

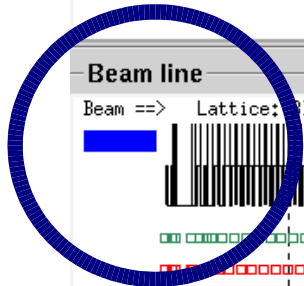
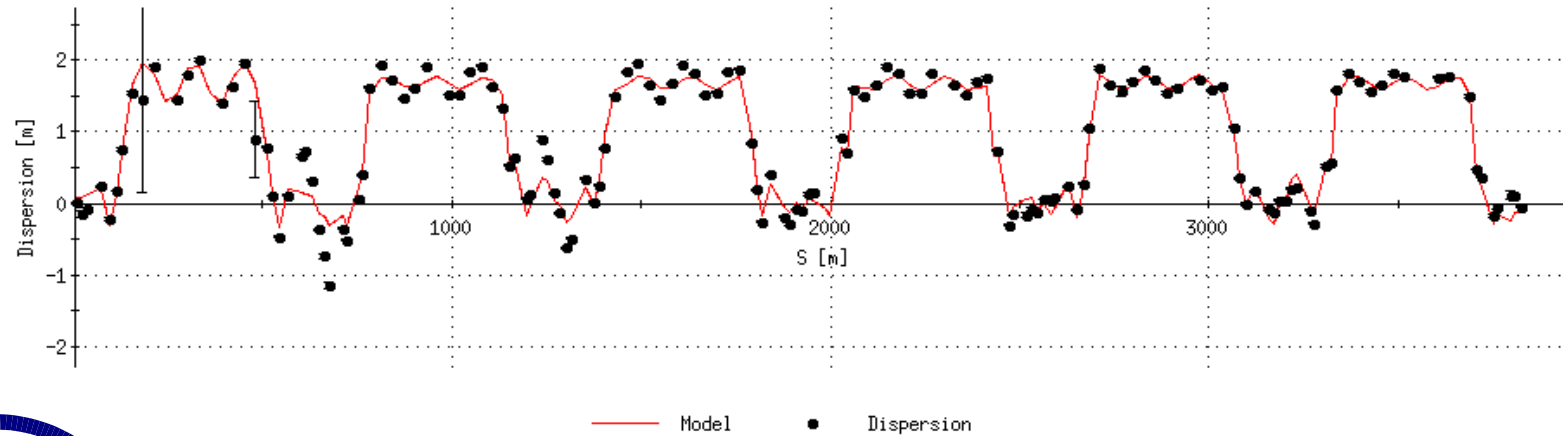
Nonlinear chromaticity correction based on beam response matrix

(Session 2: 2.0hrs, April 10, 2007)

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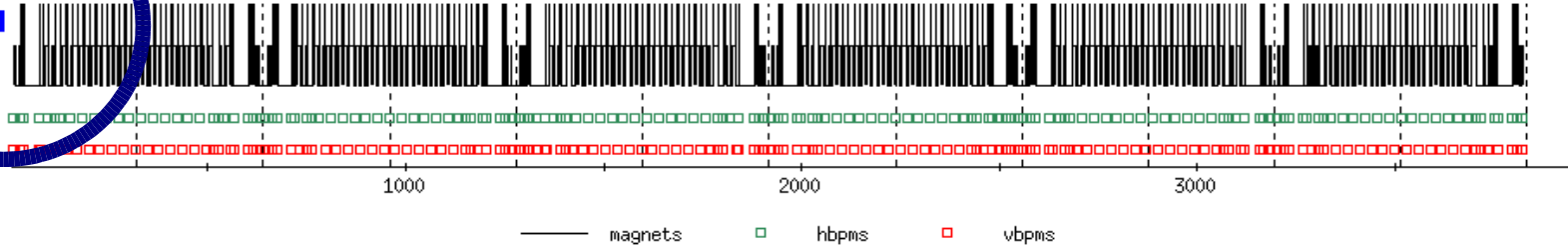
1. Dispersion measurement (Steve)
2. Yellow nonlinear chrom correction (Nikolay's setting)
3. Yellow nonlinear chrom correction (Yun's setting)
4. Plan

Dispersion measurement (1.0mm wiggling)

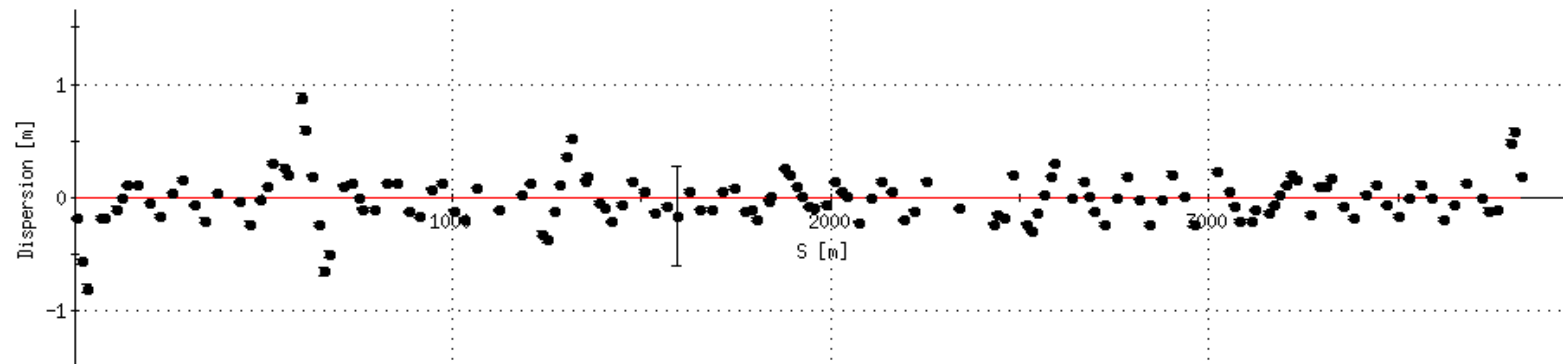


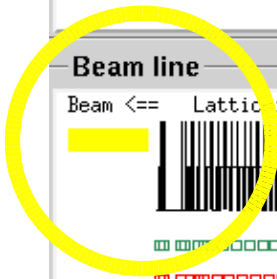
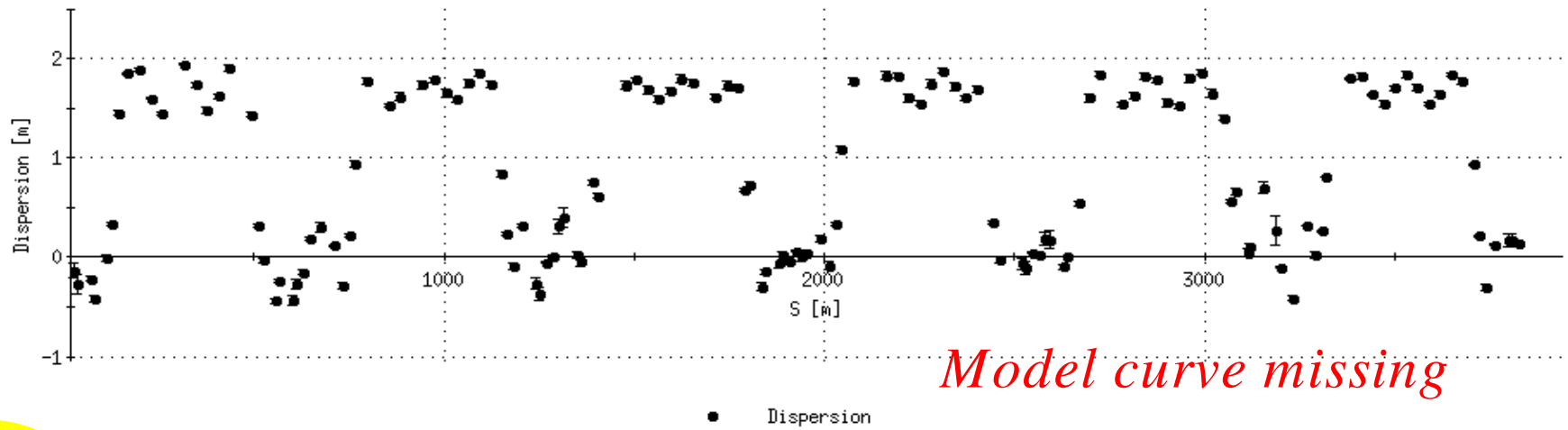
Beam line

Beam ==> Lattice: Blue



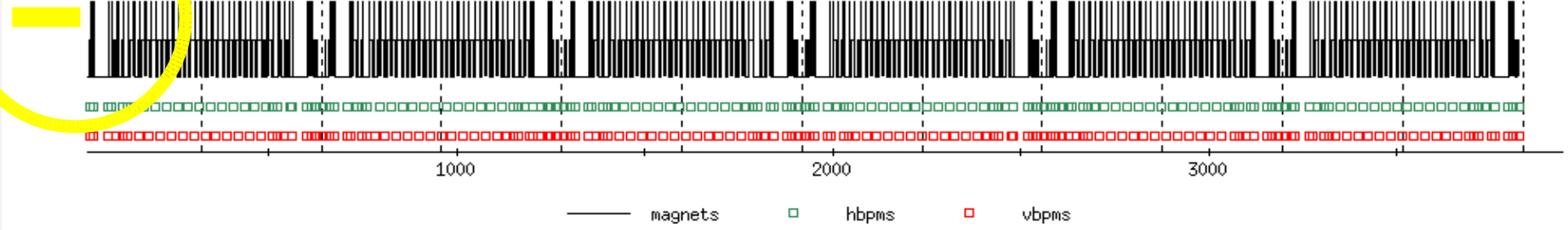
Y - Dispersion



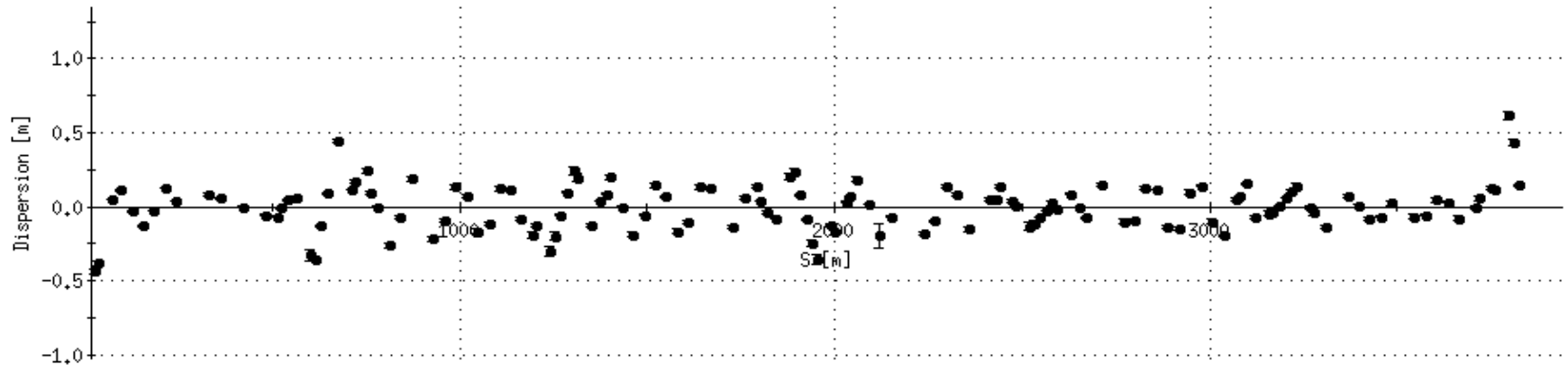


Beam line

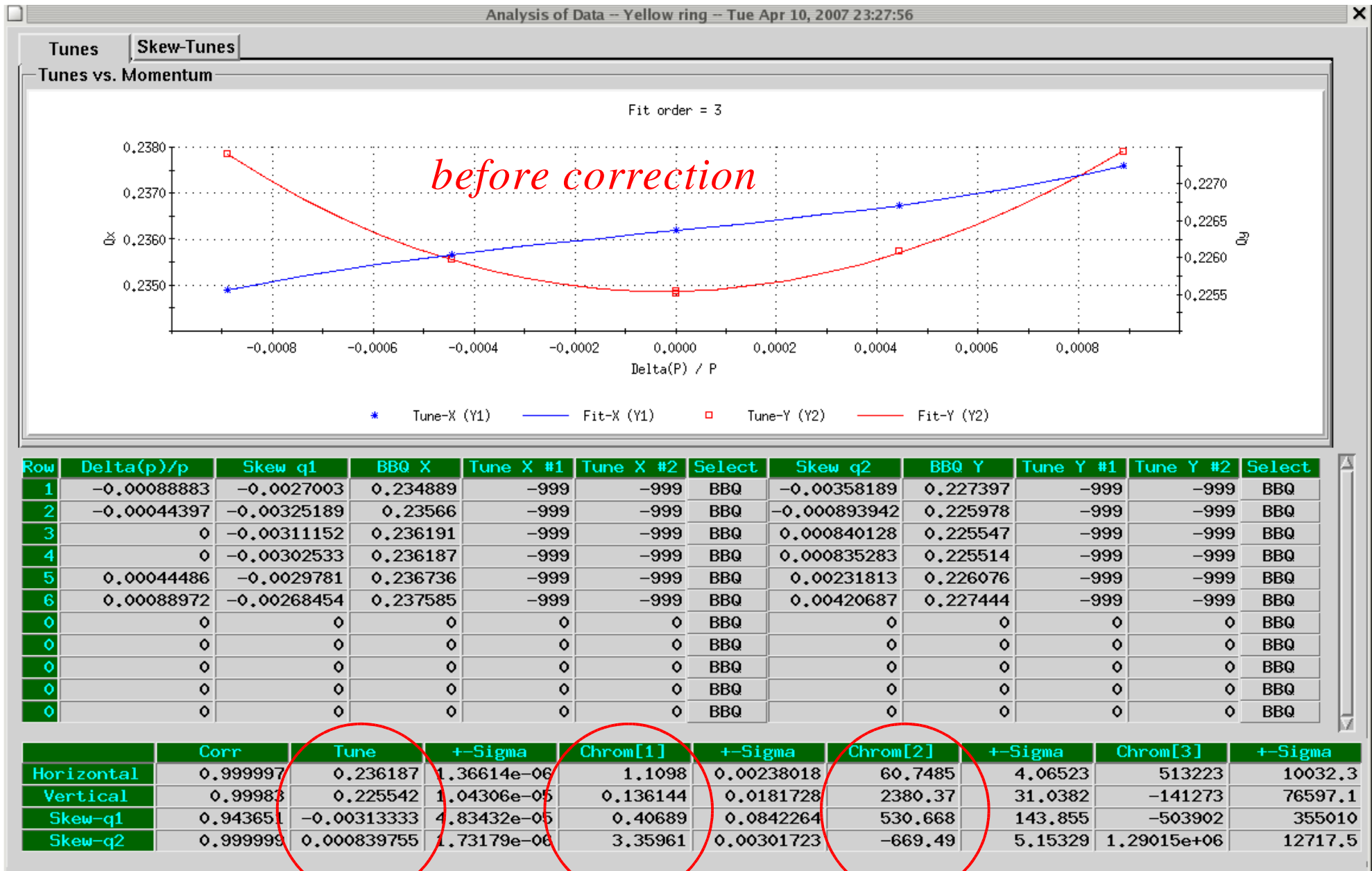
Beam <== Lattice: Yellow



Y - Dispersion

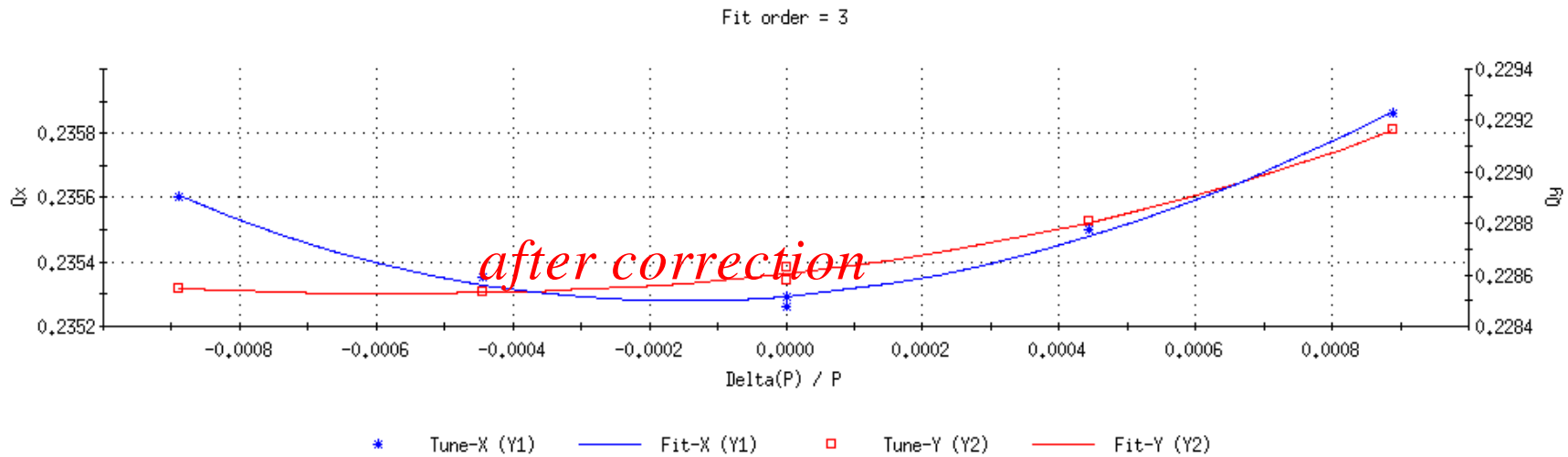


Nonlinear chrom correction with Nikolay's settings



Tunes Skew-Tunes

Tunes vs. Momentum

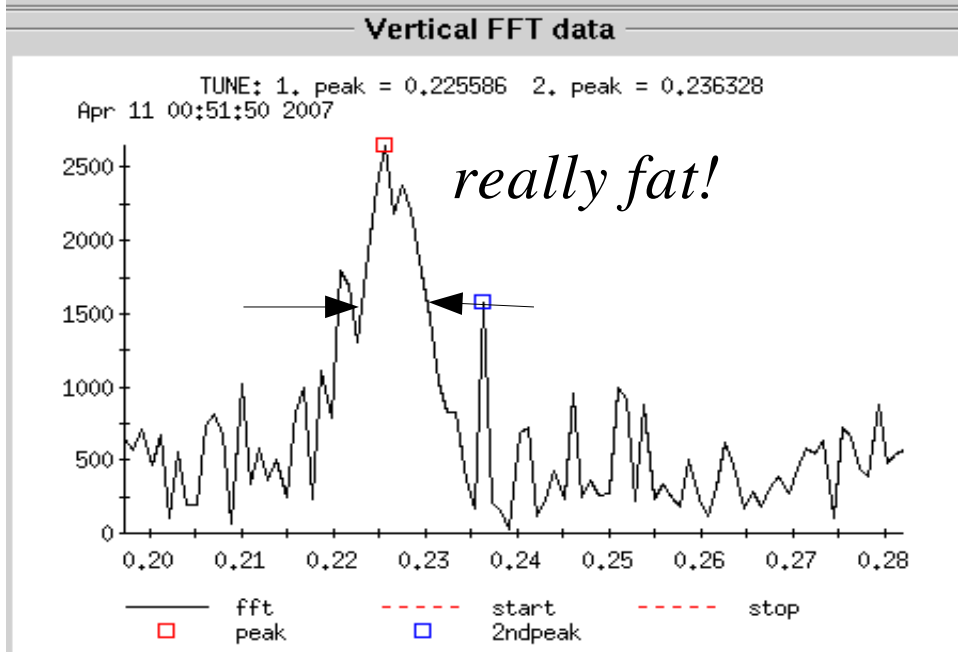
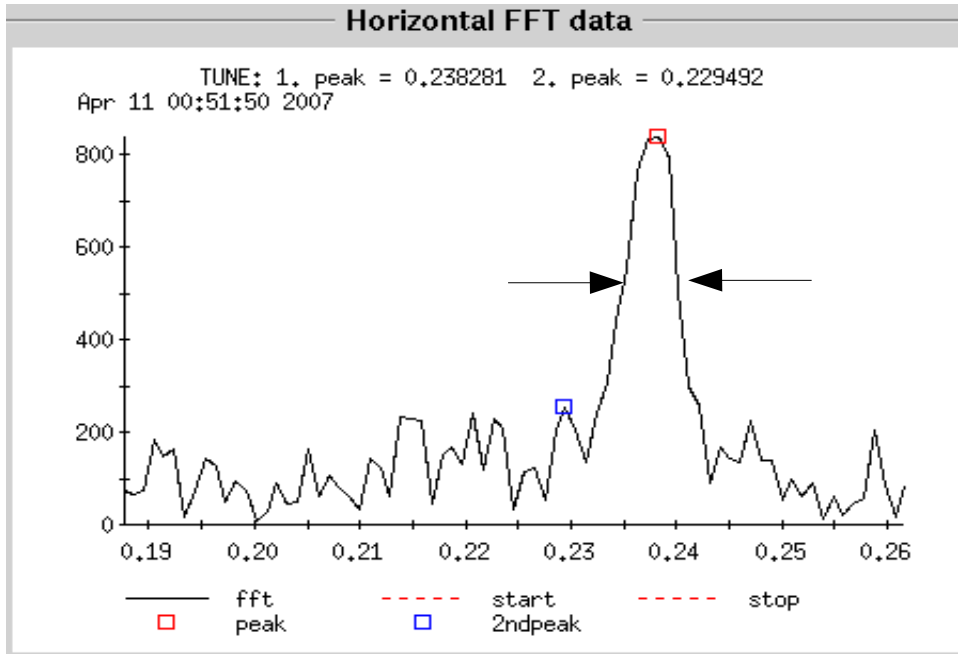


Row	Delta(p)/p	Skew q1	BBQ X	Tune X #1	Tune X #2	Select	Skew q2	BBQ Y	Tune Y #1	Tune Y #2	Select
1	-0.00088883	-0.00396221	0.235602	0.228516	0.236328	BBQ	-0.00255693	0.228544	0.236328	0.228516	BBQ
2	-0.00044397	-0.00448695	0.235351	0.228516	0.235352	BBQ	-0.000276927	0.228532	0.228516	0.235352	BBQ
3	0	-0.00425316	0.235293	0.228516	0.235352	BBQ	0.0017114	0.228629	0.228516	0.235352	BBQ
4	0	-0.00437715	0.23526	0.235352	0.228516	BBQ	0.00170156	0.228579	0.228516	0.235352	BBQ
5	0.00044486	-0.00377459	0.235502	0.235352	0.229492	BBQ	0.00318555	0.228805	0.228516	0.235352	BBQ
6	0.00088972	-0.00167634	0.235862	0.235352	0.229492	BBQ	0.0033124	0.229162	0.229492	0.236328	BBQ
0	0	0	0	0	0	BBQ	0	0	0	0	BBQ
0	0	0	0	0	0	BBQ	0	0	0	0	BBQ
0	0	0	0	0	0	BBQ	0	0	0	0	BBQ
0	0	0	0	0	0	BBQ	0	0	0	0	BBQ
0	0	0	0	0	0	BBQ	0	0	0	0	BBQ

	Corr	Tune	+Sigma	Chrom[1]	+Sigma	Chrom[2]	+Sigma	Chrom[3]	+Sigma
Horizontal	0.995915	0.235293	1.33256e-05	0.178001	0.0232166	561.939	39.6529	-40894.5	97856.7
Vertical	0.997885	0.228605	1.02057e-05	0.293364	0.017781	313.252	30.3691	67775.3	74945.8
Skew-q1	0.995306	-0.0044026	6.5728e-05	0.638304	0.114515	1963.9	195.587	815879	482675
Skew-q2	0.999849	0.00174263	2.51616e-05	4.09545	0.043838	-1711.69	74.8732	-1.00387e+06	184775

These settings were found by Nikolay several weeks ago. They can be used for operation.

Nonlinear chrom correction with Yun's settings



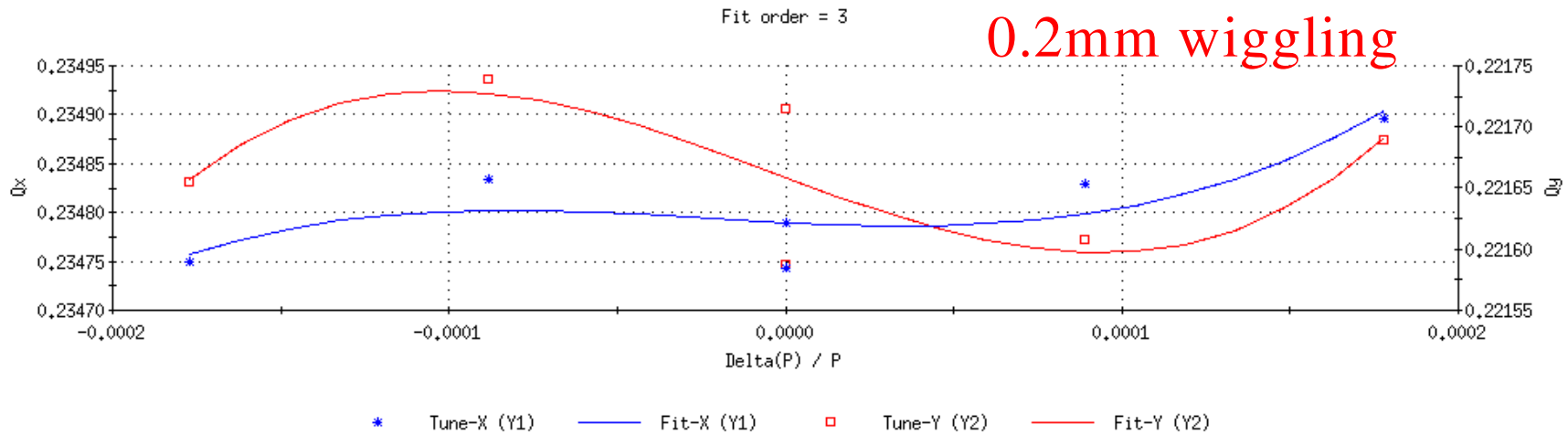
after applying correction

The correction strengths are calculated with offline optics model based b2 measurement at Yellow store.

Unfortunately this model failed to predict Q' well.

Tunes Skew-Tunes

Tunes vs. Momentum



Row	Delta(p)/p	Skew q1	BBQ X	Tune X #1	Tune X #2	Select	Skew q2	BBQ Y	Tune Y #1	Tune Y #2	Select
1	-0.000177054	-0.000800155	0.23475	0.236328	0.226562	BBQ	-0.00282631	0.221654	0.227539	0.220703	BBQ
2	-8.80823e-05	-0.00229487	0.234833	0.236328	0.259766	BBQ	-0.000823555	0.221738	0.226562	0.232422	BBQ
3	0	-0.00285865	0.234744	0.235352	0.242188	BBQ	0.00171473	0.221715	0.226562	0.229492	BBQ
4	0	-0.00285299	0.234789	0.236328	0.253906	BBQ	0.00113194	0.221587	0.226562	0.240234	BBQ
5	8.8972e-05	-0.00381005	0.234829	0.236328	0.245117	BBQ	0.00278943	0.221608	0.226562	0.217773	BBQ
6	0.000177944	-0.00390295	0.234897	0.236328	0.227539	BBQ	0.00368504	0.221689	0.225586	0.193359	BBQ
0	0	0	0	0	0	BBQ	0	0	0	0	BBQ
0	0	0	0	0	0	BBQ	0	0	0	0	BBQ
0	0	0	0	0	0	BBQ	0	0	0	0	BBQ
0	0	0	0	0	0	BBQ	0	0	0	0	BBQ
0	0	0	0	0	0	BBQ	0	0	0	0	BBQ

	Corr	Tune	+Sigma	Chrom[1]	+Sigma	Chrom[2]	+Sigma	Chrom[3]	+Sigma
Horizontal	0.865623	0.23479	1.87224e-05	-0.164883	0.163489	1282.71	1397.97	1.82958e+07	1.72943e+07
Vertical	0.723125	0.221659	2.67241e-05	-1.01457	0.233361	456.237	1995.44	3.53082e+07	2.46856e+07
Skew-q1	0.990288	-0.00300329	0.000102202	-8.52949	0.892453	19266.3	7631.26	-7.21386e+06	9.44061e+07
Skew-q2	0.9962	0.00133085	0.000135128	21.1066	1.17997	-29767.1	10089.8	-8.68959e+07	1.2482e+08

Limited by beamexp time, nonlinear chrom check not completed.

Later on solution found to overcome the error in Q' predication.

Plan for next session

1. We do have two sets of sextupole strengths for Blue and Yellow nonlinear chrom correction **ALTHOUGH** the optics models still have problems to predict Q_s , Q' s well.

It is **TIME** to go back the goal of this beamexp to measure response matrix.

2. **PLAN** for next session

- >> Measuring response matrix
- >> Try Yun's (and Nikolay's) correction for Yellow store.
- >> Beam time request: 3hrs.