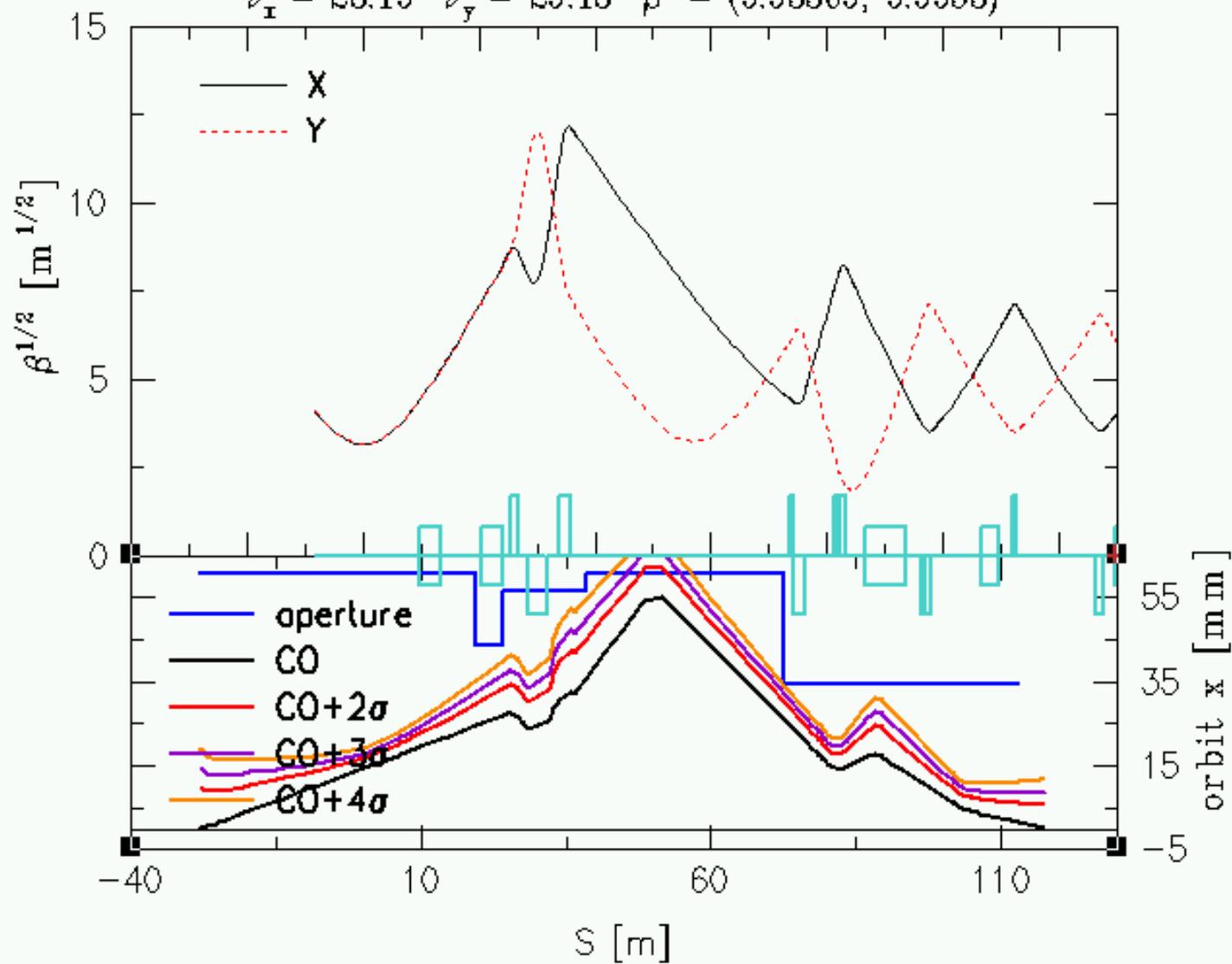


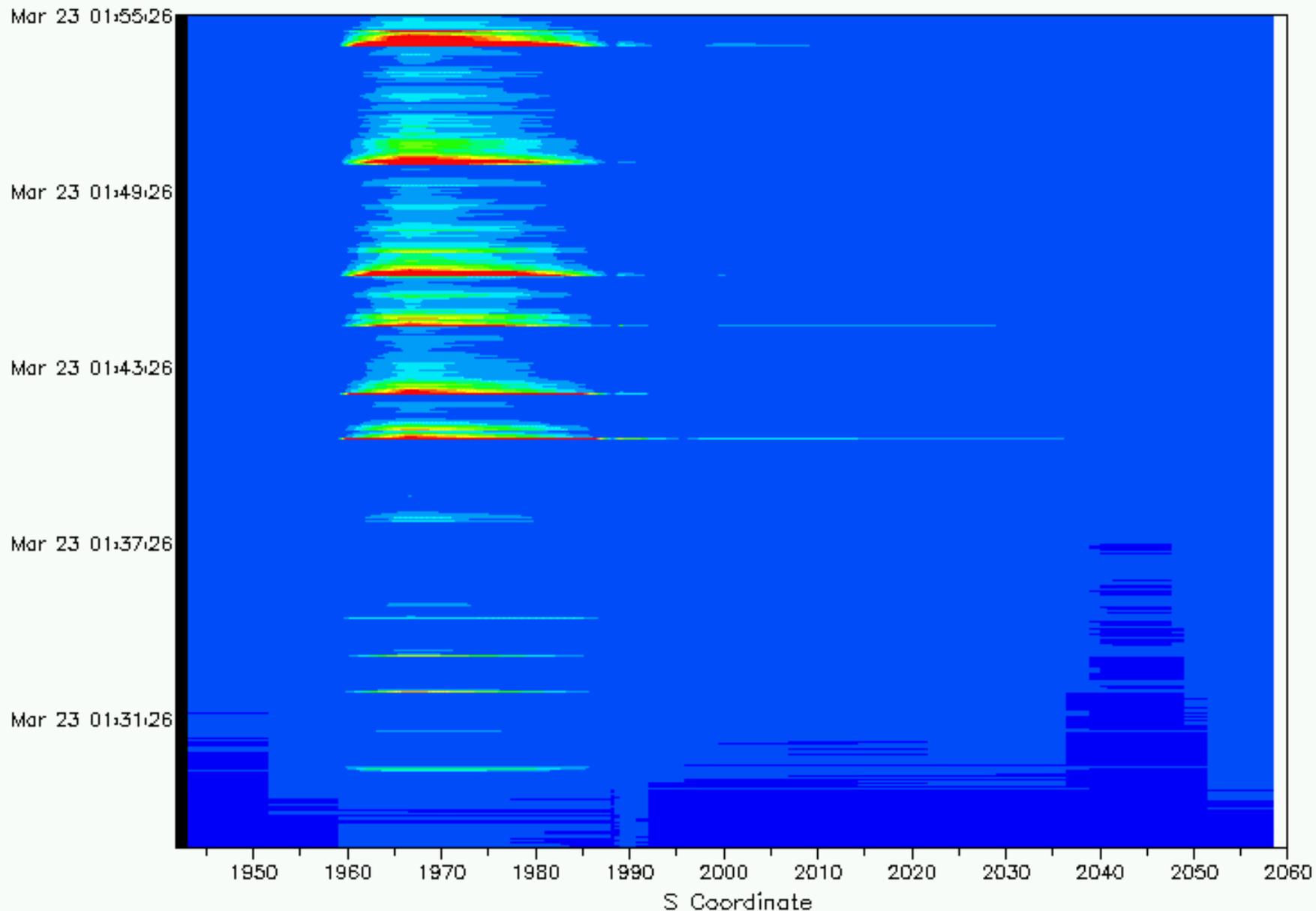
Warm Dipole in BI12

Relativistic Heavy Ion Collider (BI12)

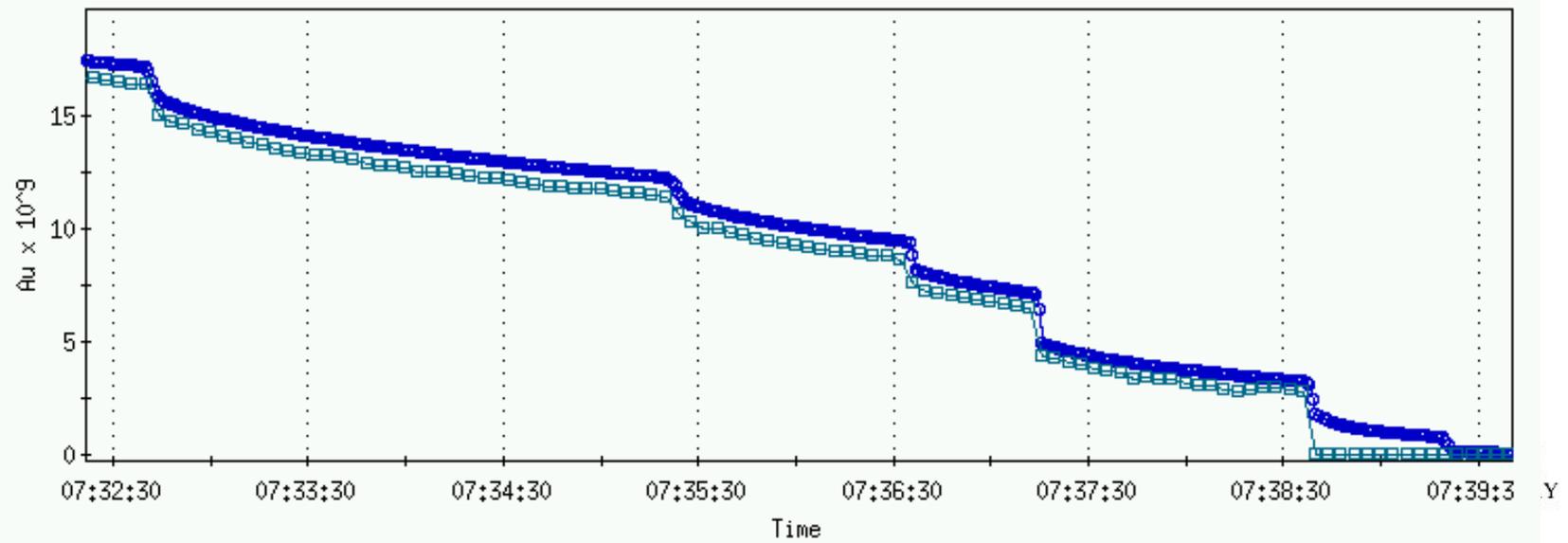
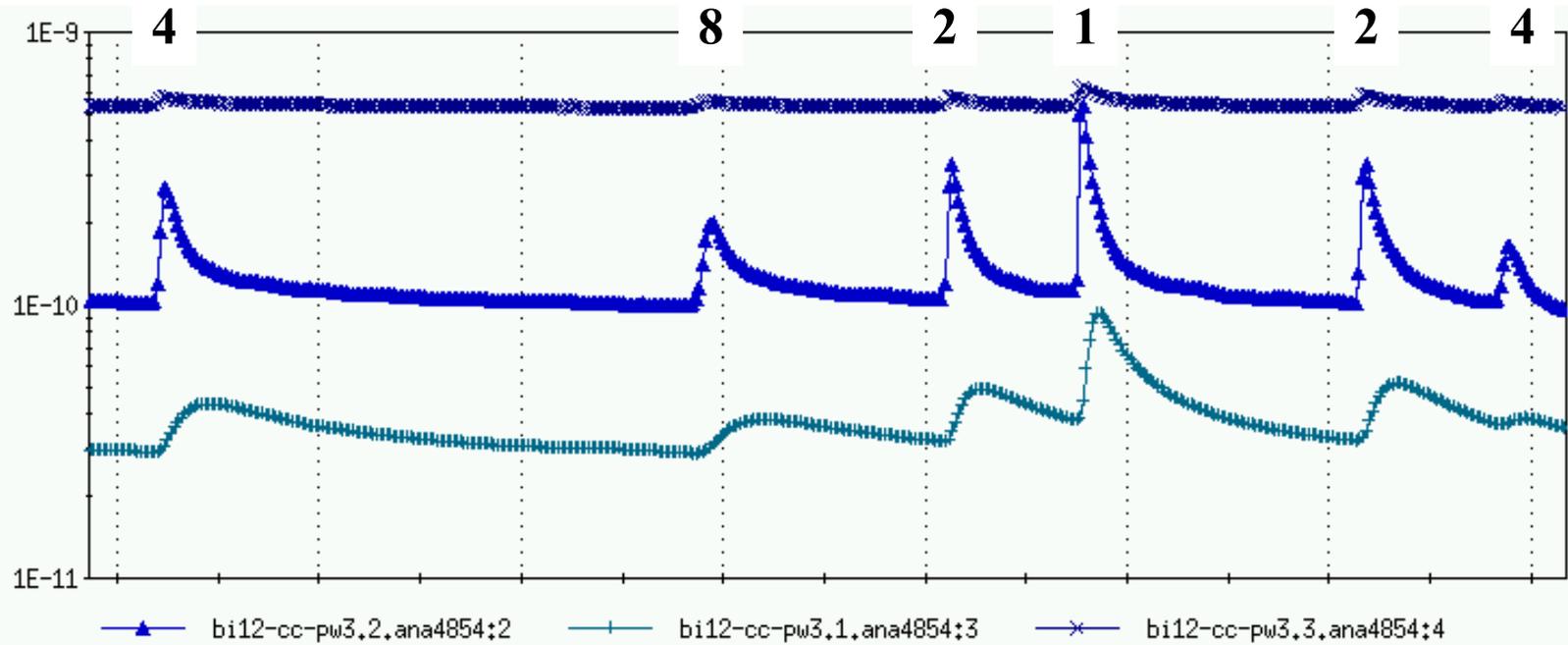
$$\nu_x = 28.19 \quad \nu_y = 29.18 \quad \beta^* = (9.93309, 9.9953)$$



Beam Loss Is Local At IP 12



Pressure Rise vs. Slow Factor in Ramping



Mystery: Orbit Oscillating between Two States (0.3mm)

Blue Orbit Display

File Acquire Orbit Correction Help

X orbit

orbit [mm]

s [m]

Beam ==> Lattice: Blue

Ring

s [m]

— magnets ○ hsteer ● vsteer □ hbpms ■ vbpms

Y orbit

orbit [mm]

s [m]

Scale Control:

Region: Ring Orbit scale [mm]: 20

Orbit list:

S	D	Name	Comment	Src	Clr
	+	1	Tue Mar 23 01:31:11	Measured	
	+	2	Tue Mar 23 01:31:19	Measured	
	+	3	Tue Mar 23 01:31:23	Measured	
	+	4	Tue Mar 23 01:31:27	Measured	
	+	5	Tue Mar 23 01:36:35	Measured	
	+	6	Tue Mar 23 01:36:39	Measured	
	+	7	Tue Mar 23 01:36:43	Measured	
	+	8	Tue Mar 23 01:36:47	Measured	
	+	9	Tue Mar 23 01:36:52	Measured	
#	+	10	Tue Mar 23 01:36:55	Measured	

4

Turn: [] Increment: []

Data Delete

Orbit Statistics:

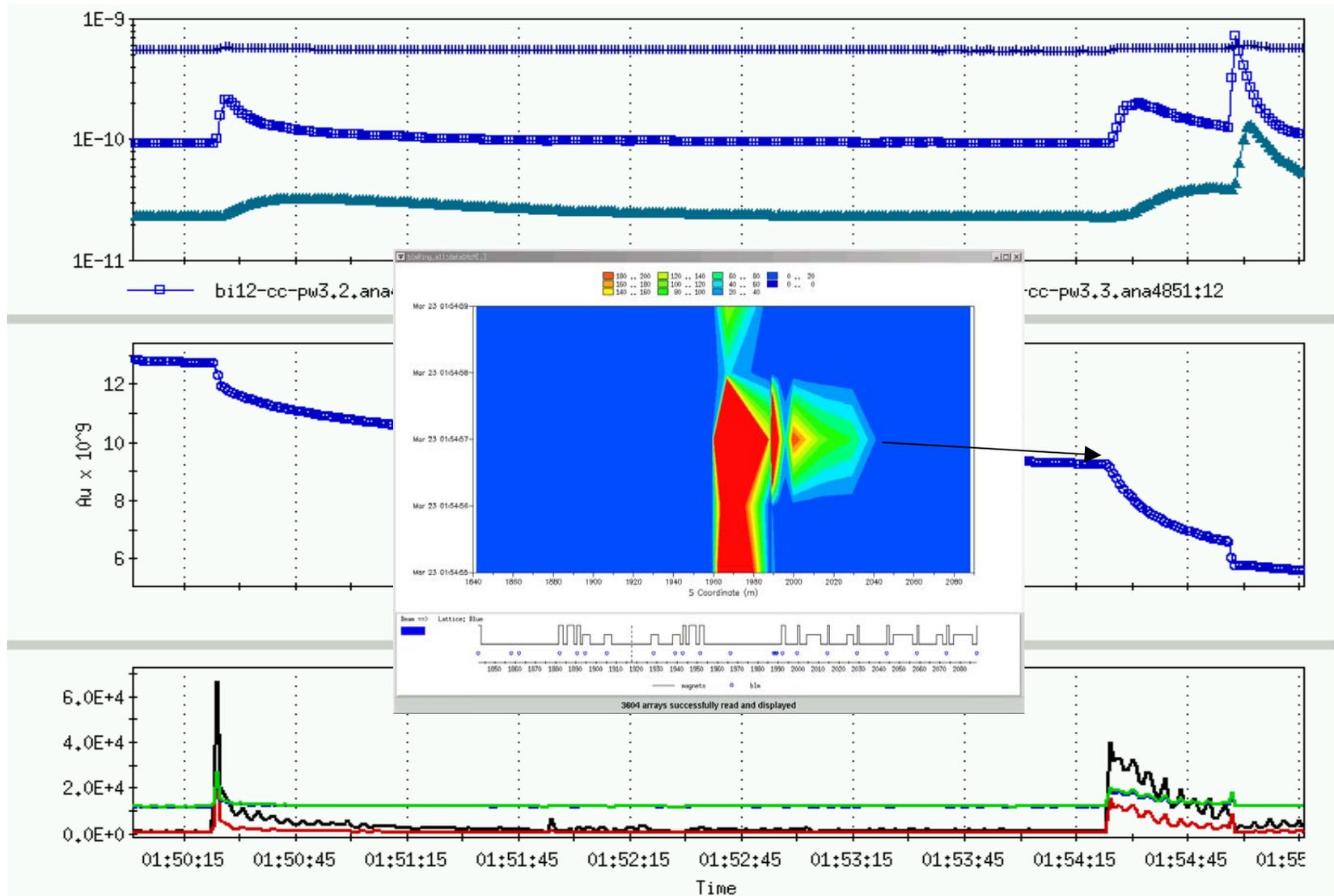
	mean	rms	max	Nbpms
X:	0.20546	3.66397	7.172	45
Y:	-0.0768	0.60339	1.426	43

Displayed Region

Arcs

Acquisition mode set to STOP
 Acquisition mode set to TBT
 Acquisition mode set to STOP
 Acquisition mode set to Closed Orbit

Mystery 2: Why Pin Diode Did Not Record Beam Loss?



BO11-tv10(200m away) trip: clear indication that pump speed is an important factor.

Beam Scraping at Bi12

- Generate a 56mm bump by warm dipoles and cold correctors then lower the whole bump by 10mm. Using the cold correctors to increase the whole bump amplitude mm by mm.
- There is a 3 meter straight section between the two warm dipoles. In between, there are BLM, pin diode and electron detector. The closest vacuum gauge is 5 m away down stream.
- Clearly seen loss local at the BLM.
- Taking pressure rise data while raising the bump amplitude. The slow factor was also varied. There is clearly correlation between the pressure rise and slow factor, which indicates that the pumping is an important factor. The data will be used to develop dynamic model.
- The pressure rise level is comparable to single turn kick case, $\sim 5 \times 10^{-10}$, but the beam loss rate is slower than the single turn kick case.