

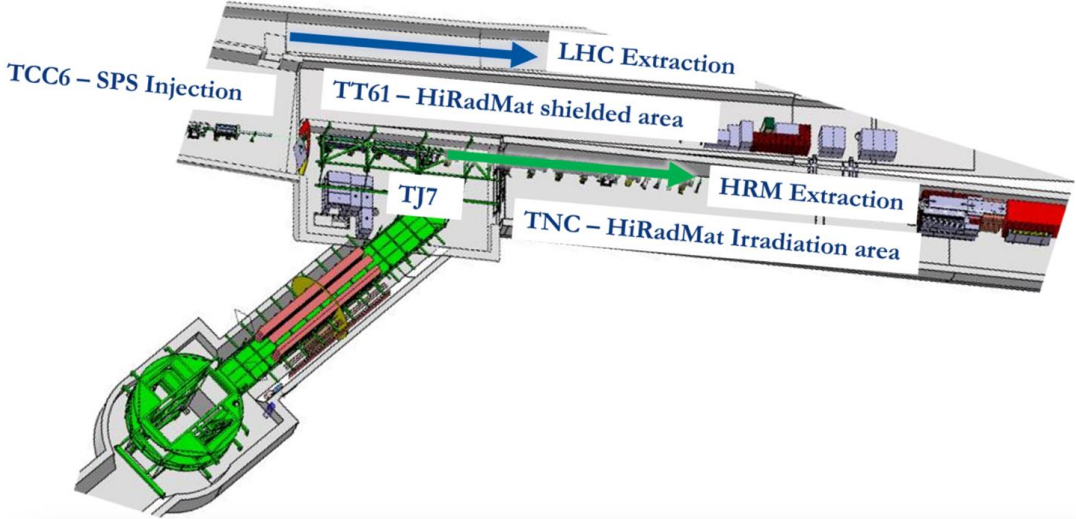
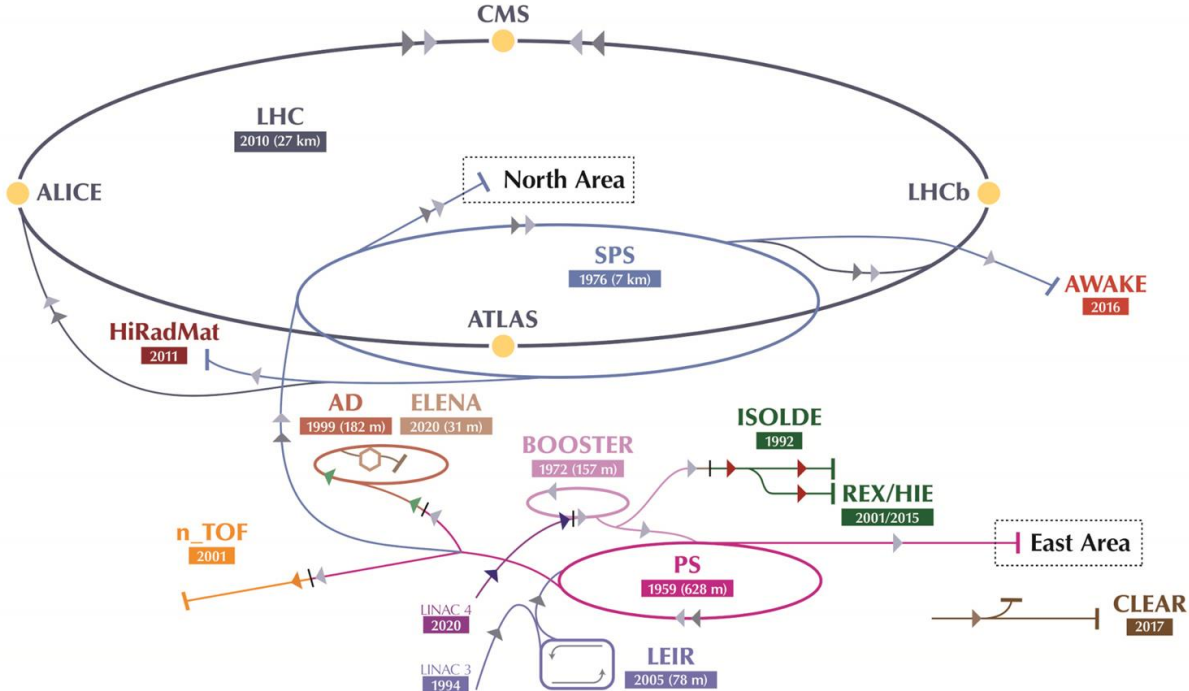
Processing and Analysis of HiRadMat Beam Line Data

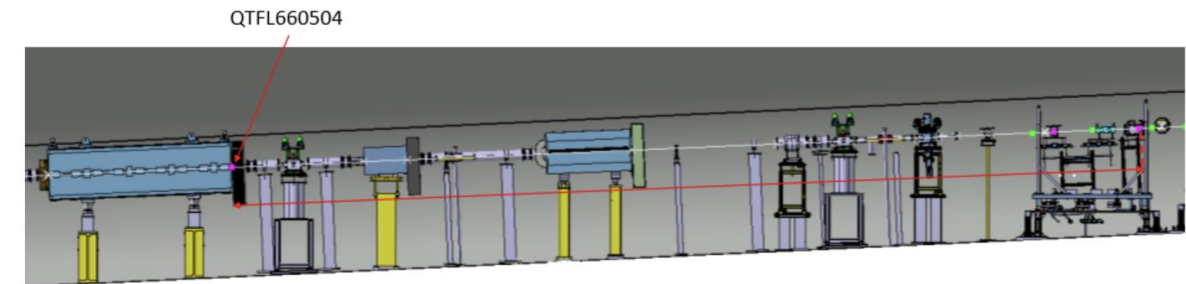
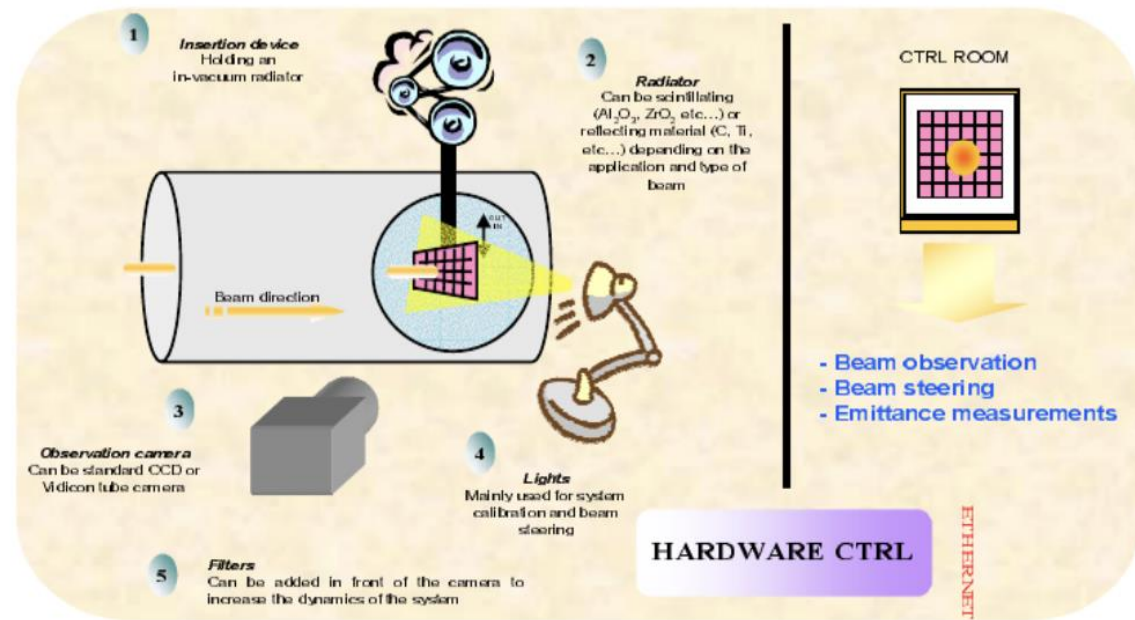
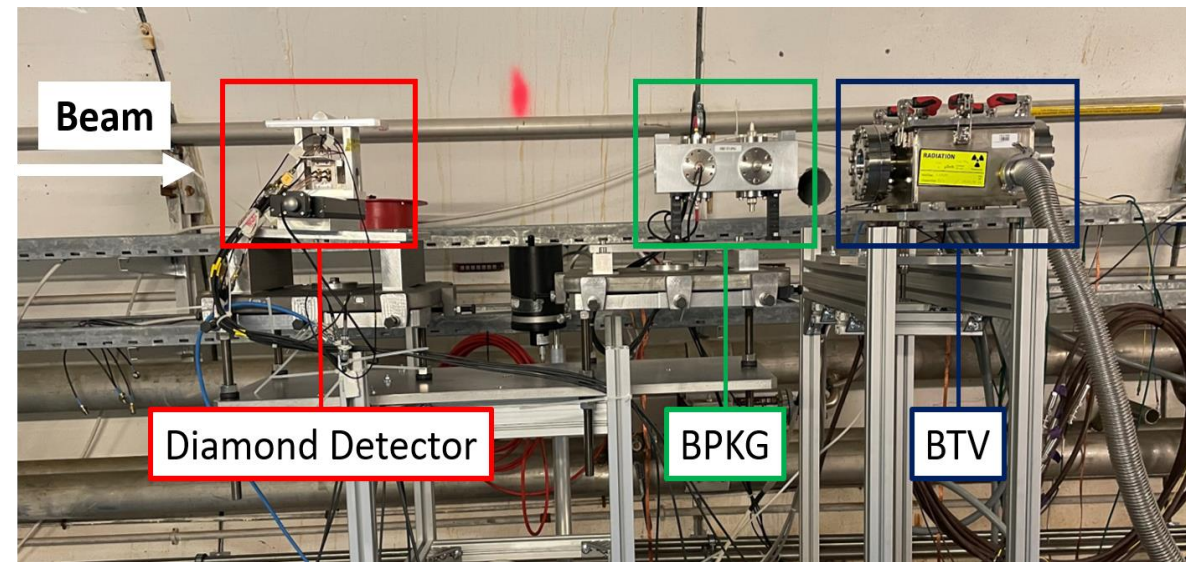
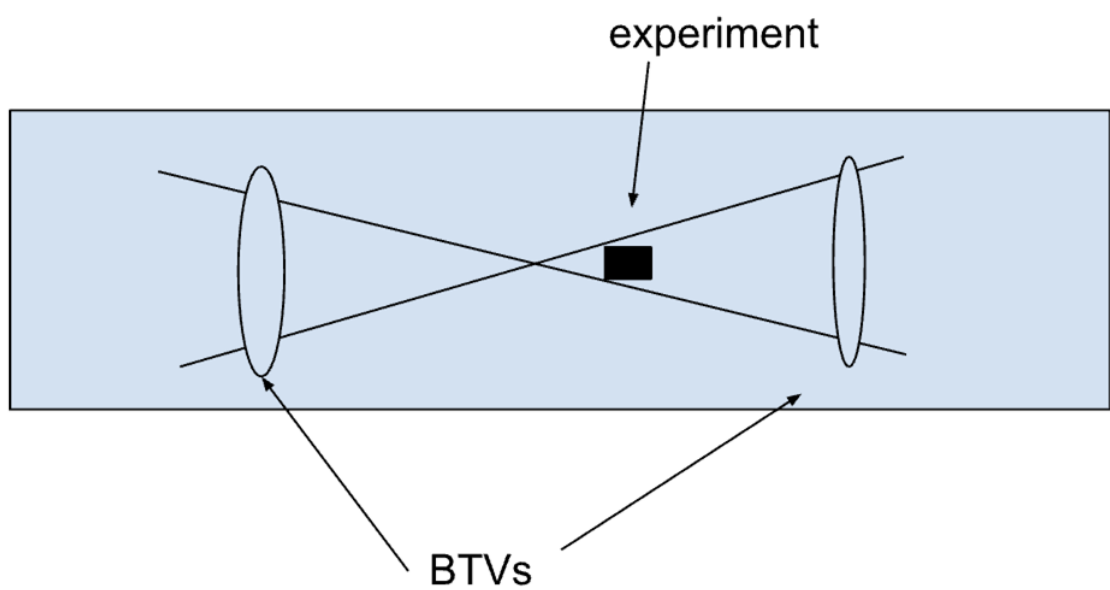
Julia White

7/25/2024

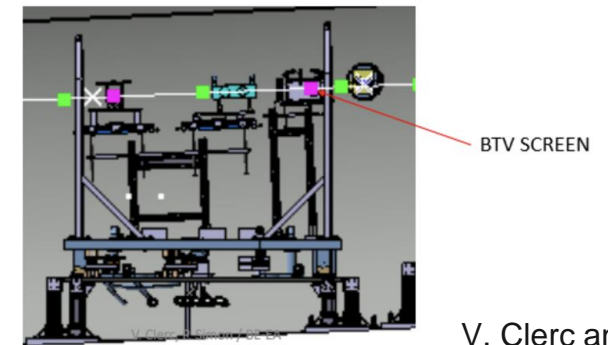
HiRadMat

- ❖ High Intensity Radiation to Materials
- ❖ Test the effects of short beam pulses on materials and accelerator components





Exit point of QTLF660504 to the HRMT-BTV screen on table A
=> 14762mm



23/11/2021 Version 4

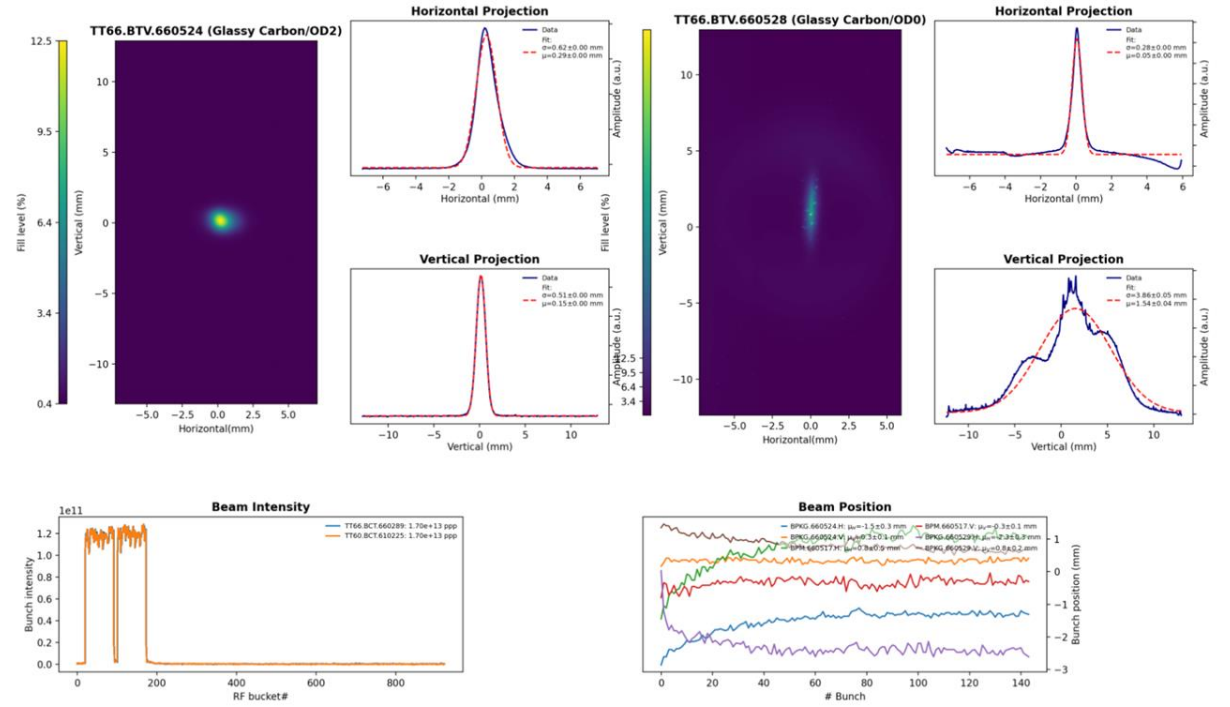
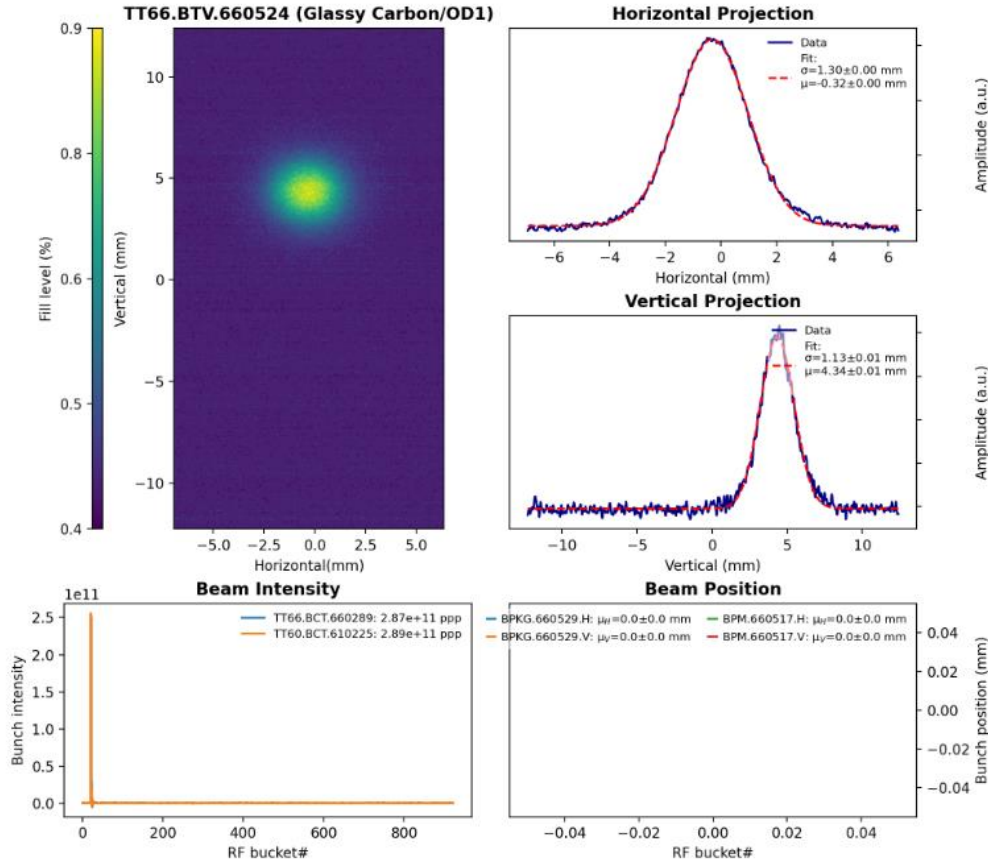
V. Clerc and P. Simon



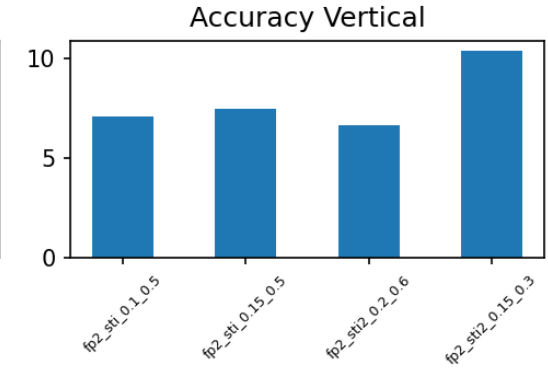
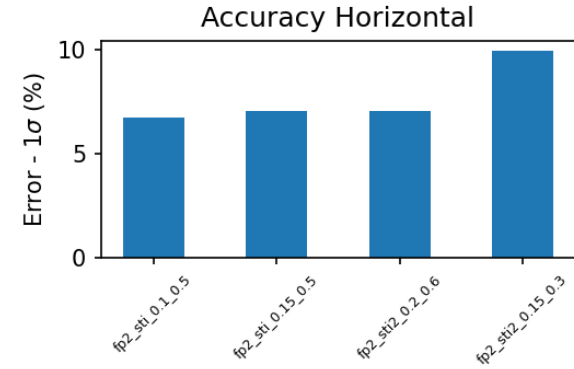
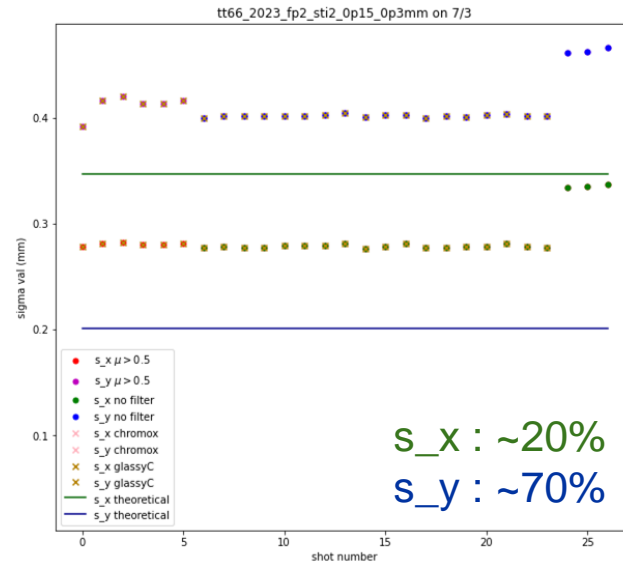
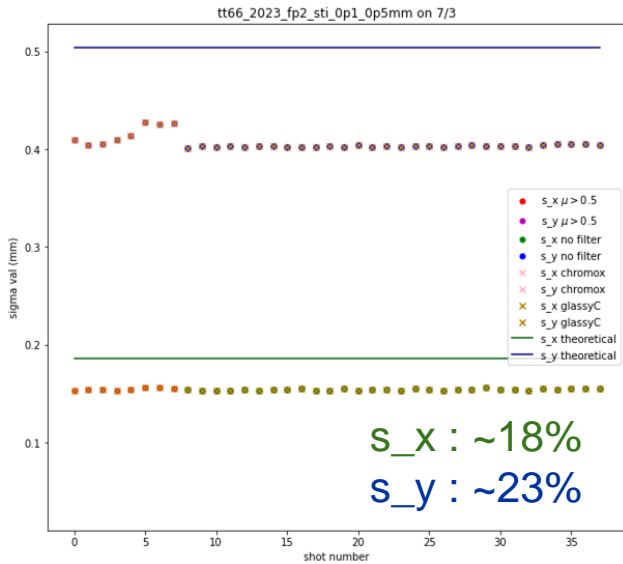
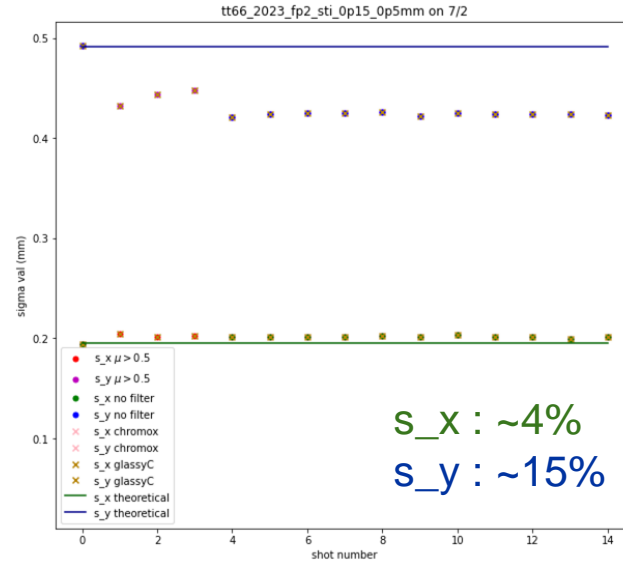
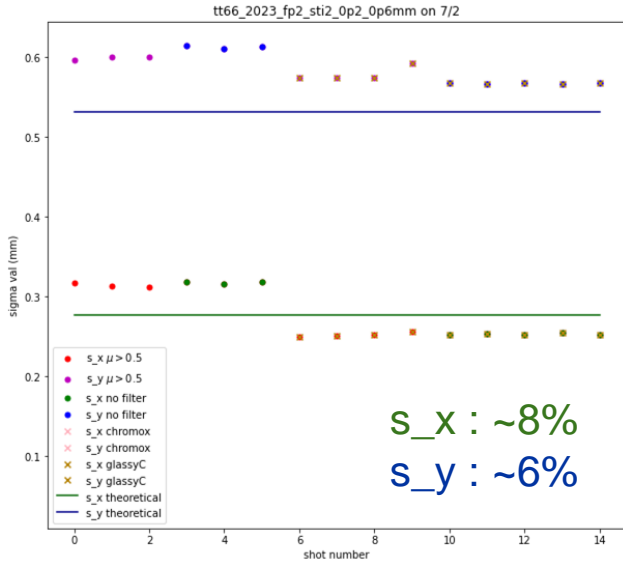
Real-Time BTV Script

Extraction: 2.87e+11 ppp, 1, (0.00±0.00) ns
 Supercycle: 24-05-03 14:35:18.135000 tt66_2022_fp3_1p0mm_qid6604_off
 Acquisition: 24-05-03 14:35:24.766387 $\sigma=(1.30, 1.13)$ mm / $\mu=(-0.32, 4.34)$ mm

JULIA: Extraction: 1.70e+13 ppp, 0, (0.00±0.00) ns
 Supercycle: 24-07-01 21:38:55.335000 tt66_2024_fp2_sti_smaug_0p4_0p4mm
 Acquisition: 24-07-01 21:39:17.555235 BTV 524: $\sigma=(0.62, 0.51)$ mm / $\mu=(0.29, 0.15)$ mm BTV 528: $\sigma=(0.28, 3.86)$ mm / $\mu=(0.05, 1.54)$ mm



Results From July 2 and 3

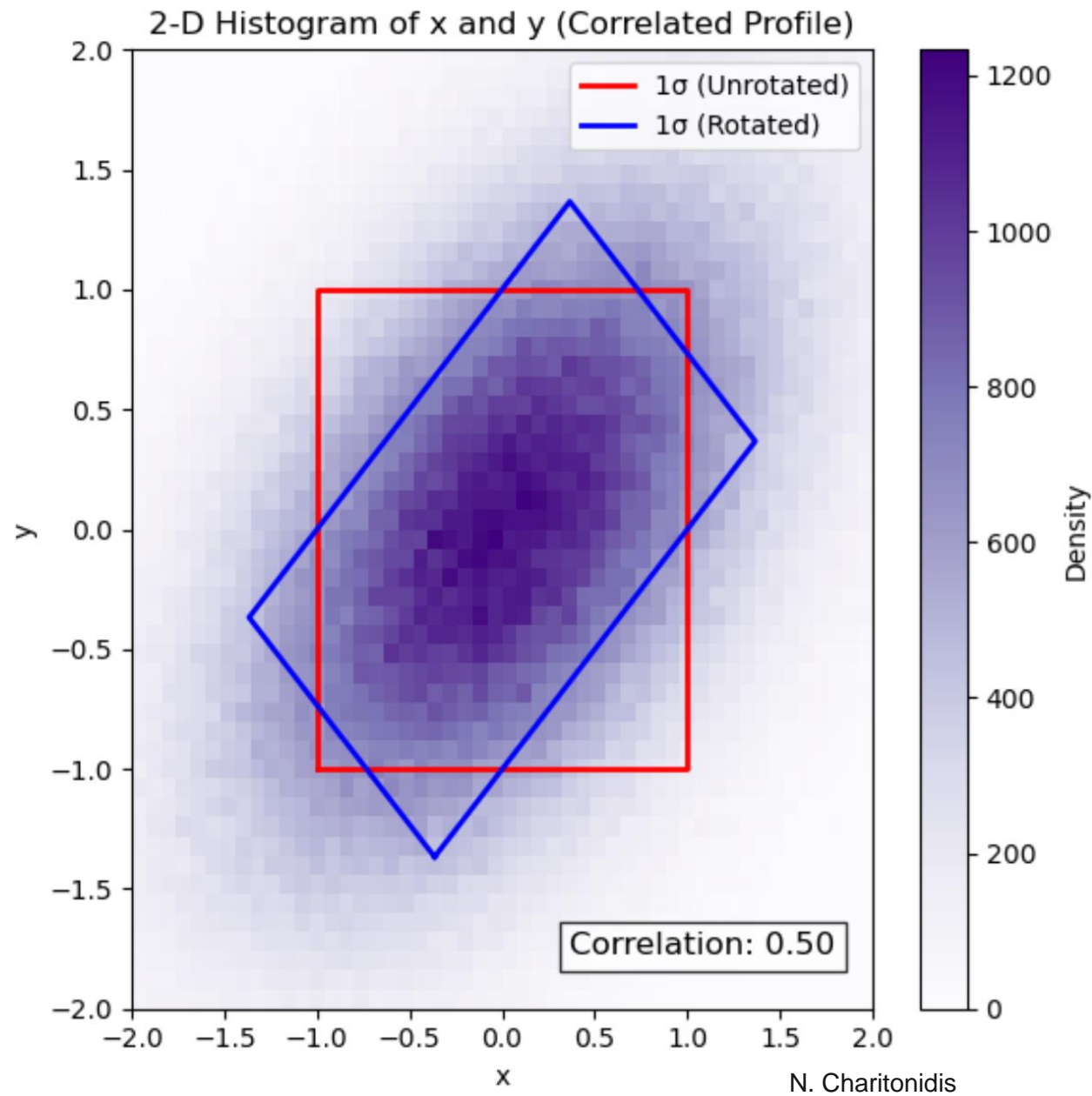


F. Velotti

	at target		theoretical at US BTV		measured at US BTV		sim
	optic x [mm]	optic y [mm]	sigma_x	sigma_y	BTV660524.fit.sx	BTV660524.fit.sy	
tt66_2023_fp2_sti2_0p2_0p6mm	0.2	0.6	0.311	0.574	0.32	0.60	
tt66_2023_fp2_sti_0p15_0p5mm	0.15	0.5	0.196	0.491	0.21	0.43	
tt66_2023_fp2_sti_0p1_0p5mm	0.1	0.5	0.18600	0.50400	0.15	0.41	
tt66_2023_fp2_sti2_0p15_0p3mm	0.15	0.3	0.34700	0.20100	0.28	0.39	

G. Banks



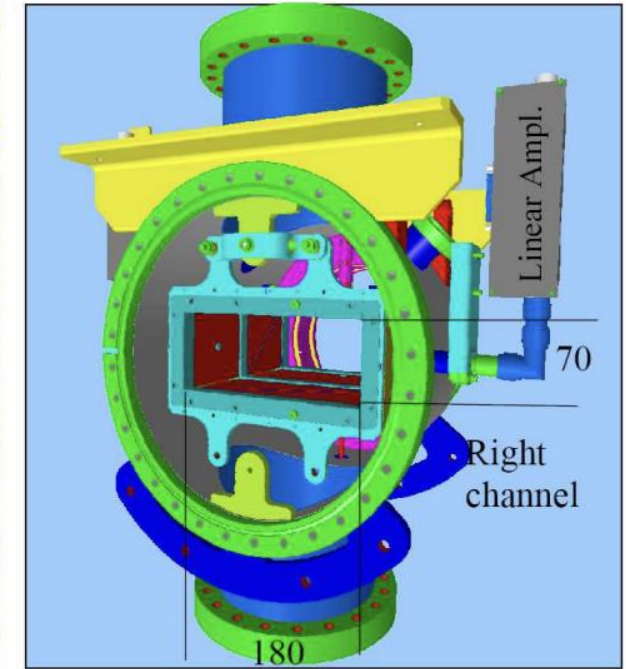
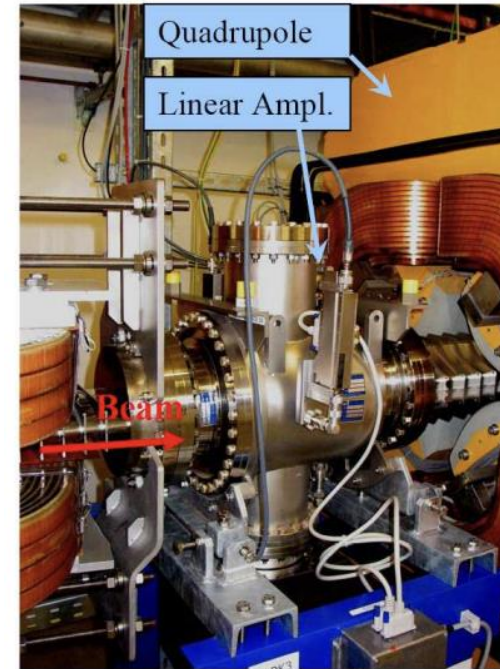


N. Charitonidis

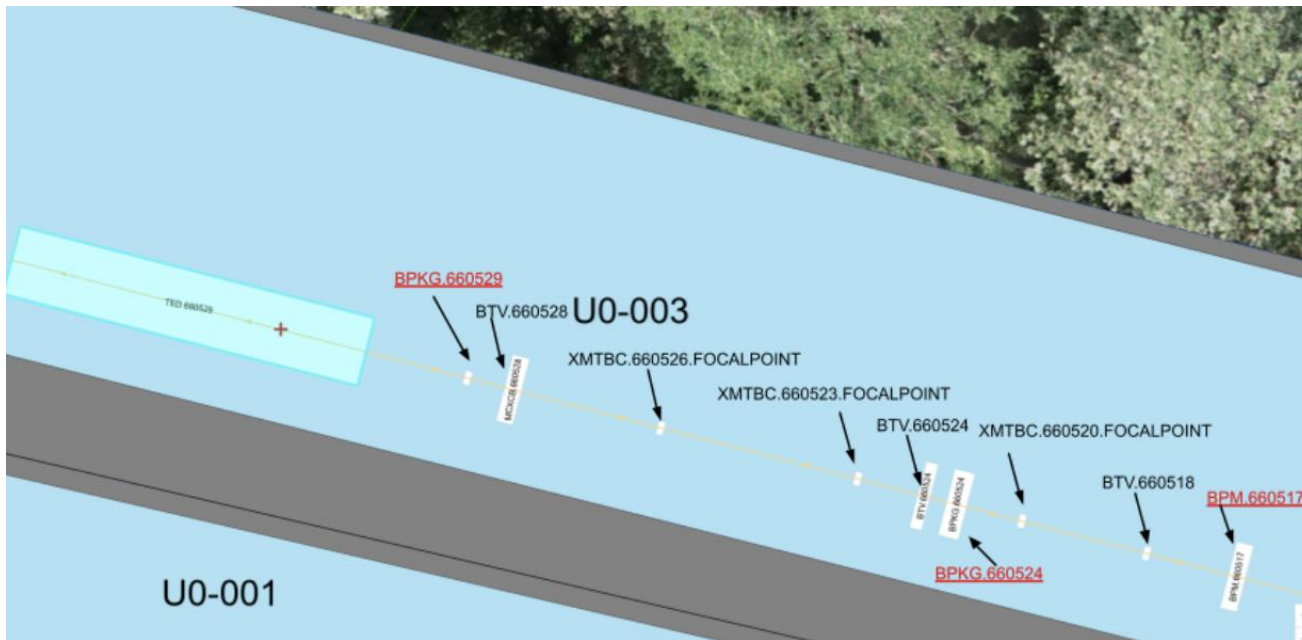


BPM / BPKG

- ❖ Beam position monitors give the center of mass of the beam and the 'longitudinal bunch shape'
- ❖ No magnets between the BPMs and BPKGs being analyzed

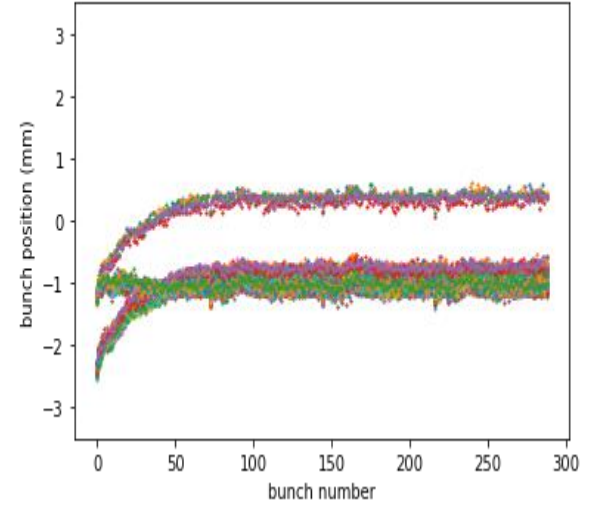
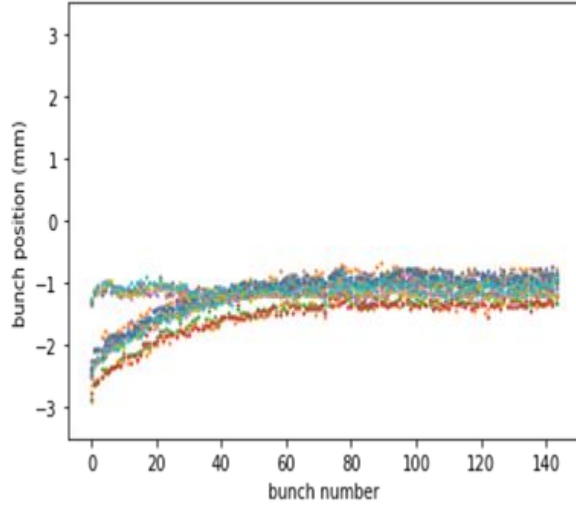
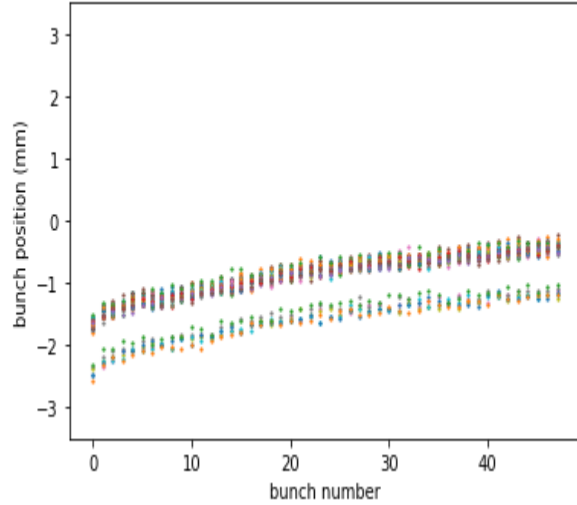
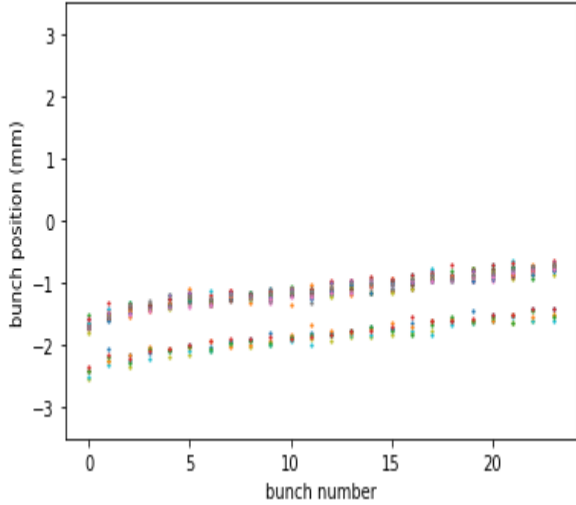


P. Forck, P. Kowina, and D. Liakin

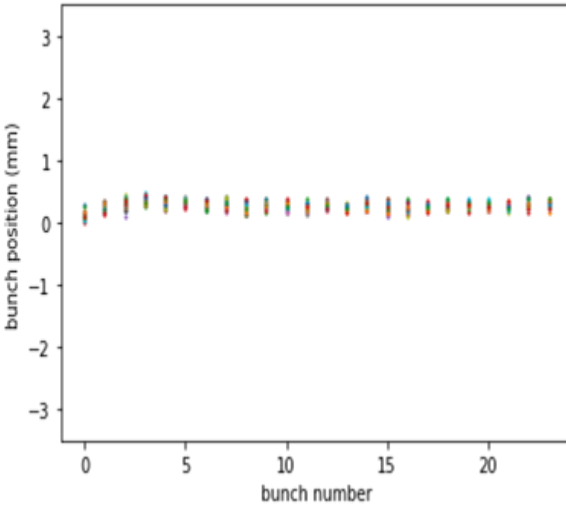


BPKG 660524 Results

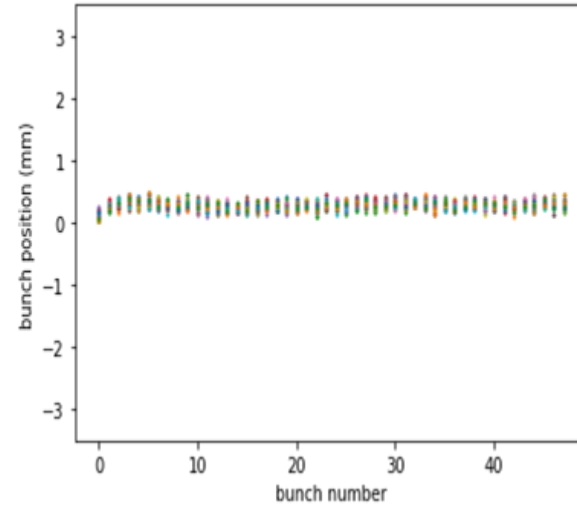
Beam Position of TT66.BPKG.660524 with 24 bunches : horizontal Beam Position of TT66.BPKG.660524 with 48 bunches : horizontal Beam Position of TT66.BPKG.660524 with 144 bunches : horizontal Beam Position of TT66.BPKG.660524 with 288 bunches : horizontal



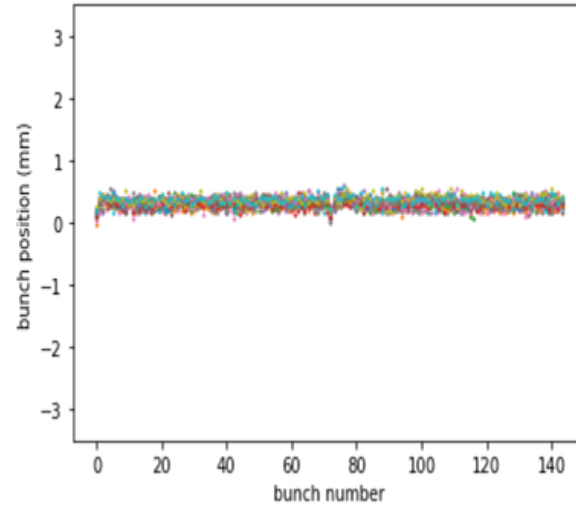
Beam Position of TT66.BPKG.660524 with 24 bunches : vertical



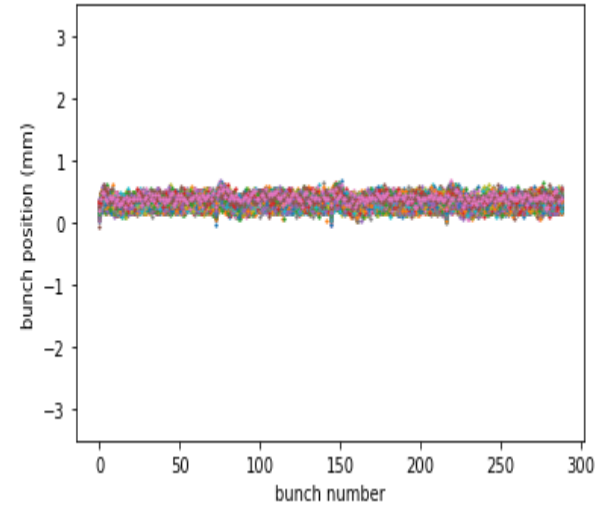
Beam Position of TT66.BPKG.660524 with 48 bunches : vertical



Beam Position of TT66.BPKG.660524 with 144 bunches : vertical



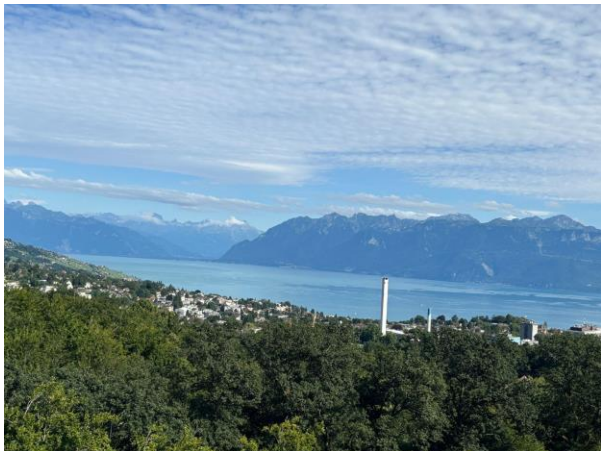
Beam Position of TT66.BPKG.660524 with 288 bunches : vertical



Next Steps

- ❖ **Calculate the true area of the beam so its density can be used by the STI group in August.**
 - Connect to Beam Size Monitor tool and obtain a direct size estimation of the beam in each direction.
- ❖ **Learn more about beam position monitors and meet with experts on the extraction beam line to figure out why we are seeing the drift in the BPMs.**
- ❖ **Analyze vistar script performance and optics results from STI pre commissioning (7/25) to prepare for their experiment in August.**







home.cern