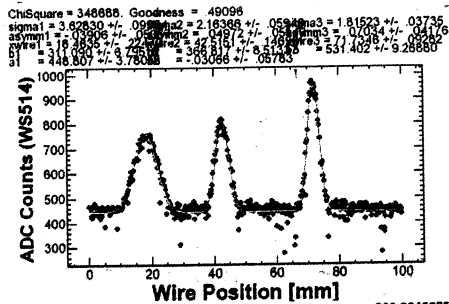


# 507A - LER Matching

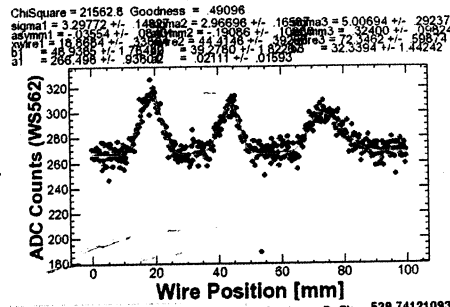
File Edit Control Window

09/25/2009 11:16:07 Help

• A



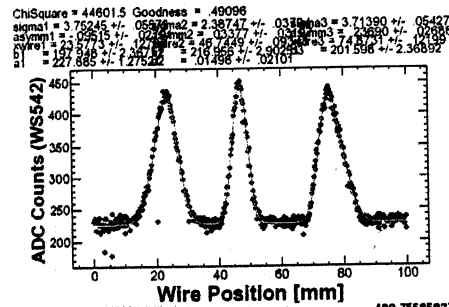
Wire C



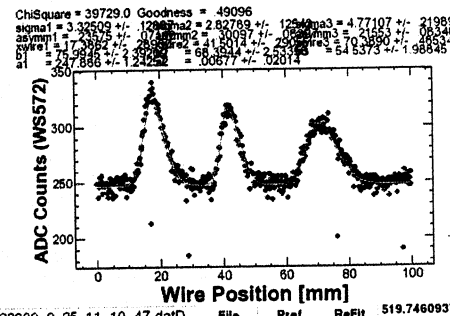
File: WS2009\_9\_25\_11\_7\_28.datA File Pref ReFit 399.8046875 V 2828

File: WS2009\_9\_25\_11\_10\_11.datC File Pref ReFit 529.7412109375 V 2441

• B



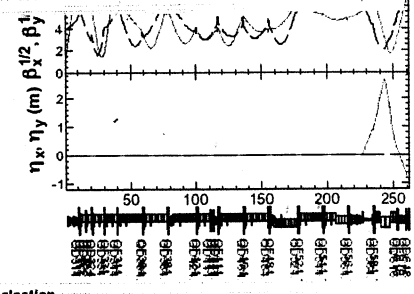
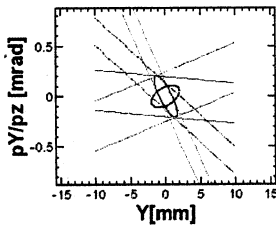
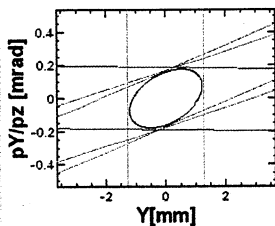
Wire D



- 13.685
- 1.421
- 9542E-7
- 330.336
- 3.475
- 7913E-7
- 623.132

File: WS2009\_9\_25\_11\_8\_5.datB File Pref ReFit 499.756889375 V 2524

File: WS2009\_9\_25\_11\_10\_47.datD File Pref ReFit 519.74609375 V 2346

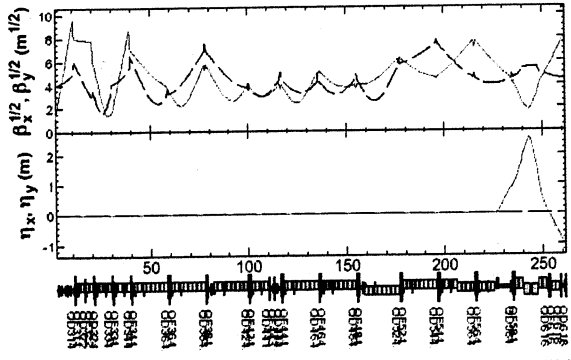


Window  
 Optics Calculate Matching

Matching Residual = 9.6007E-29

Matching Conditions

QD544 QF584: $\beta_x <$	60.00	59.26788
QD544 QF584: $\beta_y <$	60.00	59.99998

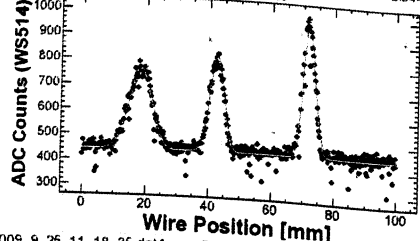


$Q\{F=D\}564 |K1| < 0.30$   
 " 584 " < 0.30

- Matching Calculation
- Calc Matching
  - Recover Calculation
  - Reset Calculation
  - Q-mag Set
  - Q-mag Read&Write
  - Read Q-Mag from File
  - Save Q-Mag to File

File Edit Control Window  
Wire A

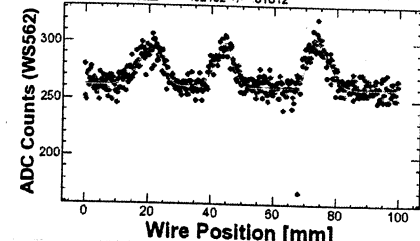
ChiSquare = 332976 Goodness = 49096  
 sigma1 = 3.57928 +/- 0.061 sigma2 = 2.18578 +/- 0.513 sigma3 = 1.86250 +/- 0.03746  
 asym1 = 0.7446 +/- 0.00002 asym2 = 0.00000 +/- 0.00000 asym3 = 0.00000 +/- 0.00000  
 w1 = 18.5642 +/- 0.00000 w2 = 42.0000 +/- 0.00000 w3 = 71.8700 +/- 0.00000  
 a1 = 247.108 +/- 5.80000 a2 = 375.789 +/- 6.21000 a3 = 524.683 +/- 6.54452  
 b1 = 0.00000 +/- 0.00000 b2 = 0.00000 +/- 0.00000 b3 = 0.00000 +/- 0.00000



File: WS2009\_9\_25\_11\_18\_35.datA File Pref ReFit 399.8046875 V 2829

Wire C

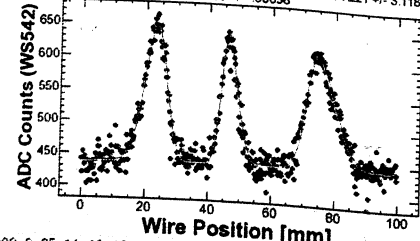
ChiSquare = 30816.1 Goodness = 49096  
 sigma1 = 3.92923 +/- 0.061 sigma2 = 2.84085 +/- 0.202 sigma3 = 3.19072 +/- 1.9075  
 asym1 = 2.1606 +/- 0.00000 asym2 = 0.00000 +/- 0.00000 asym3 = 0.00000 +/- 0.00000  
 w1 = 21.8808 +/- 0.00000 w2 = 44.8887 +/- 0.00000 w3 = 72.3074 +/- 0.00000  
 a1 = 267.206 +/- 1.17526 a2 = 302.852 +/- 0.21612 a3 = 437.0183 +/- 2.10542  
 b1 = 0.00000 +/- 0.00000 b2 = 0.00000 +/- 0.00000 b3 = 0.00000 +/- 0.00000



File: WS2009\_9\_25\_11\_19\_50.datC File Pref ReFit 529.7412109375 V 2442

Wire B

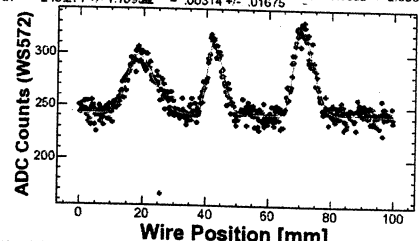
ChiSquare = 69367.1 Goodness = 49095  
 sigma1 = 3.44520 +/- 0.076 sigma2 = 2.53179 +/- 0.633 sigma3 = 4.39768 +/- 1.0291  
 asym1 = 2.57178 +/- 0.00000 asym2 = 0.00000 +/- 0.00000 asym3 = 0.00000 +/- 0.00000  
 w1 = 25.7178 +/- 0.00000 w2 = 46.1174 +/- 0.00000 w3 = 74.0350 +/- 0.00000  
 a1 = 438.629 +/- 1.99928 a2 = 189.747 +/- 4.00149 a3 = 171.221 +/- 3.11847  
 b1 = 0.00000 +/- 0.00000 b2 = 0.00000 +/- 0.00000 b3 = 0.00000 +/- 0.00000



File: WS2009\_9\_25\_11\_19\_10.datB File Pref ReFit 499.755859375 V 2525

Wire D

ChiSquare = 27853.9 Goodness = 49096  
 sigma1 = 4.20016 +/- 0.174 sigma2 = 2.39019 +/- 0.944 sigma3 = 2.90467 +/- 0.9725  
 asym1 = 18.639 +/- 0.00000 asym2 = 0.00000 +/- 0.00000 asym3 = 0.00000 +/- 0.00000  
 w1 = 18.639 +/- 0.00000 w2 = 42.1380 +/- 0.00000 w3 = 70.0626 +/- 0.00000  
 a1 = 233.271 +/- 1.10938 a2 = 60.514 +/- 0.16198 a3 = 83.6952 +/- 2.05807  
 b1 = 0.00000 +/- 0.00000 b2 = 0.00000 +/- 0.00000 b3 = 0.00000 +/- 0.00000

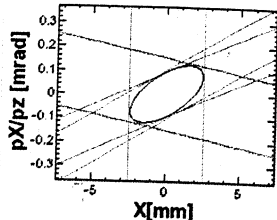


File: WS2009\_9\_25\_11\_20\_25.datD File Pref ReFit 519.74609375 V 2347

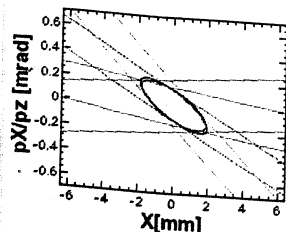
File Edit Window

Wire Scan Optics Calculate Matching

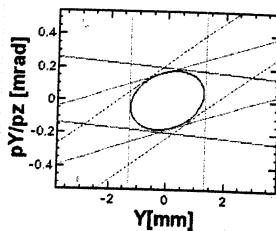
X phase space at Wire A



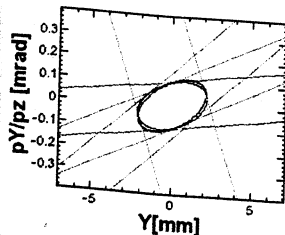
X phase space at Matching Point



Y phase space at Wire A



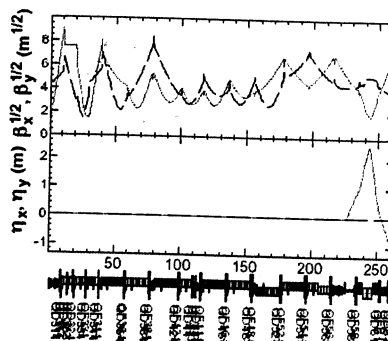
Y phase space at Matching Point



Results of Measurement

$\beta_x$ @BM611P [m] :	14.919	$\beta_y$ @BM611P [m] :	21.477
$\alpha_x$ @BM611P :	1.166	$\alpha_y$ @BM611P :	-370
$\epsilon_x$ [m] :	2.3252E-7	$\epsilon_y$ [m] :	2.2084E-7
$\eta_x$ [mm.mrad] :	1582.880	$\eta_y$ [mm.mrad] :	1503.364
Bmag x :	1.020	Bmag y :	1.021
Bmag x :	2.3720E-7	Bmag y :	2.2547E-7
$\gamma$ Bmag x :	1614.717	$\gamma$ Bmag y :	1534.866

Optics Plot



Wire Selection

3-wire:ABC 3-wire:ABD 3-wire:ACD 3-wire:BCD  
 4-wire:ABCD

NonLinearFit Err(meas), no n: 0 Err(opt) (%): 0

13

15:23 ~ 15:41

9/25

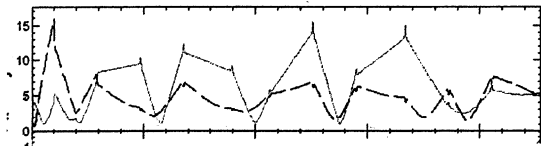
AR 5079 - Matching 1/2

09/25/2009 15:37:06

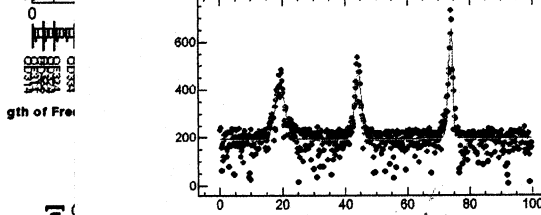
Calculate Matching

Matching Residual = 5.9887E-29

Matching Conditions  
 QD544 QF584:  $\beta_x <$  60.00 43.13943  
 QD544 QF584:  $\beta_y <$  60.00 58.58948

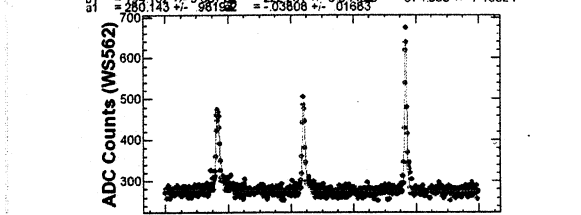


File Edit Control Window  
 Wire A  
 ChiSquare = 837868. Goodness = .49216  
 sigma1 = 1.61925 +/- 0.9890ma2 = 99507 +/- 05060ma3 = 68392 +/- 02359  
 sigma2 = 1.1115 +/- 0.1222ma2 = 10874 +/- 1188ma3 = 74183 +/- 07358  
 sigma3 = 217.410 +/- 1.1138ma2 = 278.129 +/- 14.133ma3 = 458.866 +/- 17.0683  
 sigma4 = 194.374 +/- 3.9504ma2 = 0.2548 +/- 0.5897



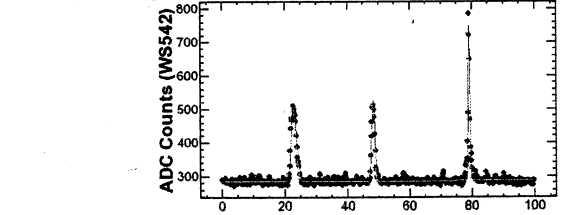
File: /AR\data\Raw\WS2009\_9\_25\_15 File Pref ReFit 419.794921875 V 2839

Wire C  
 ChiSquare = 64802.9 Goodness = .49239  
 sigma1 = 58568 +/- 0198ma2 = 40220 +/- 01484ma3 = 37077 +/- 00819  
 sigma2 = 57236 +/- 00819ma2 = 27883 +/- 01311ma3 = 12642 +/- 04548  
 sigma3 = 194.102 +/- 5.8972ma2 = 222.701 +/- 6.8438ma3 = 372.233 +/- 7.15924  
 sigma4 = 180.143 +/- 98192ma2 = -0.3808 +/- 01683



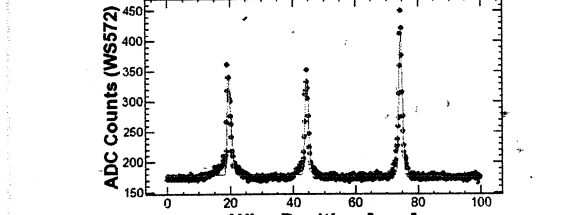
File: WS2009\_9\_25\_15\_40\_16.datC File Pref ReFit 649.6826171975 V 2450

Wire B  
 ChiSquare = 59919.8 Goodness = .49239  
 sigma1 = 81857 +/- 0176ma2 = 49705 +/- 01249ma3 = 26789 +/- 00462  
 sigma2 = 18543 +/- 0148ma2 = 10072 +/- 06303ma3 = 6357  
 sigma3 = 242.942 +/- 4.0862ma2 = 238.177 +/- 5.172ma3 = 473.790 +/- 7.08471  
 sigma4 = 286.320 +/- 82722ma2 = 0.3202 +/- 01410



File: WS2009\_9\_25\_15\_39\_31.datB File Pref ReFit 499.755859375 V 2537

Wire D  
 ChiSquare = 29052.3 Goodness = .49239  
 sigma1 = 61550 +/- 0136ma2 = 57369 +/- 01306ma3 = 54675 +/- 00921  
 sigma2 = 194215 +/- 01476ma2 = 01176 +/- 00363ma3 = 16573 +/- 03483  
 sigma3 = 188.284 +/- 3.2652ma2 = 160.082 +/- 3.0884ma3 = 237.251 +/- 3.44226  
 sigma4 = 179.314 +/- 37.622ma2 = -0.0235 +/- 00384

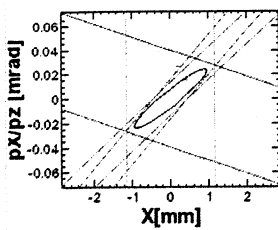


File: WS2009\_9\_25\_15\_40\_59.datD File Pref ReFit 549.7314453125 V 2352

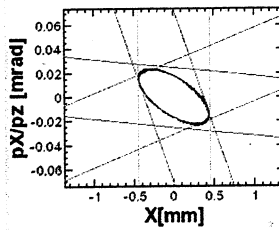
File Edit Window

Wire Scan Optics Calculate Matching

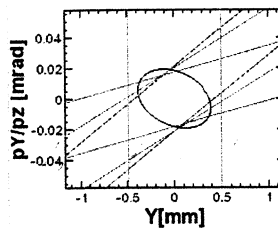
X phase space at Wire A



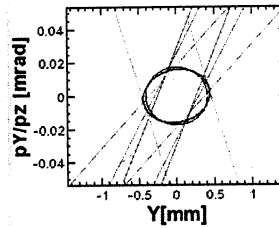
X phase space at Matching Point



Y phase space at Wire A



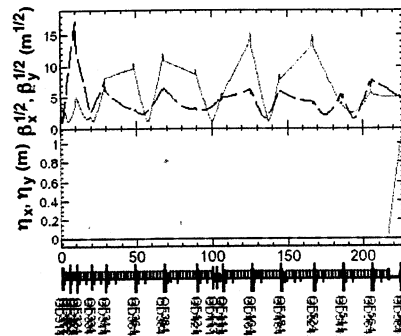
Y phase space at Matching Point



Results of Measurement

$\beta_x$ @BM611E [m] :	24.840	$\beta_y$ @BM611E [m] :	23.703
$\alpha_x$ @BM611E :	807	$\alpha_y$ @BM611E :	.010
$\epsilon_x$ [m] :	7.5782E-9	$\epsilon_y$ [m] :	7.1212E-9
$\tau_x$ [mm.mrad] :	44.491	$\tau_y$ [mm.mrad] :	41.808
Bmag x :	1.004	Bmag y :	1.017
Bmag x :	7.6107E-9	Bmag y :	7.2451E-9
$\gamma$ Bmag x :	44.681	$\gamma$ Bmag y :	42.535

Optics Plot



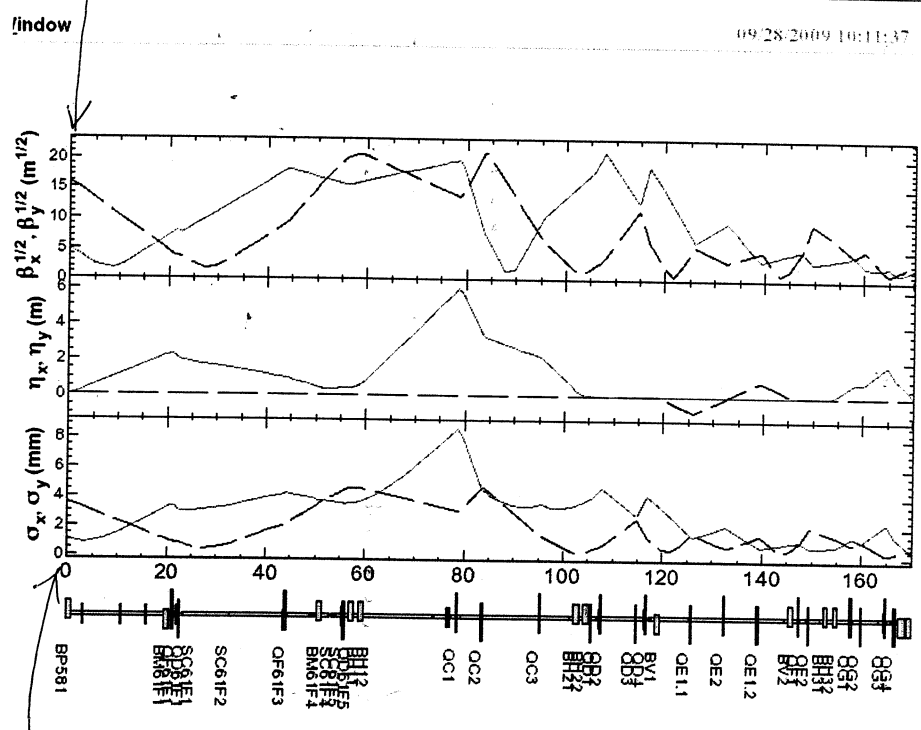
Wire Selection

- 3-wire:ABC 3-wire:ABD 3-wire:ACD 3-wire:BCD
- 4-wire:ABCD

NonLinearFit Err(meas), n: n: 0 Err(opt) (%): 0

2009/9/28

BT  
PF 入り口に Match して 5セグ - E 動かして OK

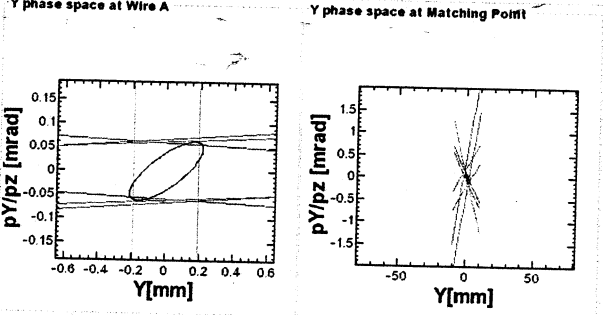
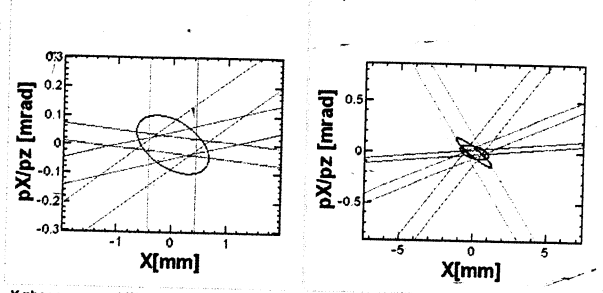


BP581 での  $\{\alpha_x, \beta_x, \alpha_y, \beta_y\} = \{2.69, 24.699, 6.105, 251.72\}$   
 "users/aida/sad/kekb/bt/pf/v4- $\alpha$  r $\phi$ .sad"  
 PF

右側 大西氏 1-53 QM の設定 test

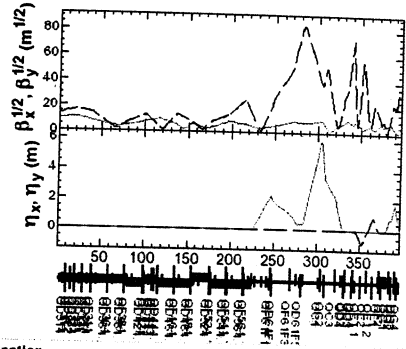
LINAC KEKB e+				Read			
Quad	Read (I/B')	File (I/B')		Steering	Read (I)	File (I)	
QD_32_4	3.980	13.7494	3.980	SX_A1_G0	.001	.000	
QF_32_4	3.849	14.0940	3.849	SY_A1_G0	.001	.000	
QD_33_4	4.352	15.2082	3.912	SX_A1_G4	2.150	.000	
QF_33_4	4.239	15.2902	3.800	SY_A1_G4	-.629	.000	
QD_34_4	4.860	17.8772	4.098	SX_A1_S6	.001	.000	
QF_34_4	5.079	17.4239	4.098	SY_A1_S6	.001	.000	
QD7D_36_4	5.963	11.3894	5.963	BX_A1_B8	-.585	.000	
QF_36_4	6.037	11.6664	6.037	BY_A1_B8	.158	.000	
QD7D_38_4	8.066	15.5684	7.963	BX_A1_C5	-.294	.000	
QF_38_4	7.912	15.3606	8.007	BY_A1_C5	.050	.000	
QD7D_42_4	8.733	17.3003	8.733	SX_A1_21	-.057	.000	
QF_42_4	8.740	16.8690	8.740	SY_A1_21	.074	.000	
QD7D_44_4	10.645	20.5780	10.645	BX_A1_22	-.031	.000	
QF_44_4	10.549	20.4969	10.549	BY_A1_22	.136	.000	
QD_44_1	.000	.0000	.000	BX_A1_M	.001	.000	
QF_44_3	.000	.0000	.000	BY_A1_M	.001	.000	
QD7D_46_4	10.659	21.0082	10.659	SX_A1_B4	-.160	.000	
QF_46_4	10.945	21.2804	10.945	SY_A1_B4	.170	.000	
QD7D_48_4	10.095	19.2623	10.095	SX_A1_I	.001	.000	
QF_48_4	10.681	20.8706	10.681	SY_A1_I	-.150	.000	
QD7D_52_4	16.835	17.7491	16.645	SX_A1_G1	.001	.000	
QF_52_4	17.128	17.8624	16.674	SY_A1_G1	.001	.000	
QD7D_54_4	6.593	7.1394	6.652	SX_A2_1	-.556	.000	
QF_54_4	6.081	6.7583	7.385	SY_A2_1	-.370	.000	
QD7D_56_4	13.275	14.1929	14.842	SX_A2_2	-.250	.000	
QF_56_4	13.597	14.6206	14.051	SY_A2_2	.548	.000	
QD7D_58_4	14.974	16.0418	14.974	SX_A2_3	.150	.000	
QF_58_4	14.066	15.0845	14.066	SY_A2_3	-.538	.000	
QD_61_6	9.341	3.2801	9.341	SX_A2_4	-.839	.000	
QF_61_6	1.331	.5233	1.331	SY_A2_4	.062	.000	

Wire Scan Optics Calculate Matching



Results of Measurement

$\beta_x$ @BP581 [m] :	16.146	$\beta_x$ @BP581 [m] :	110.168
$\alpha_x$ @BP581 :	562	$\alpha_x$ @BP581 :	14.883
$r_x$ [m] :	5.9862E-8	$r_x$ [m] :	8.4467E-9
$\eta_x$ [r.mm.mrad] :	292.868	$\eta_x$ [r.mm.mrad] :	41.325
Bmag x :	2.187	Bmag y :	171.701
$\eta$ Bmag x :	1.3092E-7	$\eta$ Bmag y :	1.4503E-6
$\eta$ Bmag x :	640.529	$\eta$ Bmag y :	7095.457

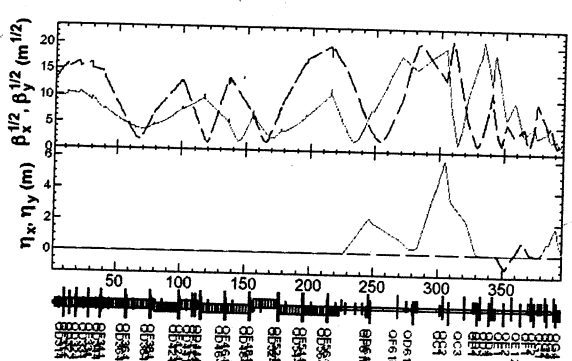


Wire Selection  
 3-wire:ABC 3-wire:ABD 3-wire:ACD 3-wire:BCD

Window

Optics Calculate Matching

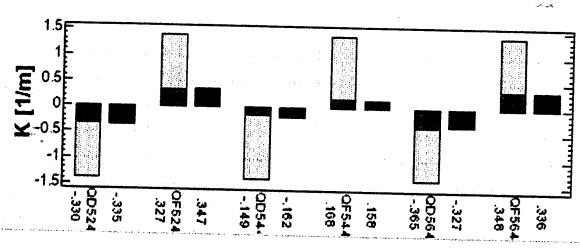
Matching Residual = 2.9454E-28



Matching Conditions

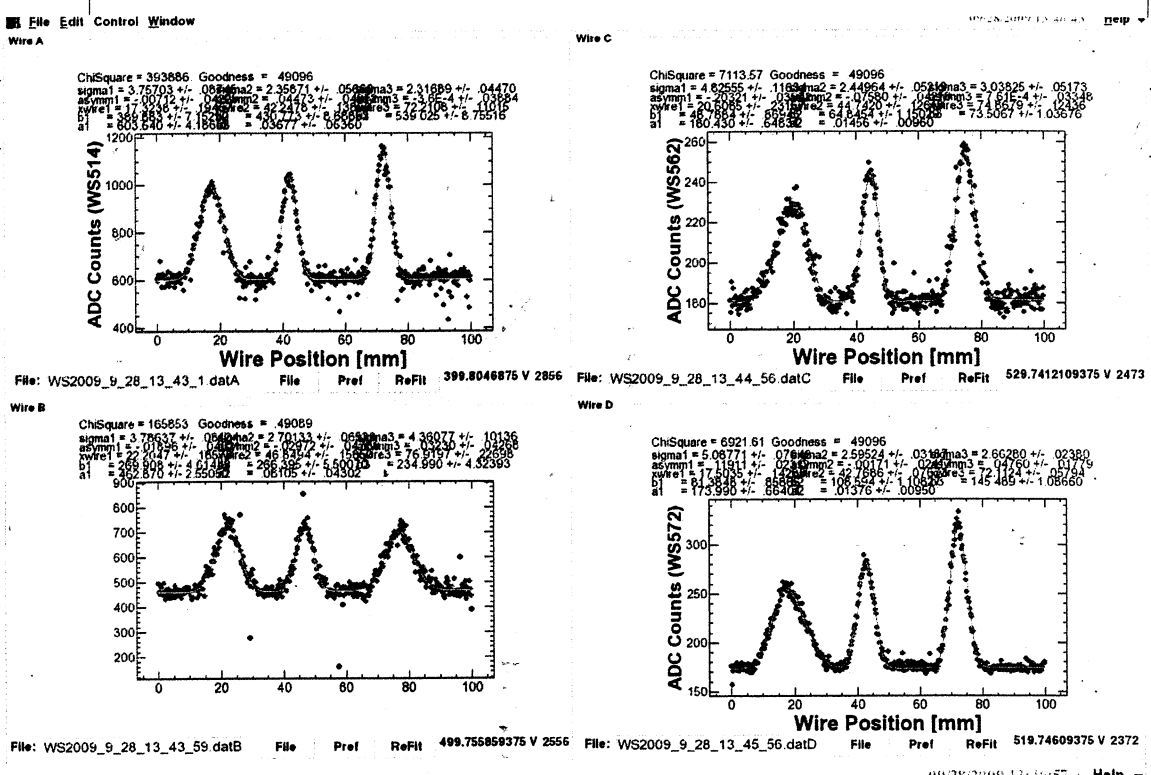
QD544 BP581: $\beta_x$ <	200.00	137.766
QD544 BP581: $\beta_y$ <	400.00	392.03

Strength of Free Qmag (QX\*)



- Matching Calculation
- Calc Matching
- Recover Calculation
- Reset Calculation
- Q-mag Set
- Q-mag Read&Write
- Read Q-Mag from File
- Save Q-Mag to File

Matching set  $\vec{M} \vec{i}$ . LER or Bmag  $\left\{ \begin{array}{l} x = 1.469 \\ y = 1.062 \end{array} \right.$



File Edit Window

Wire Scan Optics Calculate Matching

X phase space at Wire A X phase space at Matching Point

Y phase space at Wire A Y phase space at Matching Point

Results of Measurement

$\beta_x$ @BM611P [m] :	18.517	$\beta_y$ @BM611P [m] :	26.477
$\alpha_x$ @BM611P :	1.513	$\alpha_y$ @BM611P :	-7.23
$\gamma_x$ [m] :	3.0111E-7	$\gamma_y$ [m] :	2.3309E-7
$\eta_x$ [mm.mrad] :	2049.797	$\eta_y$ [mm.mrad] :	1586.733
Bmag x :	1.022	Bmag y :	1.033
$\delta$ Bmag x :	3.0766E-7	$\delta$ Bmag y :	2.4072E-7
$\eta$ Bmag x :	2094.376	$\eta$ Bmag y :	1638.728

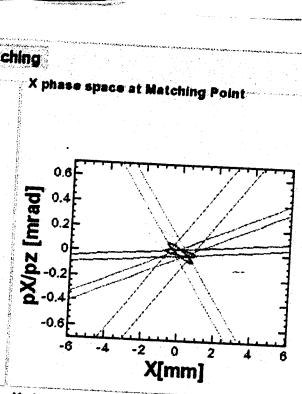
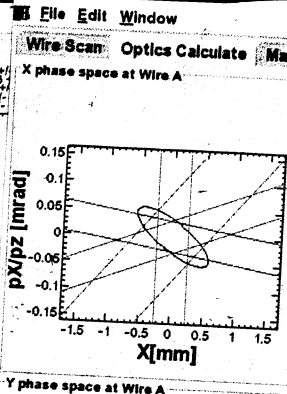
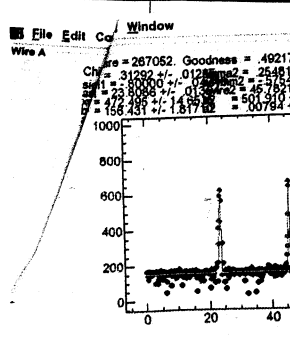
Optics Plot

Wire Selection  
 3-wire:ABC 3-wire:ABD 3-wire:ACD 3-wire:BCD  
 4-wire:ABCD  
 NonLinearFit Err(mess), no n: 0 Err(opt) (%): 0  
 \*Calculate Optics\* Save All Parameters

All informations are SAVED to /data1/KEKB/Wire/LINAC/sector5/KEKBp/data/MatchResult/WSL5p\_2009\_9\_28\_13\_46\_36

BPS81E  
 ANGLE が  
 入可した  
 10F.0

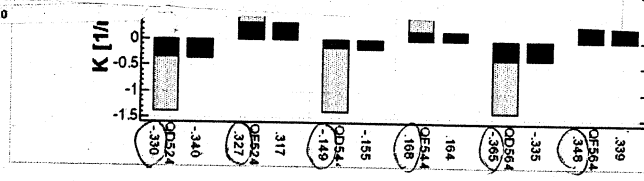
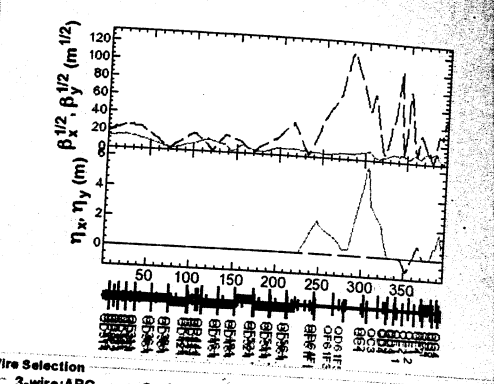
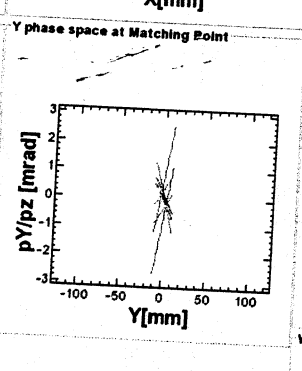
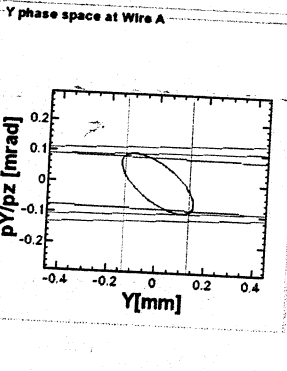
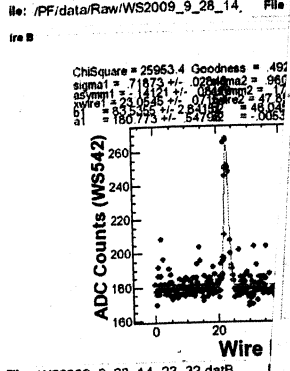
ER 5セクタ 再測定で Bmag ~ 1  
 <方針> この状態で PF を Matching L.  
 ER を再測定する



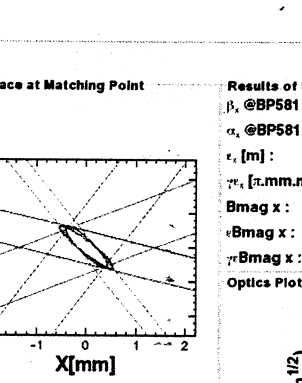
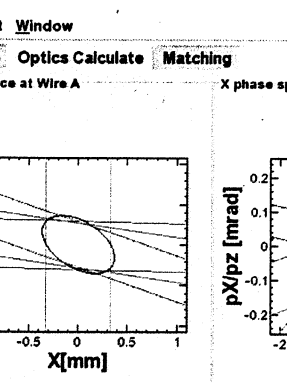
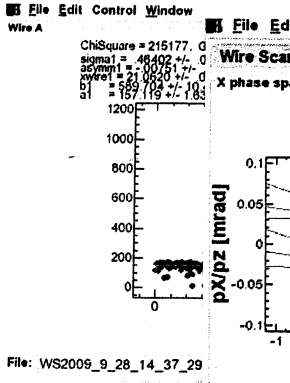
Results of Measurement

$\beta_x$ @BP581 [m] :	36.935	$\beta_y$ @BP581 [m] :	278
$\alpha_x$ @BP581 :	830	$\alpha_y$ @BP581 :	34
$\epsilon_x$ [m] :	1.8483E-8	$\epsilon_y$ [m] :	1.85E-8
$\gamma_x$ [r.mm.mrad] :	90.424	$\gamma_y$ [r.mm.mrad] :	51
Bmag x :	4.490	Bmag y :	307
Bmag x :	8.2993E-8	Bmag y :	5.56E-8
$\gamma$ Bmag x :	406.033	$\gamma$ Bmag y :	374602

Optics Plot



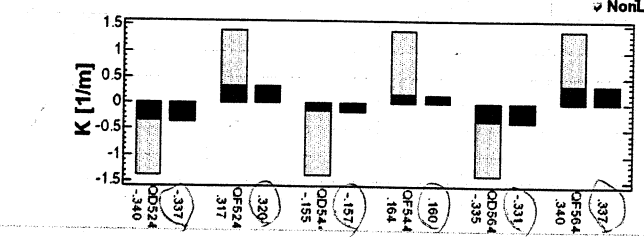
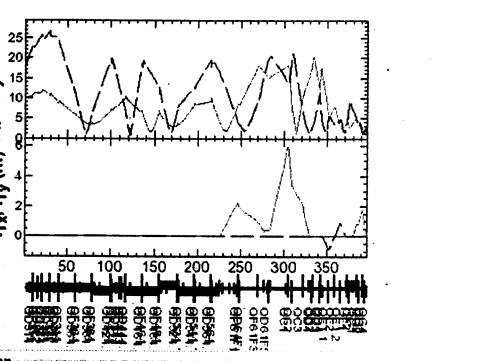
The Calculation for Q-Mag values are RECOVERED to the before matching.



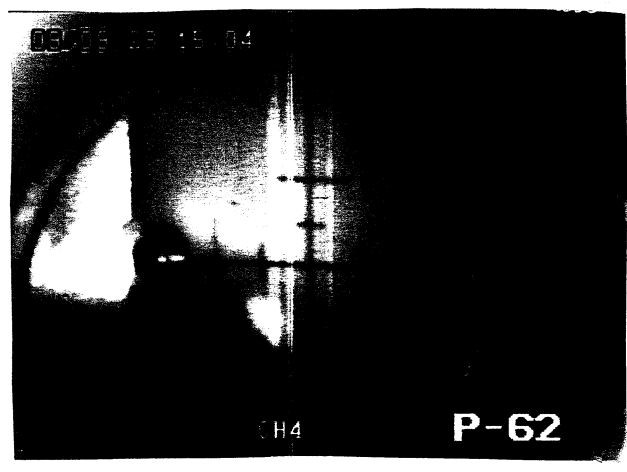
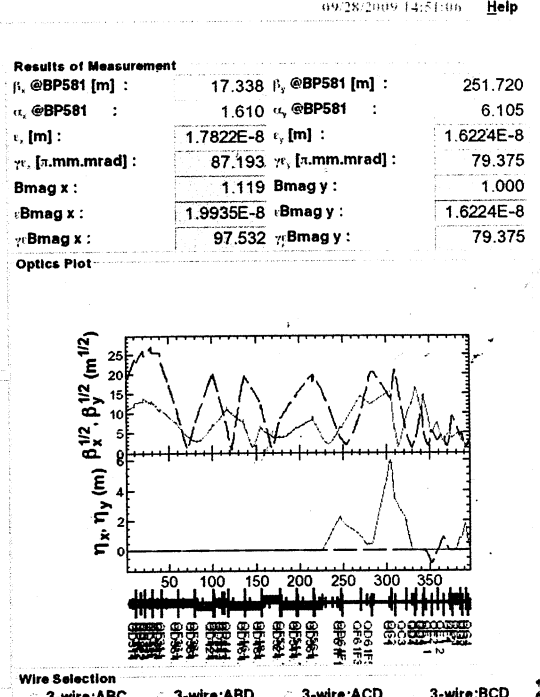
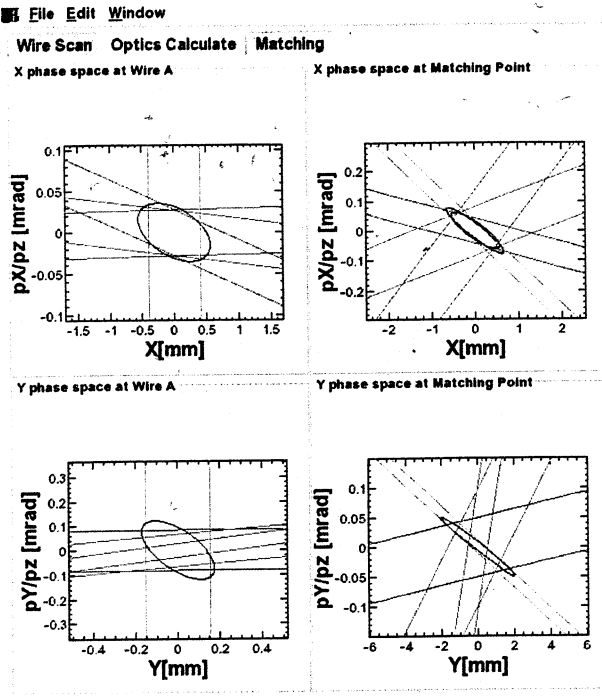
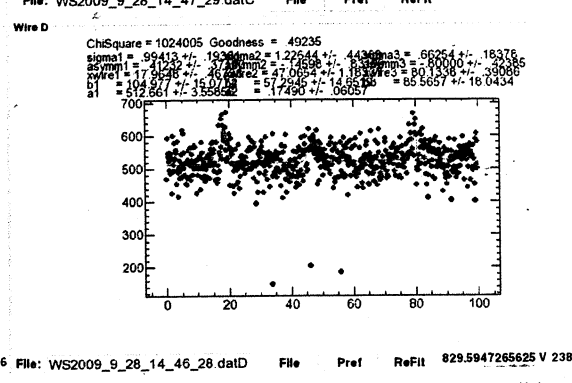
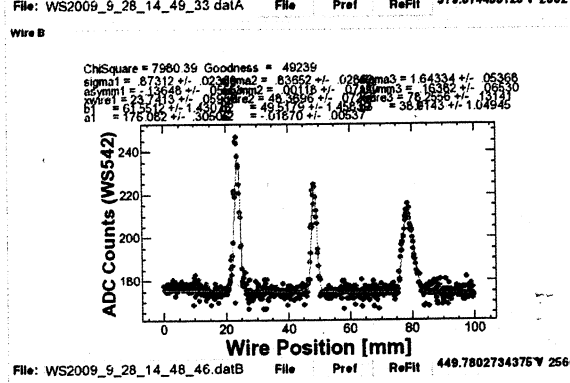
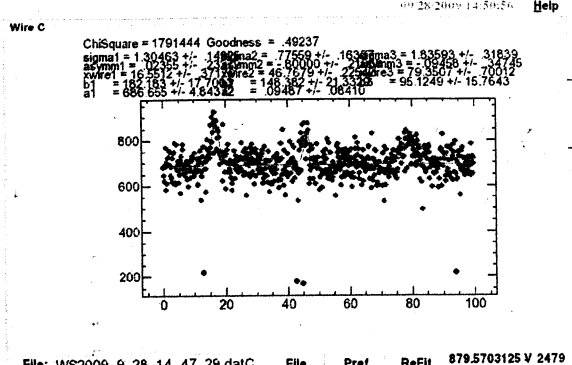
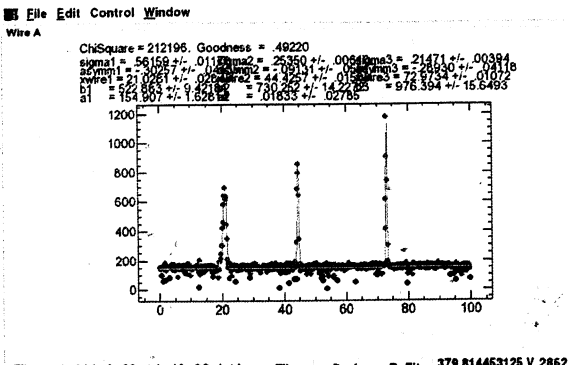
Results of Measurement

$\beta_x$ @BP581 [m] :	14.954	$\beta_y$ @BP581 [m] :	251.720
$\alpha_x$ @BP581 :	1.923	$\alpha_y$ @BP581 :	6.105
$\epsilon_x$ [m] :	1.1740E-8	$\epsilon_y$ [m] :	1.2585E-8
$\gamma_x$ [r.mm.mrad] :	57.436	$\gamma_y$ [r.mm.mrad] :	61.572
Bmag x :	1.200	Bmag y :	1.000
Bmag x :	1.4090E-8	Bmag y :	1.2585E-8
$\gamma$ Bmag x :	68.935	$\gamma$ Bmag y :	61.572

Optics Plot

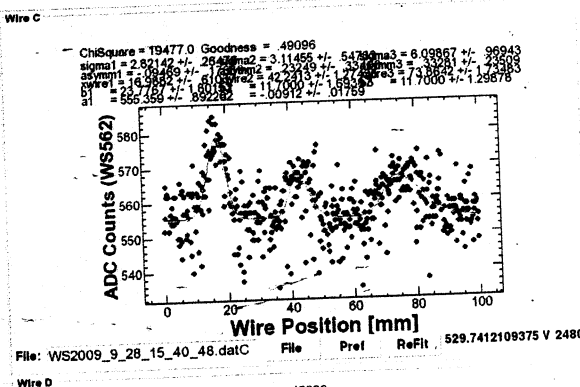
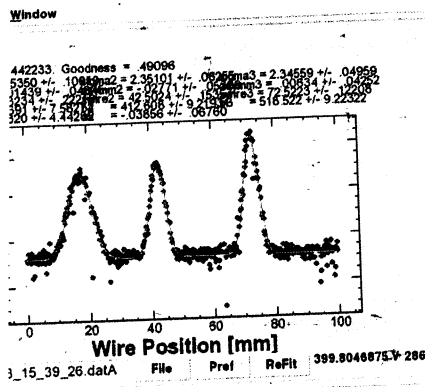


○から○へ  
 K値で変更。  
 あるの大きいのは  
 変えていい。

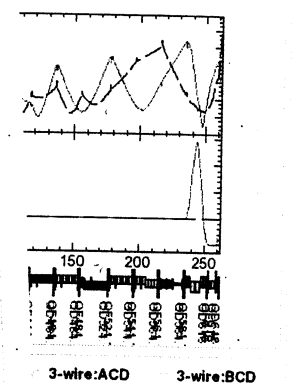
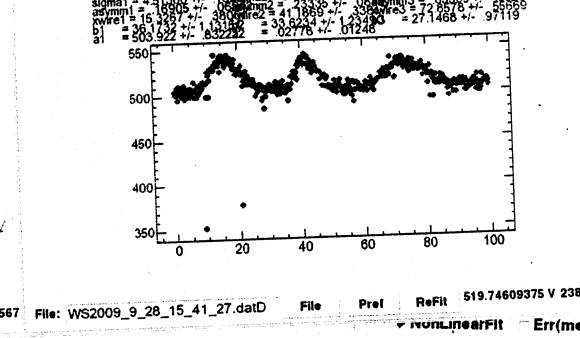
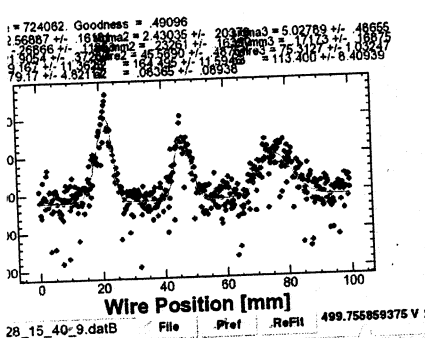


F4 2006-6



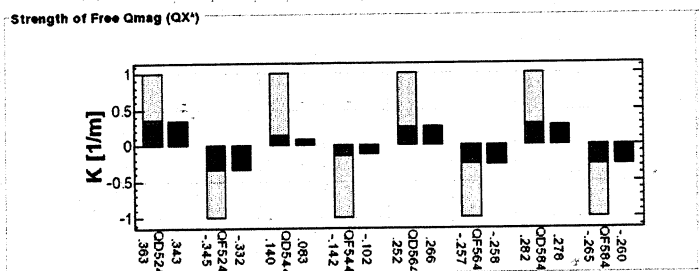
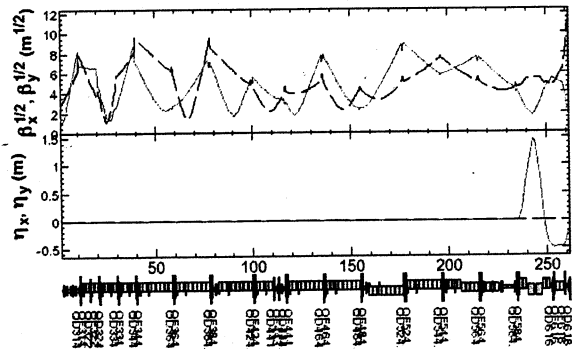


28 $\beta_x$ @BM611P [m] :	17.610
26 $\alpha_x$ @BM611P :	979
7 $\epsilon_x$ [m] :	2.1269E-7
3 $\gamma_x$ [1/mm.mrad] :	1447.912
2 Bmag y :	2.235
6 Bmag y :	4.7542E-7
5 $\gamma_y$ Bmag y :	3236.441



Matching Residual = 2.9184E-28

Matching Conditions		
QD544 QF584: $\beta_x$ <	60.00	57.93382
QD544 QF584: $\beta_y$ <	60.00	58.48107

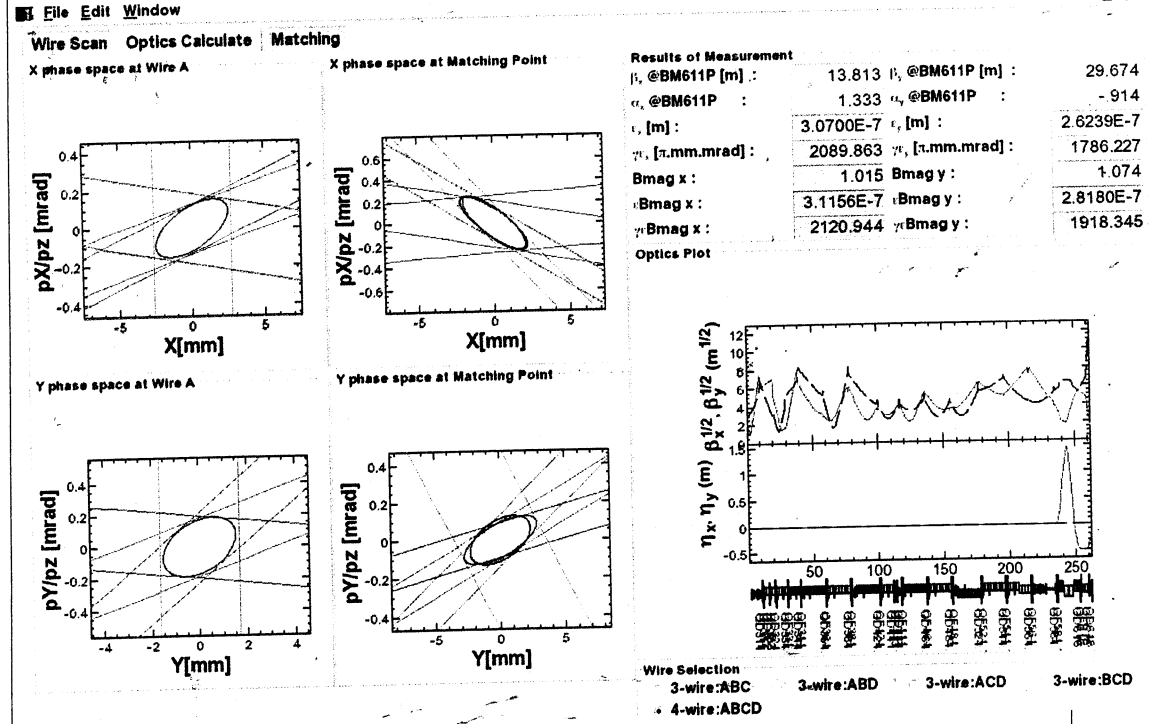
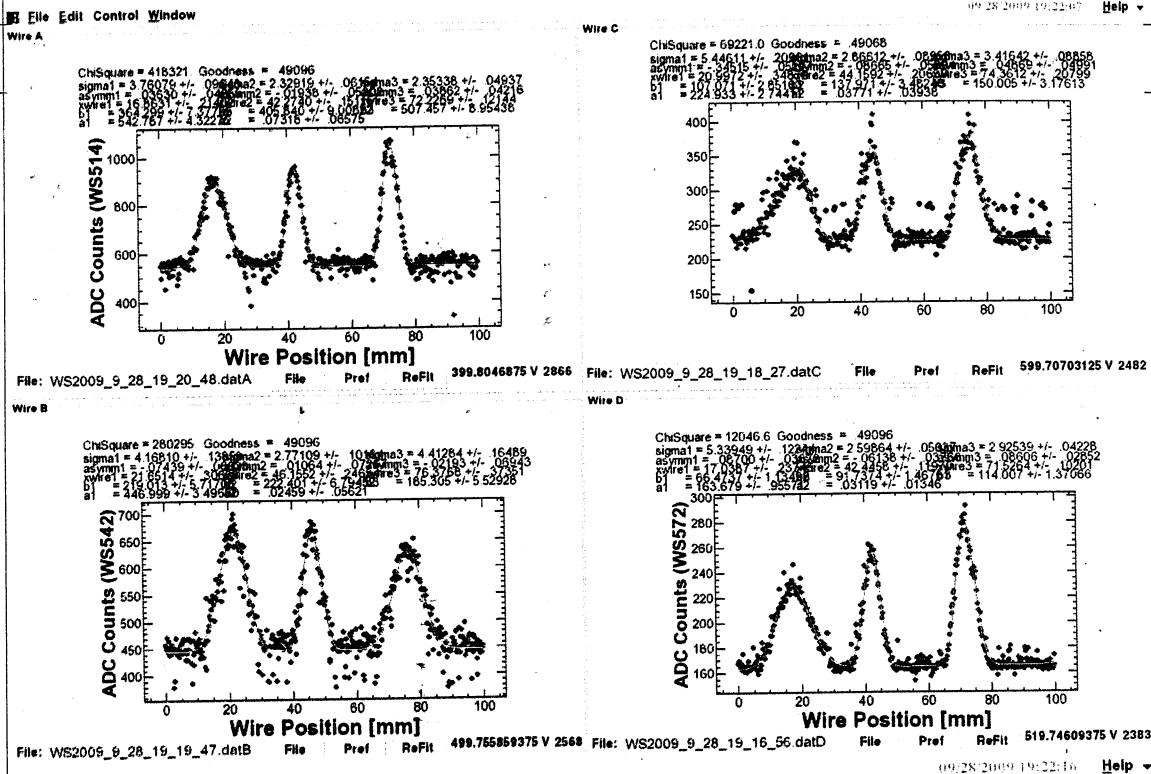


- Matching Calculation
- Calc Matching
- Recover Calculation
- Reset Calculation
- Q-mag Set
- Q-mag Read&Write
- Read Q-Mag from File
- Save Q-Mag to File

LEP の BMAG の  $\beta_x = 5.9$  と  $\beta_y = 2.2$  とおいて調整  
 Matching を set して LEP の PF を 5.0 に  
 ↑  
 DR は 100% ↑ F4 の 12.2 長に  
 2期程

→ 方針変更 → LEP の Matching L. の ~~Beam~~ <sup>QM</sup> PF Beam  
 通して BT (PF) を Matching して  
 初期値を測り

LER Beam P.16 の 13:46 頃に戻り再測定.



この設定で PF Beam を測定してみる