Δf_{RF} Fill List

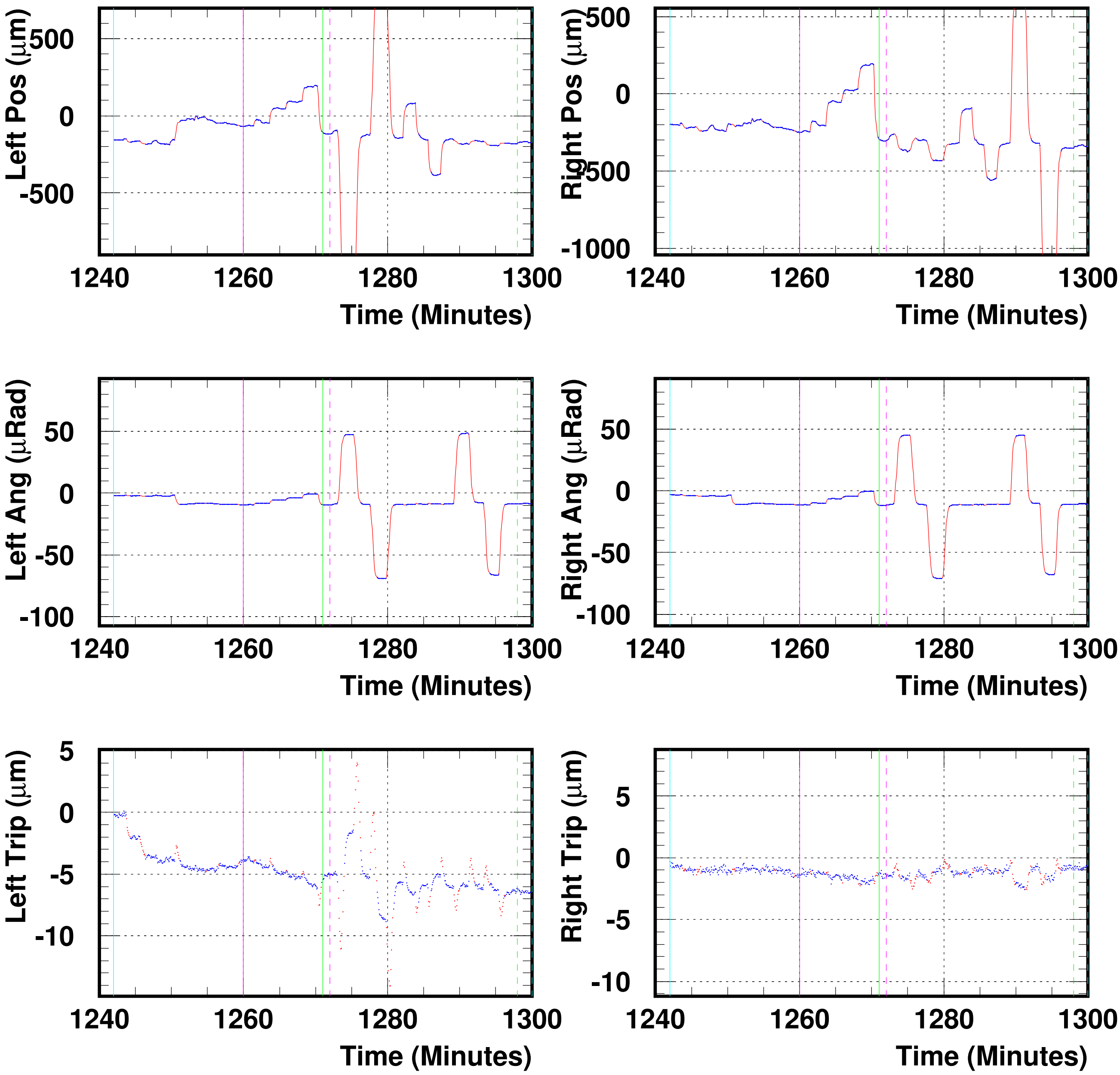
Fill	Energy	Type
7931	50 GeV	e^+
7931	93 GeV	e^+
8221	50 GeV	e^+
8221	93 GeV	e^+
8224	50 GeV	e^+

- 8224 is a low current fill
- Calibration performed at 50 GeV
- X-Y cross-talk now included!
- 8224 is actually calibrated in 8223 (X only)

Other f_{RF} ladders exist, but these are easiest...

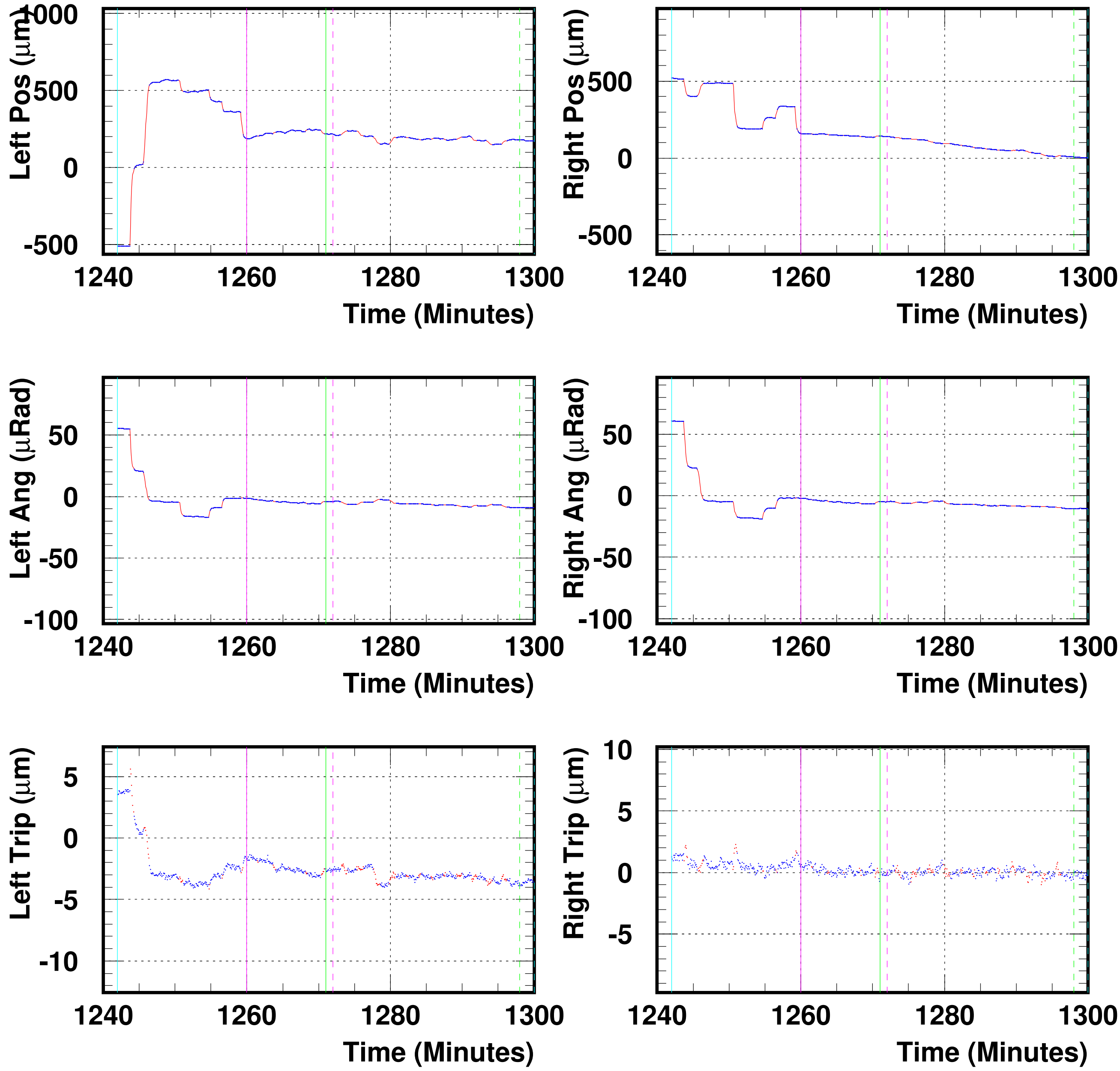
Fill 7931 93 GeV X Axis

2001/11/02 12.13



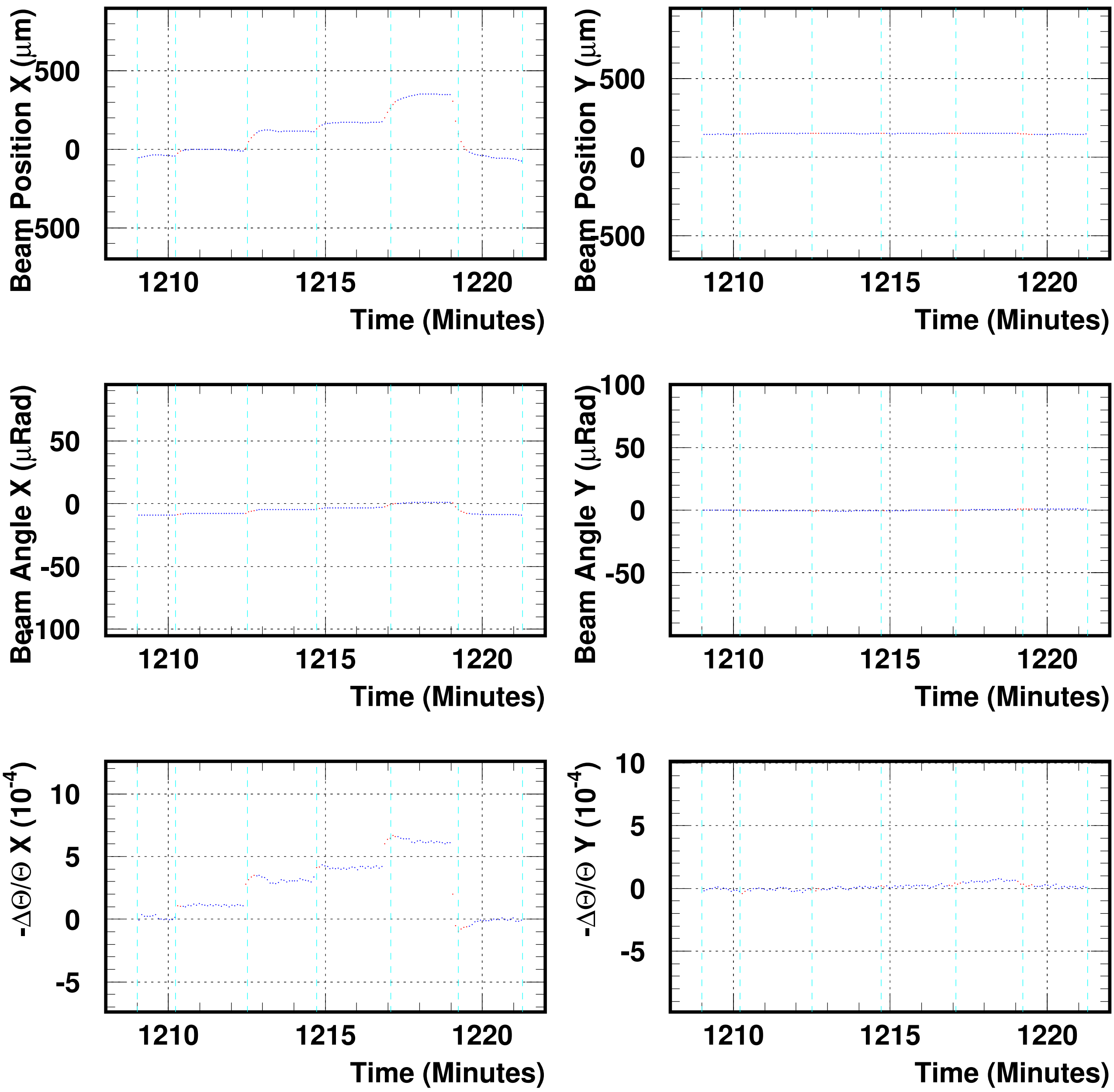
Fill 7931 93 GeV Y Axis

2001/11/02 12.13



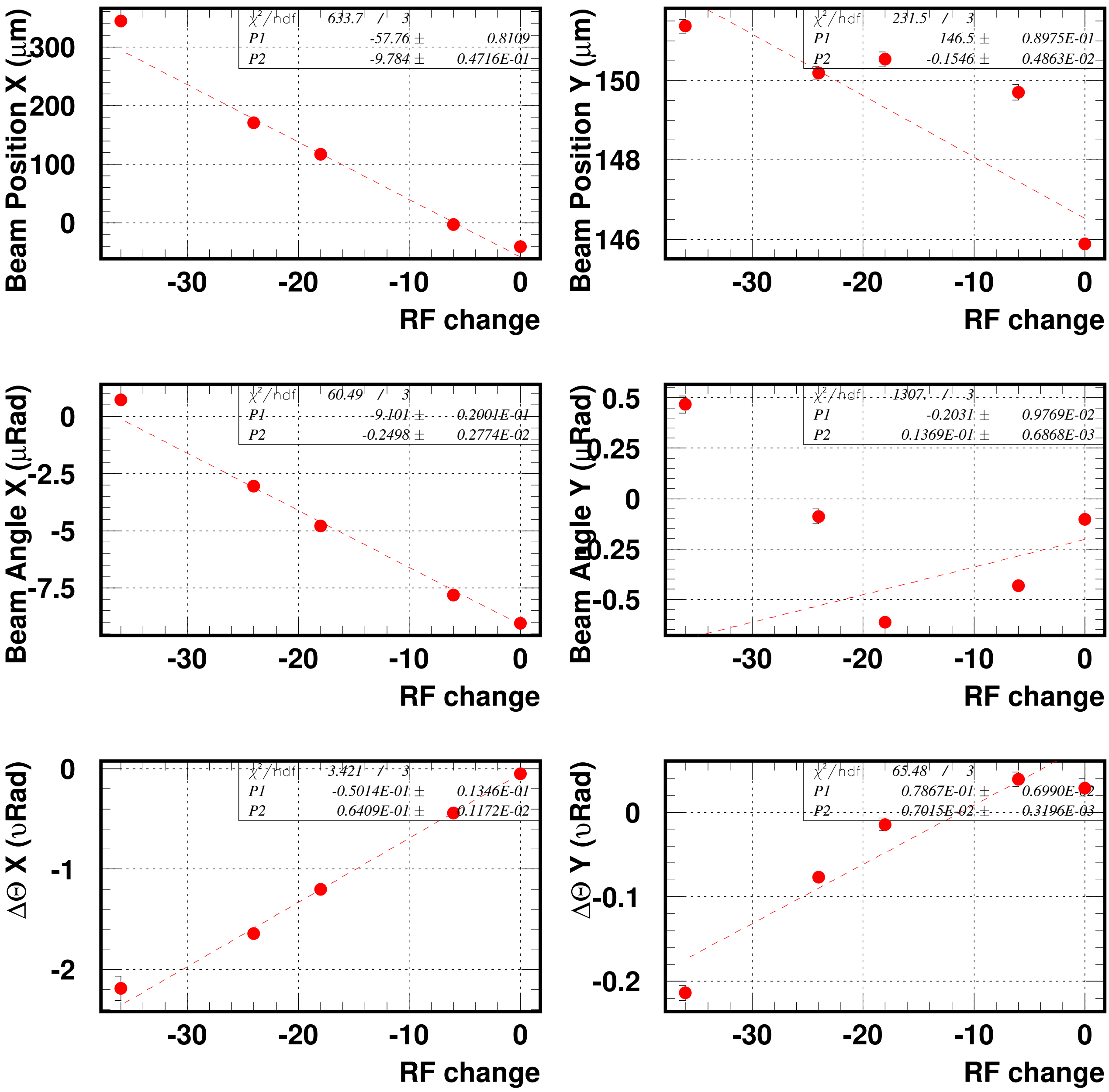
Fill 7931 50 GeV

2001/11/02 12.13



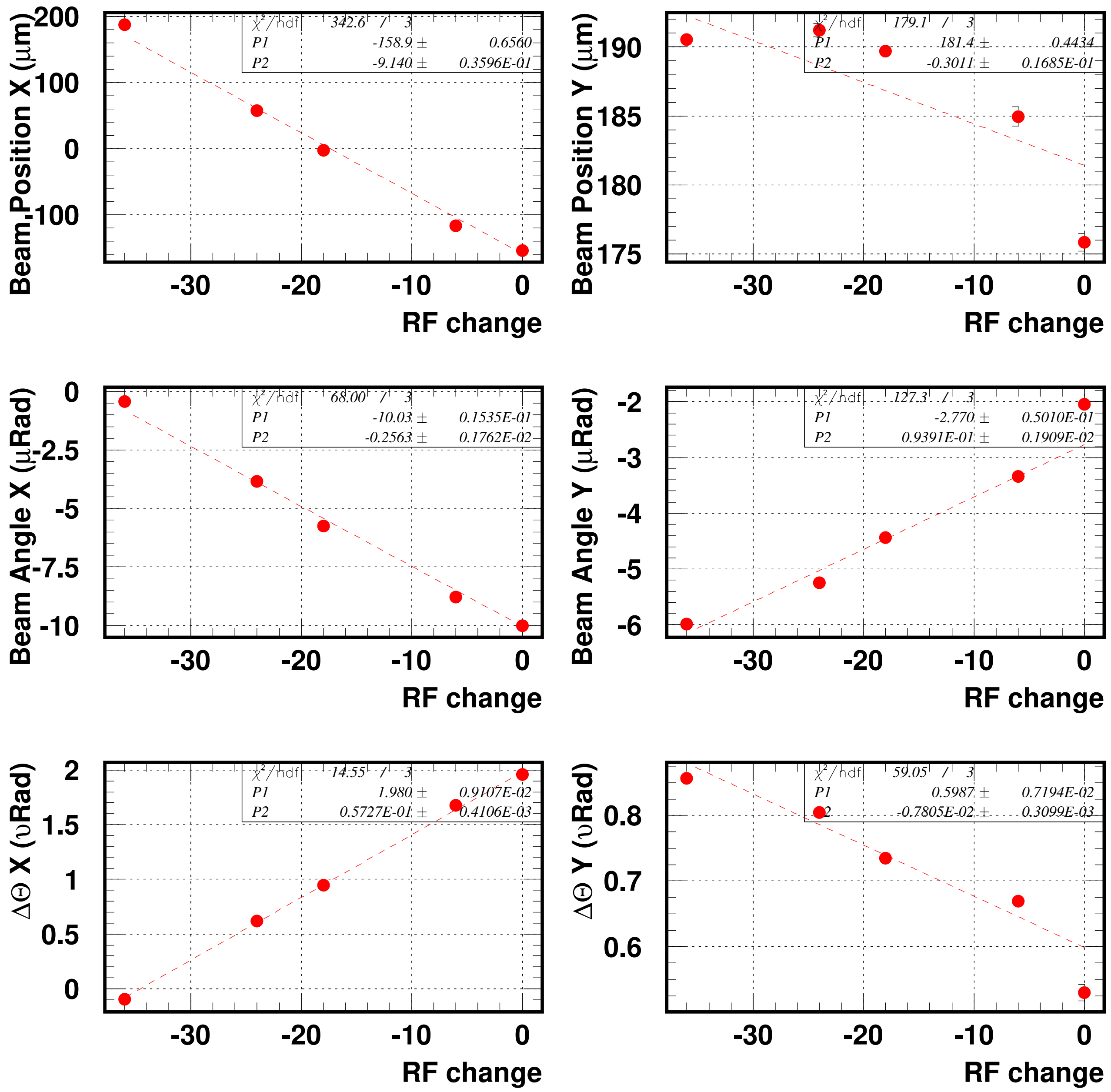
Fill 7931 50 GeV

2001/11/02 12.14



Fill 7931 93 GeV

2001/11/02 12.14



Fit Results

Fill	$\Delta\Theta_X$ [nRad/Hz]	$\Delta\Theta_Y$ [nRad/Hz]	ΔX [µm/Hz]
7931 50 GeV	64	+7	-9.8
7931 93 GeV	57	+8	-9.1
8221 50 GeV	70	-5	-11.3
8221 93 GeV	71	+2	-11.0
8224 50 GeV	80	-69	-11.6

Expected

$$\frac{\Delta\Theta_X}{\Delta f_{RF}} = \frac{\Theta_0}{\alpha f_{RF}} = 76.5\ \text{nRad/Hz}$$

$$\frac{\Delta\Theta_Y}{\Delta f_{RF}} = 0$$

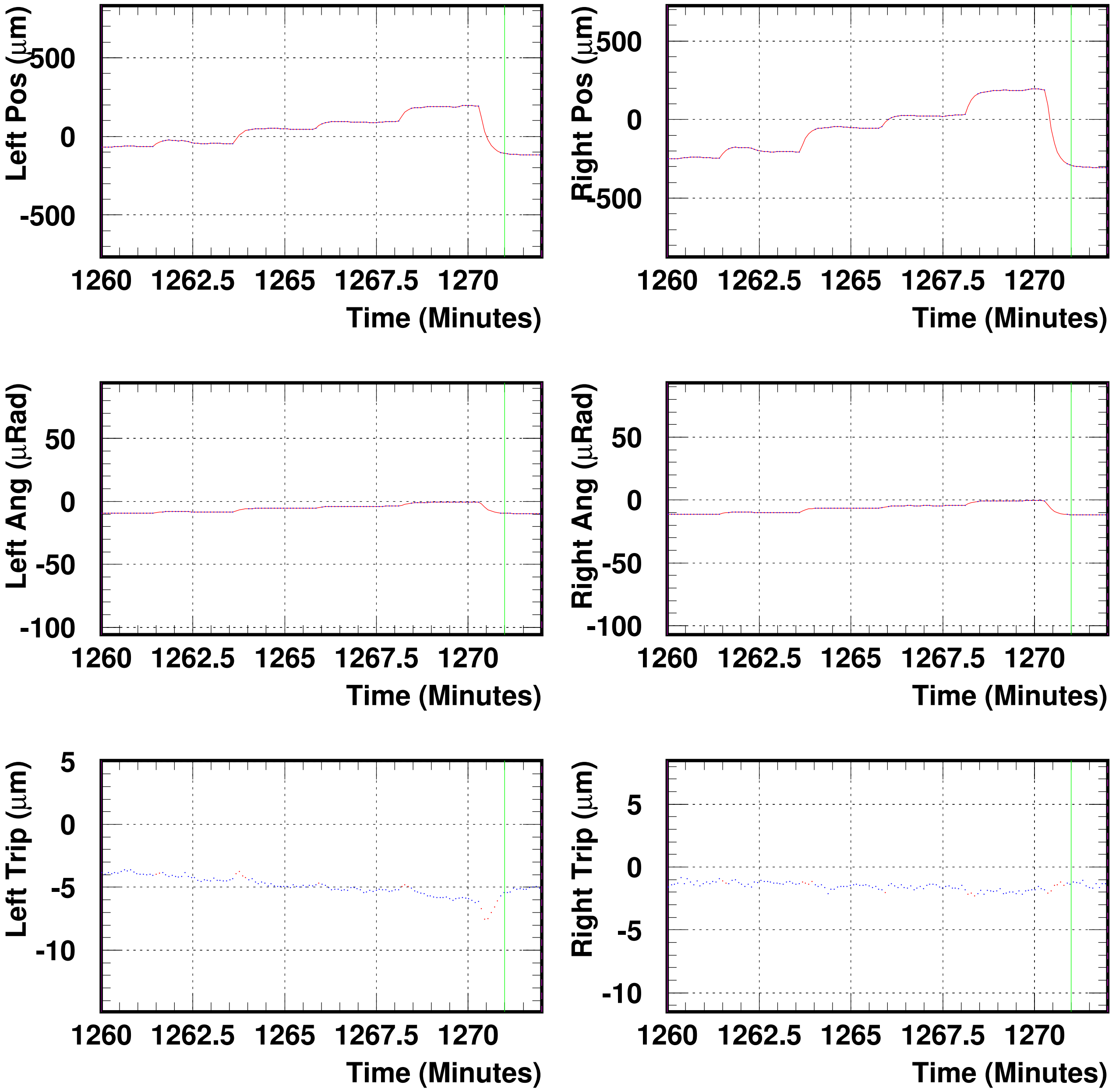
Overall gain stable 10-15%,

a little above 2000 µm/V assumption.

Y Weirdness from cross-talk terms...

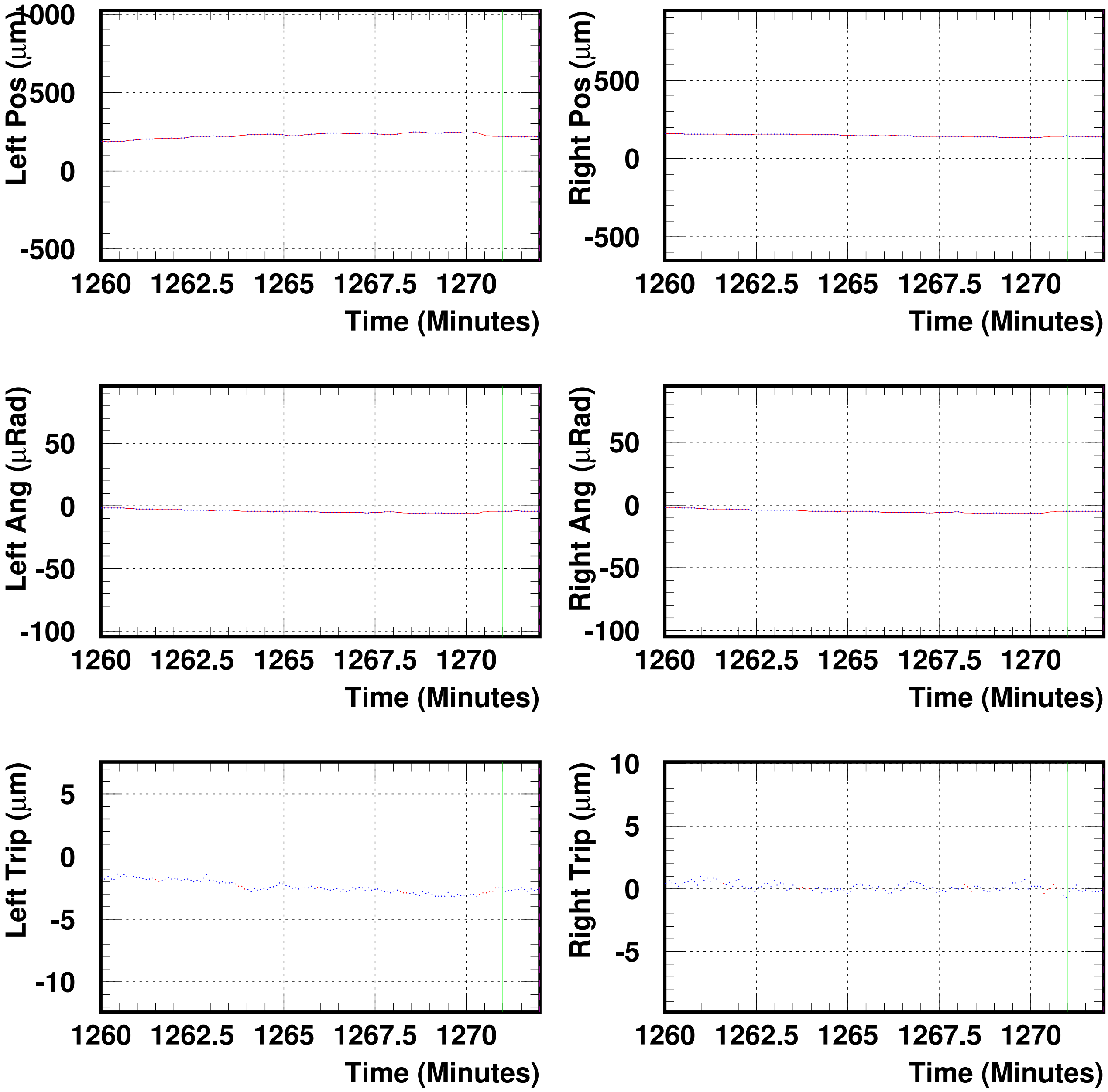
Fill 7931 93 GeV X Axis

2001/11/02 12.14



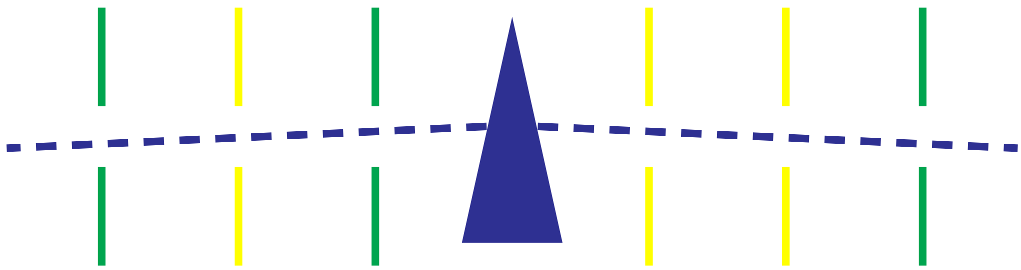
Fill 7931 93 GeV Y Axis

2001/11/02 12.14



Find the bad BPM?

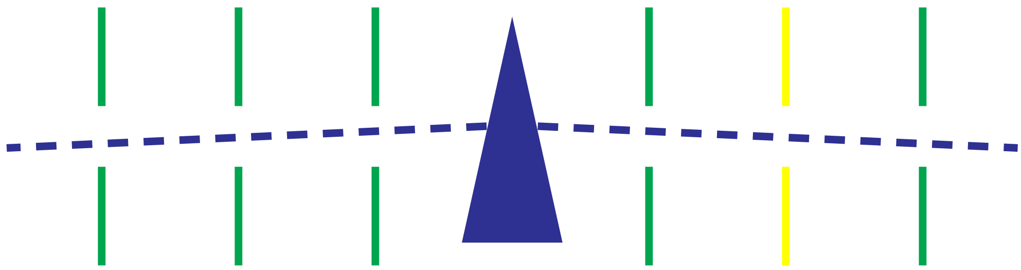
Extended Triplet



$$T = (1 - r)x_1 + r x_3 - x_2$$

$$r = \frac{z_2 - z_1}{z_3 - z_1}$$

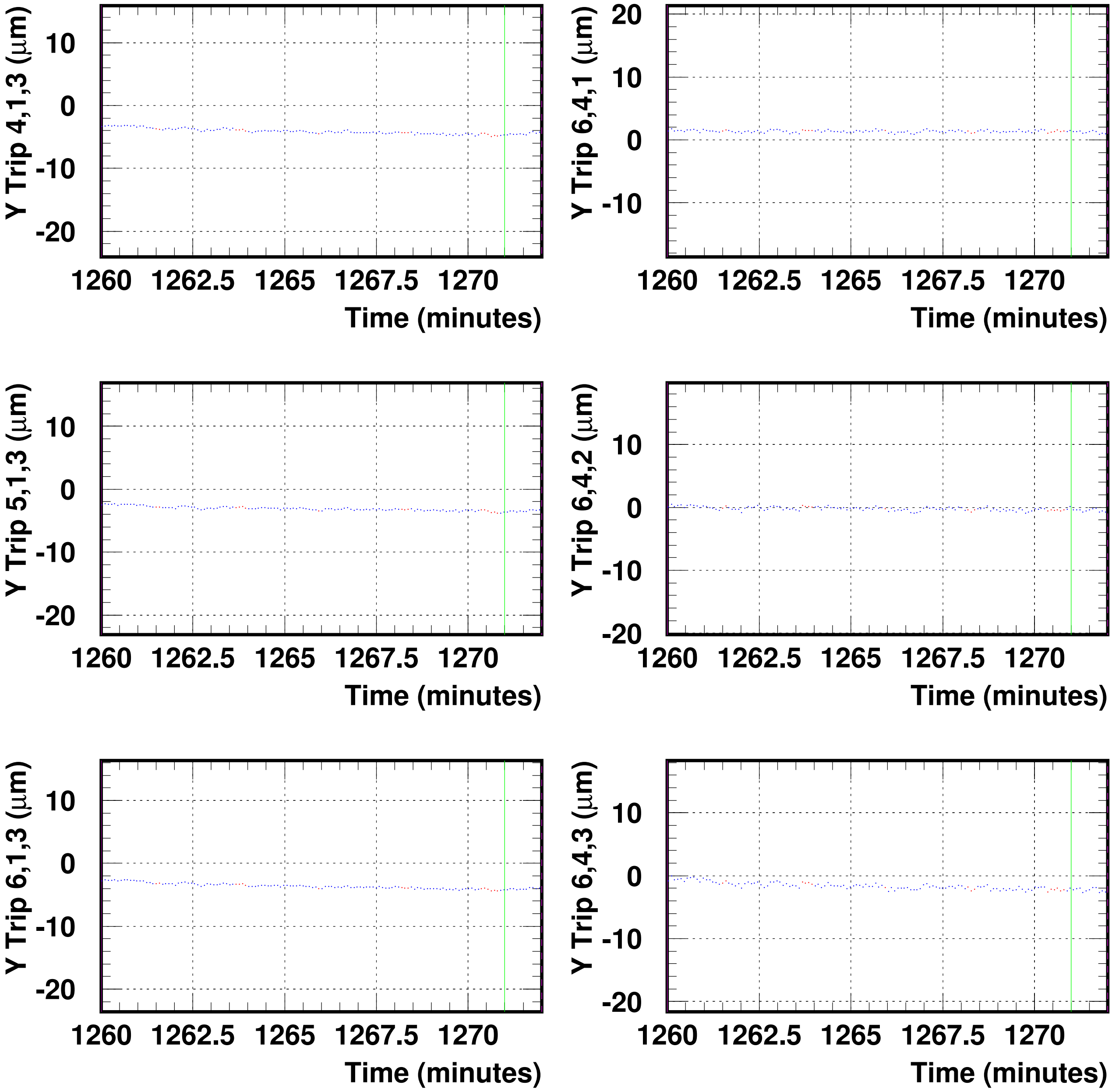
Linear Fit



Plot residual of single BPM to linear fit

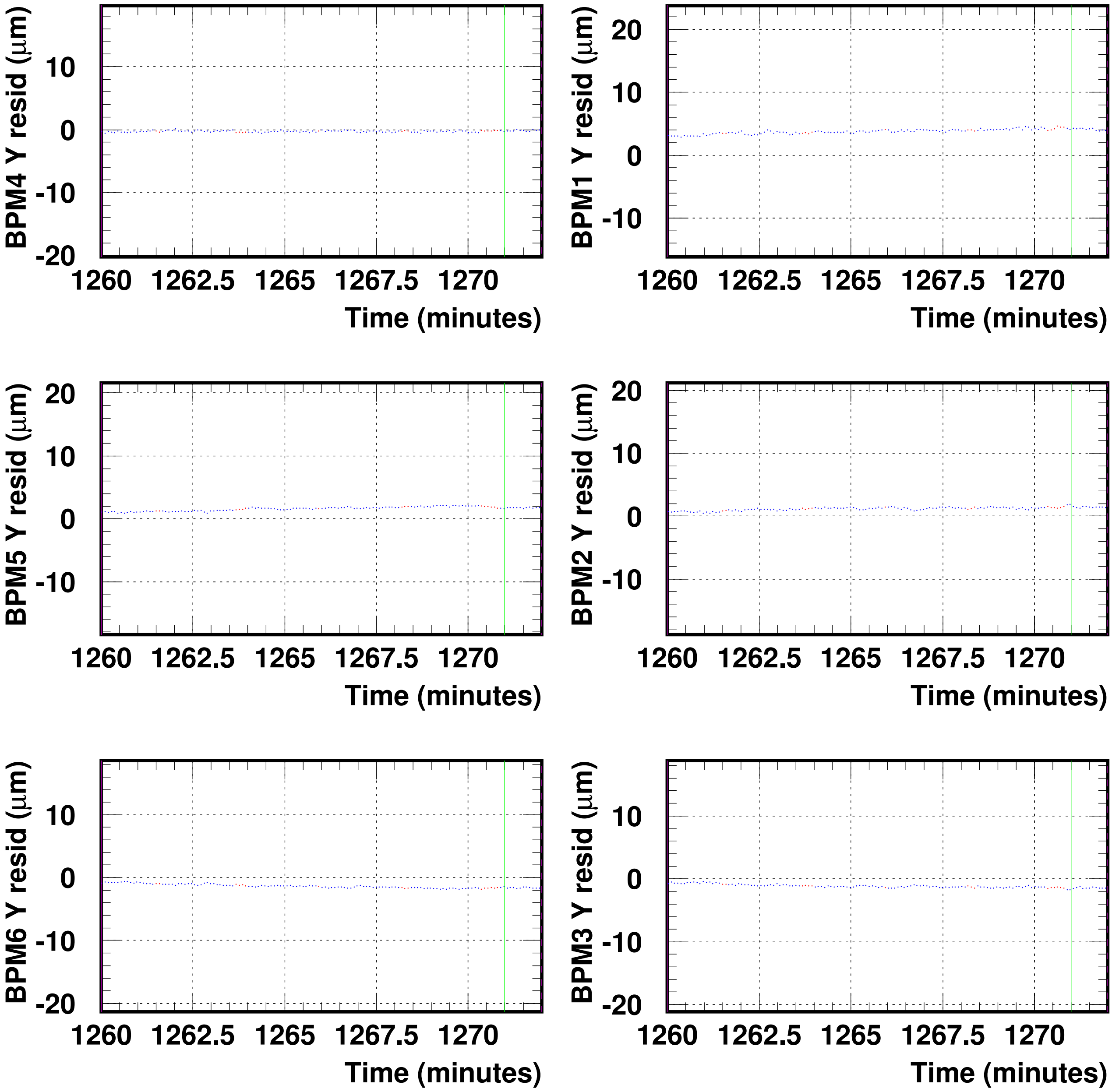
Fill 7931 93 GeV Y Axis

2001/11/02 12.14



Fill 7931 93 GeV Y Axis

2001/11/02 12.14



So...

X Axis Data

- Overall gain stable to 10-15%
- Things look OK

Y Axis Data

- RHS Triplet sensitive to cross-talk
- Properly calibrated, things look nice in Y