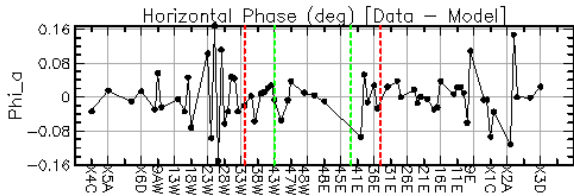


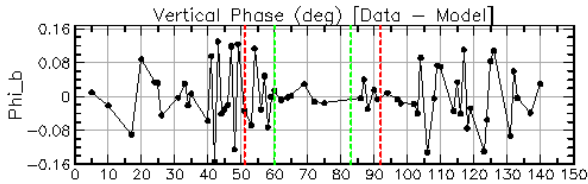


# First Look at BPM Residuals Analysis 2021-2023 Phase File Optimizations Using Sextupole Studies

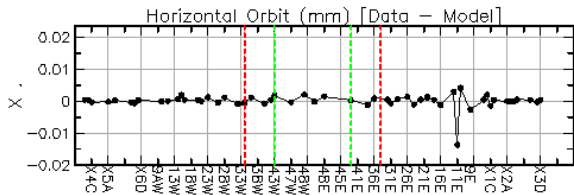
Data: SEXTUPOLE 32 OCU  
Analysis of 21 February 2024



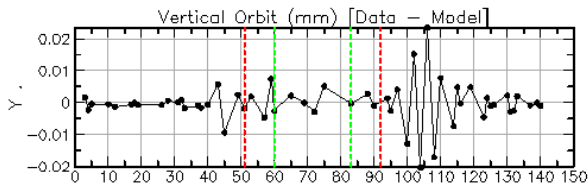
2023-OCT-06 21:13:32  
CHESS-U\_6000MEV\_2D190904\_NEW  
Dat: phase\_31769  
Ref: NONE  
CESR Set: 168979  
Route: CHESS\_6000\_DEVEL  
RMS = 0.05531  
Average = 0.00000



RMS = 0.06419  
Average = 0.00000



CHESS-U\_6000MEV\_2D190904\_NEW  
Dat: phase\_31769  
Ref: NONE  
CESR Set: 0  
Species: Not\_Set1  
RMS = 0.00216  
Average = 0.00005



RMS = 0.00629  
Average = -0.00019

Written: phase\_31769.out

```
_Cesrv>
_Cesrv> ! Blank line after this command to append to the file
_Cesrv> &sho orbit
_File name to save show output in:
```

ix	Data		Ref		Model		Data - Model		Used	
	X (mm)	Y (mm)	X (mm)	Y (mm)	X (mm)	Y (mm)	X (mm)	Y (mm)		
3	-0.4323	0.6238	0.0000	0.0000	-0.4326	0.6222	0.0003	0.0016	T	X4A
4	2.2009	-0.3106	0.0000	0.0000	2.2006	-0.3083	0.0003	-0.0023	T	X4B
5	2.1206	-0.3487	0.0000	0.0000	2.1210	-0.3482	-0.0003	-0.0005	T	X4C
6	0.0000	0.0000	0.0000	0.0000	2.2269	-0.6885	-2.2269	0.6885	F	X4D
10	-4.6500	-2.2175	0.0000	0.0000	-4.6498	-2.2170	-0.0002	-0.0005	T	X5A
11	0.3071	-2.0386	0.0000	0.0000	0.2371	-1.6525	0.0700	-0.3861	F	X5B
12	1.3094	-0.1174	0.0000	0.0000	1.3092	-0.1161	0.0002	-0.0013	T	X5C
13	0.0000	0.0000	0.0000	0.0000	5.4207	0.4170	-5.4207	-0.4170	F	X5D
17	-1.4553	-0.5189	0.0000	0.0000	-1.4551	-0.5183	-0.0002	-0.0005	T	X6A
18	0.7483	-0.7933	0.0000	0.0000	0.7491	-0.7933	-0.0008	-0.0000	T	X6B
19	1.6624	-0.4732	0.0000	0.0000	1.6622	-0.4726	0.0002	-0.0007	T	X6C
20	1.2154	-0.3039	0.0000	0.0000	1.1170	-1.5997	0.0984	1.2959	F	X6D
24	1.5488	-2.0071	0.0000	0.0000	0.8235	-1.0003	0.7253	-1.0069	F	9W
25	0.9068	0.3570	0.0000	0.0000	0.5909	0.2634	0.3159	0.0936	F	9AW
26	0.4985	0.9657	0.0000	0.0000	0.4984	0.9664	0.0000	-0.0007	T	10W
27	0.0000	0.0000	0.0000	0.0000	1.9613	0.7035	-1.9613	-0.7035	F	10AW
28	-0.0017	0.8709	0.0000	0.0000	-0.0018	0.8703	0.0001	0.0006	T	11W
29	0.0000	0.0000	0.0000	0.0000	-4.4546	0.2058	4.4546	-0.2058	F	12W
30	0.0000	0.0000	0.0000	0.0000	-0.7727	-0.1435	0.7727	0.1435	F	13W
31	1.0824	-0.1606	0.0000	0.0000	1.0819	-0.1608	0.0005	0.0002	T	14W
32	0.4003	-0.4305	0.0000	0.0000	0.3984	-0.4313	0.0020	0.0007	T	15W

Jim Crittenden

CESR Accelerator Group Meeting

21 February 2024

295 variables 312 datums



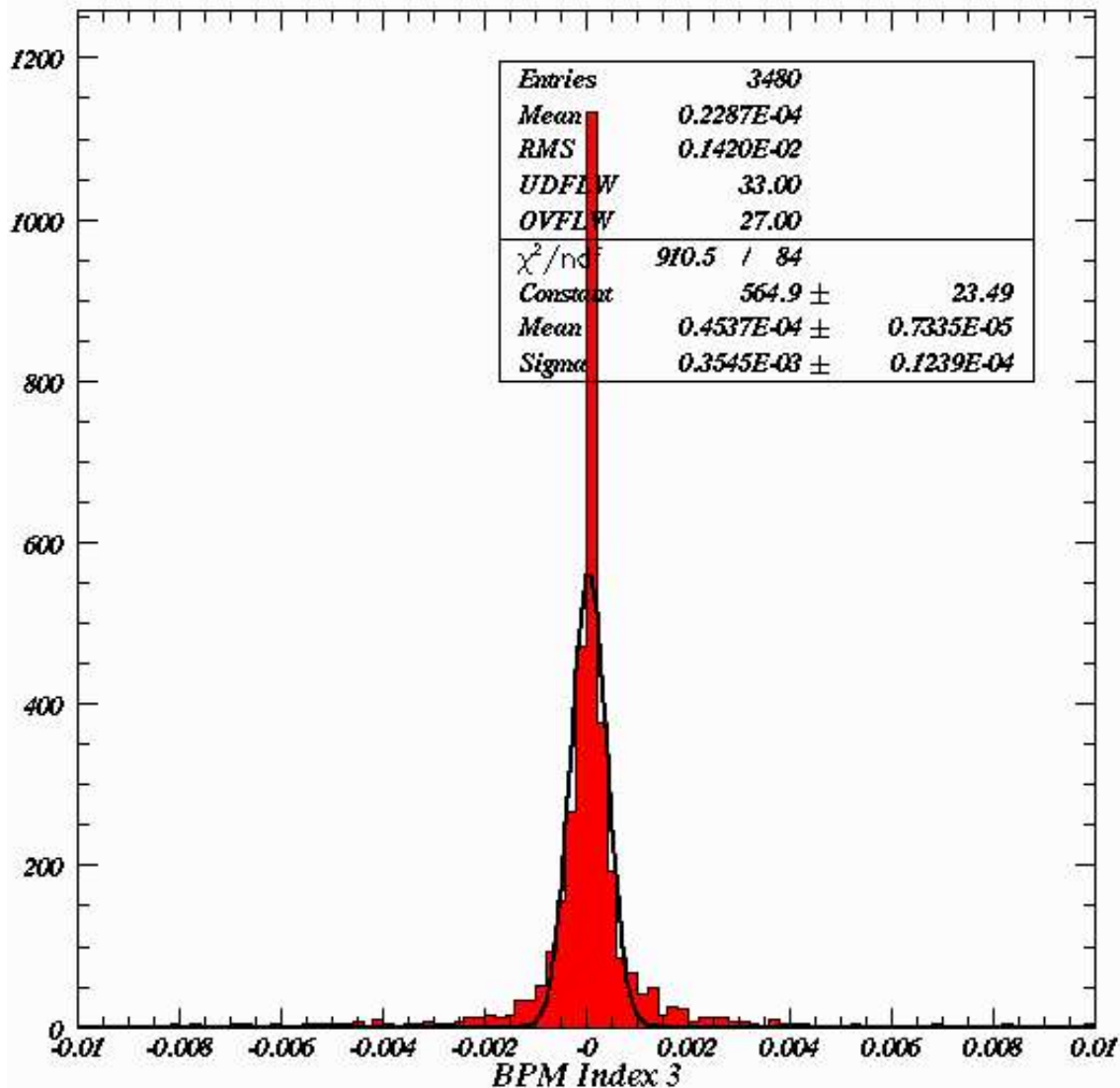
Macro ANA\_BPM reading file /home/critten/bss/analysis/rw\_bpm\_17feb2024.dat  
==> 379320 events have been read

```
*****
* NTUPLE ID= 12 ENTRIES= 379320 BPM Orbit and Model
*****
* Var numb * Name * Lower * Upper *
*****
* 1 * PHASENR * 0.264680E+05 * 0.317800E+05 *
* 2 * SEXTNR * 0.800000E+01 * 0.910000E+02 *
* 3 * SEXTCU * -.300010E+05 * -.100000E+01 *
* 4 * INDEX * 0.300000E+01 * 0.140000E+03 *
* 5 * XD * -.340934E+02 * 0.380706E+02 *
* 6 * YD * -.896820E+01 * 0.117242E+02 *
* 7 * XM * -.394341E+02 * 0.332865E+02 *
* 8 * YM * -.232358E+02 * 0.188329E+02 *
*****
```

Event	PHASENR	SEXTNR	SEXTCU	INDEX	XD	YD	XM	YM
1	26468.	8.	-30000.	3.	0.161	0.2891	0.1609	0.2881
2	26468.	8.	-30000.	4.	-0.353	0.2854	-0.3549	0.2867
3	26468.	8.	-30000.	5.	-0.2314	0.3823	-0.2303	0.3831
4	26468.	8.	-30000.	6.	-2.3348	-4.2099	-3.2211	0.1303
5	26468.	8.	-30000.	10.	-2.9992	-2.5613	-3.0002	-2.5607
6	26468.	8.	-30000.	11.	1.4204	-1.2825	2.3224	-2.2816
7	26468.	8.	-30000.	12.	3.1993	-1.1874	3.1992	-1.1831
8	26468.	8.	-30000.	13.	-1.2825	0.0694	-1.2822	0.0655
9	26468.	8.	-30000.	17.	-1.9376	-0.6886	-1.9379	-0.6757
10	26468.	8.	-30000.	18.	4.1403	1.753	4.1397	1.7375
11	26468.	8.	-30000.	19.	4.1562	-2.7827	4.1572	-2.7734
12	26468.	8.	-30000.	20.	-0.0809	-2.1298	-0.0808	-2.1335
13	26468.	8.	-30000.	24.	1.0709	-1.4872	-0.0496	-1.1547
14	26468.	8.	-30000.	25.	-0.4842	0.8255	-0.0184	0.4667
15	26468.	8.	-30000.	26.	-0.2782	0.9498	-0.5272	1.1133
16	26468.	8.	-30000.	27.	-2.28	1.3926	-1.3124	0.7326
17	26468.	8.	-30000.	28.	0.5947	0.9519	0.595	0.9513
18	26468.	8.	-30000.	29.	-0.2367	-0.1096	-0.7525	0.269
19	26468.	8.	-30000.	30.	-0.515	0.0089	-0.5148	0.0096



*Measured - Modeled Orbit X (mm)*





# Time Dependence of Residuals (25E)

offset.bpm.20231127: **74**, -0.09, 9.41, 0.00, 0.00, 2020-10-21 19:22:33 p:26150 p:26151  
 offset.bpm.20240119: **74**, -0.34, 2.89, 0.00, 0.00, 2023-11-27 13:14:20 p:31877 p:31878

