

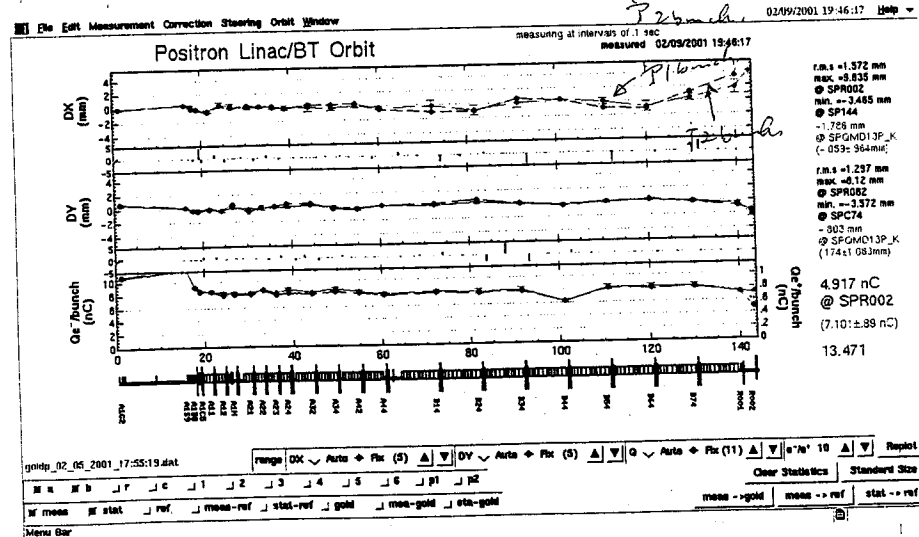
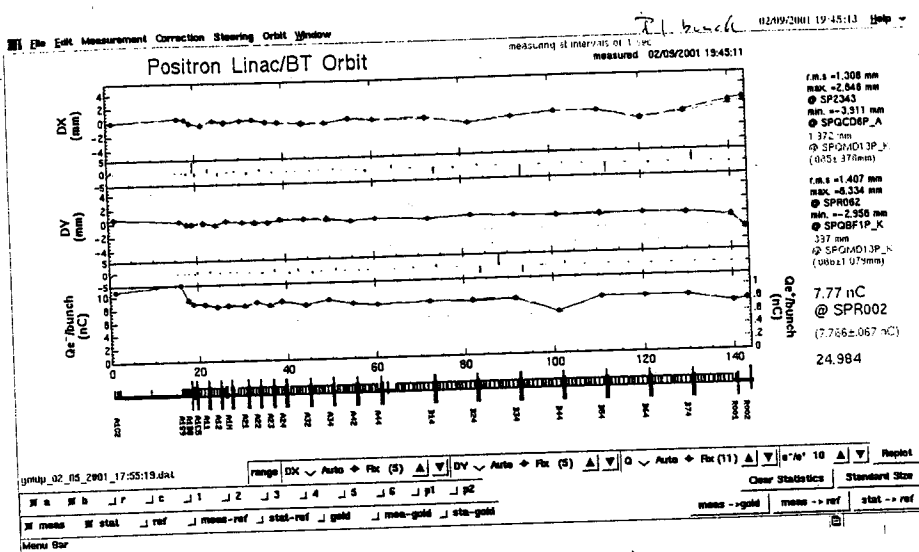
カ1バンチ nC (パルス電圧最低)

カ2バンチ 9nC

この時、軌道変位差が小さかった。

カ1バンチ

FB 全ON

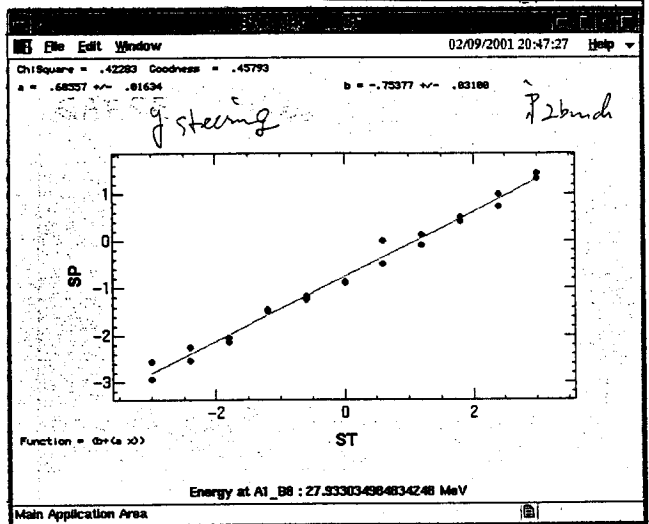
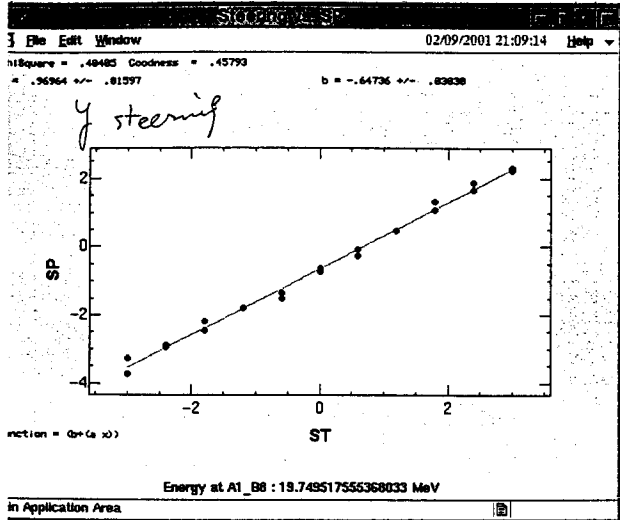
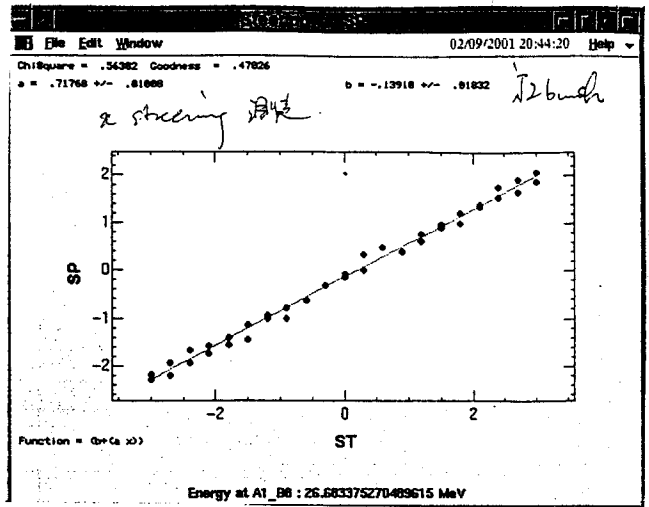
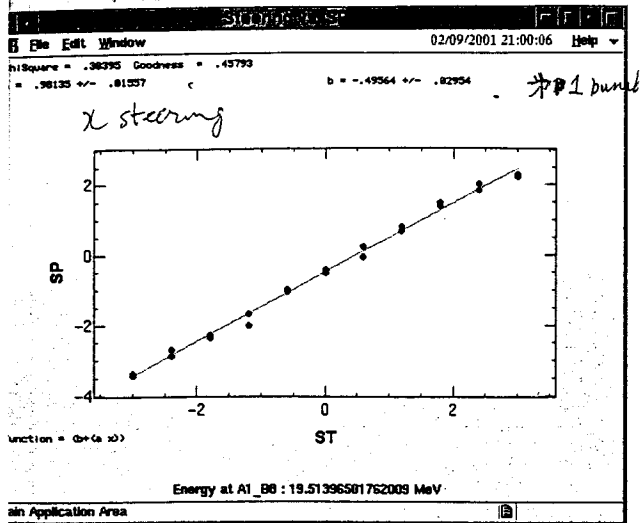


カ2バンチ

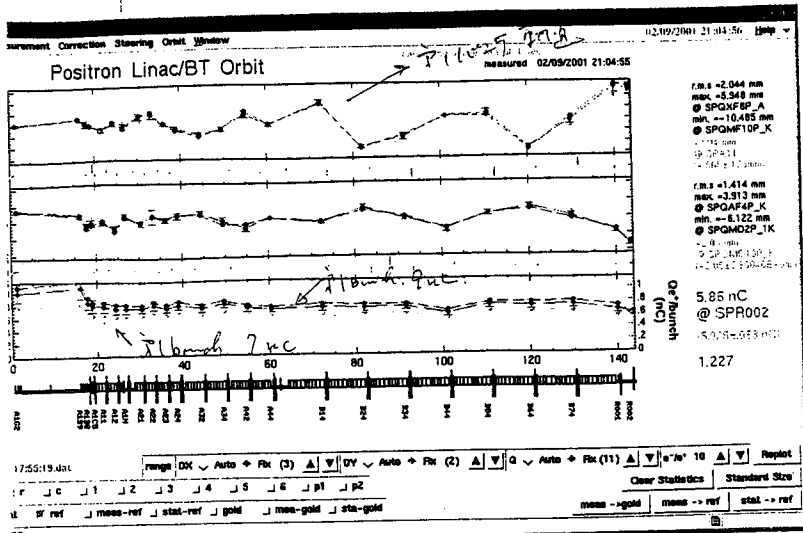
(そのまま切り表えた)
FBが働いた後

カ1バンチエネルギー $\begin{cases} x & 19.5 \text{ MeV} \\ y & 19.7 \text{ MeV} \end{cases}$

カ2バンチエネルギー $\begin{cases} x & 26.7 \text{ MeV} \\ y & 27.9 \text{ MeV} \end{cases}$

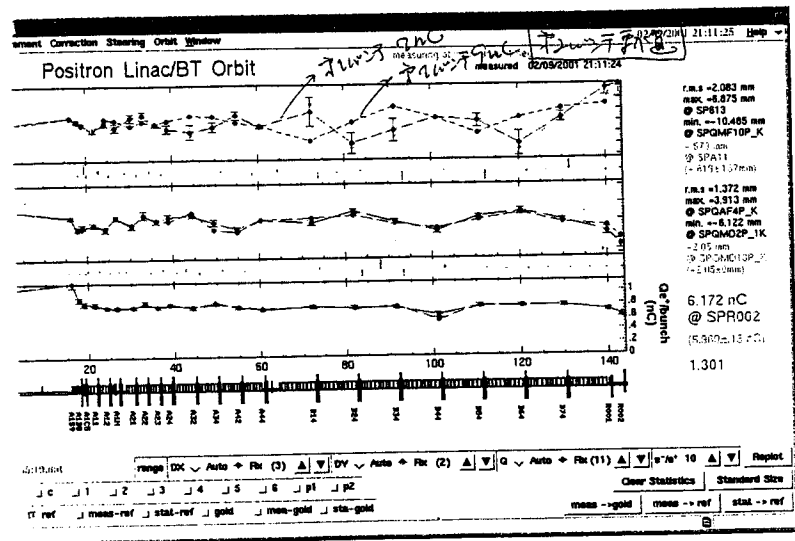


- (1) カ1, カ2バンチのエネルギー差が大きくなったにもかかわらず、軌道変位差は小さくなった。このことは、軌道差がエネルギー差に起因するものではないことを示している。
- (2) カ2バンチの軌道が大きく変化するのには、カ1バンチの電荷量を変化させた場合であり、wake fieldが軌道差の主たる原因であると考えられる。

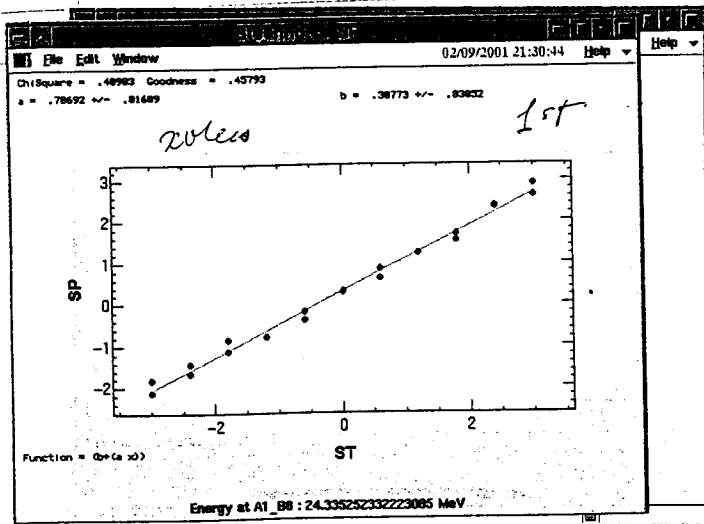


1st
change
to 2nd
to 1st
to 2nd
to 1st
(change
(2nd))

#1, #2 in the 9nC

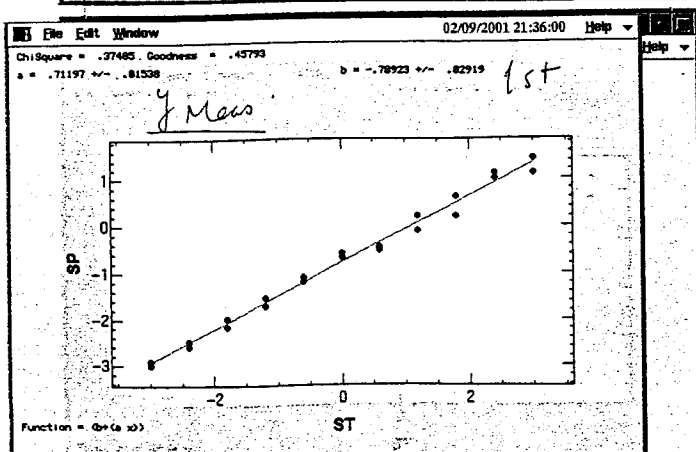


1st
change
to 2nd
to 1st
to 2nd
to 1st
(change
to)



1st
change
(to 2nd 9nC)

2nd
E = 26.89 MeV
28.586 MeV



1st E = 24.335
26.891

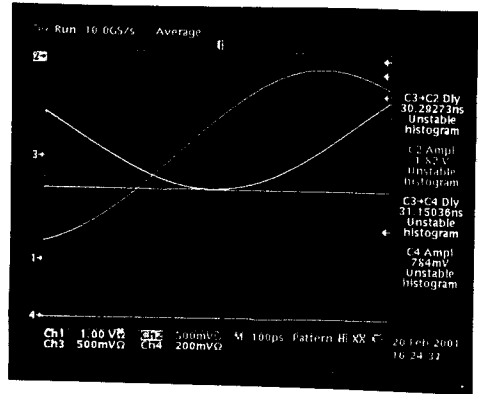
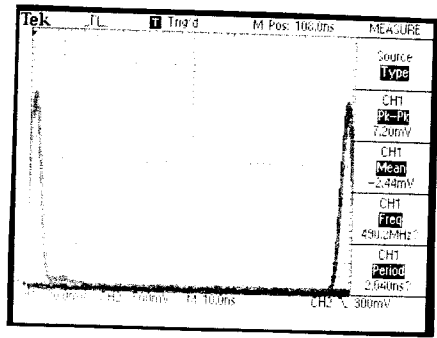
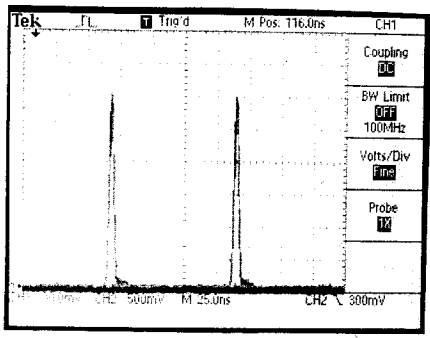
2月20日 Two bunch study

Data set

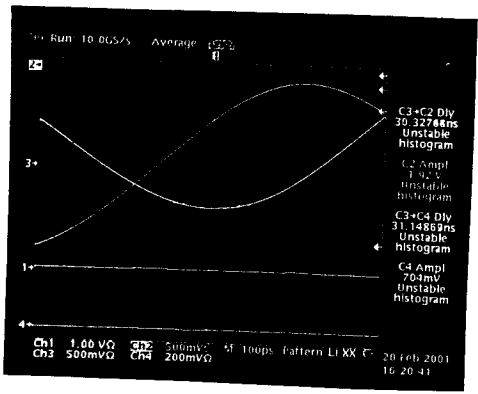
ボ1バッチ ON/OFF して, ボ2バッチ軌道変化を見る.

data 14. delay all

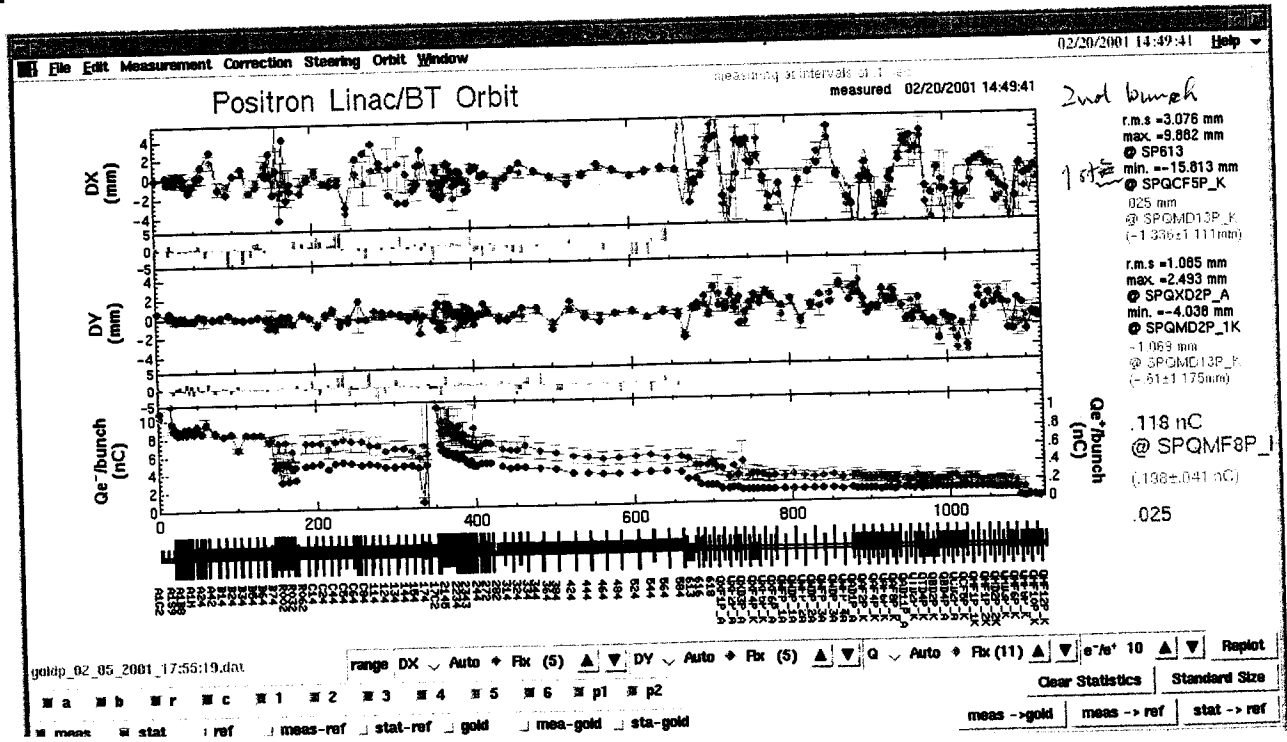
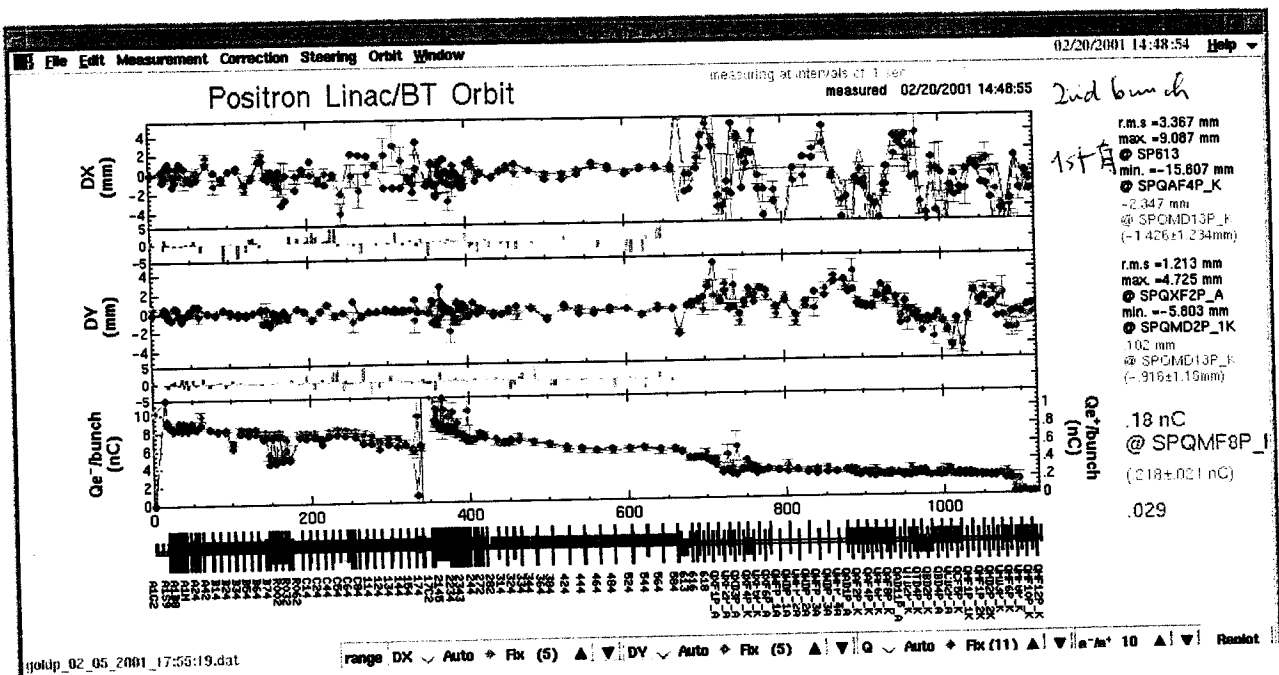
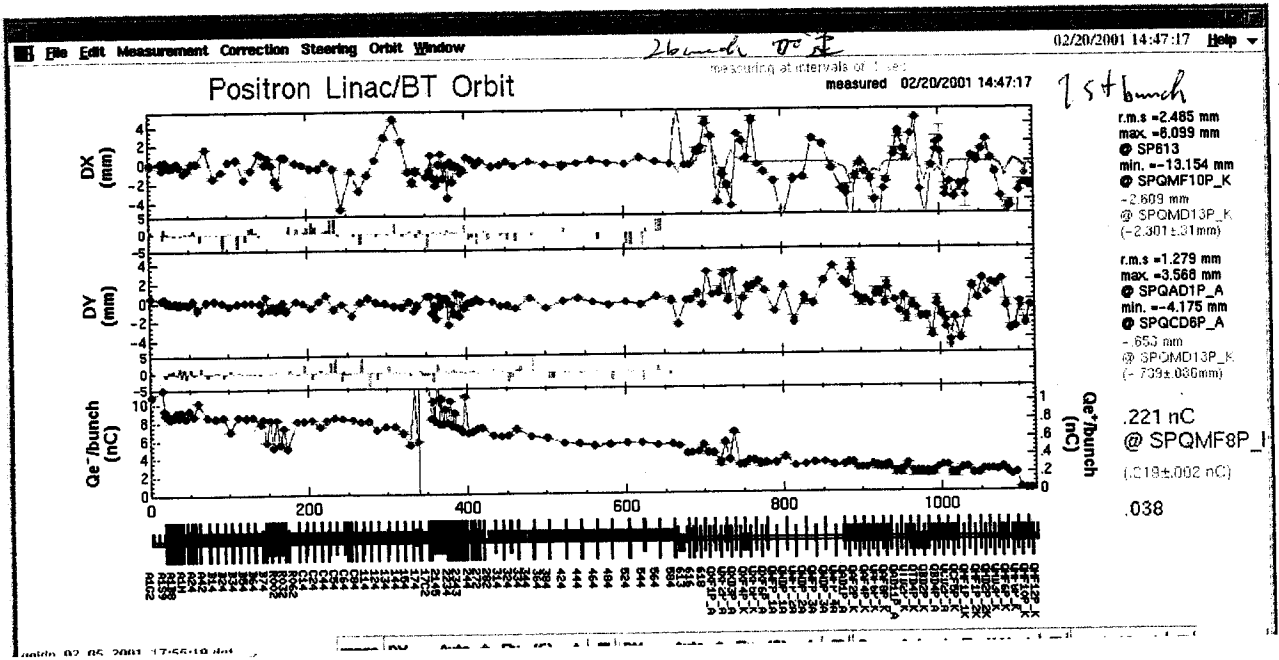
- 1238 (1) Two bunch. Feedbackでボ1バッチ軌道安定させる. Fig 1 (14:47)
- (2) Feedback 全て off
- (3) ボ1バッチ ONでボ2バッチ軌道 Fig 2; (14:46) 再測定 (14:49) 計測 Arc sec (14:51.30)
- (4) ボ1バッチ off してボ2バッチ軌道 Fig 3 (14:49.41), Arc sec (14:50.36)

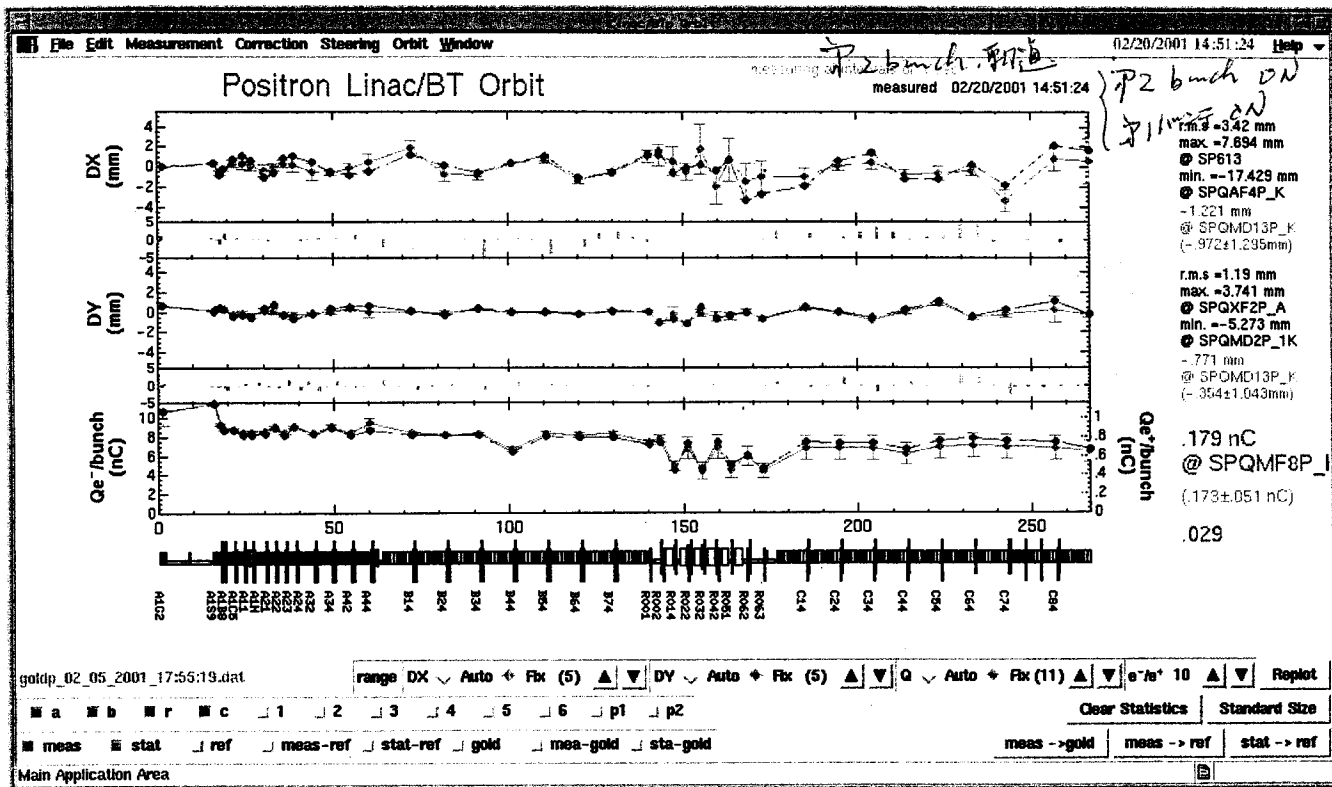
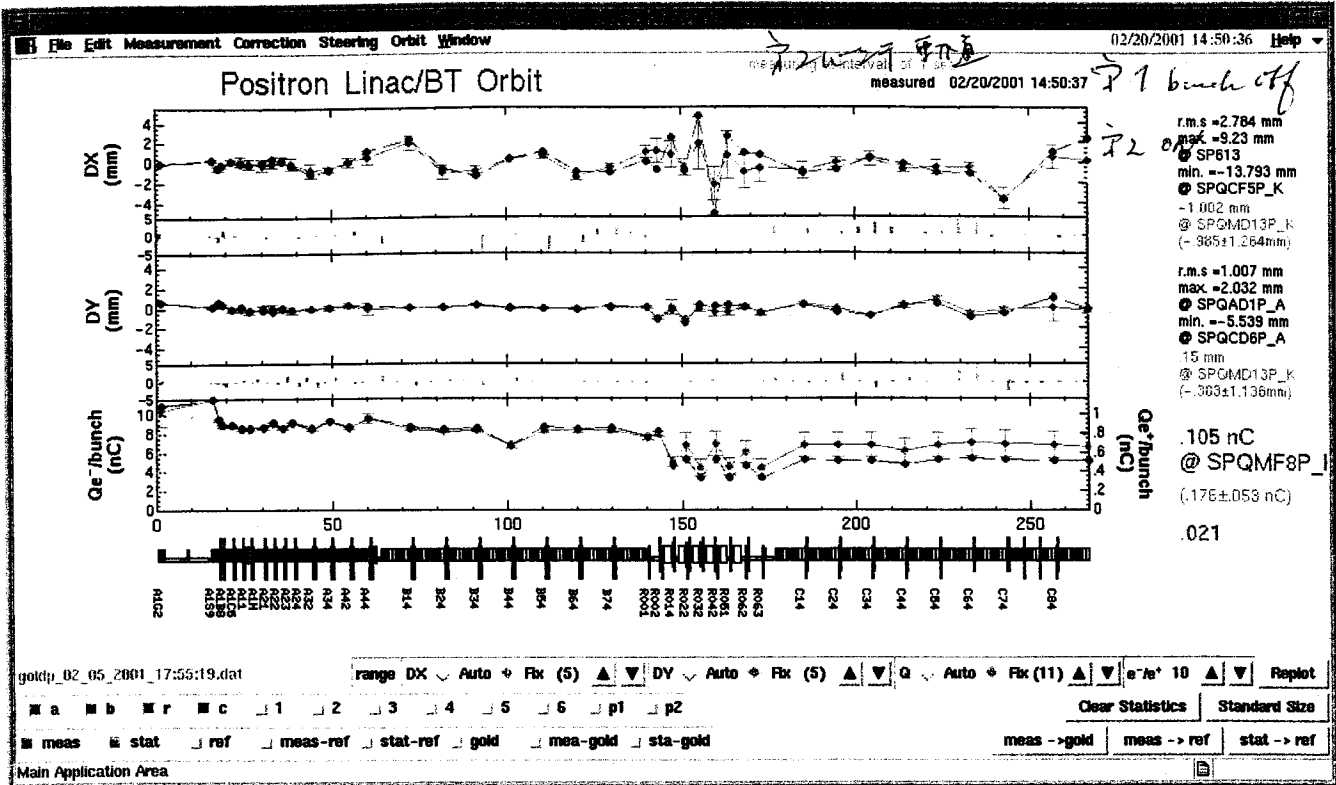


ボ1バッチ
Grid pulse (30.2927ns
1.82V
GUN Beam (WM-A1-G2)
(31.158 ns
784mV



ボ2バッチ
Grid pulse (30.3274ns
1.92V
Gun Beam (31.149 ns
704mV





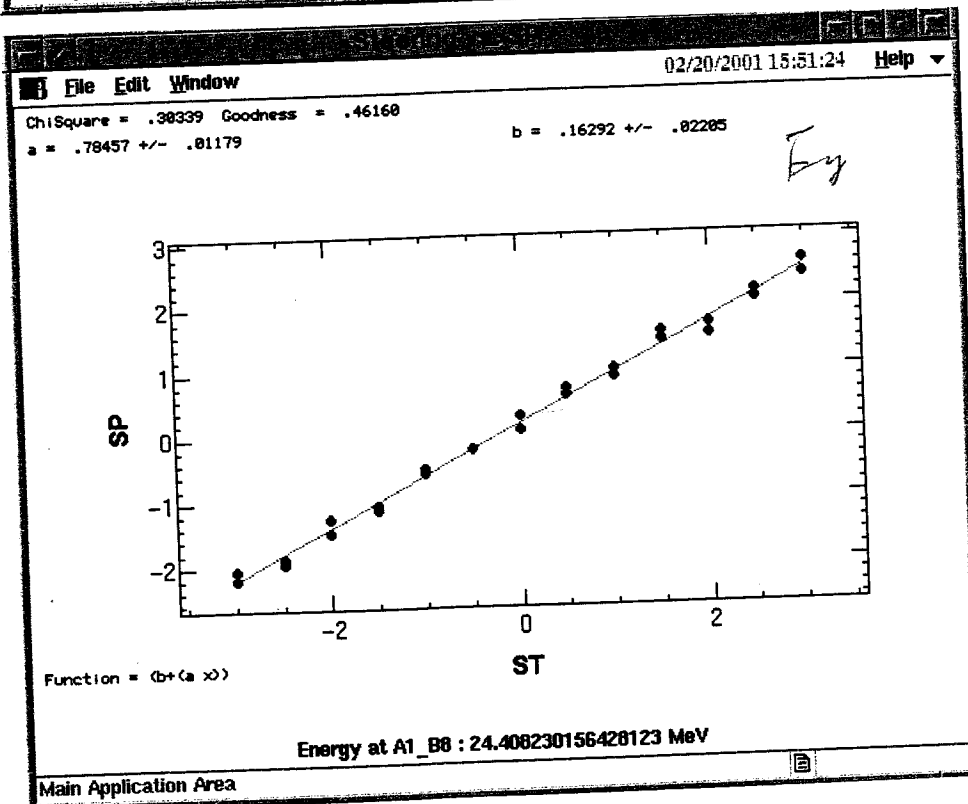
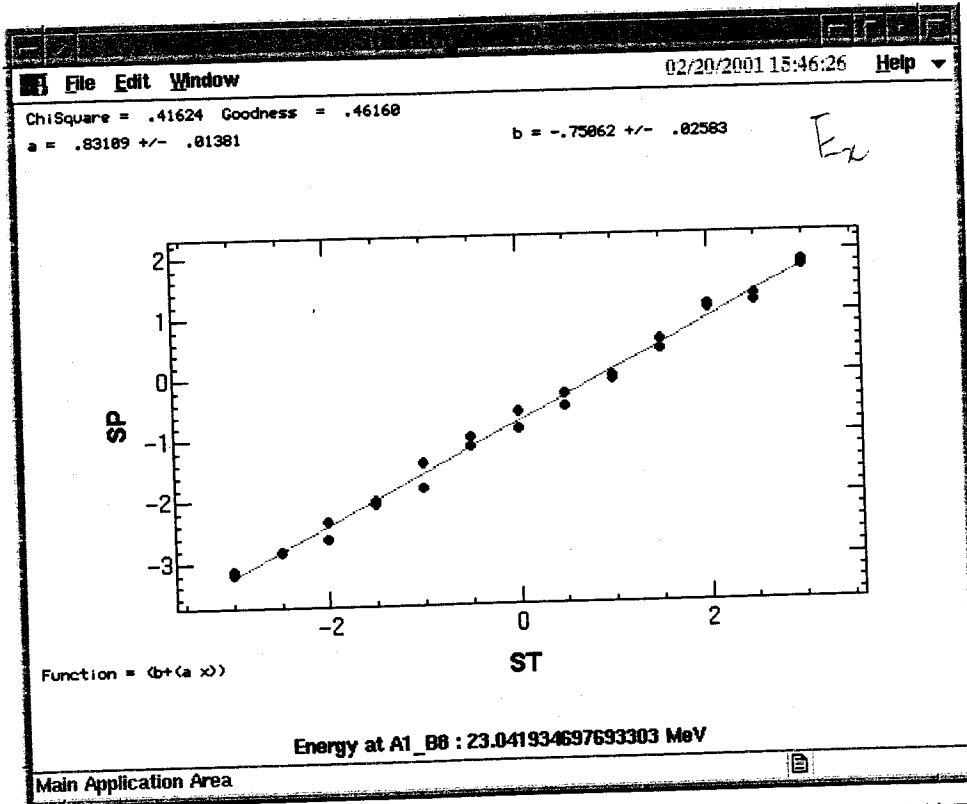
15240

2 bunch 測定 / 7 bunch 測定 (2nd bunch ON時)

Analyzer (ST) 81 ① TK menu - linac

$$E_x = 23.04193 \text{ MeV}$$

$$E_y = 24.40823 \text{ MeV}$$



Name of Steering	BX_A1_B8
Name of SP	SP_A1_C5
Start Value (A)	-3
Step Value (A)	0.5
Stop Value (A)	3
Offset X (mm)	0
Offset Y (mm)	0

Handwritten:
 Hw cur
 Analyzer (ST)
 81.

Use Spiricon

Zero QF/D_A1_B8

```

-2.5 0 0 0 0 -2.831 0.451 7.766
-2.0 0 0 0 0 -2.336 0.358 7.822
-2.0 0 0 0 0 -2.618 0.361 7.727
-1.5 0 0 0 0 -2.019 0.423 7.750
-1.5 0 0 0 0 -2.076 0.490 7.814
-1.0 0 0 0 0 -1.393 0.561 7.642
-1.0 0 0 0 0 -1.817 0.262 8.005
-0.5 0 0 0 0 -1.004 0.544 7.797
-0.5 0 0 0 0 -1.133 0.255 7.931
0.0 0 0 0 0 -0.578 0.388 7.856
0.0 0 0 0 0 -0.874 0.466 7.763
0.5 0 0 0 0 -0.298 0.384 7.787
0.5 0 0 0 0 -0.510 0.527 7.821
1.0 0 0 0 0 -0.010 0.323 7.690
1.0 0 0 0 0 -0.081 0.585 7.845
1.5 0 0 0 0 0.568 0.524 7.711
1.5 0 0 0 0 0.413 0.393 7.717
2.0 0 0 0 0 1.128 0.374 7.770
2.0 0 0 0 0 1.087 0.384 7.611
2.5 0 0 0 0 1.272 0.297 7.800
2.5 0 0 0 0 1.189 0.382 7.739
3.0 0 0 0 0 1.804 0.530 7.601
3.0 0 0 0 0 1.745 0.507 7.695

```

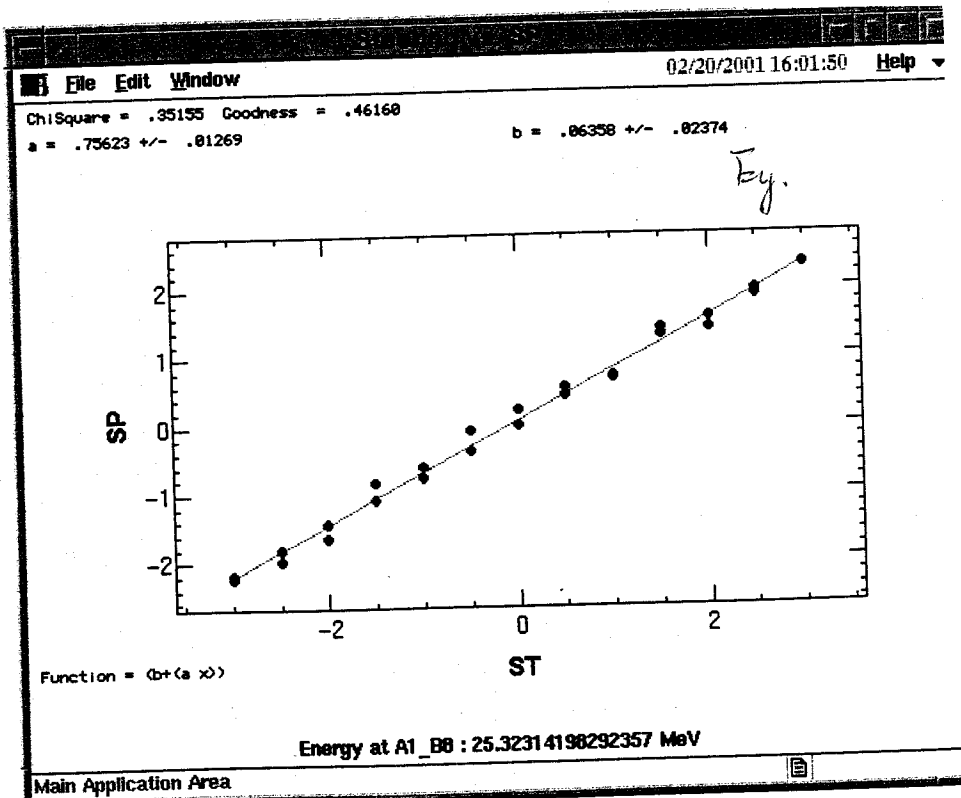
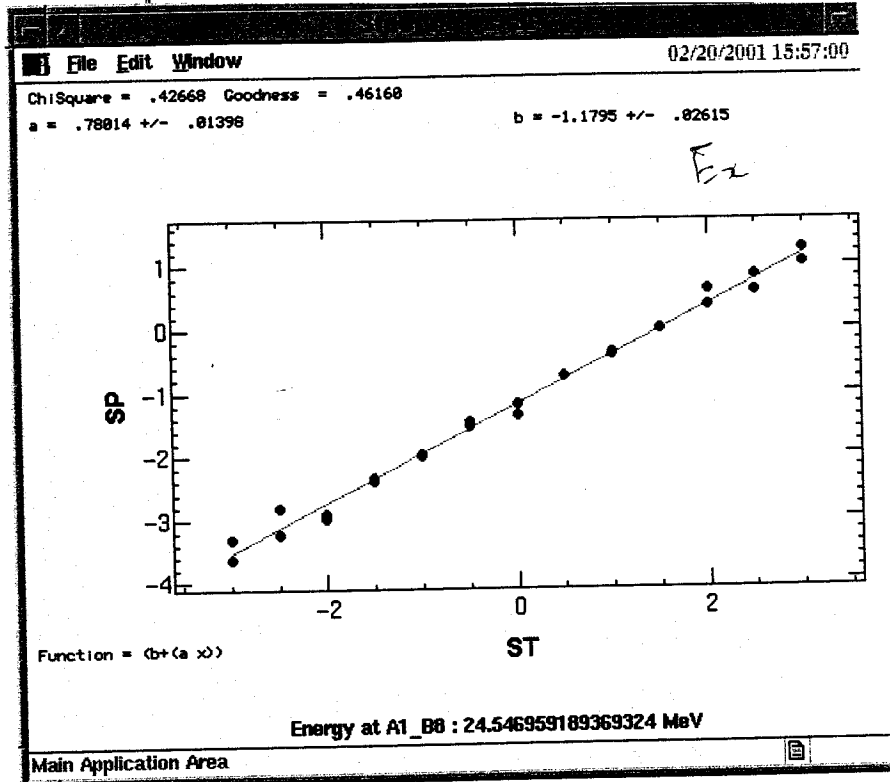
Current Steering (A)	-0.863
Current QF_A1_B8 (T/m)	3.37804
Current QD_A1_B8 (T/m)	2.88065
Current QF_A1_C5 (T/m)	2.8276
Current QD_A1_C5 (T/m)	2.57553

finished, 'BX_A1_B8' set to -0.863
 file /tmp/tkst-scsp.2762 written

CF=ST

2nd bunch E 測 定 (P 7 W = 7 ON)

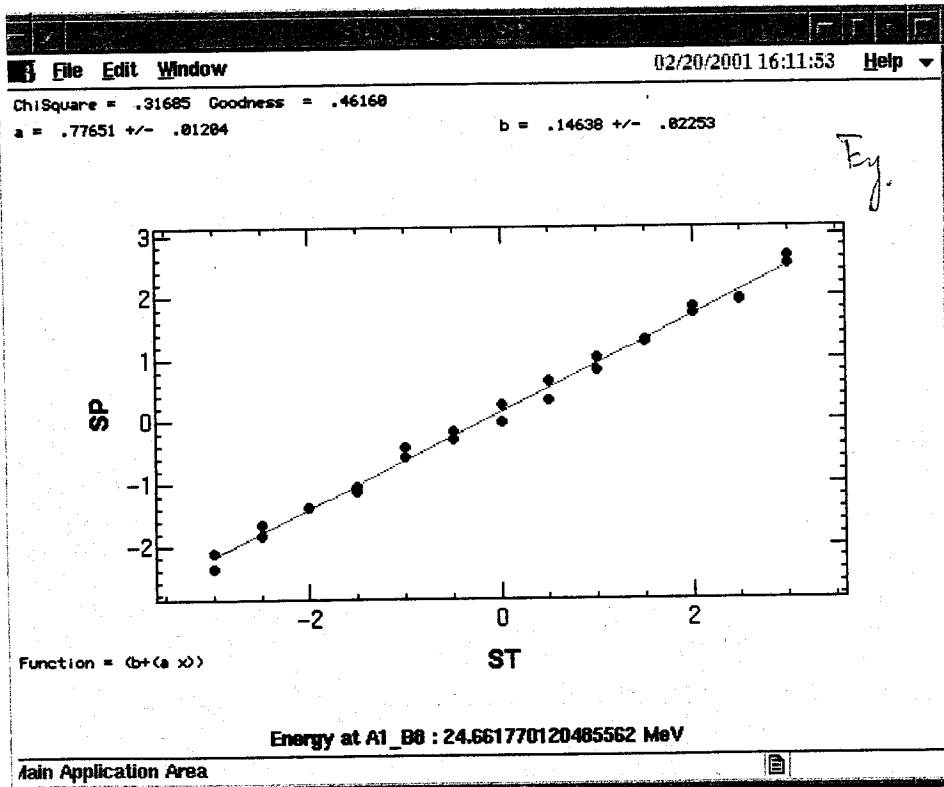
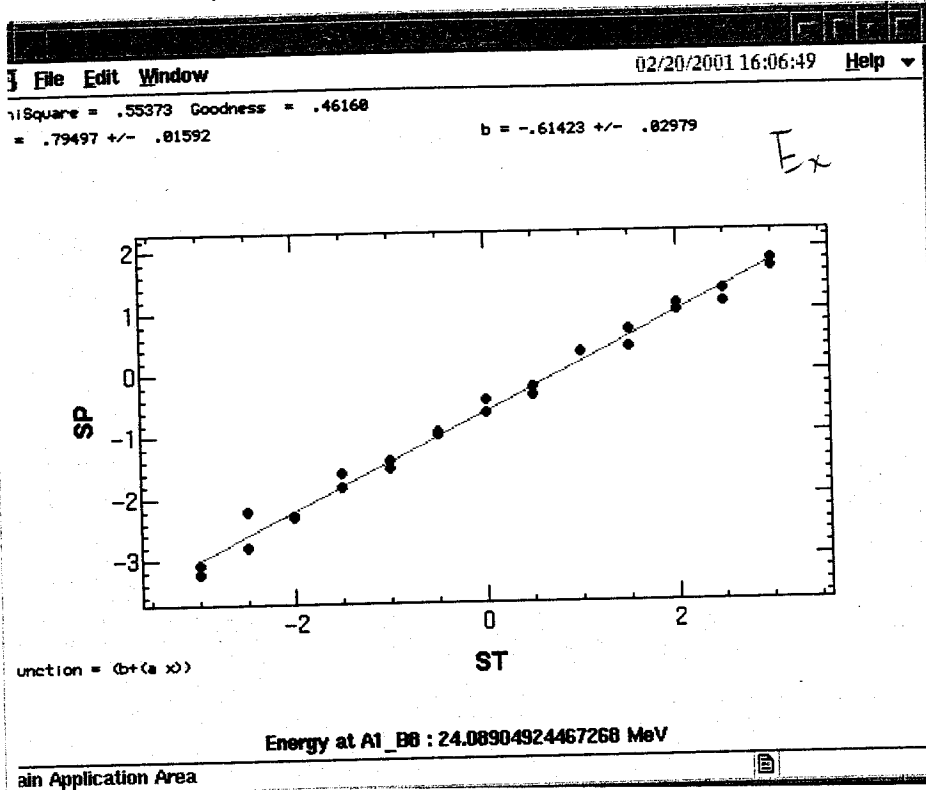
$$\left. \begin{aligned} E_x &= 24.5469 \text{ MeV} \\ E_y &= 25.3231 \end{aligned} \right\}$$



16:02

2nd bunch 正相検. (前110=7 off)

$$\left. \begin{aligned} E_x &= 24.0890 \\ E_y &= 24.6617 \text{ MeV} \end{aligned} \right\} \text{New}$$



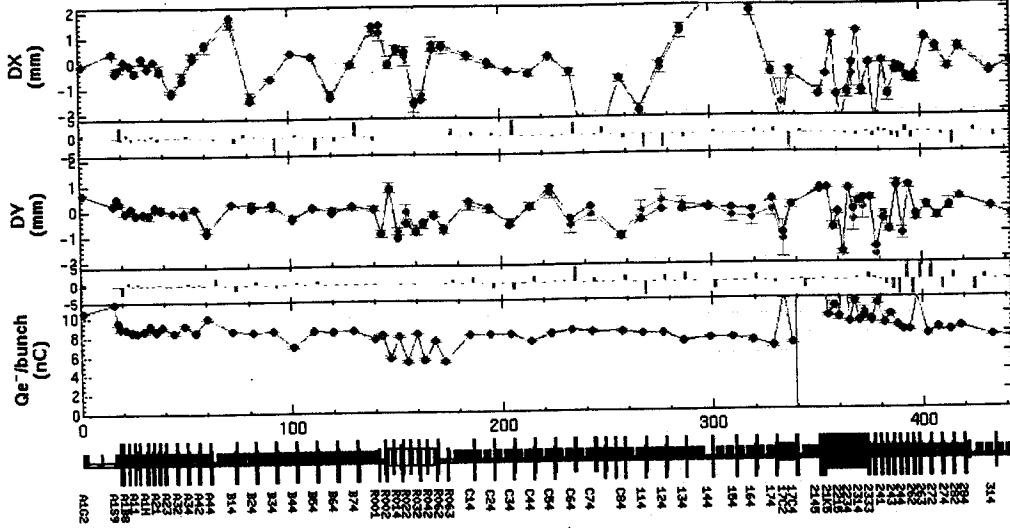
Orbit a 2nd

1st bunch (end on)

FB後

Positron Linac/BT Orbit

measuring at intervals of 1 sec
measured 02/20/2001 16:16:18



r.m.s = 2.634 mm
 max = 6.396 mm
 @ SP613
 min. = -14.785 mm
 @ SPQMF10P_K
 -2.116 mm
 @ SPQMD13P_K
 (-1.166 ± 737mm)

r.m.s = 1.239 mm
 max = 3.246 mm
 @ SPQAD1P_A
 min. = -4.296 mm
 @ SPQCD6P_A
 -484 mm
 @ SPQMD13P_K
 (-.973 ± 649mm)

.223 nC
 @ SPQMF8P_1
 (.208 ± 01 nC)

.032

ip_02_05_2001_17:55:19.dat

range DX Auto Fx (2) DY Auto Fx (2) Q Auto Fx (11) e-/e' 10 Replot

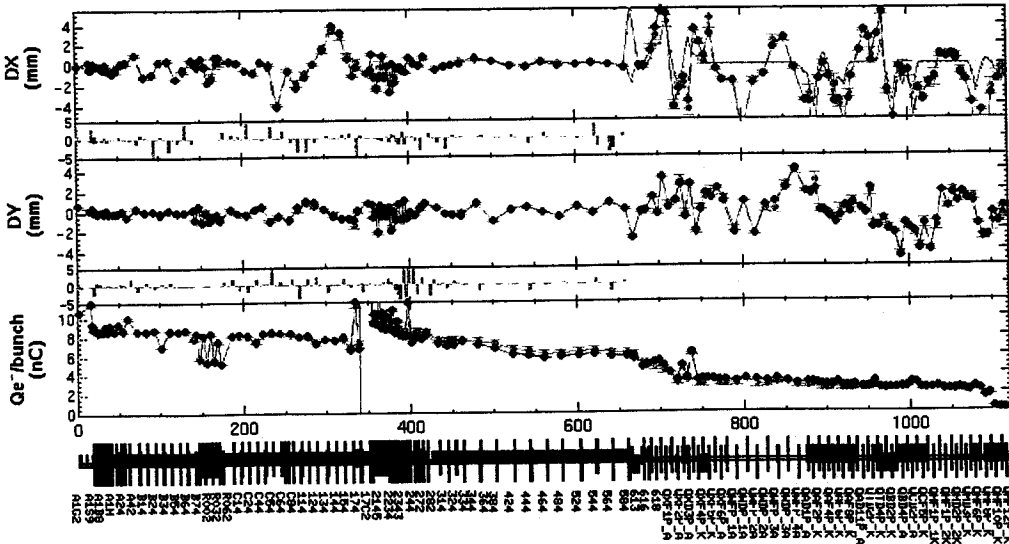
Clear Statistics Standard Size

meas -> gold meas -> ref stat -> ref

Positron Linac/BT Orbit

measuring at intervals of 1 sec
measured 02/20/2001 16:15:02

2 bunch orbit 1st bunch FB on後



r.m.s = 2.772 mm
 max = 5.636 mm
 @ SP613
 min. = -18.208 mm
 @ SPQMF10P_K
 -431 mm
 @ SPQMD13P_F
 (-1.303 ± 874mm)

r.m.s = 1.235 mm
 max = 4.089 mm
 @ SPQAD1P_A
 min. = -4.709 mm
 @ SPQCD2P_A
 -235 mm
 @ SPQMD13P_F
 (-.651 ± 845mm)

.235 nC
 @ SPQMF8P_1
 (.202 ± 01 nC)

.035

ip_02_05_2001_17:55:19.dat

range DX Auto Fx (5) DY Auto Fx (5) Q Auto Fx (11) e-/e' 10 Replot

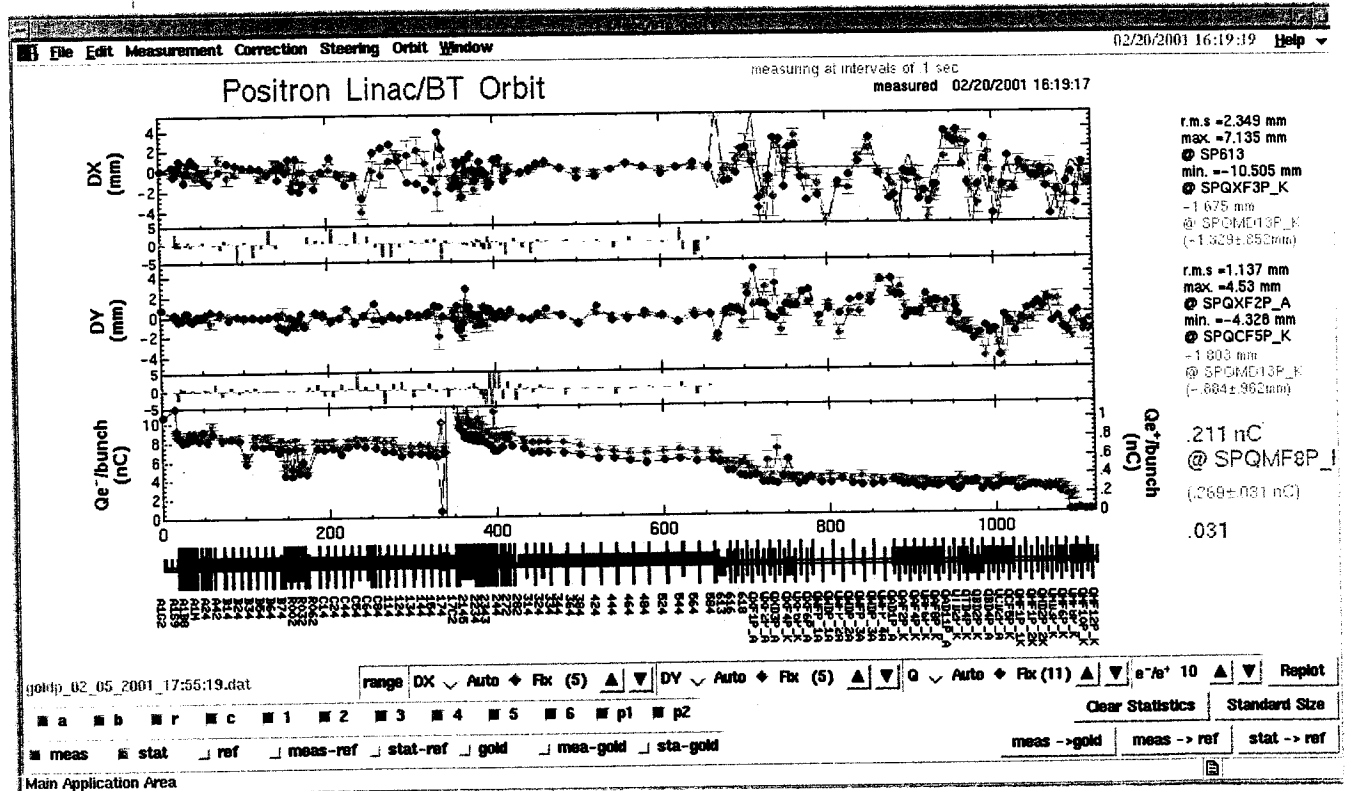
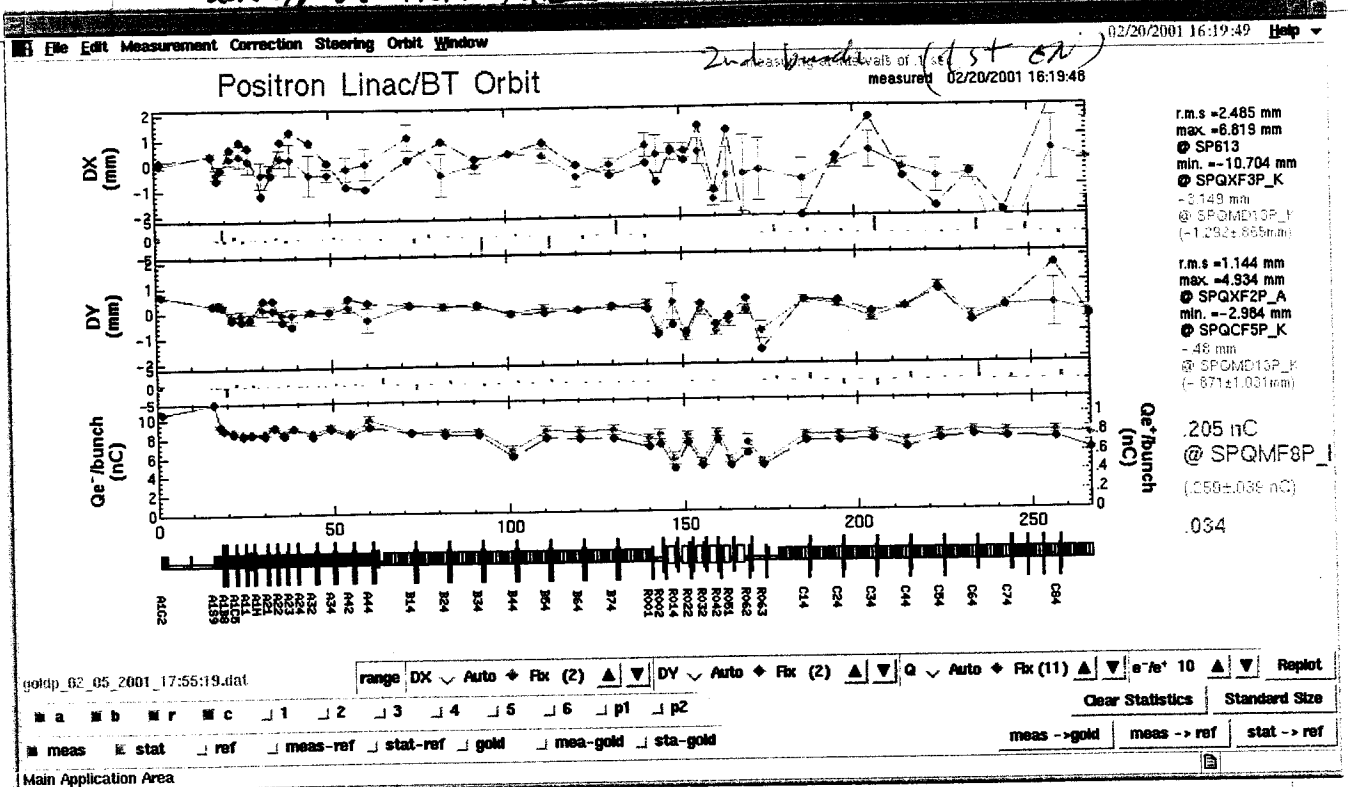
Clear Statistics Standard Size

meas -> gold meas -> ref stat -> ref

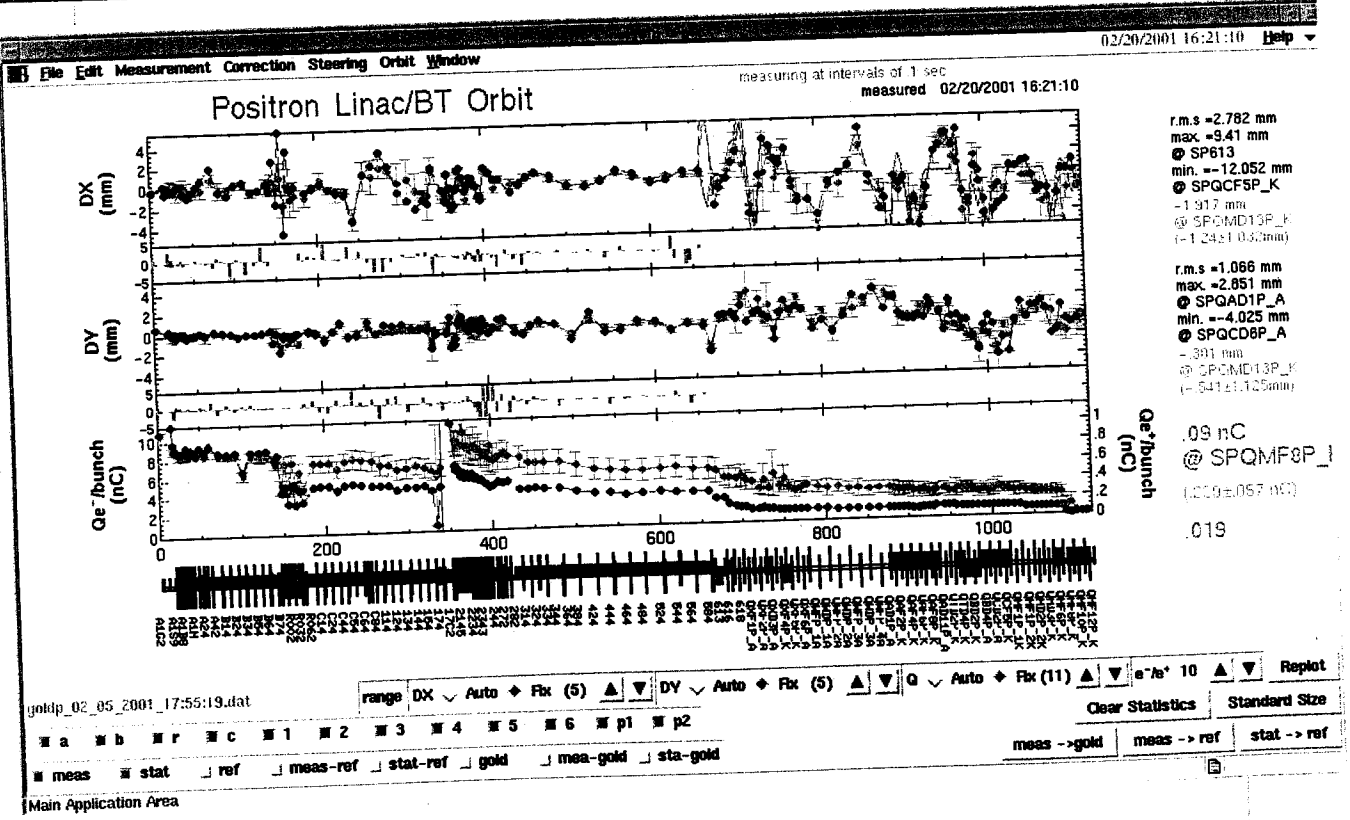
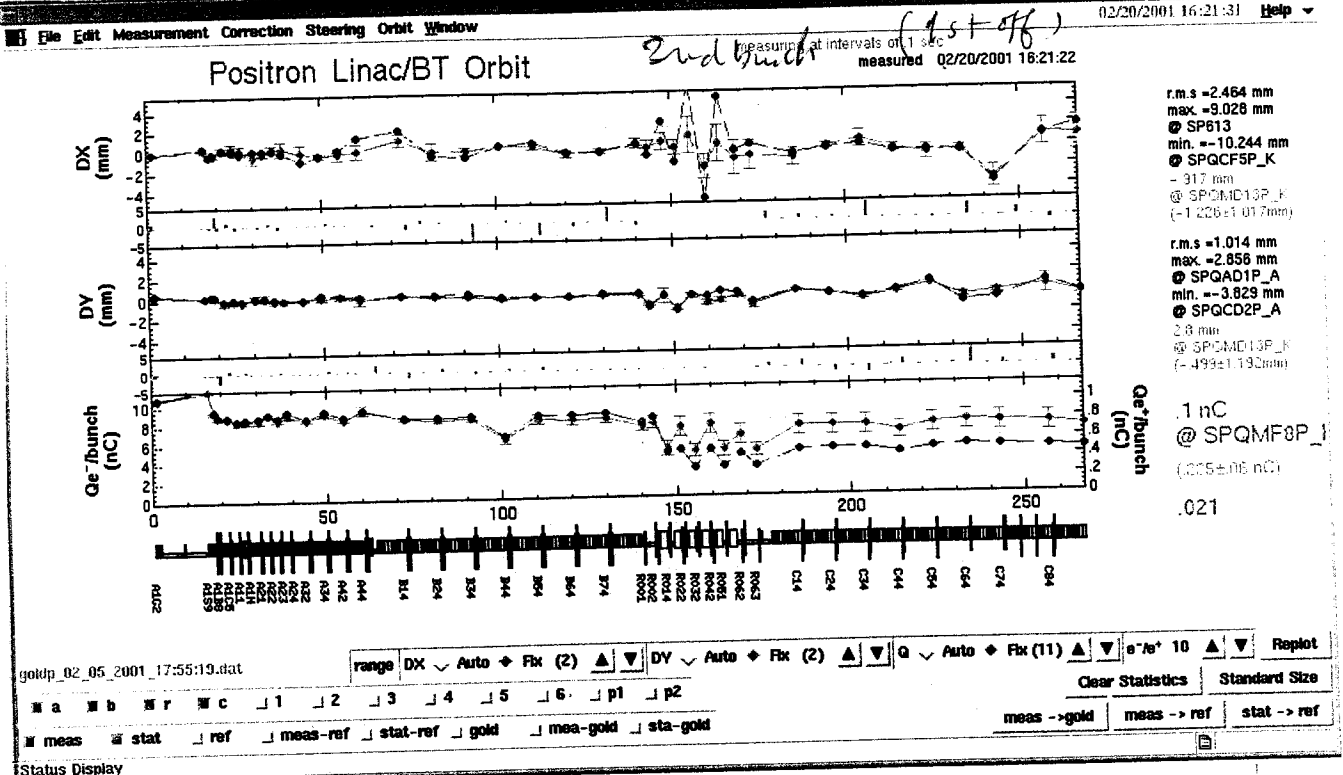
Feedback off に 2nd bunch 軌道測定

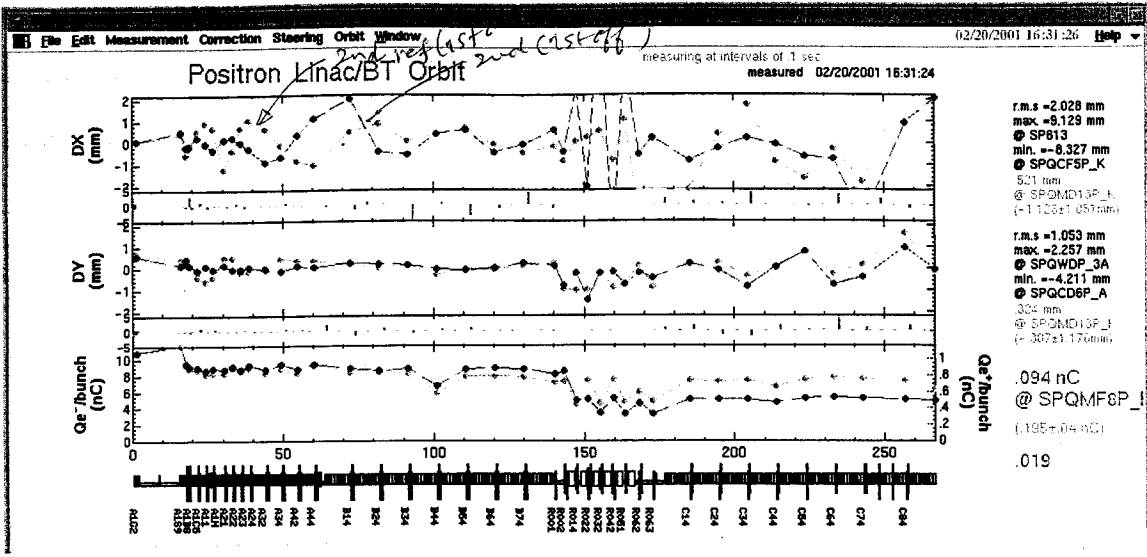
2nd bunch

(1st or)

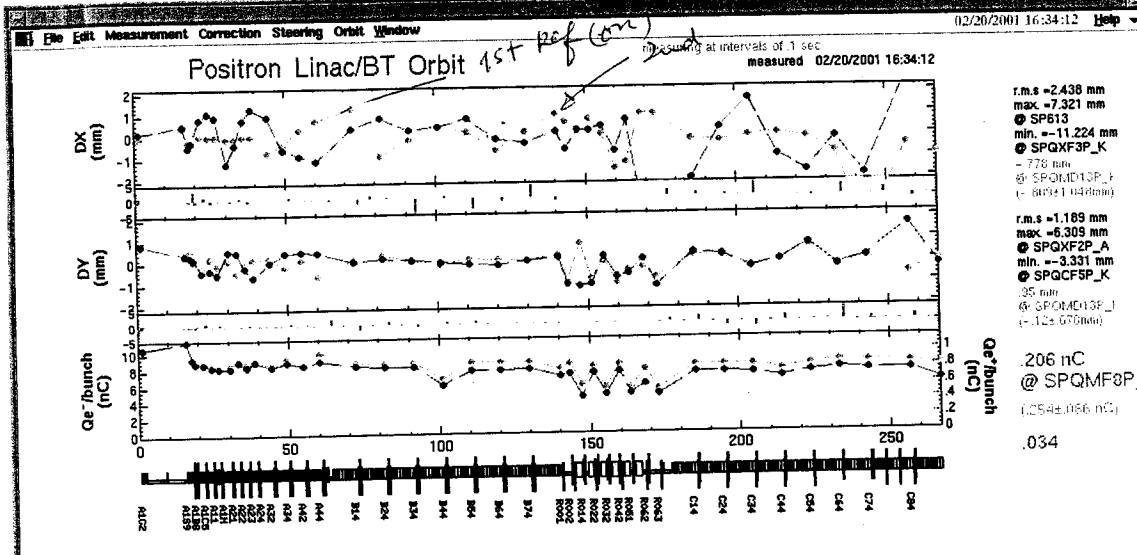


第1バッチ off で第2バッチを測定

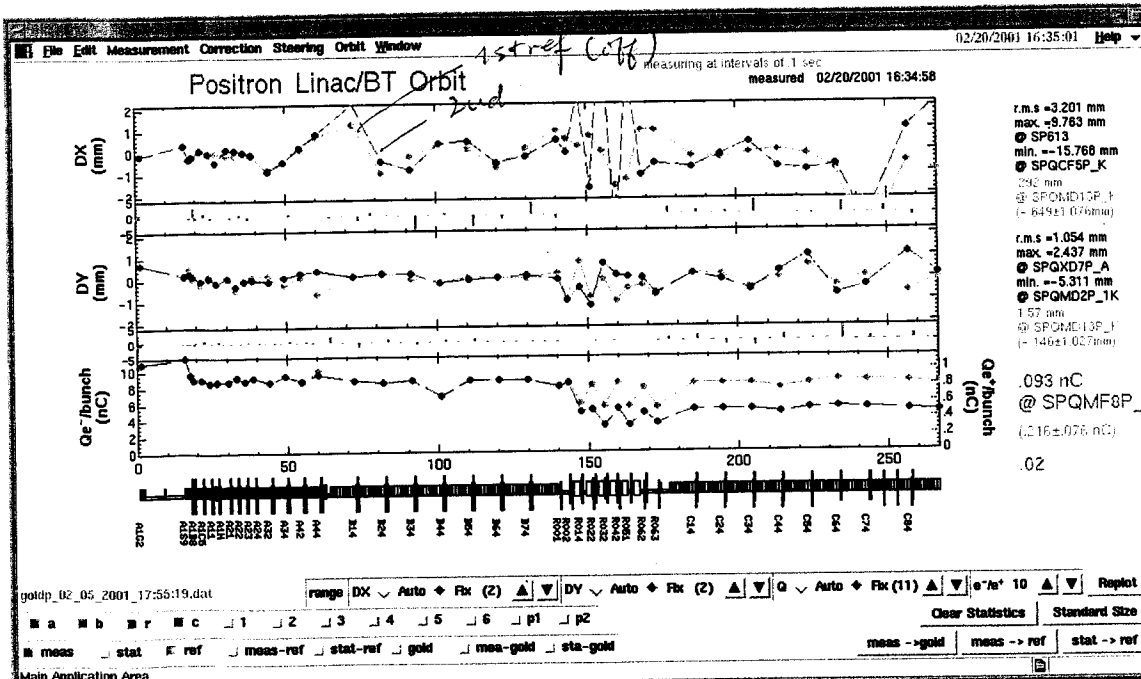




オ2バンチ軌道
1st B
オレンジ 有
ブルー 無



オ1/オ2バンチ軌道
オレンジ, オ1B
ブルー, オ2B
オ2バンチは
オ1バンチの
wake fieldの
影響を受けて
いる。



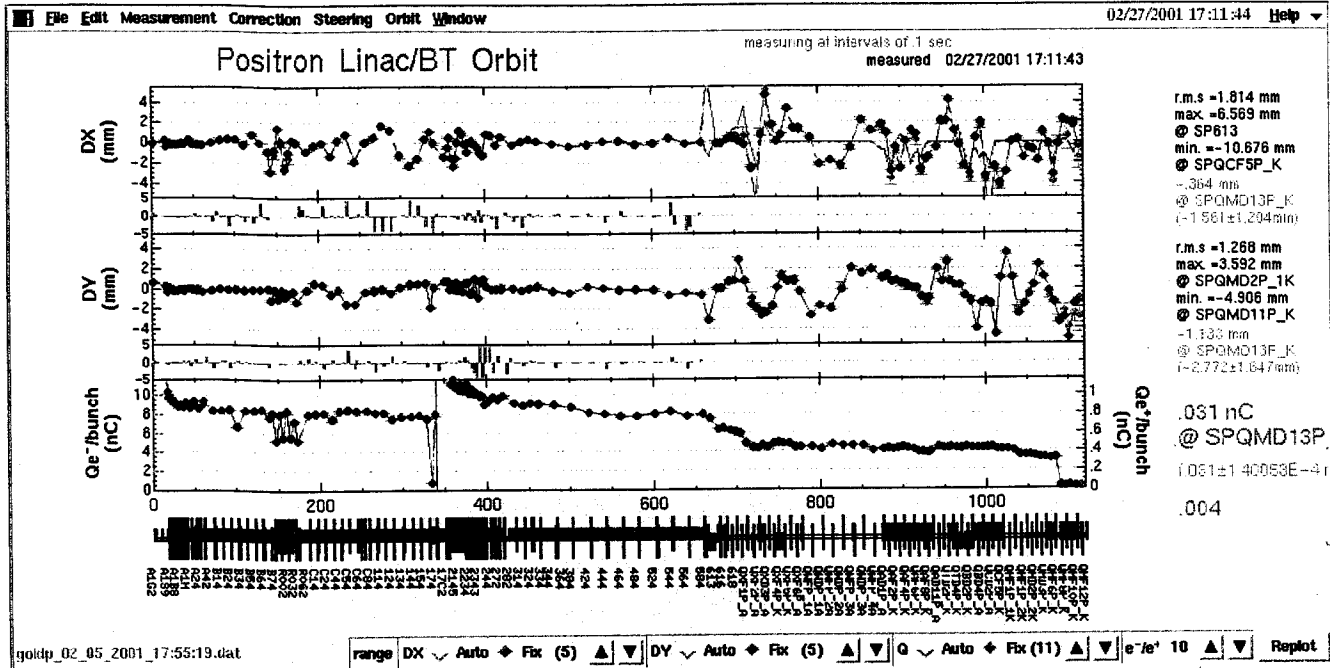
各バンチ単独
オレンジ オ1B
ブルー オ2B
単独バンチ
軌道は似て
いる。

2001. 2. 27. 入射部調整

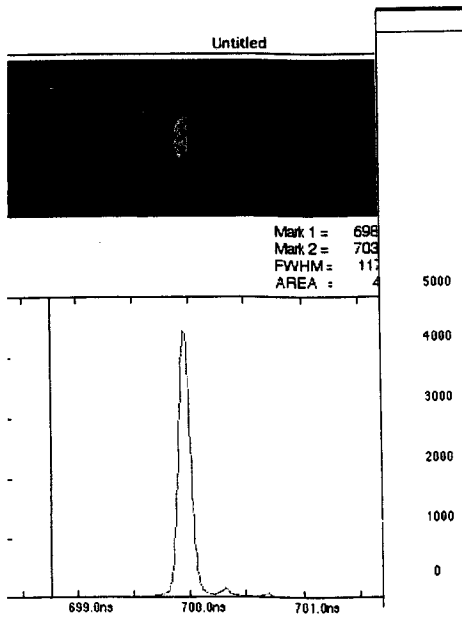
目標 ① "サテライトバンチを減らす"

② 透過率を上げる。

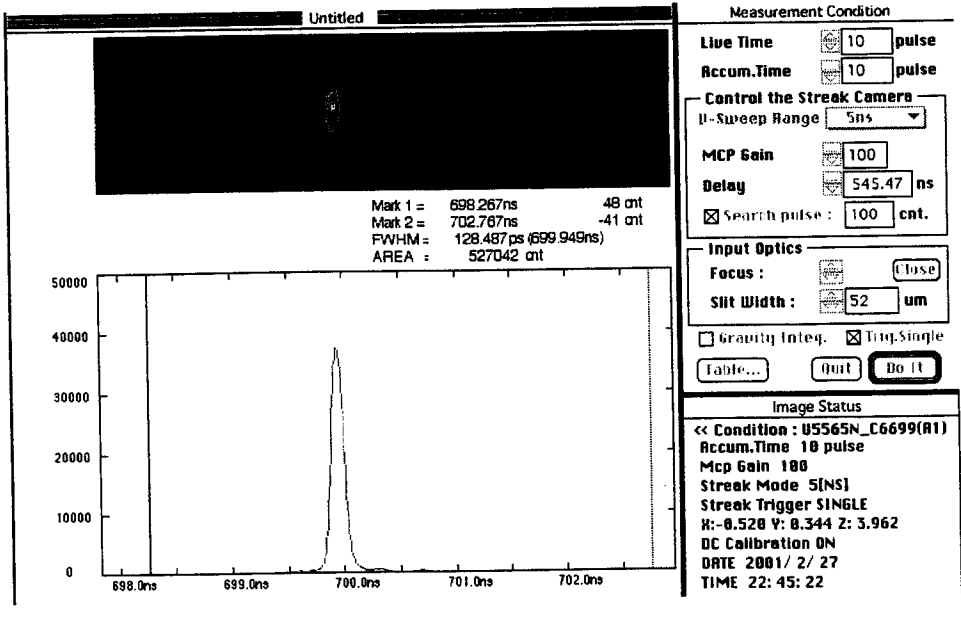
調整前の状態



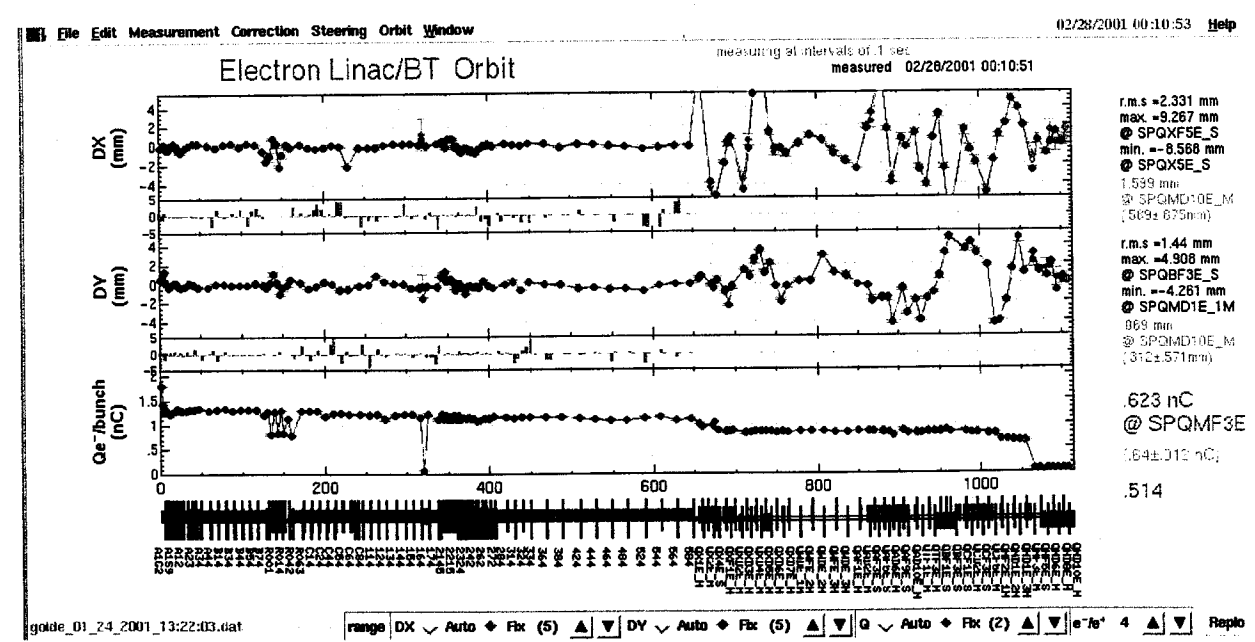
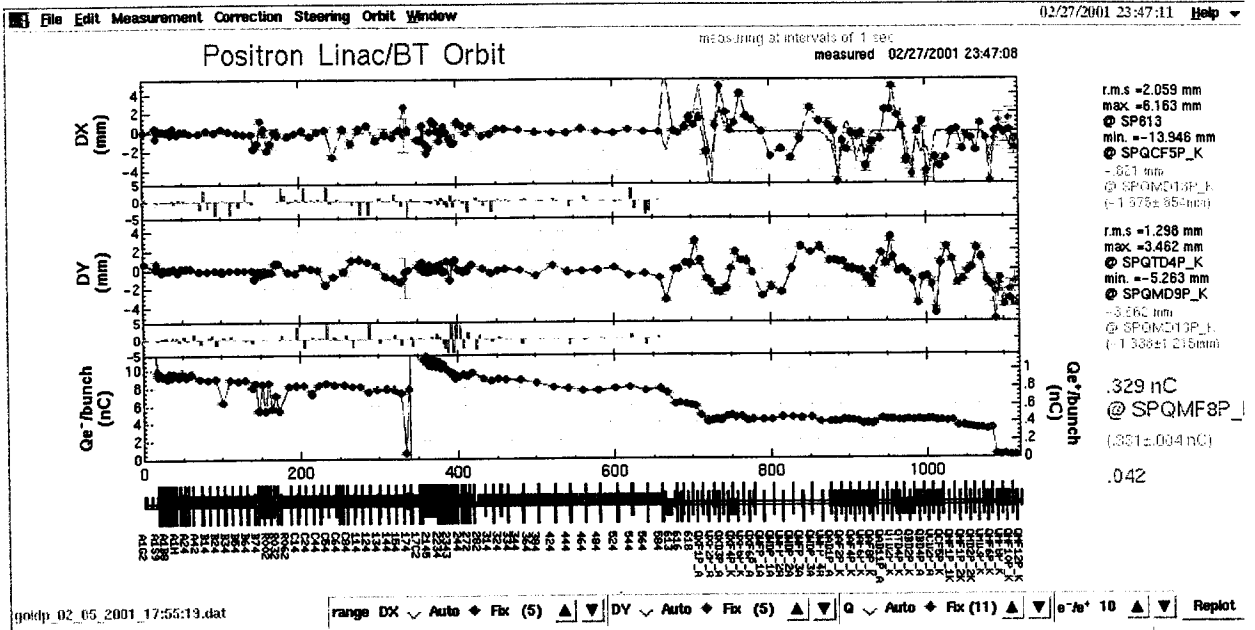
調整前



調整後



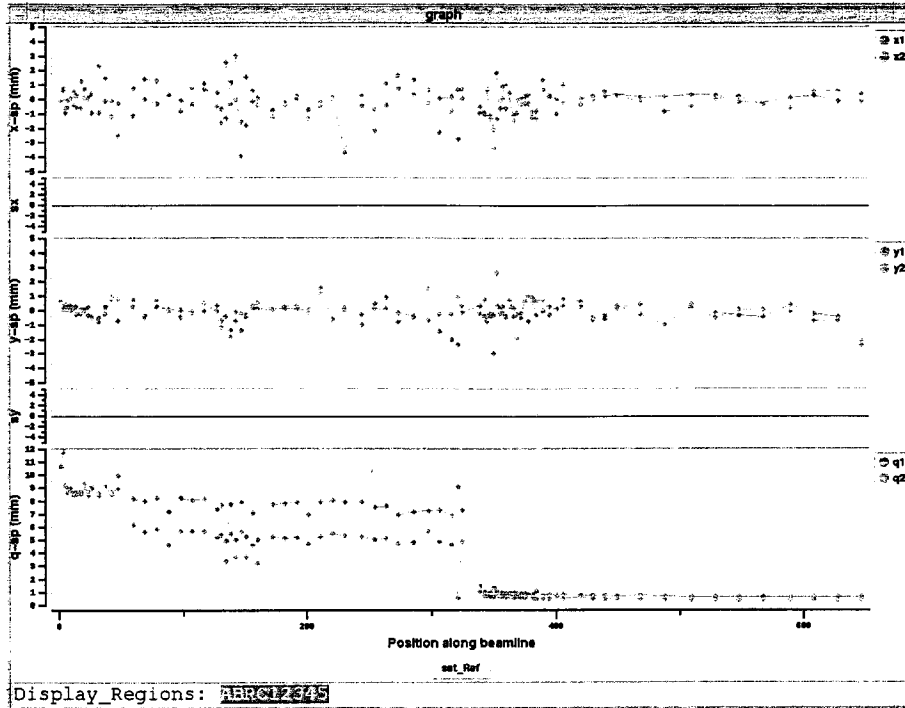
調整後



1. 3/2

Two Bunch Beam Timing 調整

調整後のパラメータ " T10302-10nC "



青: 第1バッチ
赤: 第2バッチ

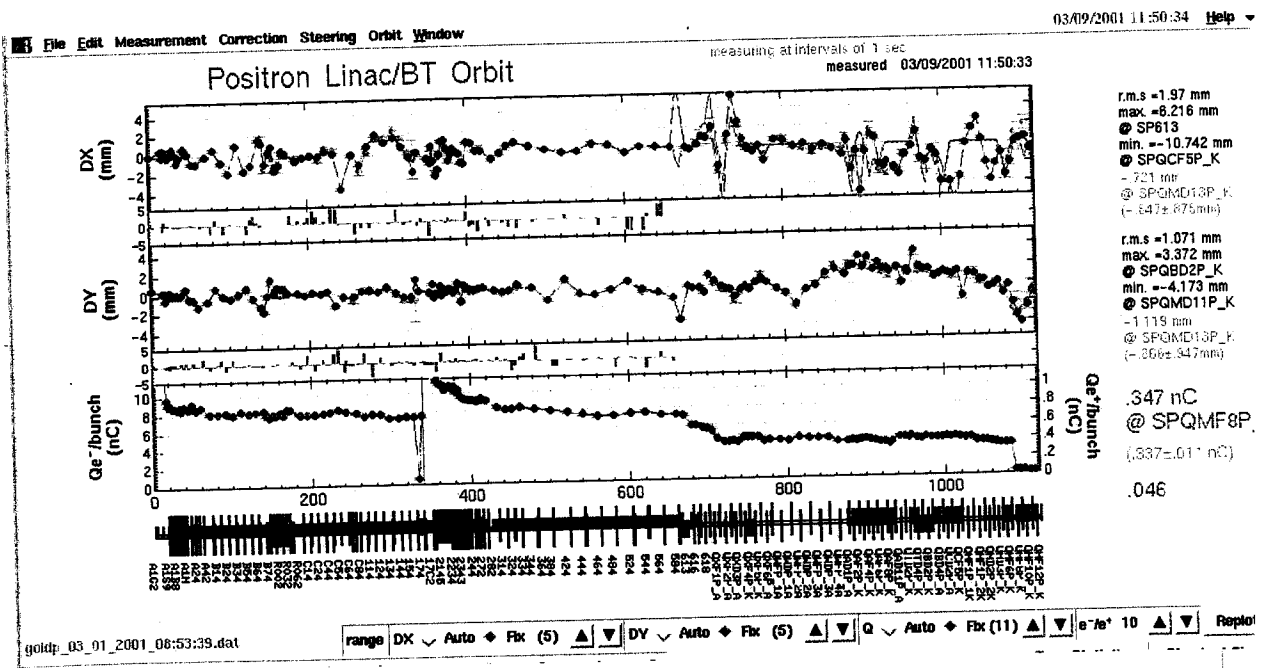
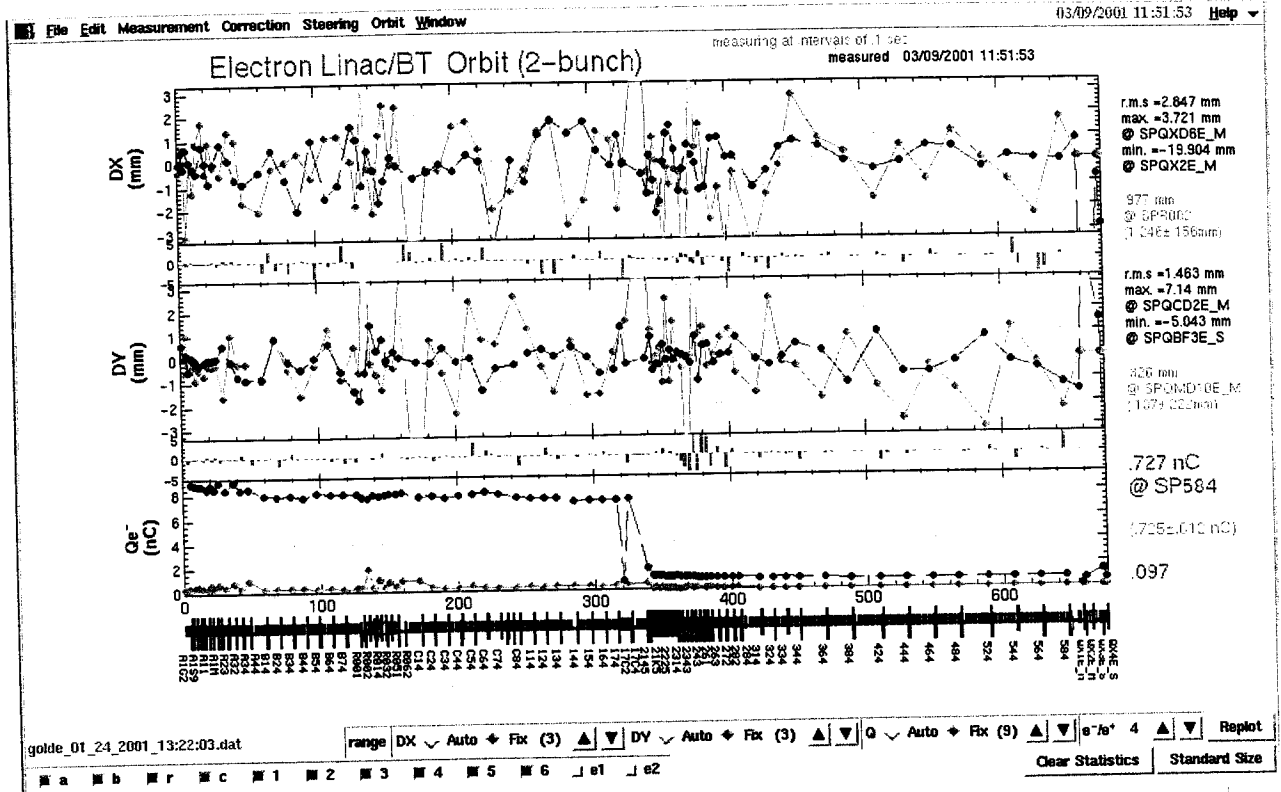
3/5 SP_A44 異常^感覚,

SP_A44はビーム感度がないため、この前後でST電流が異常になつてたことが発覚した*。B-sectorからビーム(赤)が減少するのと関係があるかもしれない。

*当面、Maxになつてた電流をOKしたところ、J-ARCの通りが良くなった!

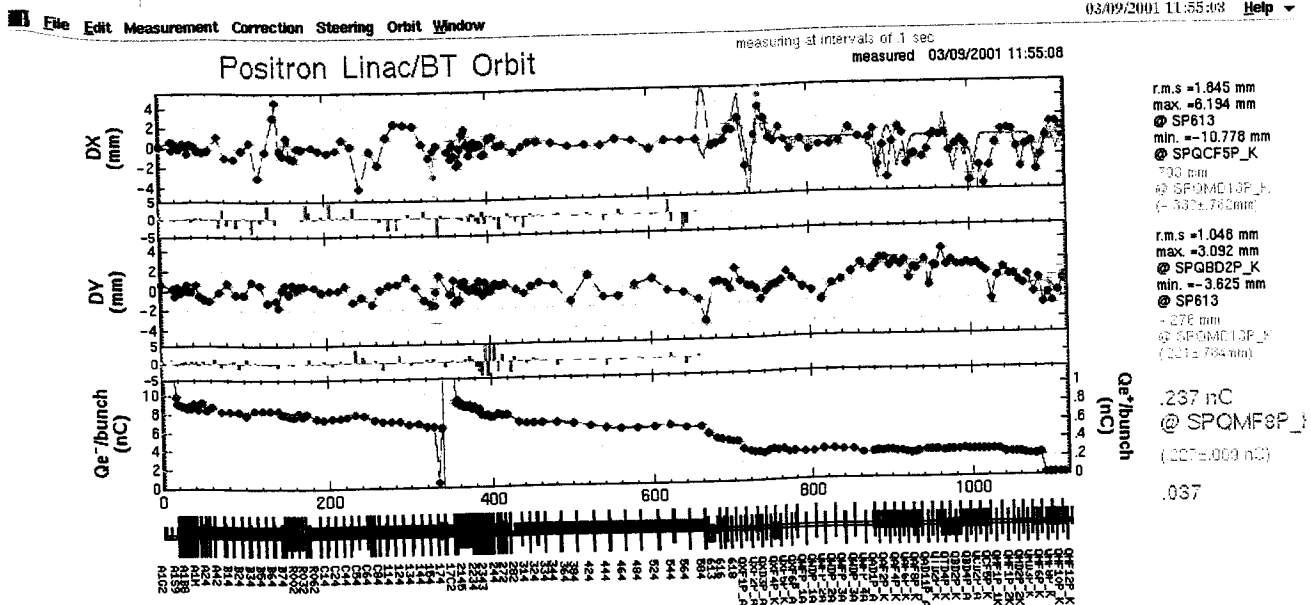
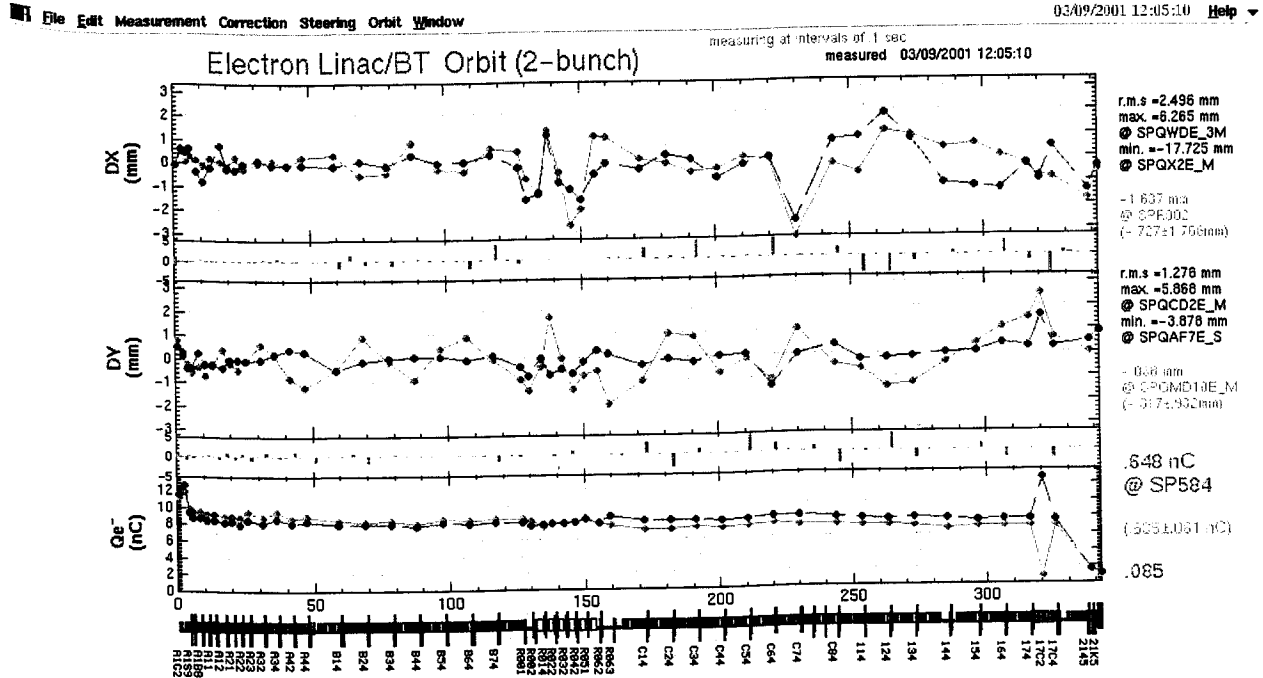
3/9(全) Two Bunch Test

Single beam. (KEKB 入射ビーム)



bunch beam

軌道補正前



goldip_03_01_2001_08:53:39.dat range DX Auto Fx (5) ▲ ▼ DY Auto Fx (5) ▲ ▼ Q Auto Fx (11) ▲ ▼ e-/e+ 10 ▲ ▼ Replot

Clear Statistics Standard Size

meas -> gold meas -> ref stat -> ref

Main Application Area

軌道補正後

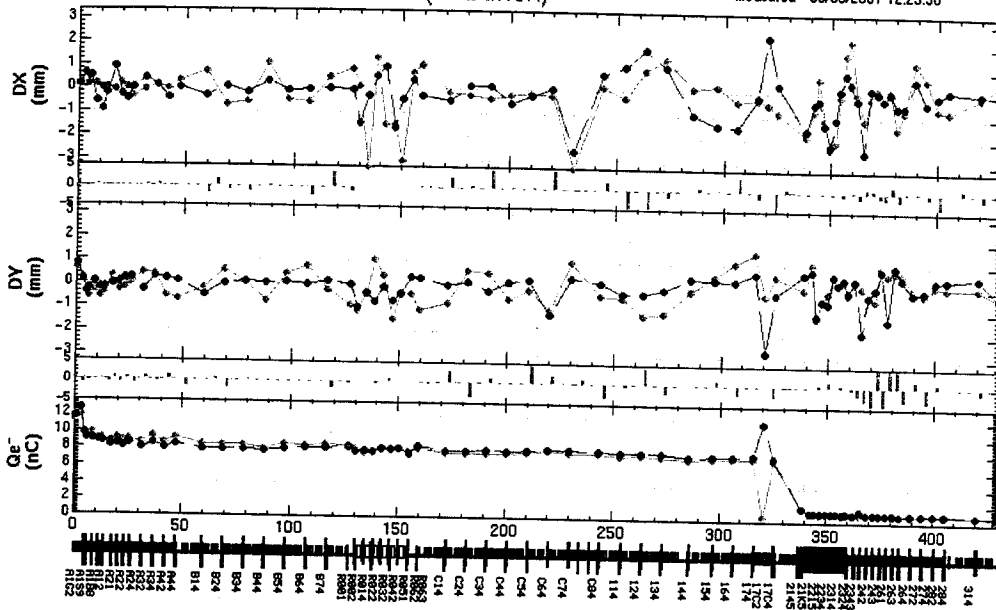
File Edit Measurement Correction Steering Orbit Window

03/09/2001 12:25:30

Electron Linac/BT Orbit

measuring at intervals of 1 sec

measured 03/09/2001 12:25:30



r.m.s = 2.522 mm
 max = 7.276 mm
 @ SPQWDE_3M
 min. = -18.947 mm
 @ SPQX2E_M
 -1.471 mm
 @ SPQD02
 (-1.515 ± 17.3mm)
 r.m.s = 1.453 mm
 max = 9.806 mm
 @ SPQCD2E_M
 min. = -4.041 mm
 @ SPQX5E_S
 -7.71 mm
 @ SPQMD13E_K
 (-2.11 ± 8.93mm)
 8.27 nC
 @ SPR001
 (8.125 ± 1.73 nC)
 1.105

golde_01_24_2001_13:22:03.dat

range DX Auto Fix (3) DY Auto Fix (3) Q Auto Fix (13) e-/e+ 4 Repl
 a b r c 1 2 3 4 5 6 e1 e2 Clear Statistics Standard St

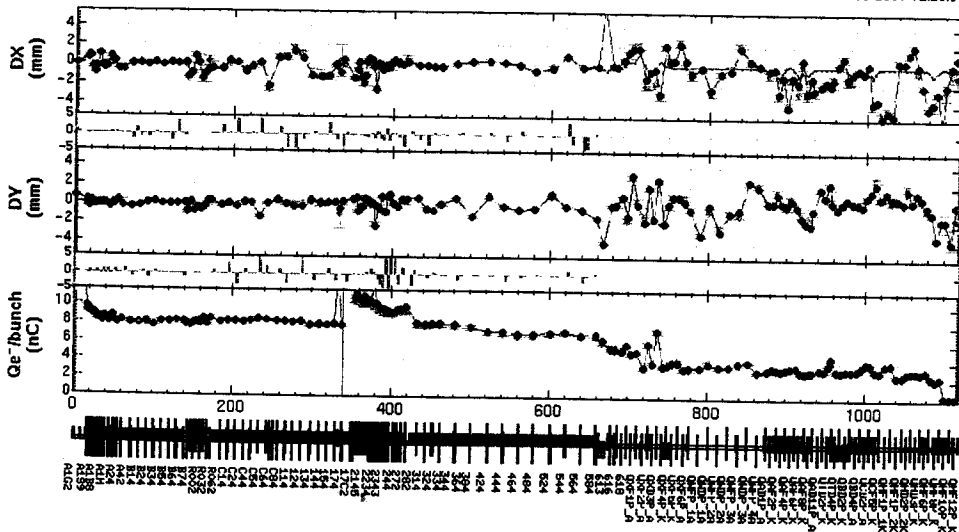
File Edit Measurement Correction Steering Orbit Window

03/09/2001 12:25:55

Positron Linac/BT Orbit

measuring at intervals of 1 sec

measured 03/09/2001 12:25:54



r.m.s = 1.613 mm
 max = 6.13 mm
 @ SP613
 min. = -6.849 mm
 @ SPQMF10P_K
 31 mm
 @ SPQMD13F_K
 (-6.03 ± 1.05mm)
 r.m.s = 1.084 mm
 max = 3.238 mm
 @ SPQXD2P_A
 min. = -4.035 mm
 @ SP613
 2 mm
 @ SPQMD13F_K
 (-1.159 ± 1.03mm)
 7.922 nC
 @ SPB24
 (7.866 ± 0.78 nC)
 1.015

goltp_03_01_2001_08:53:39.dat

range DX Auto Fix (5) DY Auto Fix (5) Q Auto Fix (11) e-/e+ 10 Repl
 Clear Statistics Standard Size