Repeatability

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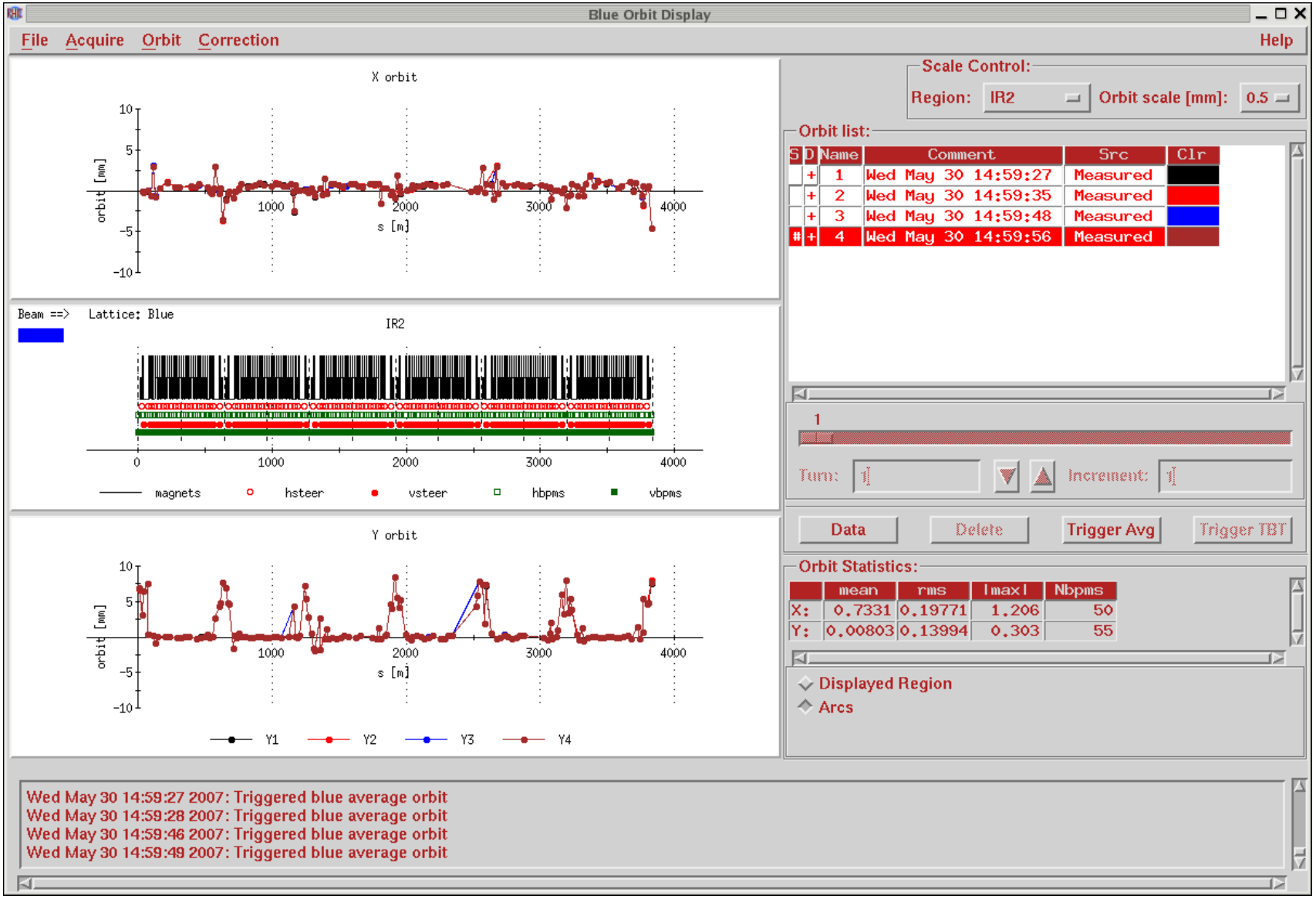
Reference measurements

- Reference orbit was established (rms <0.2mm after SVD corrections)
- Beam parameter snapshot on reference orbit:

	Qx/Qy	ξx/ξy	dQmin
Blue	0.228/0.219	-5.7+-0.2 -3.0+-0.7	<0.001
Yellow	0.228/0.218	-4.8+-0.4 -4.5+-0.4	<0.001

- + Dispersion functions and Optics measurement (in Blue)
- Snapshot(s) of all power supply currents were done.
- The settings at the end of the study: reference settings

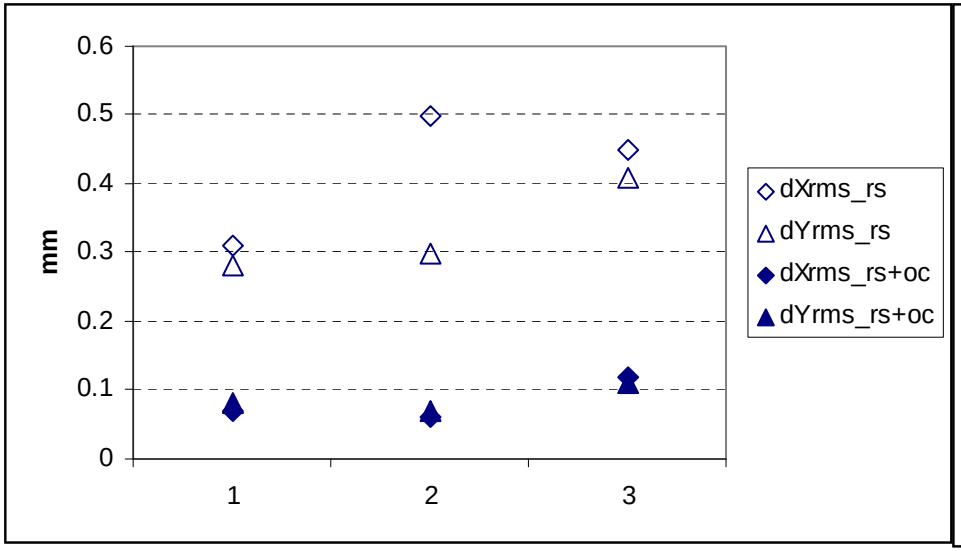
Blue reference orbit



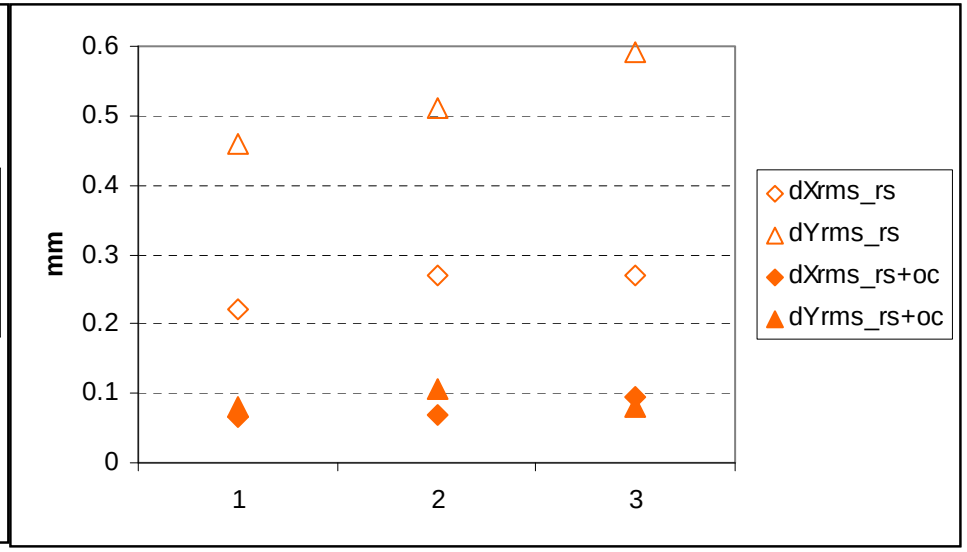
Time of measurements

	Reference measurement	Week 1	Week 2	Week 3
Date	May 30	Jun 05-06	Jun 13	Jun 20
Time of the day	14:30-15:00	0:00-1:00	17:45-18:15	18:00-18:30
Time after coming to the injection	2.5-3 h	0.5-1.5 h	20-50 min	1-1.5 h

Measured orbit deviations from the reference orbit



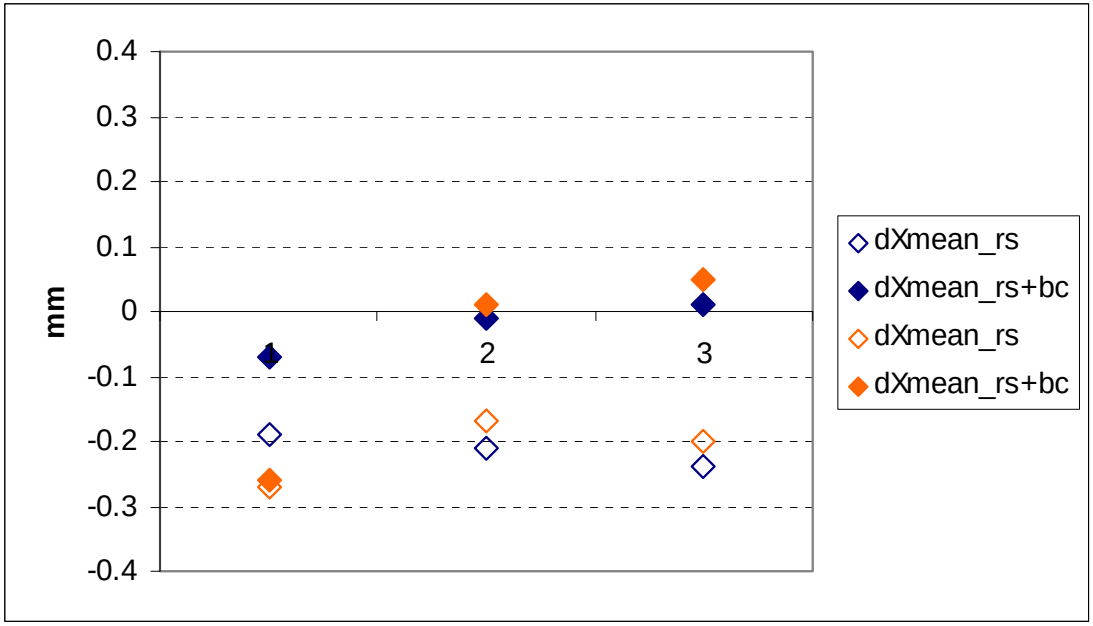
Blue



Yellow

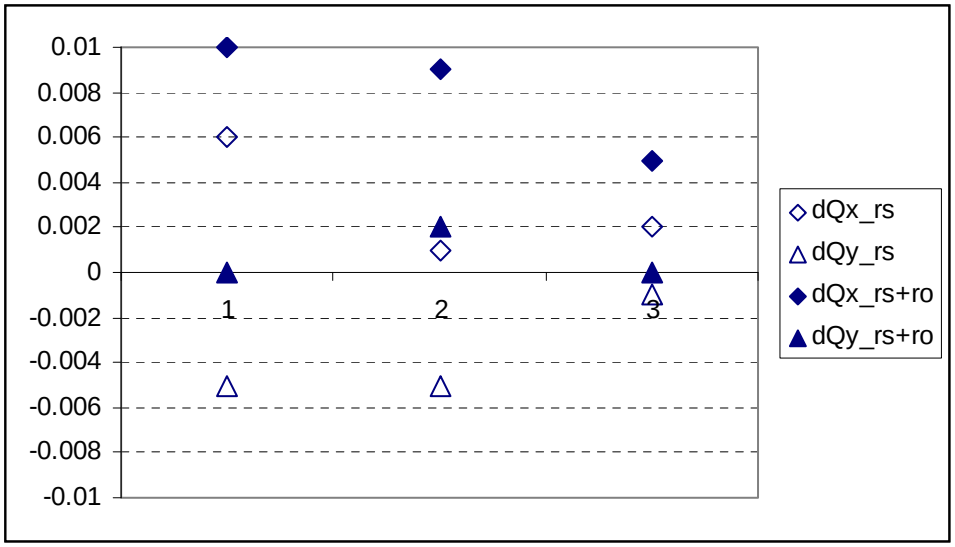
Deviations are shown for restored reference settings (rs) and for restored reference settings and the orbit corrected to reference orbit (rs+oc).

Measured mean orbit deviations from the reference orbit

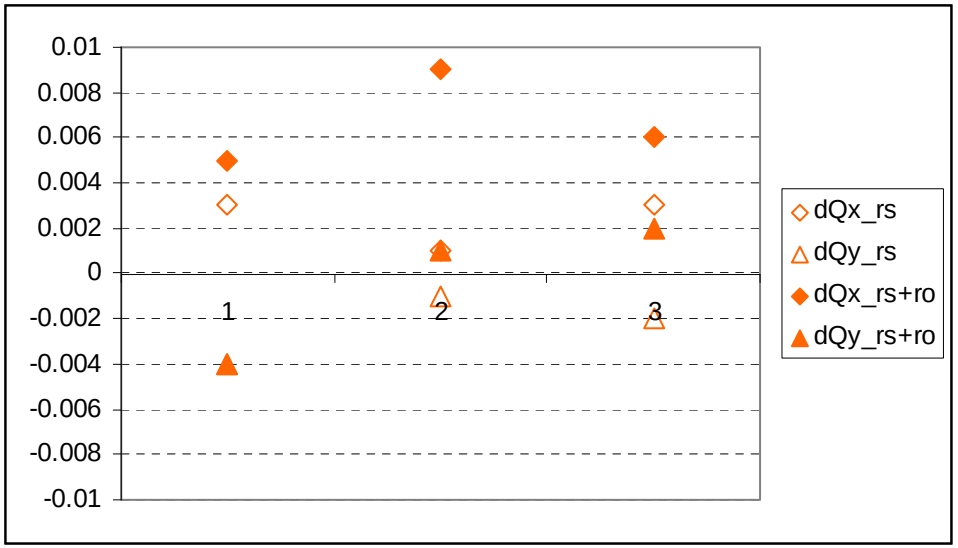


Deviations are shown for restored reference settings (rs)
and for restored reference settings and the bend field correction (rs+bc).

Measured tune deviations from the reference values



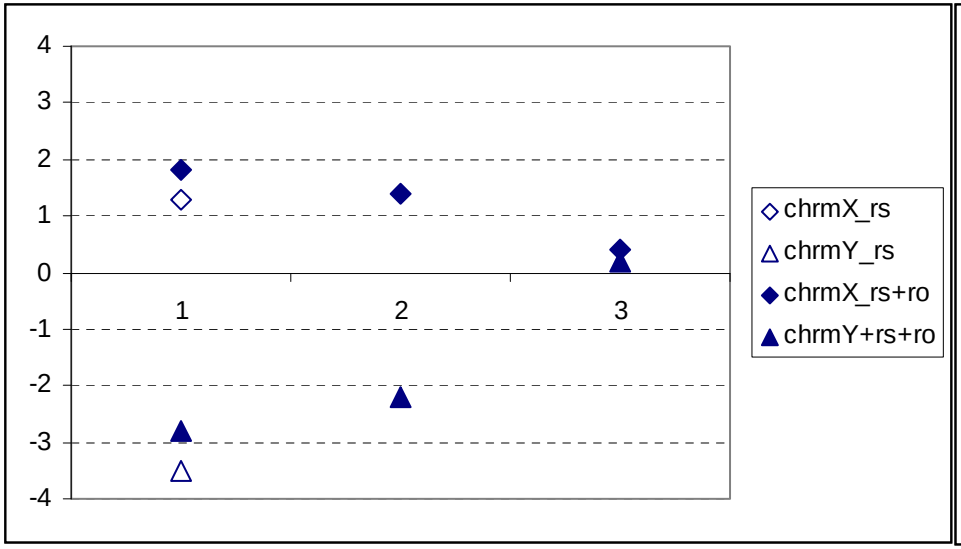
Blue



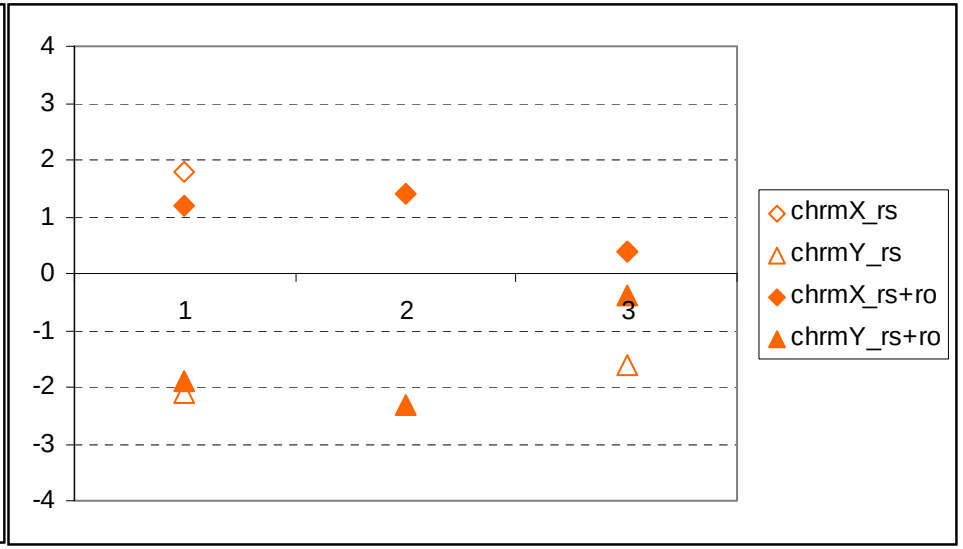
Yellow

Deviations are shown for restored reference settings (rs) and for restored reference settings and the orbit corrected to reference orbit (rs+ro).

Measured chromaticity deviations from the reference values



Blue

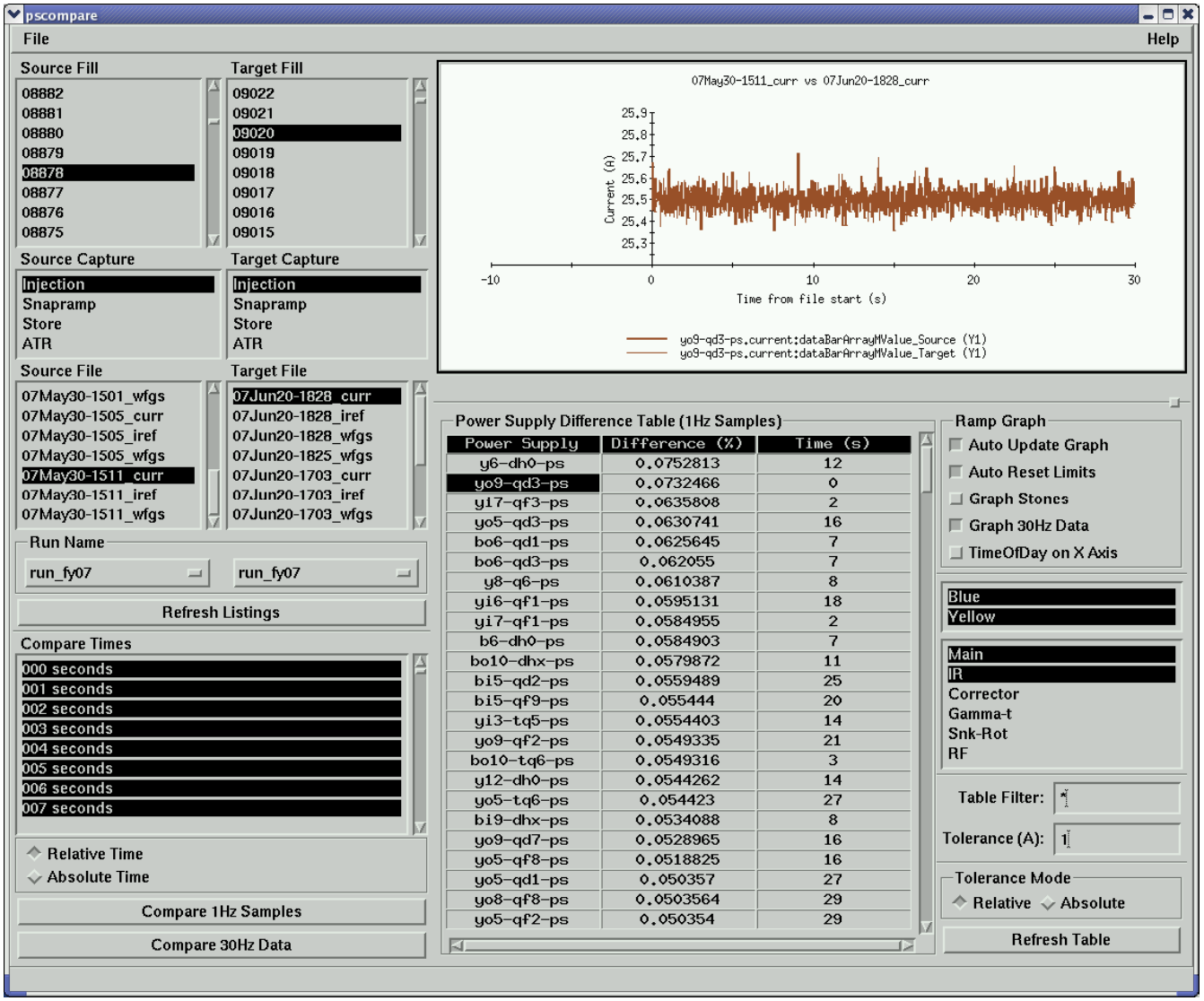


Yellow

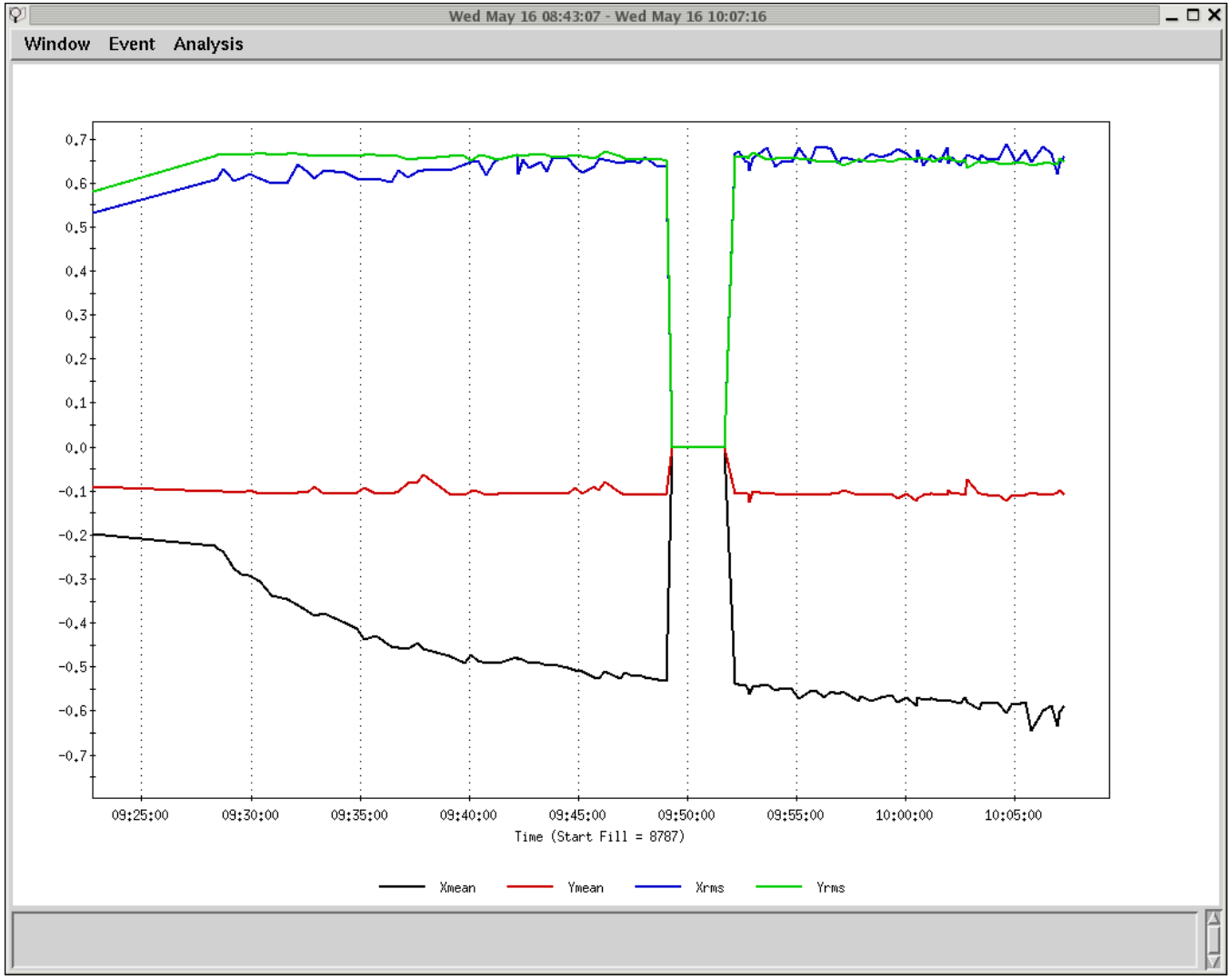
Beam parameter comparison with the reference

	δQx/δQy	δξx/δξy	δXrms/δYrms	δXmean,mm
Blue, ref. settings				
Week 1	0.006 /-0.005	1.3+-1.3 / -3.5+-0.8	0.31 / 0.28	-0.19
Week 2	0.001 / -0.005		0.50 / 0.30	-0.21
Week 3	0.002 / -0.001		0.45 / 0.41	-0.24
Blue, ref.settings+ ref. orbit				
Week 1	0.01 / 0.0	1.8+-0.1 / -2.8+-0.6	0.07 / 0.08	-0.07
Week 2	0.009 / 0.002	1.4+-0.2 / -2.2+-0.2	0.06 / 0.07	-0.01
Week 3	0.005 / 0.0	0.4+-0.7 / 0.2+-1.0	0.12 / 0.11	0.01
Yellow, ref. settings				
Week 1	0.003 / -0.004	1.8+-0.04 / -2.1+-0.5	0.22 / 0.46	-0.27
Week 2	0.001 / -0.001		0.27 / 0.51	-0.17
Week 3	0.003 / -0.002	0.4+-0.1 / -1.6+-0.6	0.27 / 0.59	-0.20
Yellow, ref. settings+ ref. orbit				
Week1	0.005 / -0.004	1.2+-0.08 / -1.9+-0.1	0.065 / 0.08	-0.26
Week 2	0.009 / 0.001	1.4+-0.01 / -2.3+-0.5	0.070 / 0.105	0.01
Week 3	0.006 / 0.002	0.4+- 1.1 / -0.4+-1.0	0.095 / 0.08	0.05

Power Supply differences



Average orbit drift at the injection caused by the drift of bending field



Further plans

- Critical to have the measurements at similar time (from coming to the injection) as the reference measurement.
- Development of tools for easier transfer of PS measured non-reproducibility into the model.
- Realization of continuous orbit, tune, chromaticity drift correction at the injection should be very helpful for further repeatability measurements.
- More repeatability measurements should help in separating time dependent effects from possible effects caused by PS.