03	2016-12-13T163045	
37	-1.5	1.5	590	1070	3.11	-4.50	2016-12-13T163809	
38	-1.5	1	590	980	1.46	-4.54	2016-12-13T164453	
39	-1.5	0.5	590	890	-0.57	-4.55	2016-12-13T165257	
40	-1.5	0	590	812	-2.33	-4.58	2016-12-13T165955	

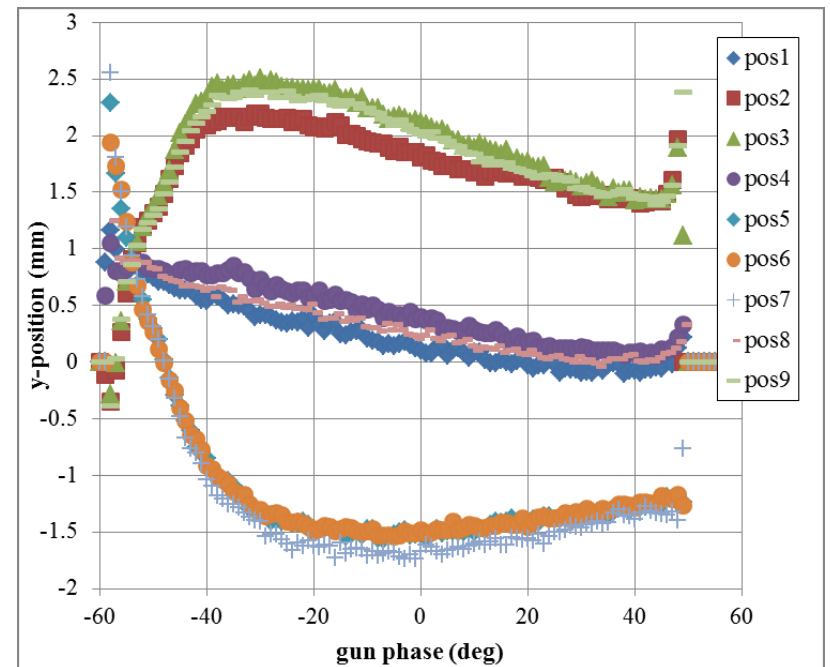
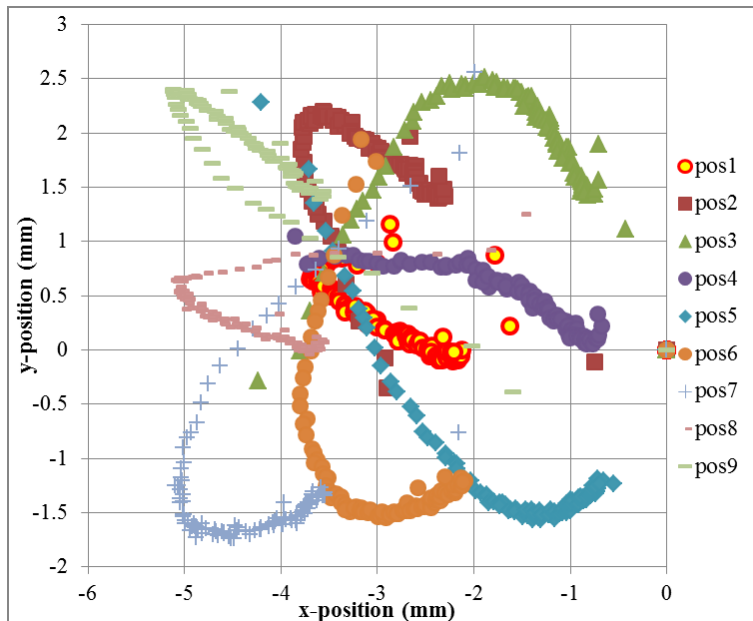
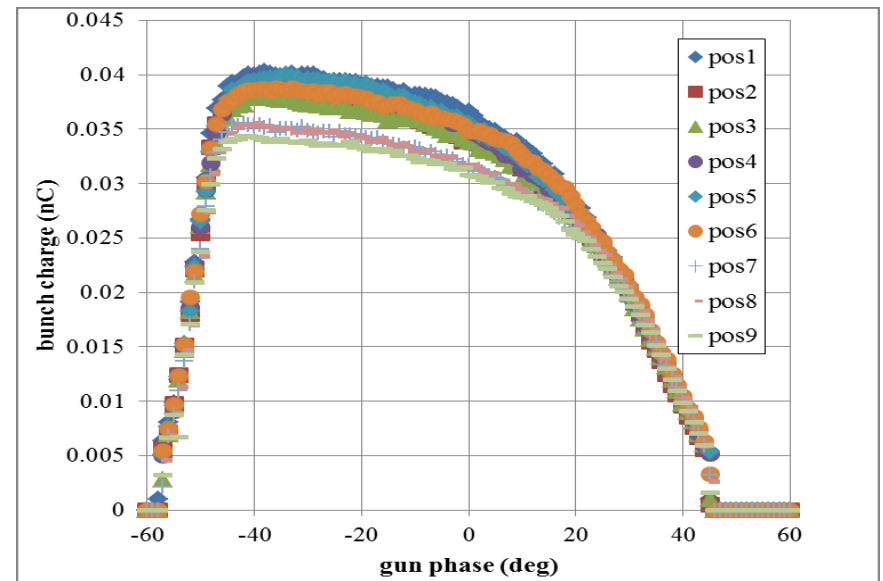
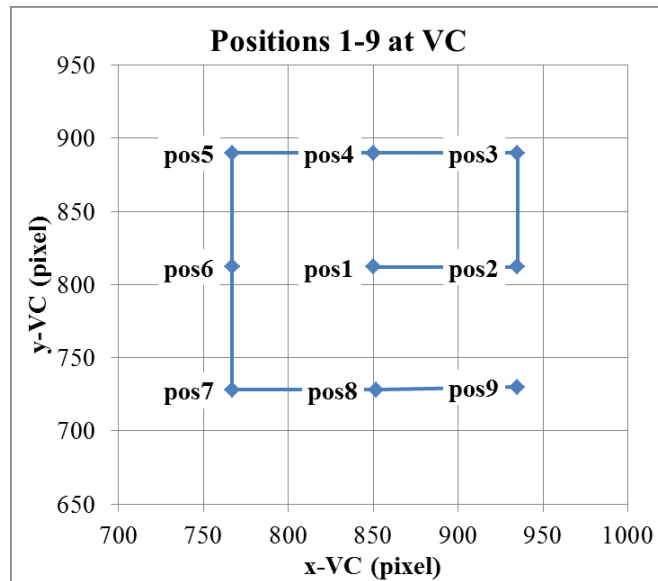
	xVC goal	yVC goal	xVC meas	yVC meas	xBPM1 (MMMG)	yBPM1 (MMMG)	Phase scan file
41	-1.5	-0.5	590	728	-3.80	-4.58	2016-12-13T1714
42	-1.5	-1	590	640	-4.65	-4.36	2016-12-14T133650
43	-1.5	-1.5	590	550	-5.13	-4.11	2016-12-14T134505
44	-1	-1.5	680	550	-5.38	-3.04	2016-12-14T135243
45	-0.5	-1.5	767	550	-5.52	-1.52	2016-12-14T135948
46	0	-1.5	850	550	-5.87	-0.16	2016-12-14T140618
47	0.5	-1.5	935	550	-5.97	1.40	2016-12-14T141312
48	1	-1.5	1020	550	-6.12	2.64	2016-12-14T141956
49	1.5	-1.5	1110	550		4	

no bunch at BPM 1



RF-gun coupler kick measurements at EXFEL

13-14.12.2016



Remarks from the XFEL recommissioning (MK, week1/2017)

- Sequencer and scanner are very useful!

File Operator XFEL

ID= 4774 Timestamp: 2017-01-07T07:22:12+01 Age: 5.2 hours

Comment: Profile Measurement Authors: Beam Profile Server

File type:

SYSTEM-SET: ALL (2782) Laser (1) RF (55) Feedbacks (1) Magnets (2692) MagnetMovers (4) Diag (29)

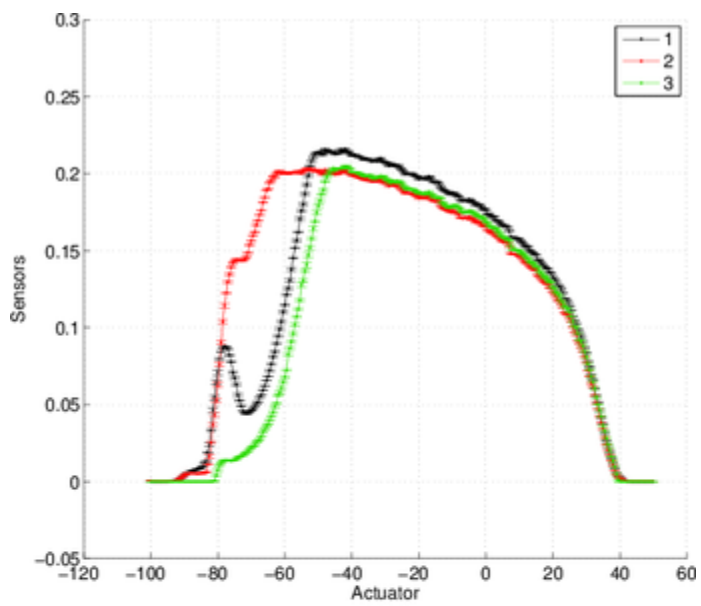
1 system-set selected with 2692 data. Show-level = 0 only writables 2692 data listed in the table below.

facility	device	location	dev. property	description	file value	device value	diff.	RBV	diff to RBV
XFEL.MAGNETS	MAGNET.ML.SOLA.23.I1		CURRENT.SP	CURRENT.SP	-32.00003052	-32.00003052	0.00000000	0.00762941	32.00765993
XFEL.MAGNETS	MAGNET.ML.SOLA.23.I1		CURRENT.SP	CURRENT.SP	333.00000000	333.00000000	0.00000000	0.00457765	-332.99542235
XFEL.MAGNETS	MAGNET.ML.CCK.23.I1		CURRENT.SP	CURRENT.SP	1.03993511	1.03993511	0.00000000	1.03966713	-0.00026798
XFEL.MAGNETS	MAGNET.ML.CCK.23.I1		CURRENT.SP	CURRENT.SP	-1.61829603	-1.61829603	0.00000000	-1.61861897	-0.00032294
XFEL.MAGNETS	MAGNET.ML.CCK.24.I1		CURRENT.SP	CURRENT.SP	0.00000000	0.00000000	0.00000000	0.00011444	0.00011444
XFEL.MAGNETS	MAGNET.ML.CCK.24.I1		CURRENT.SP	CURRENT.SP	-2.00000000	-2.00000000	0.00000000	-2.00033188	-0.00033188
XFEL.MAGNETS	MAGNET.ML.CCK.24.I1		CURRENT.SP	CURRENT.SP	0.10014772	0.10014772	0.00000000	0.09986639	-0.00028133
XFEL.MAGNETS	MAGNET.ML.CCK.25.I1		CURRENT.SP	CURRENT.SP	-3.00000000	-3.00000000	0.00000000	-3.00044298	-0.00044298
XFEL.MAGNETS	MAGNET.ML.CCK.25.I1		CURRENT.SP	CURRENT.SP	3.00000000	3.00000000	0.00000000	2.99994707	-0.00005293
XFEL.MAGNETS	MAGNET.ML.Q.37.I1		CURRENT.SP	CURRENT.SP	-2.46643543	-2.46643543	0.00000000	-2.46643543	0.00000000
XFEL.MAGNETS	MAGNET.ML.CK.37.I1		CURRENT.SP	CURRENT.SP	-0.33622807	-0.33622807	0.00000000	-0.33622807	0.00000000
XFEL.MAGNETS	MAGNET.ML.CY.37.I1		CURRENT.SP	CURRENT.SP	0.60104483	0.60104483	0.00000000	0.60035819	-0.00068665
XFEL.MAGNETS	MAGNET.ML.Q.38.I1		CURRENT.SP	CURRENT.SP	2.46941090	2.46941090	0.00000000	2.46963978	0.00022888
XFEL.MAGNETS	MAGNET.ML.CY.39.I1		CURRENT.SP	CURRENT.SP	-1.34340572	-1.34340572	0.00000000	-1.34239447	0.00101125
XFEL.MAGNETS	MAGNET.ML.CK.39.I1		CURRENT.SP	CURRENT.SP	1.00341988	1.00341988	0.00000000	1.00387764	0.00045776
XFEL.MAGNETS	MAGNET.ML.Q.46.I1		CURRENT.SP	CURRENT.SP	-2.21936750	-2.21936750	0.00000000	-2.21947145	-0.00010395
XFEL.MAGNETS	MAGNET.ML.Q.47.I1		CURRENT.SP	CURRENT.SP	1.89898384	1.89898384	0.00000000	1.89903617	0.00005233
XFEL.MAGNETS	MAGNET.ML.BL.48.I1		CURRENT.SP	CURRENT.SP	80.66316223	80.66316223	0.00000000	-0.00038147	-80.66354370
XFEL.MAGNETS	MAGNET.ML.BL.48.I1		CURRENT.SP	CURRENT.SP	80.66316223	80.66316223	0.00000000	-0.00038147	-80.66354370
XFEL.MAGNETS	MAGNET.ML.BL.50.I1		CURRENT.SP	CURRENT.SP	79.78199768	79.78199768	0.00000000	-0.00038147	-79.78237915
XFEL.MAGNETS	MAGNET.ML.BL.50.I1		CURRENT.SP	CURRENT.SP	82.10700226	82.10700226	0.00000000	0.00076294	-82.10623932
XFEL.MAGNETS	MAGNET.ML.Q.50.I1		CURRENT.SP	CURRENT.SP	1.43671024	1.43671024	0.00000000	1.43680847	0.00009823
XFEL.MAGNETS	MAGNET.ML.CY.51.I1		CURRENT.SP	CURRENT.SP	0.21200000	0.21200000	0.00000000	0.21191955	-0.00008045
XFEL.MAGNETS	MAGNET.ML.COX.51.I1		CURRENT.SP	CURRENT.SP	-0.82999998	-0.82999998	0.00000000	-0.83011866	-0.00011867
XFEL.MAGNETS	MAGNET.ML.QI.52.I1		CURRENT.SP	CURRENT.SP	-3.66994143	-3.66994143	0.00000000	-3.66978383	0.00015759
XFEL.MAGNETS	MAGNET.ML.QI.53.I1		CURRENT.SP	CURRENT.SP	1.74877501	1.74877501	0.00000000	1.74888945	0.00011444
XFEL.MAGNETS	MAGNET.ML.DI.54.I1		CURRENT.SP	CURRENT.SP	0.67722043	0.67722043	0.00000000	0.67781487	0.00061444

all listed values 2692 FILE values diff. = 126 2692 DEVICE values errors = 36

SP-RBV deviation: 0 out of 0 tolerance [bits] = 5

selected values: 0 FILE values selected, 0 DEVICE values selected



Next up

File Operator XFEL

SEQUENCE: Shut down Filename: seq_shutdown.xml

Sequencer Control

 STATUS: finished Mon 2016-07-25 06:36:12

User Parameters

Switch off magnets: Close valves:

enabled	description	status	remarks	restore	check	user actions
<input checked="" type="checkbox"/>	Block laser	ok	Injector laser blocked	1 data		
<input checked="" type="checkbox"/>	Verify gun FSM state	ok	Gun FSM is active		1 data	
<input checked="" type="checkbox"/>	Shut down gun RF	ok	Gun RF shut down	1 data	1 data	
<input checked="" type="checkbox"/>	Verify A1 FSM state	ok	A1 FSM is active		1 data	
<input checked="" type="checkbox"/>	Shut down A1 RF	ignored		1 data	1 data	
<input checked="" type="checkbox"/>	Verify AH1 FSM state	ok	AH1 FSM is active		1 data	
<input checked="" type="checkbox"/>	Shut down AH1 modulator	ok	AH1 RF shut down	1 data	1 data	
<input checked="" type="checkbox"/>	Verify TDS FSM state	ok	TDS FSM is active		1 data	
<input checked="" type="checkbox"/>	Shut down TDS RF	ignored		1 data	1 data	
<input checked="" type="checkbox"/>	Close injector valves	ok	Valves closed	7 data	7 data	
<input checked="" type="checkbox"/>	Remove write protection from inter...	ok	Interlocked magnets are now writab...	2 data	2 data	
<input checked="" type="checkbox"/>	Magnet currents to zero	ok	Currents set to zero	ID=1 (43 Item...	ID=1 (43 Item...	
<input checked="" type="checkbox"/>	Switch off magnet power supplies	ok	Sent switch-off commands	ID=1 (42 Item...		
<input checked="" type="checkbox"/>	Verify power supply state	ok	All power supplies are off		ID=1 (42 Item...	
<input checked="" type="checkbox"/>	Check magnets grounded (XTIN1)	ok	Magnets have been grounded		1 data	

solenoid changed from 347A to 400A

File: /home/xfeloper/data/scantool/2017-01-03T174522.mat

Duration: 2017-01-03 17:45:35 - 17:53:03

Samples/point: 10

Scan from: Scan Tool version 2016-05-25

Actuator: XFEL.RF/LLRF.CONTROLLER/CTRL.GUN.I1/SP.PHASE

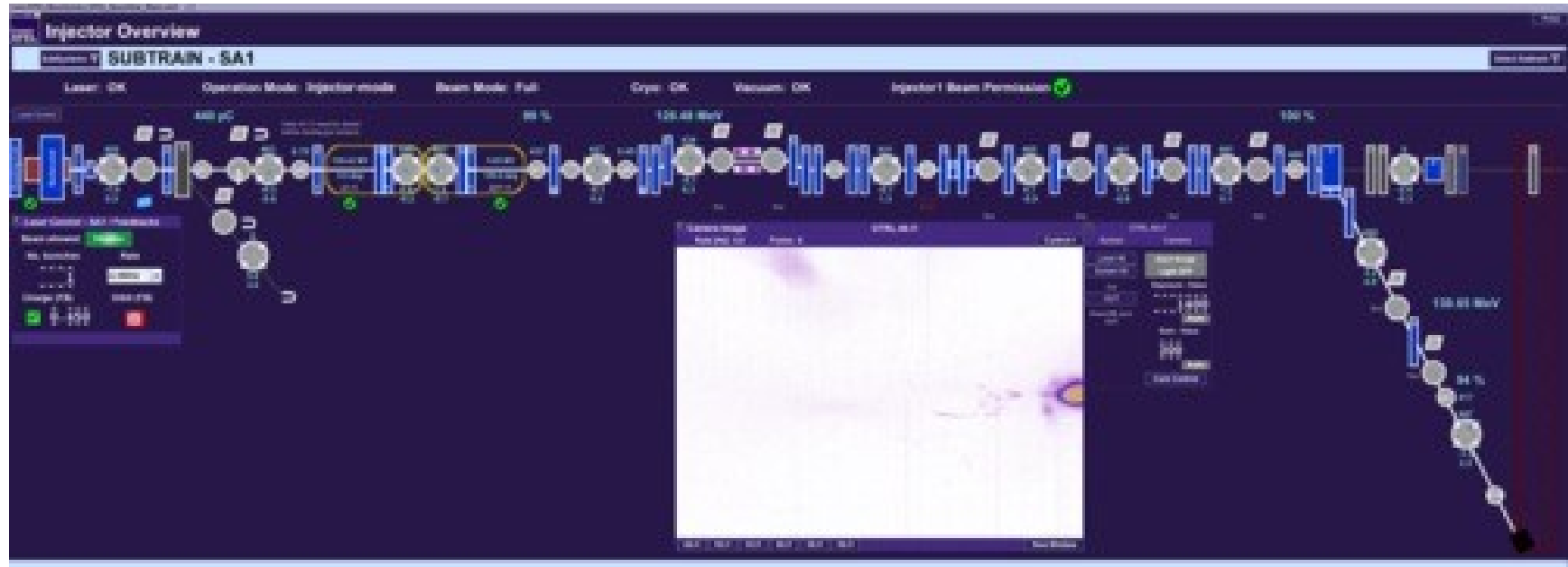
Sensor 1: XFEL.DIAG/TOROID/TORA.25.I1/CHARGE.SA1

Sensor 2: XFEL.DIAG/BPM/BPMG.24.I1/CHARGE.SA1

Sensor 3: XFEL.DIAG/CHARGE.ML/BPMG.25.I1/CHARGE.SA1

Remarks from the XFEL recommissioning (MK, week1/2017)

- LH energy server \rightarrow +cross checked with vector sums of gun,A1, AH1



Remarks from the XFEL recommissioning (MK, week1/2017)

- TV system is strongly integrated into DOOCS (ML → fast filtering + mean and rms values)
- Off-axis screens + kickers → very helpful for the fast matching
- Experts are highly motivated and very cooperative
- ...