EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH
ORGANISATION EUROPEENNE POUR LA RECHERCHE NUCLEAIRE

CERN - PS DIVISION

PS/ PA/ Note 93-16 (PPC)

MINUTES OF THE PPC MEEETING HELD ON 6 MAY 93

D. Manglunki

Geneva, Switzerland
25 May, 1993

PS/PA Note 93-16 (PPC)
25 May 1993

Minutes of the PPC meeting held on 6 May 1993

Present: N. Blazianu, J. Boillot, E. Brouzet/SL, R. Cappi (Chairman), M. Chanel, V. Chohan, L. Durieu, R. Garoby, G. Gelato, S. Hancock, H. Haseroth, J.-Y. Hémery, C. Hill, E. Jensen, P. Lefèvre, D. Manglunki (Secretary), S. Maury, M. Martini, D. Möhl, F. Pedersen, J.L. Perinet, J.P. Potier, N. Rasmussen, J.P. Riunaud, C. Saulnier, K. Schindl, G. Schneider, H. Schönauer, D.J. Simon, C. Steinbach, G. Tranquille, H. Ullrich, M. Vretenar, E. Wildner.

1. Recent performance reports from machine representatives:

See attached copies of transparencies, but some points were raised during the discussions.

a. LINAC (Ch. Hill):

- Tank 2 is still a problem. The RF preamp has already been changed three times; it is hoped that the fourth preamp will last longer.
- The LINAC LHC beam is far below the specifications (150 mA instead of 180 mA), but nevertheless the PS LHC beam is approaching the nominal values.
- News from LINAC 3: the ion source has been working for the first time on friday 30/4.

b. PSB (H. Schönauer):

- LHC test beam: the transmission in the injection line has been improved (54% instead of 48%). The new emittance measurement system still has to be calibrated.
- There is a longitudinal sextupolar instability on ring 3 which might be due to a bad short circuit on the h=1 cavity gap.

c. PS (R. Cappi):

- Several problems were encountered during the LHC MD: LINAC 2 tank 2 and RFQ, and flying wire. On the latter it has been observed that a modification of the gain will influence the results. For example, doubling the gain increases the measured emittance by 10%.
- Beam behaviour in high space charge regime: problems due to the fact that the synchrotron period (270μs) is not very long compared to the time it takes to perform a phase jump (20μs). A 10% blow-up in the vertical transverse emittance has been measured for a beam experiencing a space charge tune shift of about 0.7 during 20μs.

d. LPI (J.P. Potier):

- Vertical acceptance studies allowed to remove an obstacle and return to (and eventually overtake) the usual performances.
- Impedance measurements showed a good agreement with theory. The impedance went down from 14.5 to 12.5 Ohm when a kicker underwent a modification which was supposed to contribute for 2 Ohm.
- The machine is now back to a reasonable state.

e. LEAR (M. Chanel):

- High energy: PS202 (JetSet) has increased the density of their jet by a factor 3. The stochastic cooling will have to be able to counter-balance it.

- Low energy: the electron cooler has been equipped with a new gun.

f. AAC (V. Chohan):

- AA core cooling studies did not take place due to lack of time.

- Studies wich did take place were devoted to cooling in AC with protons in reversed polarity, longitudinal instabilities, and AA/PS transfer improvements.

- AAC is not working too badly.

g. SPS/LEP (E. Brouzet):

- New supercycle including lepton cycles, in prevision of proton MDs in parallel with LEP filling. This has not been fully tested yet.

- Beam diffusion on resonnances (LHC long term beam stability studies)

- Crystal extraction studies showed the same performances and the same problems as last year. The extraction efficiency is about 10%.

- For the moment the SPS only requests small intensities ($1.0\ 10^{13}$) from the PS. This should raise to above $2.3\ 10^{13}$ in October to prepare the neutrino runs that will take place in 1994.

- LEP will start with four bunches; it is foreseen to set up the eight bunch Pretzel scheme in one month.

- Tests of having eight bunches in the injectors will take place during week 22.

2. PSB-PS matching studies (M. Martini):

The aim of improving the dispersion matching between the two machines is to reduce the emittance blow-up due to the dispersion mismatch (see attached copies of transparencies).

Discussion points:

- If the precision of the monitors is assumed to be 0.5 mm, then for the nominal beam of $\frac{\Delta p}{p} = 4 * 10^{-3}$, the precision on the dispersion is limited to 0.13 m.

- Even assuming a perfect precision on the acquisition and control (which cannot be fulfilled in practice), a perfect matching cannot be obtained because of external constraints like the fixed position and maximum strength of the quadrupoles.

3. Divers:

- N. Blazianu exposes the problem of field variations due to cycle changes. Namely, when the cycle preceding the lepton cycles is changed, the field on the latter is modified too (by 1-2 Gauss), and so is the leptons energy. The idea to solve the problem is to create a new cycle with a B-trigged vector (see attached copies of transparencies).

- A working group will be set up to investigate further the feasability of the solution (Action: N. Blazianu, J. Boillot, H. Ullrich).

4. Recently published MD reports:

- "Alimentation principale PSB: Essai de démarrage avec 4 groupes redresseurs-onduleurs". MD 5 avril 1993. H. Fiebiger, F. Gendre.

- "Etude des longueurs de paquets du LIL à 4 MeV. Mesures effectuées du 7 au 11 décembre 1992" M.A. Tordeux (LURE, Orsay) PS/LP/ Note 93-14 (MD)

C.Hill

PPC 6/5/93

CEH

LINAC

2 MD sessions to date for LHC type beam

14 April

First experience with RFQ2 injector and new control system.
Able to supply 150/155 mA to PSB after some problems of sparking in Tank2

26 April

After weekend problems with RFQ related to timing of LEBT focusing solenoids relative to RFQ, current lower (145/150 mA) due to RFQ sparking problems. (RFQ level lower than nominal). Timing problem believed resolved but root cause (inconsistent PLS infomation ?)
Also problems with Tank2 requiring tube change

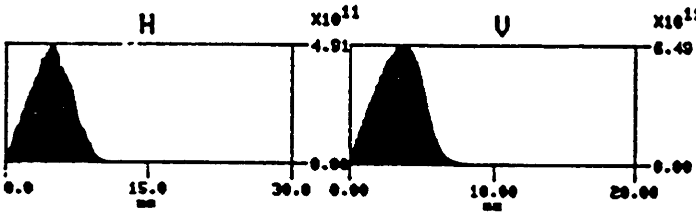
H.Schönauer MD / ME 5/4/93 LHC BEAM

HS 6/5/93

BEAMSCOPE EMITTANCES 5/ 4/1993 18:16 PROJECTION EMITTANCES (2 sigma)
USER 37 (MD.) D 4990 H: Ivanov Fit, V: Abel Transf.

RING	P/P E10	HOR. EMITTANCE PHYSICAL(NORM)	VERT. EMITTANCE PHYSICAL (NORM)	HOR. EMITTANCE PHYSICAL(NORM)	VERT. EMITTANCE PHYSICAL (NORM)
3	220 .236	6.8 (12.4)	5.6 (10.1)	5.3 (9.6)	5.4 (9.8)
1992: 3	185	(13.5)	(11.4)	(9.2)	(10.1)

AMPLITUDE PROFILES



Ilinac = 150 mA

BEST PERFORMANCE EVER

- 3 TURNS RING 3
- 2nd HARMONIC CAVITY
- BXSINS 3 = 150 μs
- BR3QCF = 16 A
  BR3QCD = 18 A
  $(Q_{H,V})_{INJ} = (4.26, 5.44)$

236 is OPTIMISTIC; IT IS $2,2 \cdot 10^{12}$ ACCELERATED

1992:

Ilinac = 165 mA

REPEAT ? (Y OR N)

Better 2nd harmonic

Better capture 2nd harmonic

INES 1 TO 9 OF 9. 1993-04-05-18:13:49

TY.BVT116	1	[illegible]	LIN	AL= 0	MASKED
TY.QDE209	2		[illegible]	AL= 31	MA= 10
TY.QDE120	10		CPS	AL= 44	MASKED
[illegible]			TT	AL= 3	MASKED
TY.BVT101	1		AA	AL= 7	MASKED
[illegible]			[illegible]	AL= 0	MA= 0

BEAM CURRENTS IN 1E10 PARTICLES CYCLE 9 USER MD

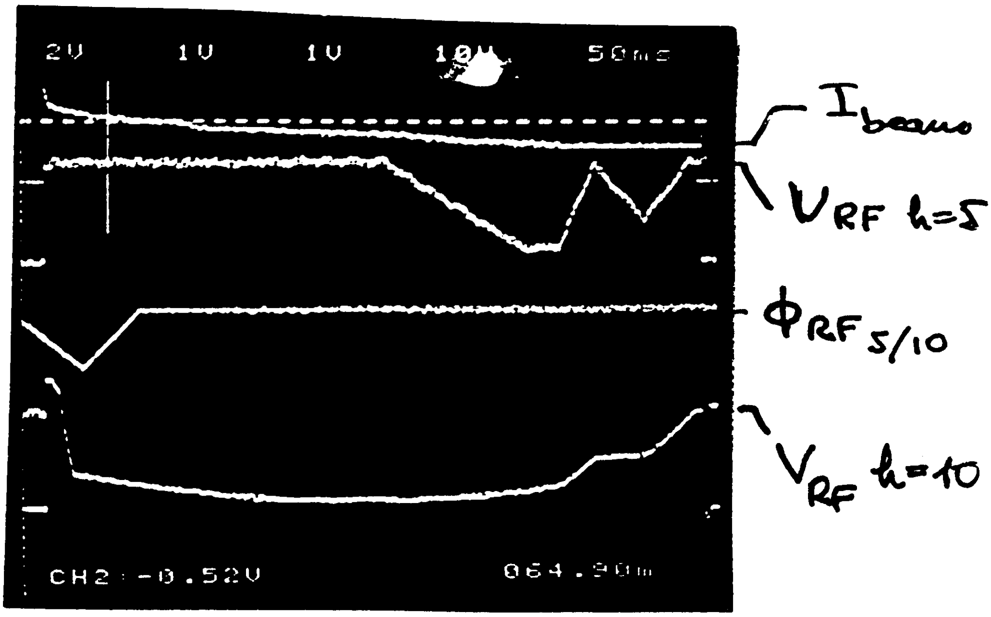
					1992						
I.TRA10	13	[illegible]	480			18	[illegible]	17	[illegible]	531	[illegible]
I.TRA20	5	37%	473	98%	(95)	2	100%	67	100%	612	100%
NJECTION	0	0%	258	54%	(48)	4	2%	2	4%	265	43%
APTURE	1	100%	227	88%		4	100%	2	100%	236	89%
CCELER	5	100%	220	97%	185	2	46%	2	71%	229	97%
T.TRA	10	100%	221	100%		0	0%	0	0%	222	97%
TP.TRA										217	98%
ROFTURNS	00.0		03.0			00.0		00.0			

HIGH INTENSITY 6/5/93

RING	1	800 10^{10} p	ok
	2	715	to be tuned...?
	3	685	= ceiling @ 11.5 turns inj.
	4	780	~ ok

RING 2

Present tuning



RING 3 :

For > 11.5 turns

rapid loss @ 290 ms ; 7 MHz , sextupole modes

G.S.: Resonance h=1 cavity gap short-circuit ?

K. Cappi

(1)

SUMMARY OF CPS MD'S

RC
6.5.93

(1) PSB-PS matching ... see M.M. talk

(2) LHC type beam with RFQ2

Problems with
RF tank 2
RFQ2
flying wire
- - -

$\hat{I}_{LINAC} \simeq 145\,mA$

$N_{t\,PSB} \lesssim 200 \cdot 10^{10}$ ppp $(k_b = 5)$

$N_{t\,PS} \leq \underline{190} \cdot 10^{10}$ ppp " $\leftrightarrow$ $180 \cdot 10^{10}$ ppp (LHC values)

PS $\begin{cases} \varepsilon^*_x \simeq 3.4\ \mu m & (\Delta Q_x \sim 0.295) \\ \varepsilon^*_y = 2.4\ \mu m & (\Delta Q_y \sim 0.370) \end{cases}$

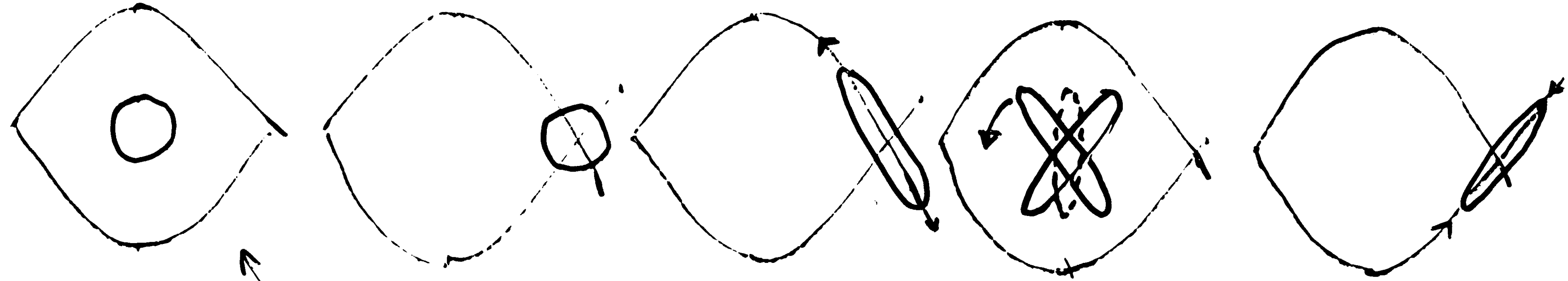
$\langle \varepsilon^* \rangle \simeq \underline{2.8}\ \mu m$ $\leftrightarrow$ $2.4\ \mu m$

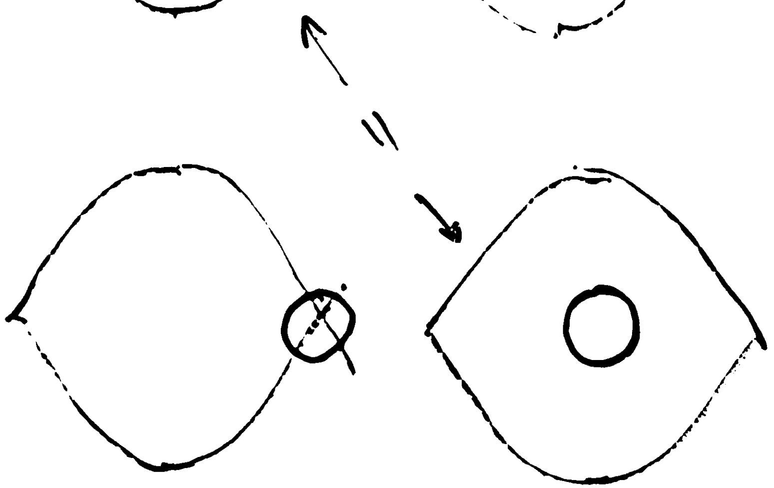
(3) BEAM BEHAVIOUR WITH VERY HIGH ΔQ_{SC} (FUSION MACHINES)

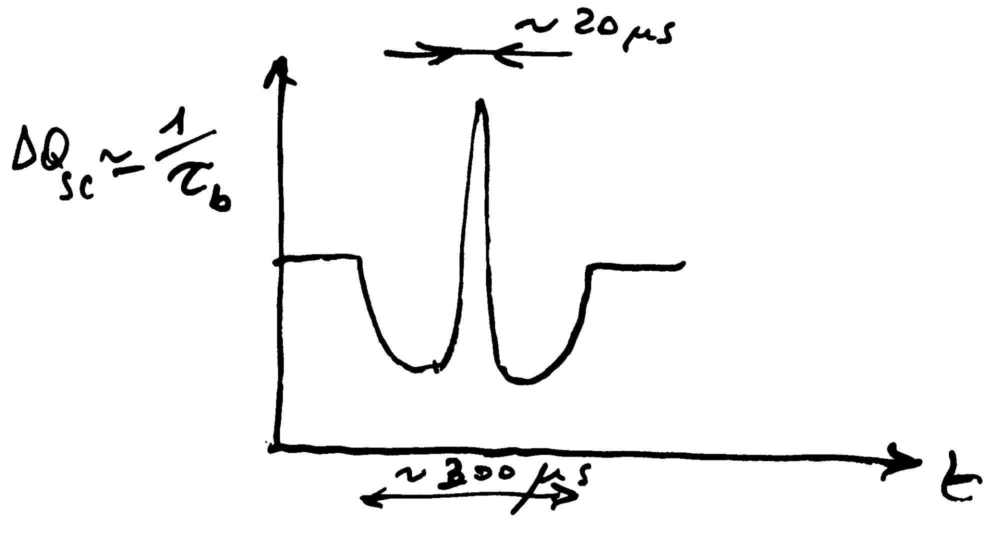
./.

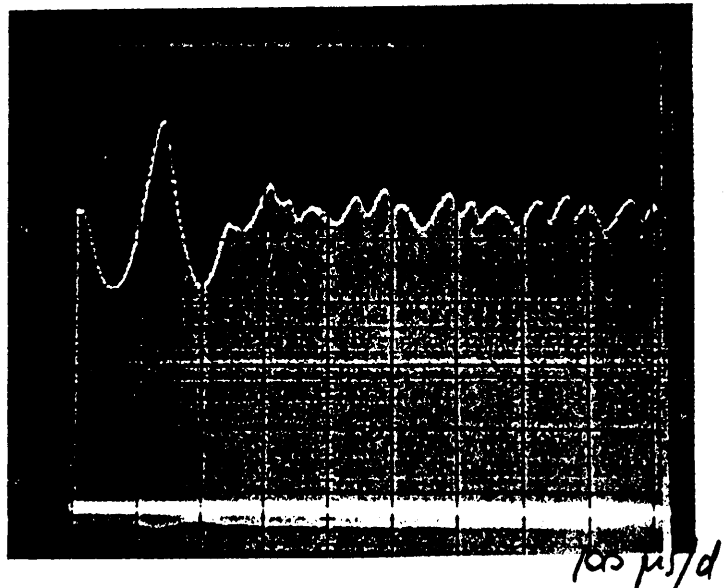
see next Transp.

HIGH ΔQ_{sc} BEAM BEHAVIOUR in PS









PRELIMINA RESULT

τ_b 36 → 22 → 36 ns

ΔQ_y 0,43 → 0,74 → 0,43

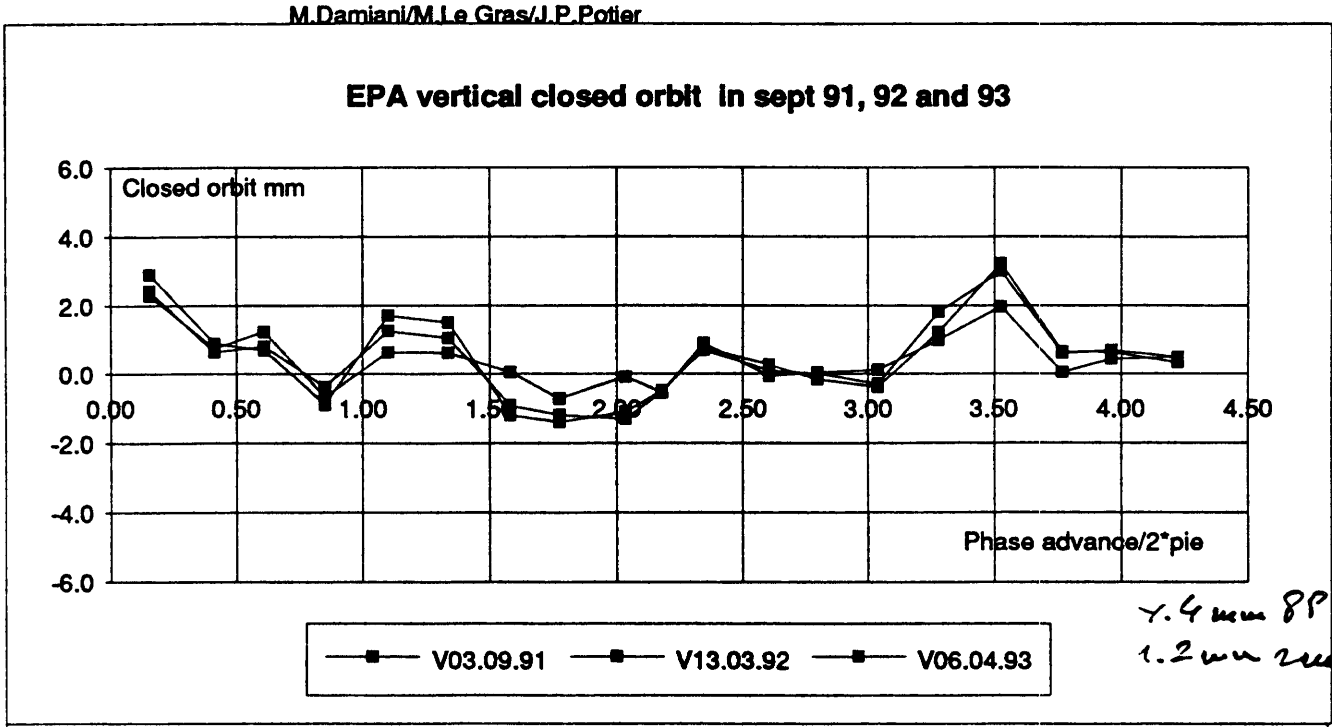
$\mathcal{E}^*_{y(1\sigma)}$ 3,4 → 4,0 μm (BU ≃ 1.17)

J.P. Potier

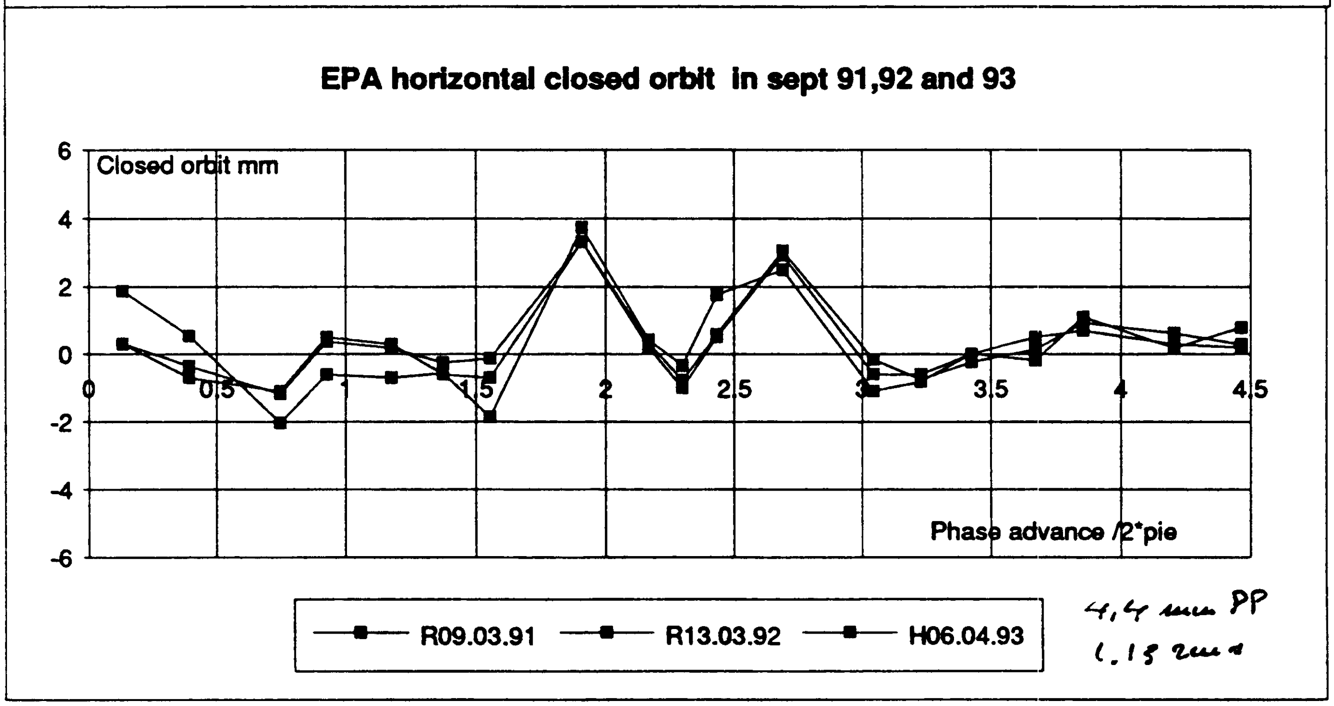
April 6,93

First EPA Closed Orbit measurements at 93 startup, comparison with 91 and 92 C.O.

M.Damiani/M.Le Gras/J.P.Potier

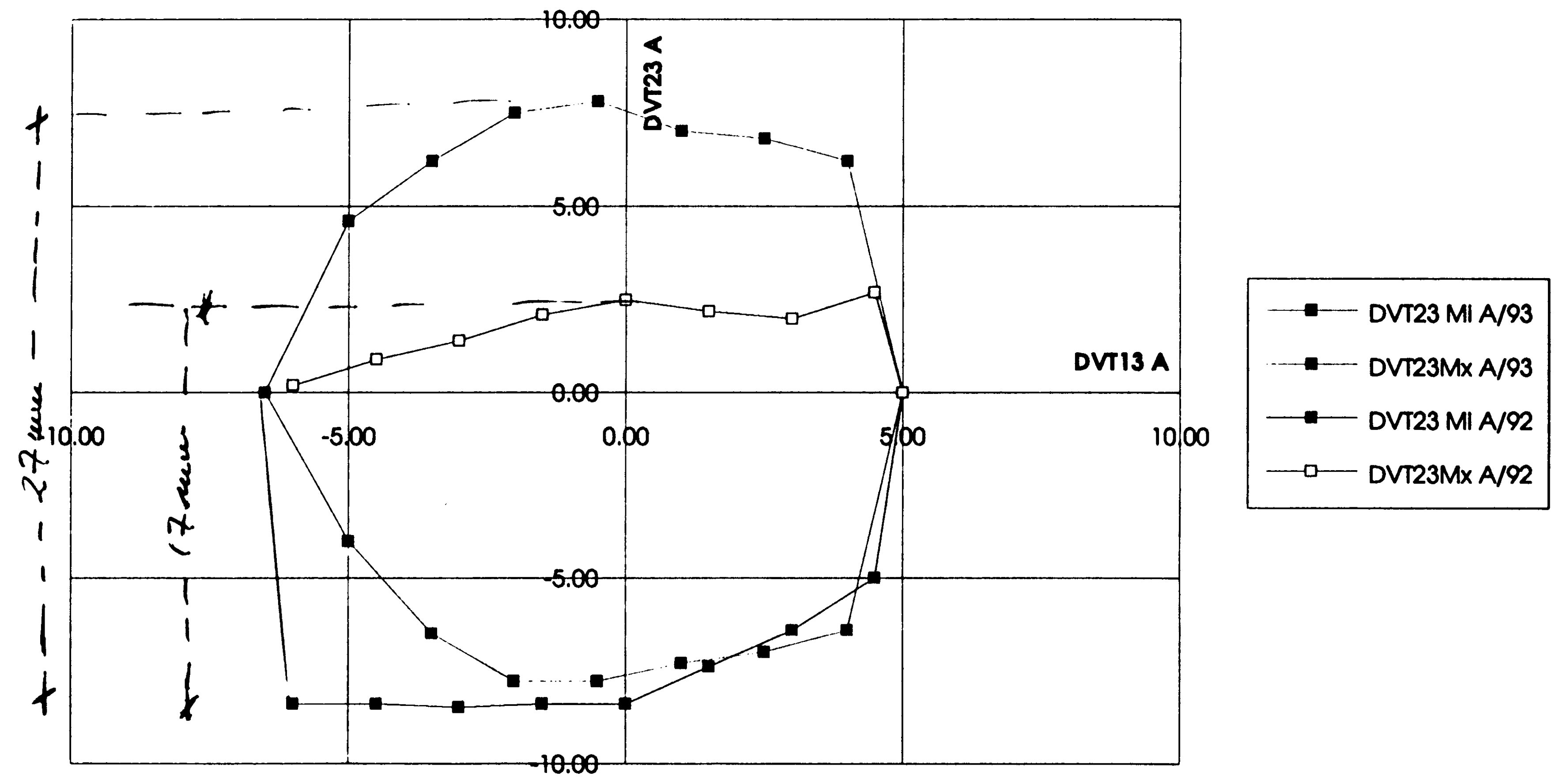


7.4 mm PP
1.2 mm rms

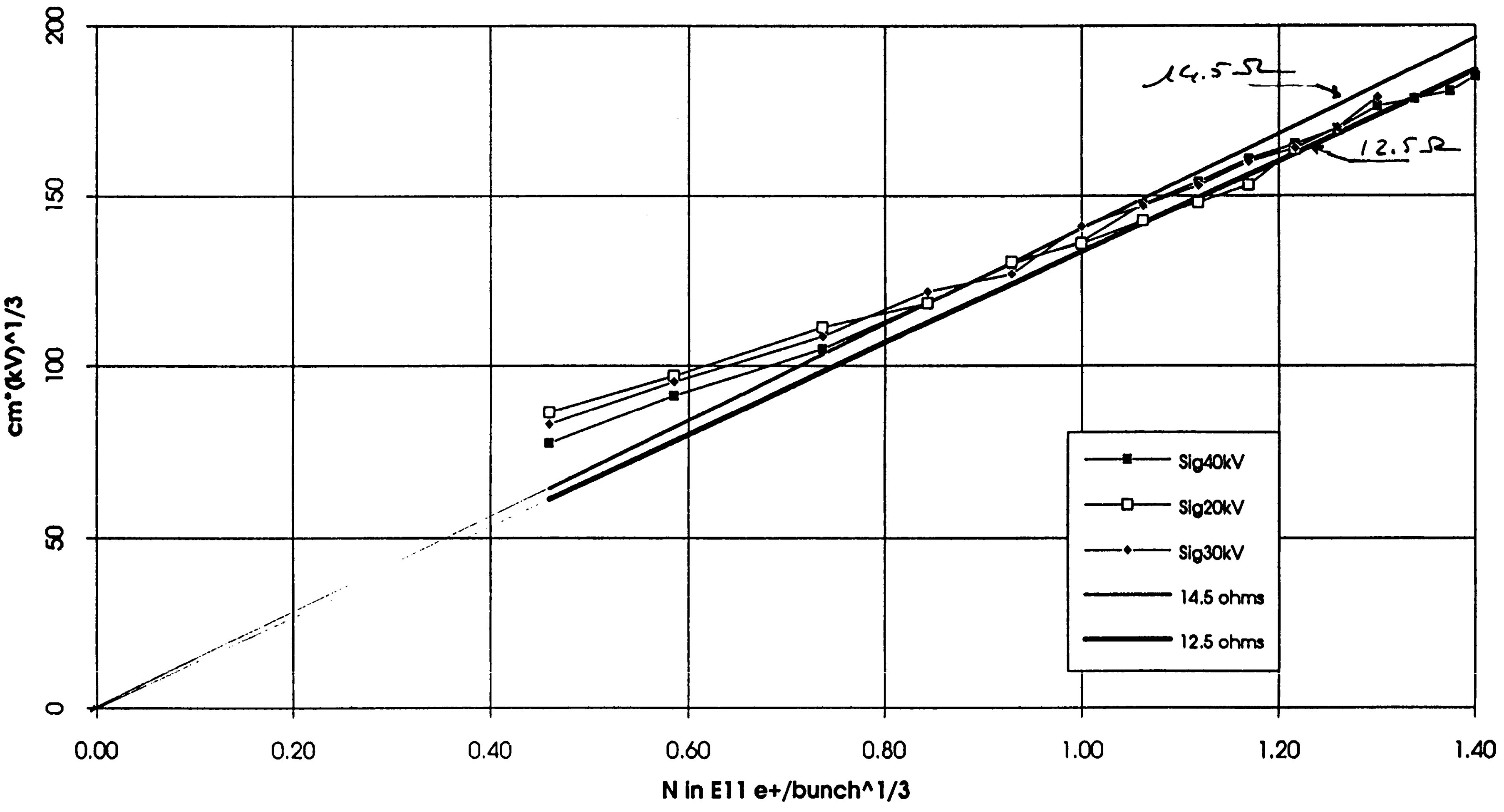


4,4 mm PP
1.18 rms

EPA vertical aperture 29/09/92 and 06/04/93 after removal of the restrictions



Sigs*(Vcos(phis)^1/3 plot at 500 MeV versus N^1/3 data of April 8,1993



L.P.I Performance

6-May-93

		PPP	PPE	Unit
	Charge at ECM01	4078	233	10 E8 e-
	Charge at UMA25	1581	91	10 E8 e-
	Charge Hix.UMA22	7.7	54.5	10 E8 e-
	uma22 with slit =16.4	6.7	50	
	Bunch nbr in EPA	8	4	
	Total Bean in EPA	1912	1130	10 E 8 e
	Nbre injection	317	32	
	Accumulation time	3.17	0.32	s
uma25/ecm01	LIL V xmission rate	38.77	39.06	%
hi.umu22/uma25	Conv./LIL W Effic.	0.49	59.89	%
part/(bunch*sec)	EPA acc. Rate(e8)	75.39	882.81	e/(b*s)E8
I epa/(nbr inj*hi.uma22)	Inj.+ ACC. Effic.	78.33	64.79	%
	eff. with slit =16.4	90.02	70.63	
I epa/(nbr inj*ecm01)	LIL+EPA tot. Effic.	0.15	15.16	%

1993 Positron performances

"Infinite accumulation"	Max. charge /bunch	28	10 E10 e
"Infinite accumulation"	Max. charge total	85	10 E10 e

V. Chohel
6/05/93

LEAR - MD's

1 HAUTES ENERGIES >609 MeV/c

Stochastic cooling

better notches

Amélioration refroidissement longitudinal -
(à verifier avec jet set -).

2 BASSES Energies

- Déceleration ↓ 105 MeV/c
- orbites, Q's, ξ's measurement
- stochastic cooling - ok -
- Damper ok -
- Extraction ok

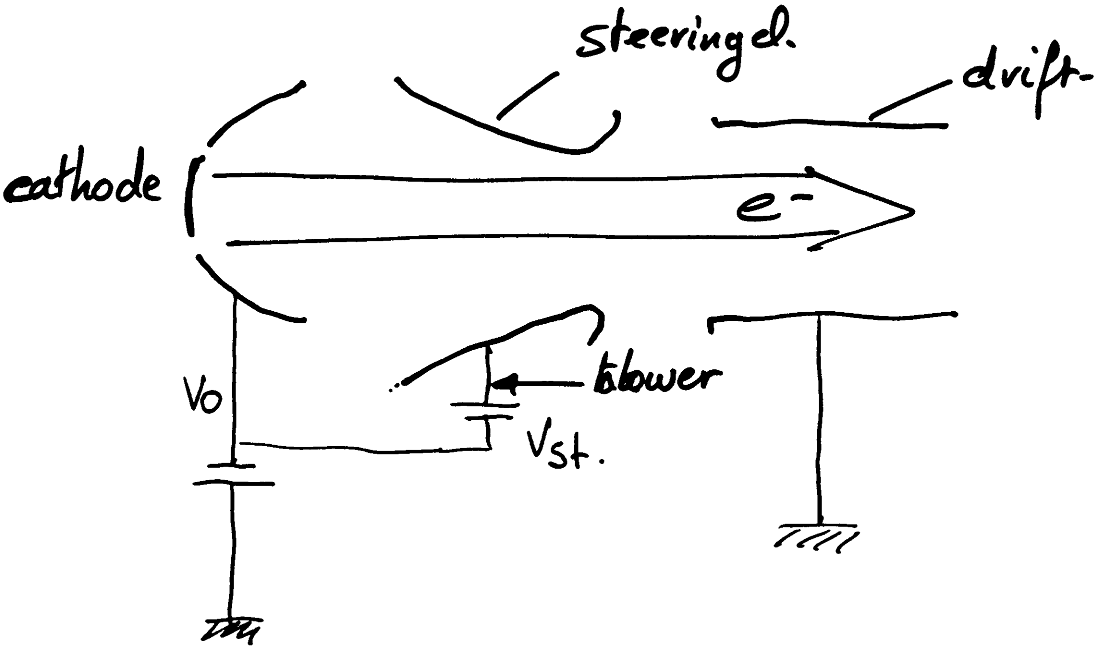
+ Principalemt refroidissement Electrons

- startup nouveau canon.
- Tests sur lear avec protons
- Tests feedback
- Tests décélaration -

Machine prête pour operation.
sauf el. cooling (1 à 2j).

Ecool

1 Gun.



Pour Vo donnée (e^- energy) on peut moduler le courant total en changeant Vst.

Exemple Vo = -27 keV
Vst = 25 kV Ie⁻ = 2.5A
Vst = 27 kV Ie⁻ = 2.7A
Vst = 20 kV Ie⁻ = 1,7A

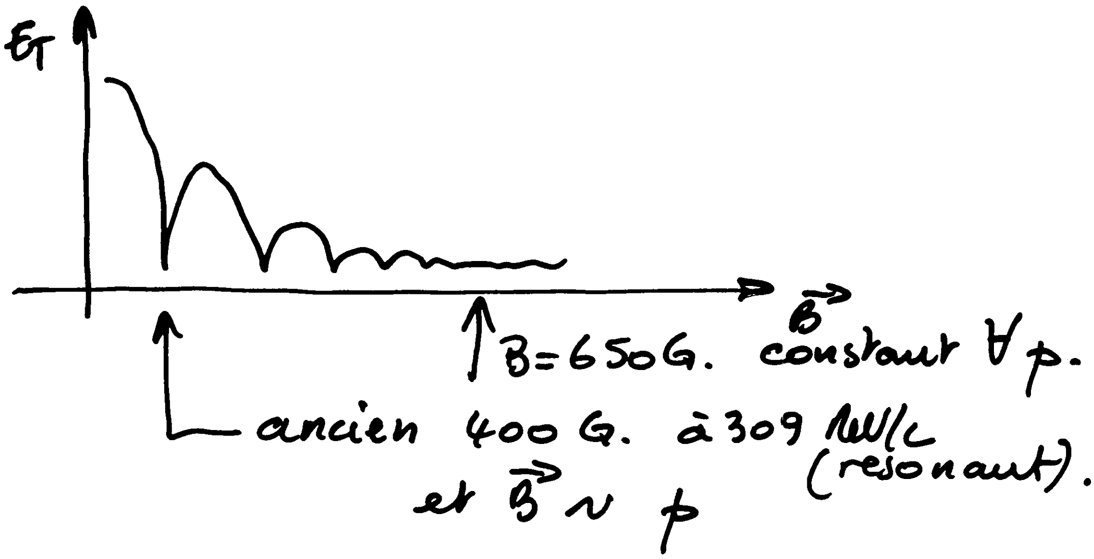
Auparavant Ie- fixé par perveance
Vo = 27 keV Ie⁻ = 2.6 A
Vo = 11 keV Ie⁻ = 0,6 A

Avec le nouveau canon Vo = 11 keV Vst = 30 kV
Ie⁻ > 3 A.

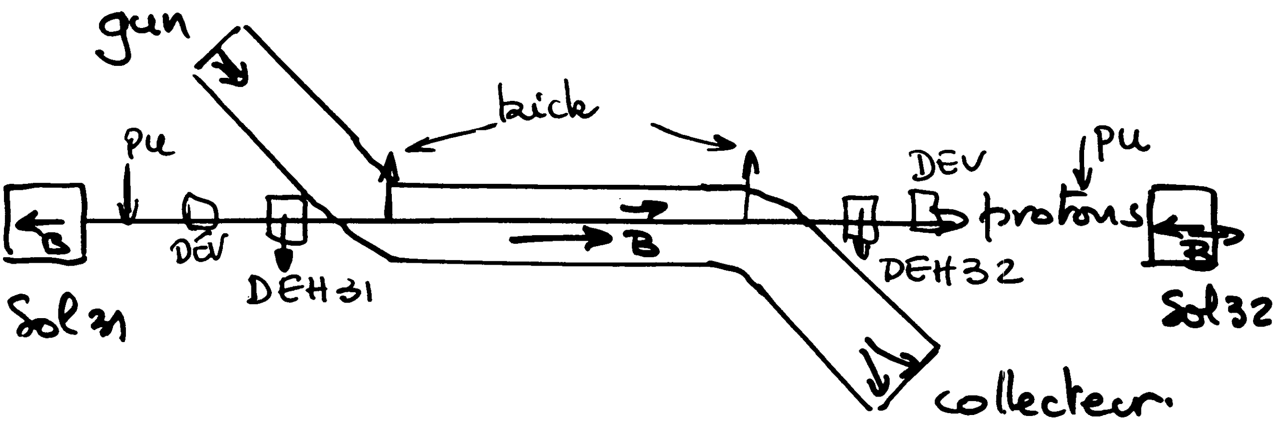
Inconvenients :

- Si on change Vst, on change potentiel de faisceau e⁻ et on refroidit les ions à une energie differente ⇒ feedback
- Pour certaines valeurs de Vst ⇒ trapping ← Blower

Canon adiabatique.



Installation.



1 Toroïdes → kick H (∼ 1 mrad pour 600G=B)
compensées par DEH 31, 32

2 - solenoïdes → couplage compensé par Sol 31/32
→ ΔQ. non compensé pour l'instant
(à 309 MeV/c ∼ 6 10^{-3}).

Résultats

1 - Tous f.t compensation toroïdes ok

2 - Pas possible de conserver $\bar{B}$=650G pendant décélération ⇒ mode pulsé. c.à.d. on coupe B pdt décélération.

et on remet pour cooling

3. Pas possible d'avoir 650G au 200 et 105 MeV/c car DQ trop fort et aussi pb. de stabilité electrons.

4. Cooling ok sur tous les flatop.

Quelques resultats importants à 309 MeV/c

<u>N = 2.3 10^10</u> • $\frac{\Delta p}{p} \sim 10^{-4}$ $\varepsilon_H, \varepsilon_V \sim 4\pi$ mm mrad.

Lifetime > 10h. (Ho) $\varepsilon^* \sim 1.2\pi$ ——

• faisceau stable grâce à

1. Damper 70 Mhz, G = 50 db

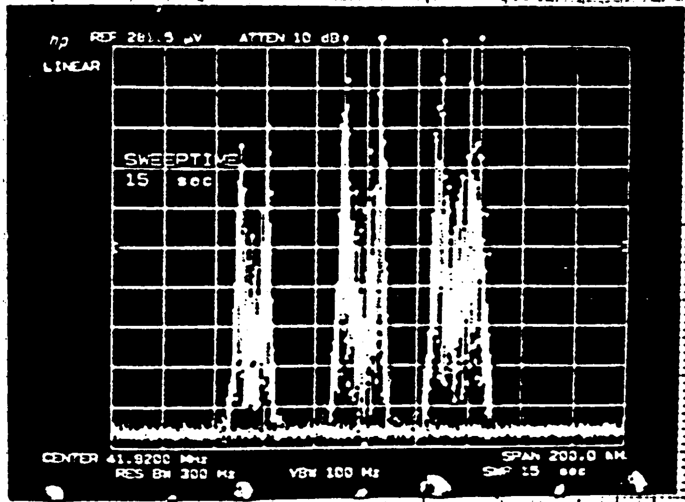
2. stochastic cool. H_p, V_p utilisé en damper (G ~ 70 db — normal 95 db).
BW - 1 Ghz.

• Vitesse de cooling

$\frac{\Delta p}{p}$ de $5\,10^{-3}$ à $4\,10^{-4}$ en < 5 sec

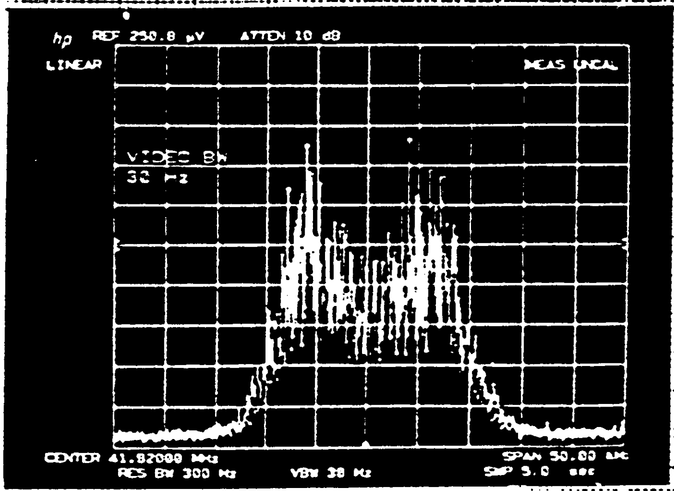
$\varepsilon_{H,V}$ de ~ 20π à 4π en 15 sec.
(Alignement très critique).

MD p e-cool feedback



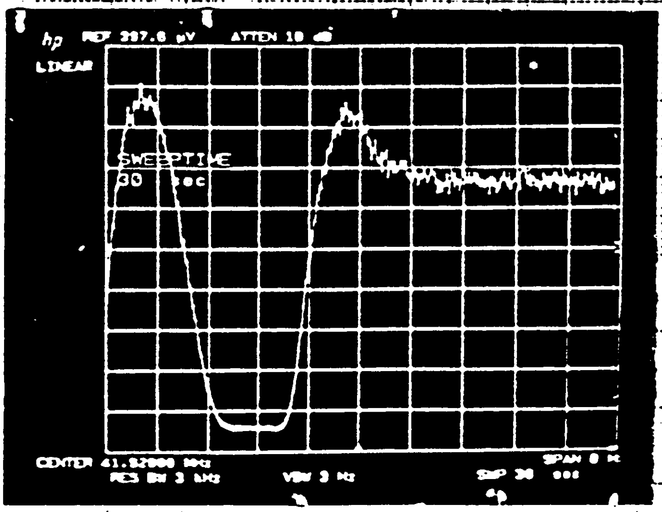
On diminue Vst de 27 kV à 25 kV en boucle ouverte du feedback

- On ferme la boucle et le faisceau revient au centre au bout de 15 sec environ.
- Pareil avec un step de +2 kV

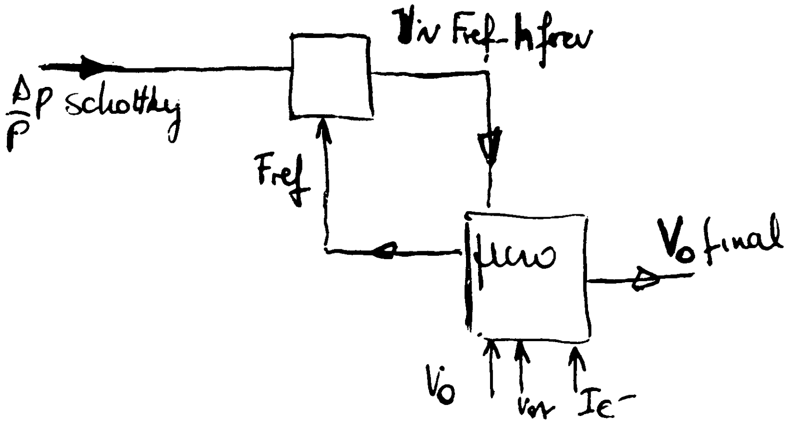


En boucle fermé

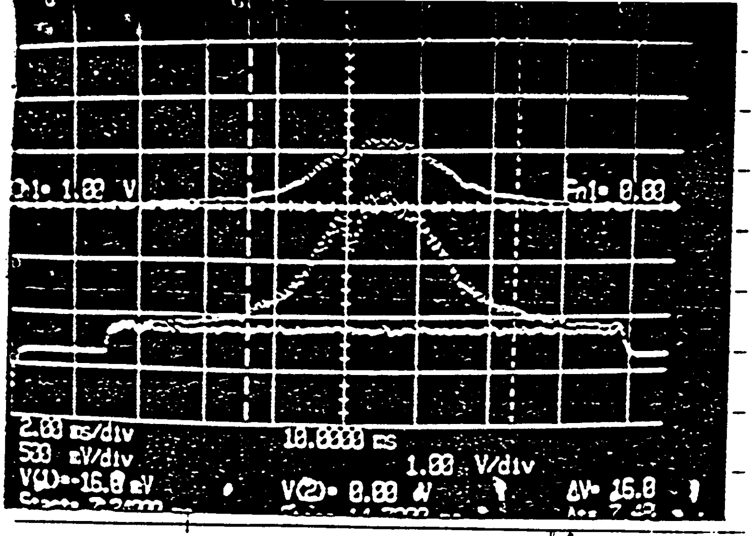
Les steps de 2 kV sur Vst ne sont plus visible en Δp. Le feedback maintient le faisceau au centre



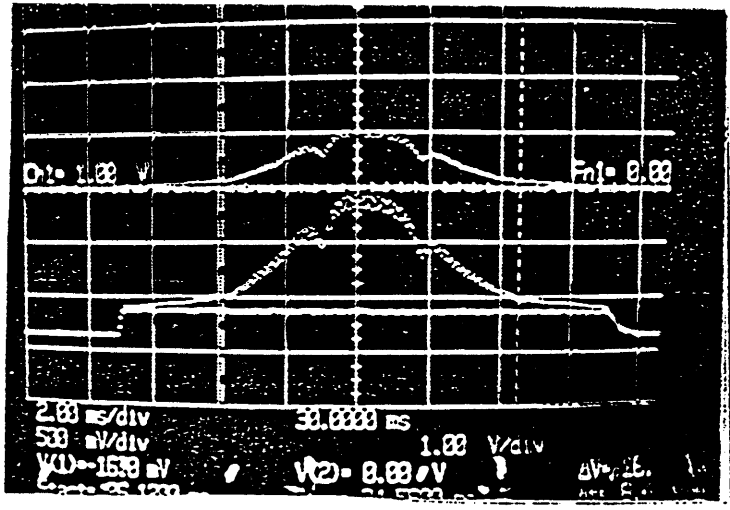
temps de reponse du feedback pour ramener le faisceau après avoir fait un step de 2 kV sur Vst en boucle ouverte.



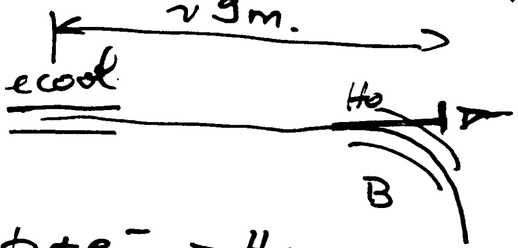
en quelques secondes la stabilité est bonne reste à finaliser le PID.



V



H.



$p + e^- \rightarrow H_0$

$N = 2\,3\,10^9$ $\Phi_{H_0} \sim 50\,k\,s^{-1}$

$\varepsilon_H (86\%) \sim 3.2\pi$

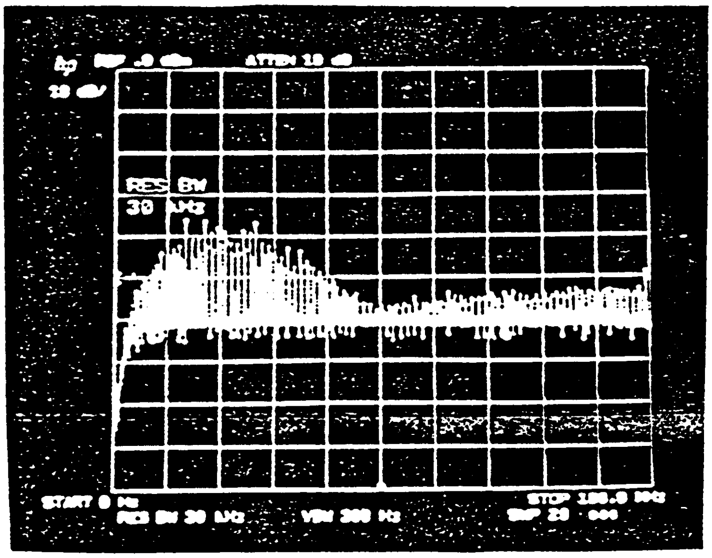
$\varepsilon_V (86\%) \sim 4\pi$

Signaux shottky H_β

enhancement ?

1. riple orbite
   Calcul ~ 1µm $\frac{\Delta B}{B} \sim 10^{-6}$

2. Damper effect (F.P.)
   to be confirmed.



0 100MHz

enhancement.

En Resumé

Projet ecool sur la bonne voie. Restent à finaliser la mise en opération simple, le feedback.

Restent à tester la neutralisation et les instabilités électrons (traps?) avec certaines valeurs de Vst.

AAC Performance 1993

s/5/9

GENERAL AAC PERFORMANCE CHECK (REMOVED POOR SHOTS)
1993-04-29-01:57:22 STACK 1.57E11

	Q AT PEAK	95% EMITTANCE, p mm mrad AT PEAK	AVERAGE
HOR.	2.2551	1.6	1.8
VERT.	2.2608	.8	.9

TRANSFORMERS	
PS-IP	12.42
TF9012	12.82
TF9053	11.77
TF5309	1834

PEAK AT 1855.11 kHz
MEAN AT 1855.07 kHz, rms WIDTH 119 Hz

AC EMITTANCE	
H	V

	ACAA			ACN			ACATL	
YIELD	44.5	EFF.		44.3	EFF.		44.3	EFF.
AC 5.3	5.35	1.00		5.26	1.00		5.22	1.00
AC 1.5	4.43	.82		4.36	.82		4.35	.83
AC 5.3				4.02	.76	.92		
AC .18				3.96	.75	.98		
AA .21	3.72	.69	.84					
PR .21	4.22	.78	1.13					
PR.052	3.73	.69	.88					
ST .21	3.36	.62					0	0
ST.052	2.37	.44	.63					
STACKED							4.21	.80
LOSS E7/h				102				

23 25 Stack 1.33 E9
last shot: 30 E6
SR: 40.6 E6/shot
SR: 28.6 E9/heure
last hour: 8 E9
please safe

Good but for low stack value

[~90% observed at starting on 1MAY93 with zero stack]

GENERAL AAC PERFORMANCE CHECK (REMOVED POOR SHOTS)
1993-05-06-08:09:01 STACK 8.26E11

	Q AT PEAK	95% EMITTANCE, p mm mrad AT PEAK	AVERAGE
HOR.	2.2547	3.3	3.9
VERT.	2.2603	1.6	1.8

TRANSFORMERS	
PS-IP	13.88
TF9012	14.42
TF9053	13.15
TF5309	2029

PEAK AT 1855.06 kHz
MEAN AT 1855.08 kHz, rms WIDTH 117 Hz

AC EMITTANCE			
H	4	V	4

	ACAA			ACN			ACATL	
YIELD	44.4	EFF.		45.0	EFF.		43.7	EFF.
AC 5.3	5.85	1.00		5.85	1.00		5.74	1.00
AC 1.5	4.66	.79		4.73	.80		4.55	.79
AC 5.3				4.70	.80	.99		
AC .18				4.65	.79	.99		
AA .21	4.54	.77	.97					
PR .21	4.93	.84	1.08					
PR.052	4.41	.75	.89					
ST .21	3.86	.65					.04	0
ST.052	2.76	.47	.62					
STACKED							3.70	.64
LOSS E7/h				218				

Not so bad for 8.2×10^{11} in Stack today.

[illegible] reasonable.
[illegible] perhaps less or equiv. to "best" c.f. 199[illegible]

Overall Core ϵ_H & core R.M.S. Width HIGH !

Problems \ Issues 1993

(0) Core Studies NOT Done (lack of time

(1) BT1247, Setting up etc
Efficiency of transfers

(2) Machine Setting up done in a hurry, Acceptances, tunes, etc ... related to problems of efficiency in test beam (only 85% after Easter etc)

(3) Ground leakage in main focussing Quad of AA & possible leakage current during setting-up after easter

(4) Coupling (& loss rate control) as already observed last year (See Eloise write-up)

(5) Transfer Eff. related to (1) above.

PS PERFORMANCE COMMITTEE (PPC)

6 May 1993

PSB-PS Betatron and Dispersion Matching MD of 26 April 1993

M. Martini, C. Saulnier, K. Schindl, E. Schulte

1 INTRODUCTION

Increase of the horizontal 1σ-emittance due to the dispersion mismatch:

$$\Delta\mathcal{E}_x^{(1\sigma)} = \left(\frac{D_{psb} - D_{ps}}{\sqrt{\beta_x}}\right)^2_{\max} \sigma_\delta^2$$

- D_{ps} is the periodic dispersion function of the PS.
- D_{psb} is the dispersion function propagated from the PSB to the PS through the transfer line.
- $D_{psb} - D_{ps}$ describes the oscillation of D_{psb} with respect to D_{ps}.
- σ_δ is the r.m.s. momentum dispersion ($\delta \stackrel{def}{=} \Delta p/p$).
- β_x is the periodic beta function of the PS.

2 THE 1989 MATCHING

Obtained with 10 quadrupoles:

```
BT.QN010 = 156.5 A  BTP.QN010 = 0.00 A
BT.QN020 = 145.6 A  BTP.QN020 = 117.6 A
BT.QN030 = 69.5 A   BTP.QN030 = 108.5 A
BT.QN040 = 230.0 A  BTP.QN040 = 142.7 A
BT.QN050 = -149.5 A BTP.QN050 = 121.6 A
                    BTP.QN060 = 146.6 A
```

Expected dispersion mismatch: ± 1.6 m.

3 THE 1991 MATCHING

Obtained with 11 quadrupoles:

```
BT.QN010 = 156.5 A  BTP.QN010 = -128.0 A
BT.QN020 = 145.6 A  BTP.QN020 = 123.4 A
BT.QN030 = 69.5 A   BTP.QN030 = 135.4 A
BT.QN040 = 166.3 A  BTP.QN040 = 206.5 A
BT.QN050 = -178.3 A BTP.QN050 = 144.8 A
                    BTP.QN060 = 166.0 A
```

Expected dispersion mismatch: ± 0.4 m.

4 RESULTS AND CONCLUSION

Aim of the MD:

i. Measure the **propagated dispersion** D_{psb} at the 1st turn after PS injection (by measuring PS trajectories at different beam momenta - change in PSB $(p-p_0)/p_0$ by ± 0.002).
D_{psb} is the ratio of the horizontal trajectory difference by the relative momentum difference.

ii. Measure the **betatron mismatch** at the PS entrance (with the SEM-grid processing system).

Horizontal emittance **blow-up** for the LHC proton beam due to the dispersion mismatch (nominal mean emittance=2.5μm):

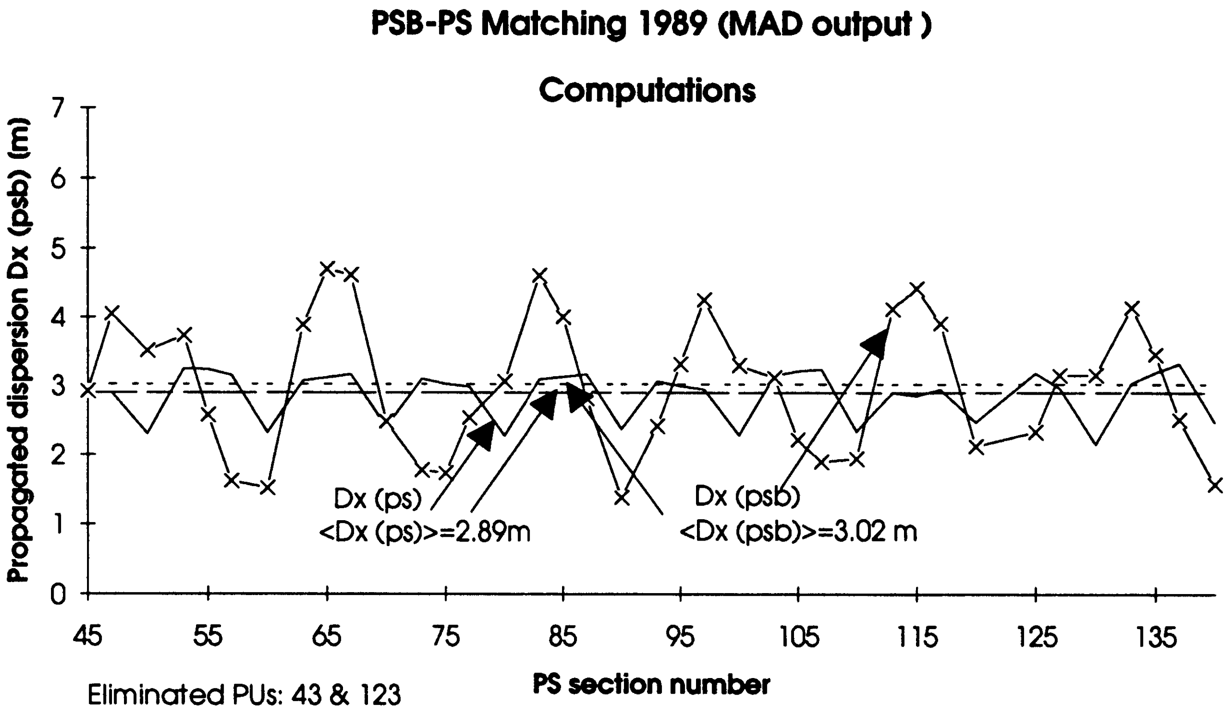
- 1989 matching:

$$\Delta\mathcal{E}_x^{(1\sigma)} \approx \left(\frac{6.8-3.4}{\sqrt{22}}\right)^2 1.25^2 = 0.8\mu m$$

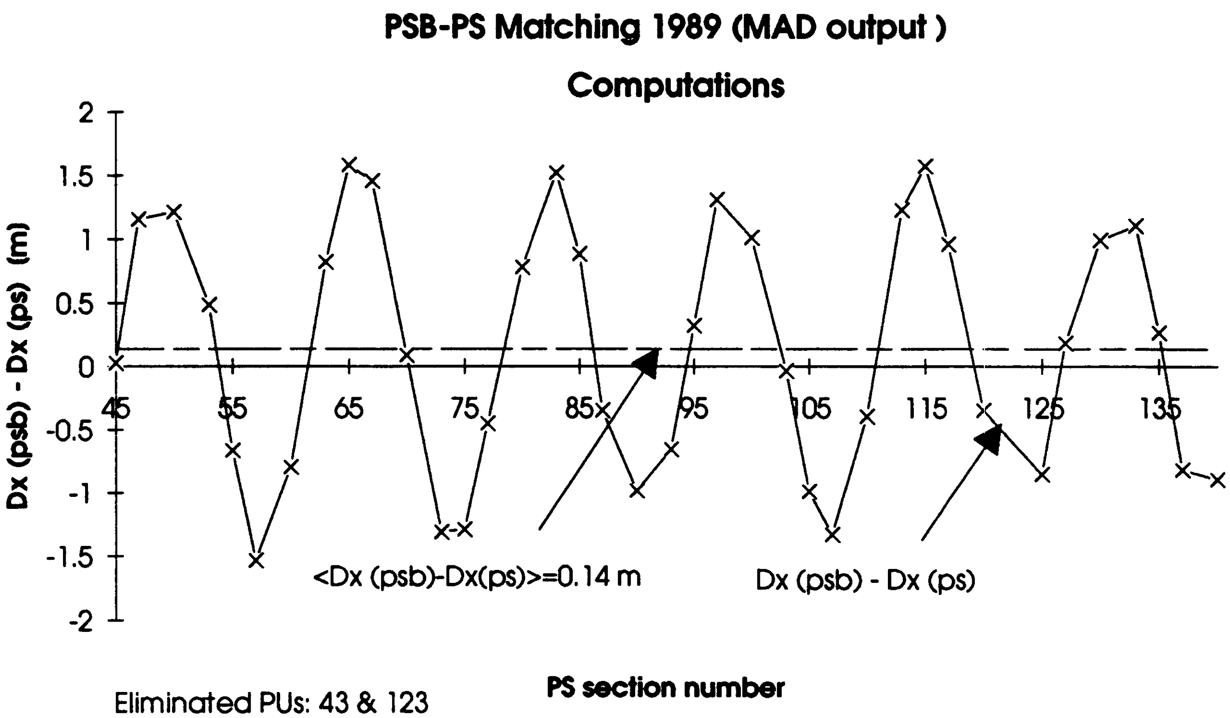
- 1991 matching:

$$\Delta\mathcal{E}_x^{(1\sigma)} \approx \left(\frac{5.3-3.5}{\sqrt{22}}\right)^2 1.25^2 = 0.2\mu m$$

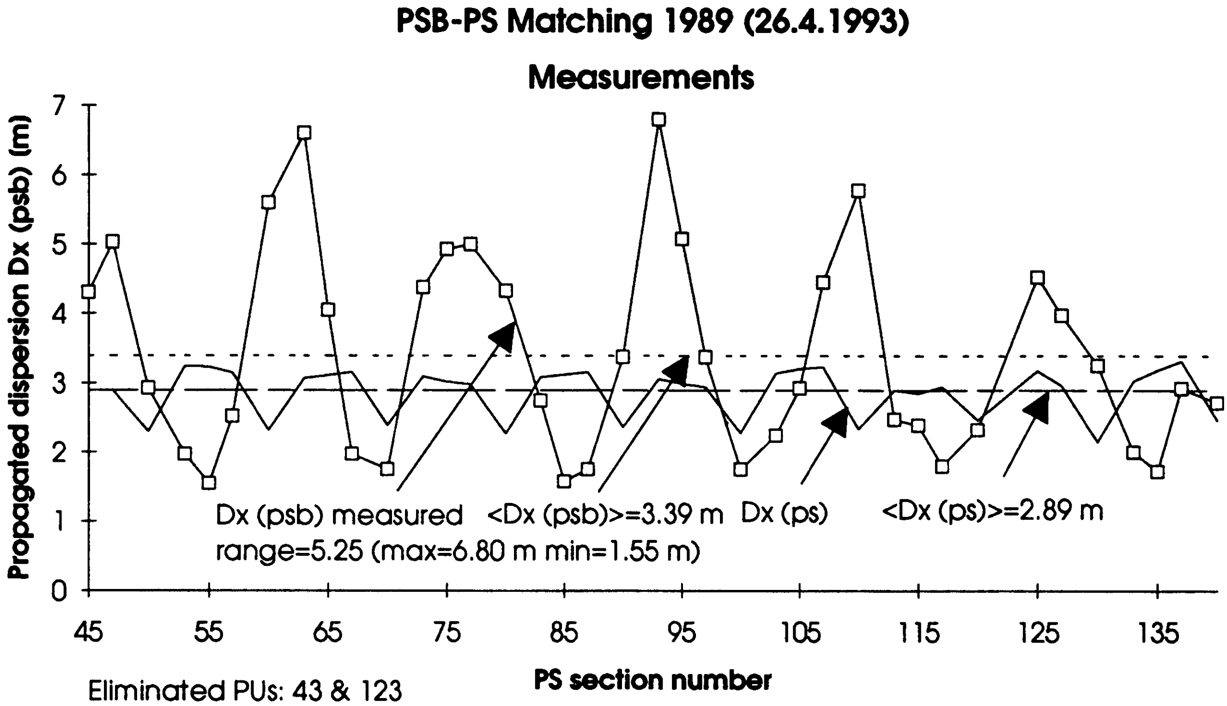
```
!-----------------------------------------------------------------------!
!                                                                       !
!                     Transfer line Booster to PS                       !
!                                                                       !
!                                                                       !
!                              30.05.1991                               !
!                                                                       !
!-----------------------------------------------------------------------!

! optics at entrance of Booster ejection septum (from KHS)
BT0:   BETA0,                                  &
       BETX=6.0788,      ALFX=0.2297,      &
       BETY=3.4112,      ALFY=0.4781,      &
       DX= -1.4847

! optics at entrance of PS stray field (= point R; from job FE42 MAD)
BTP0:  BETA0,                                  &
       BETX= 18.718,     ALFX= +1.272,     &
       BETY= 15.463,     ALFY= -0.818,     &
       DX  = +2.915,     DPX = -0.120
```



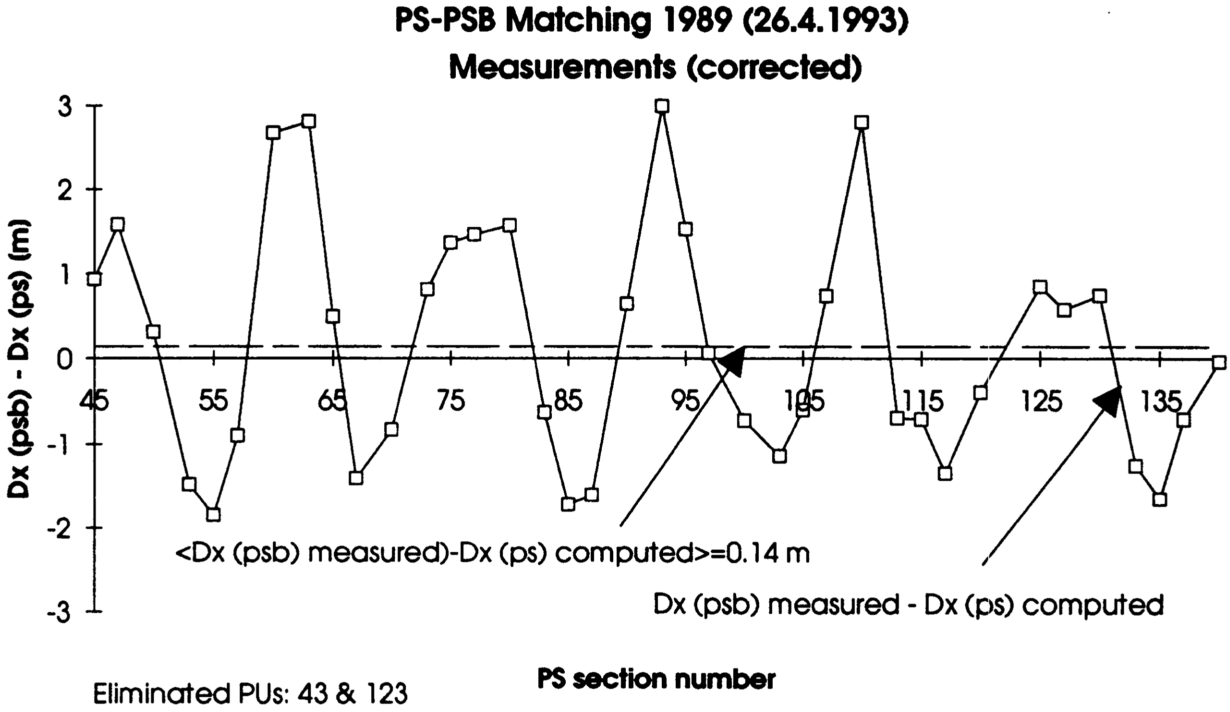
Eliminated PUs: 43 & 123

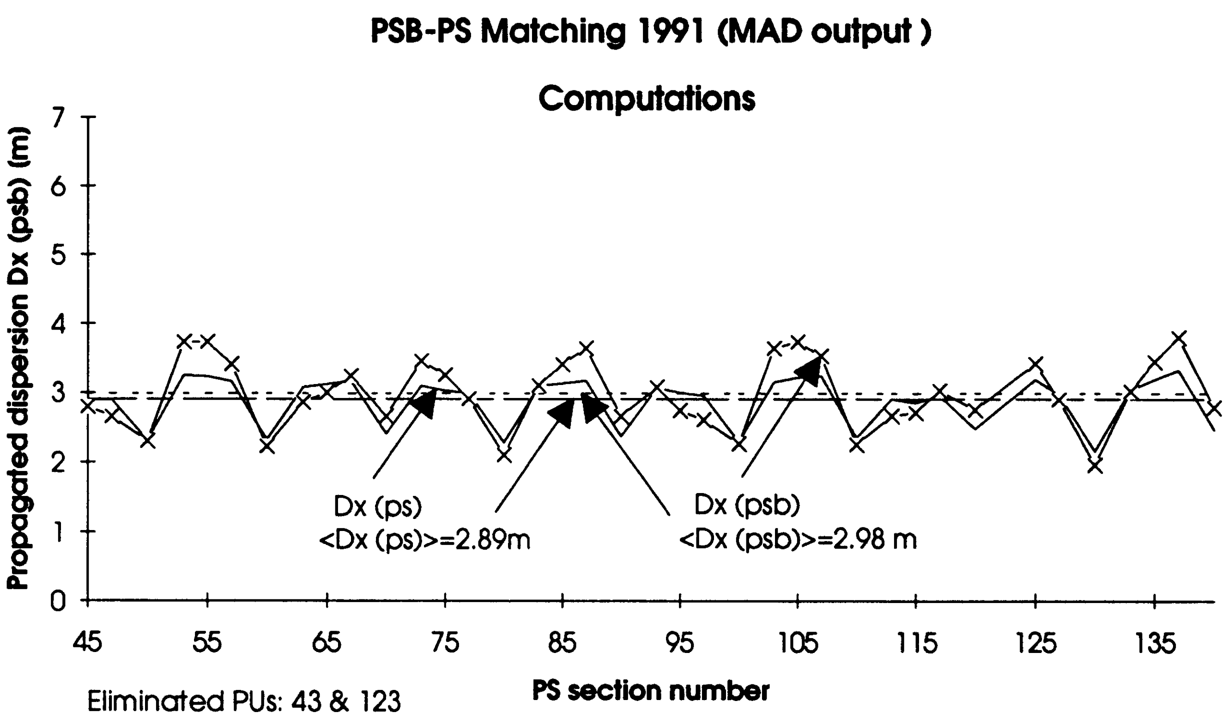


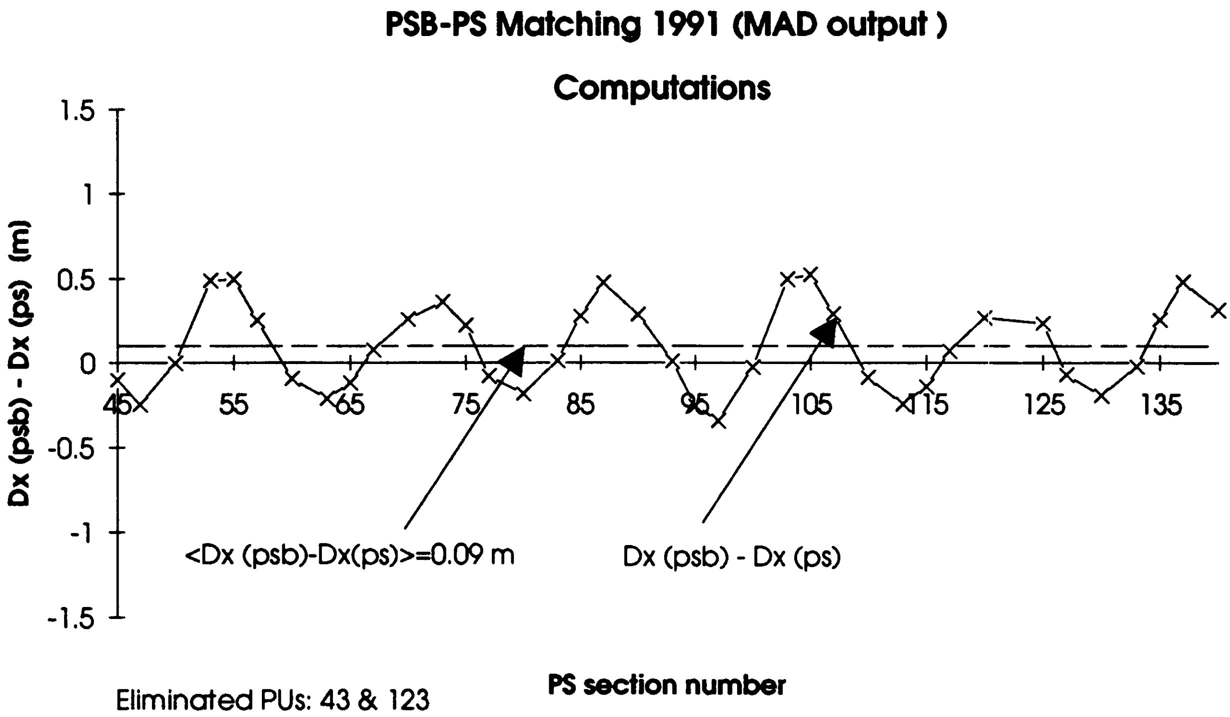
Eliminated PUs: 43 & 123

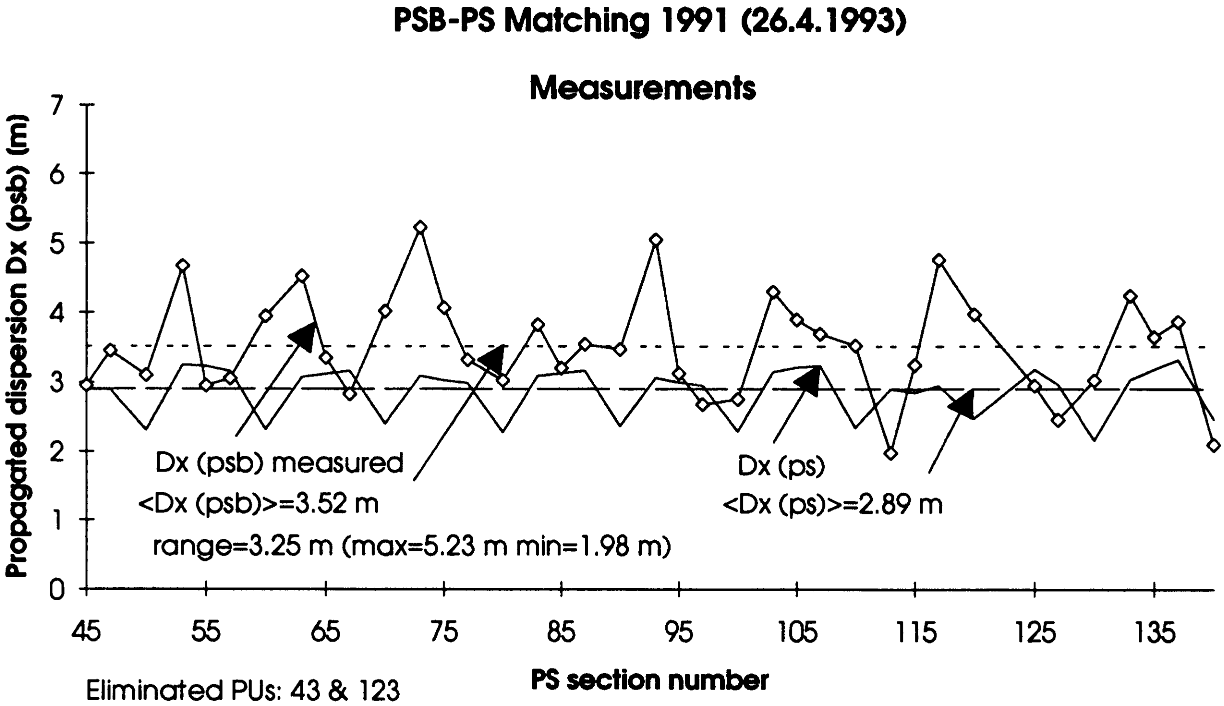


Eliminated PUs: 43 & 123

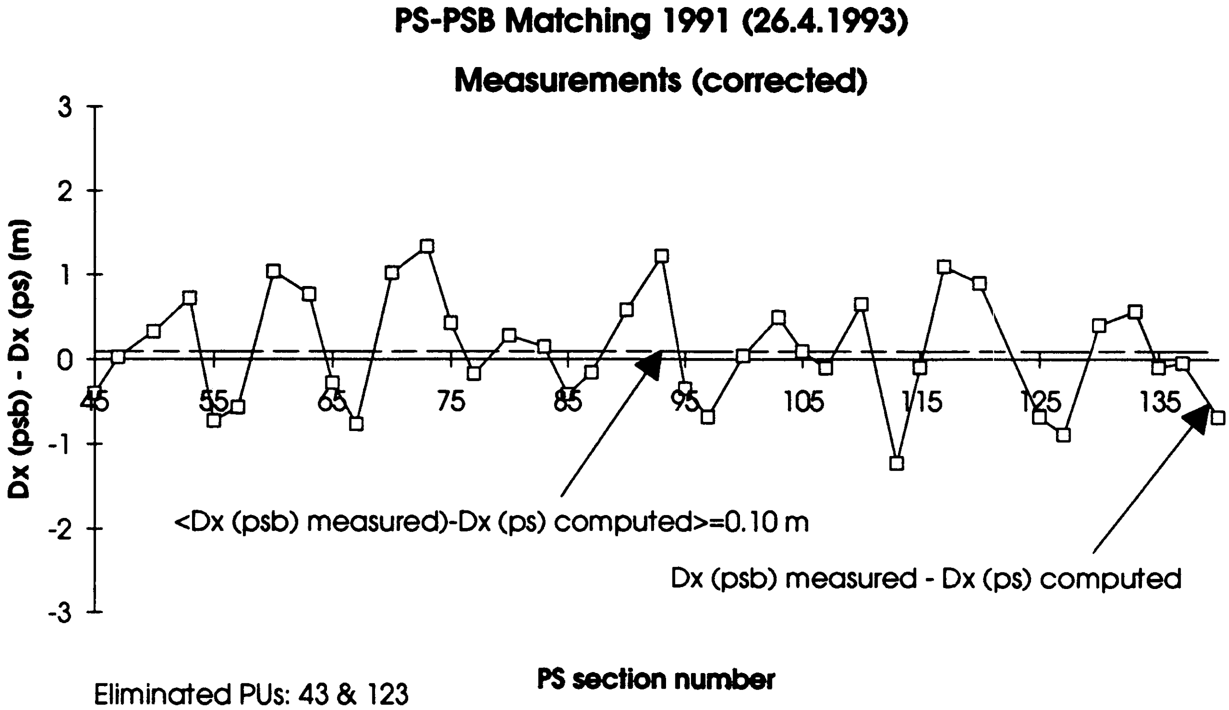

PS-PSB Matching 1989 (26.4.1993)
Measurements (corrected)
Dx (psb) - Dx (ps) (m)
3
2
1
0
-1
-2
-3
45
55
65
75
85
95
105
115
125
135
<Dx (psb) measured)-Dx (ps) computed>=0.14 m
Dx (psb) measured - Dx (ps) computed
PS section number
Eliminated PUs: 43 & 123


PSB-PS Matching 1991 (MAD output)
Computations
Propagated dispersion Dx (psb) (m)
0
1
2
3
4
5
6
7
45
55
65
75
85
95
105
115
125
135
PS section number
Dx (ps)
<Dx (ps)>=2.89m
Dx (psb)
<Dx (psb)>=2.98 m
Eliminated PUs: 43 & 123

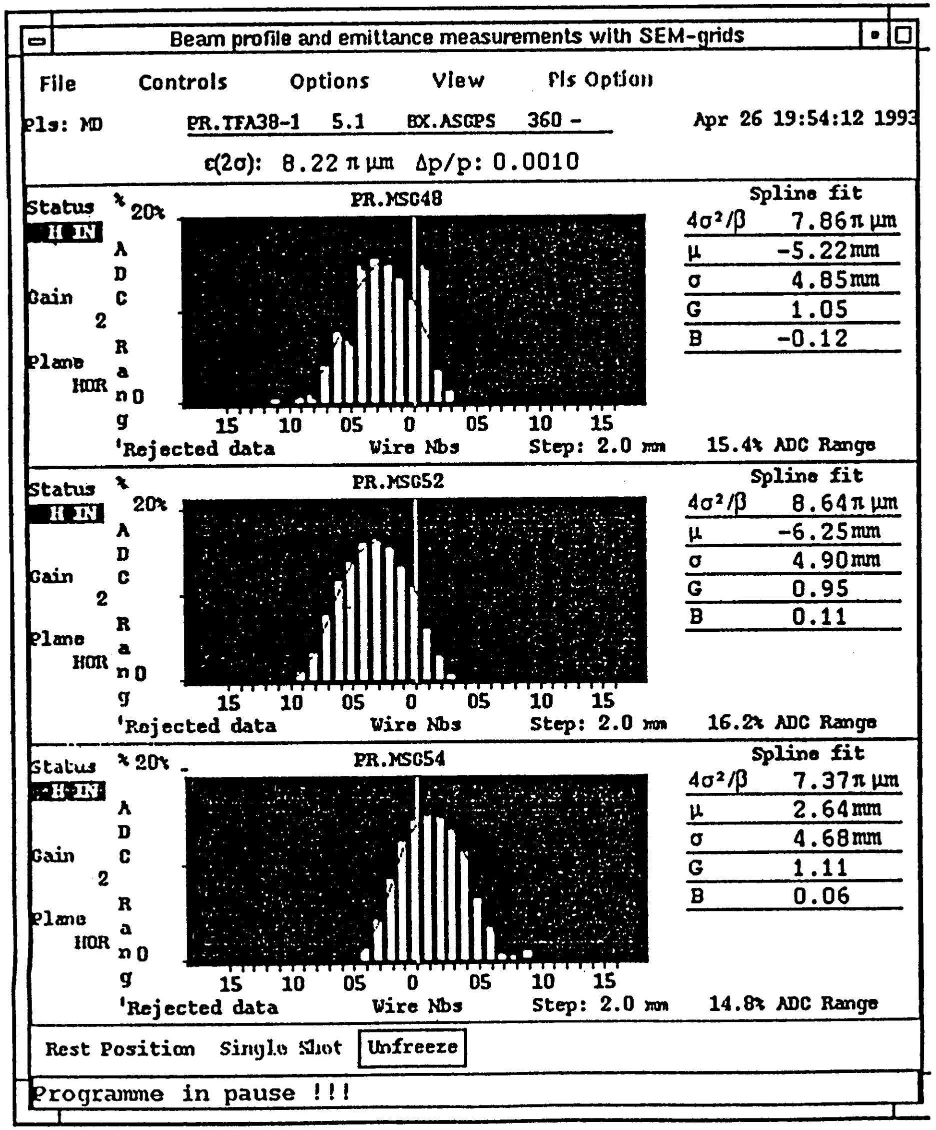

PSB-PS Matching 1991 (MAD output)
Computations
1.5
1
0.5
0
-0.5
-1
-1.5
Dx (psb) - Dx (ps) (m)
45
55
65
75
85
95
105
115
125
135
<Dx (psb)-Dx(ps)>=0.09 m
Dx (psb) - Dx (ps)
PS section number
Eliminated PUs: 43 & 123



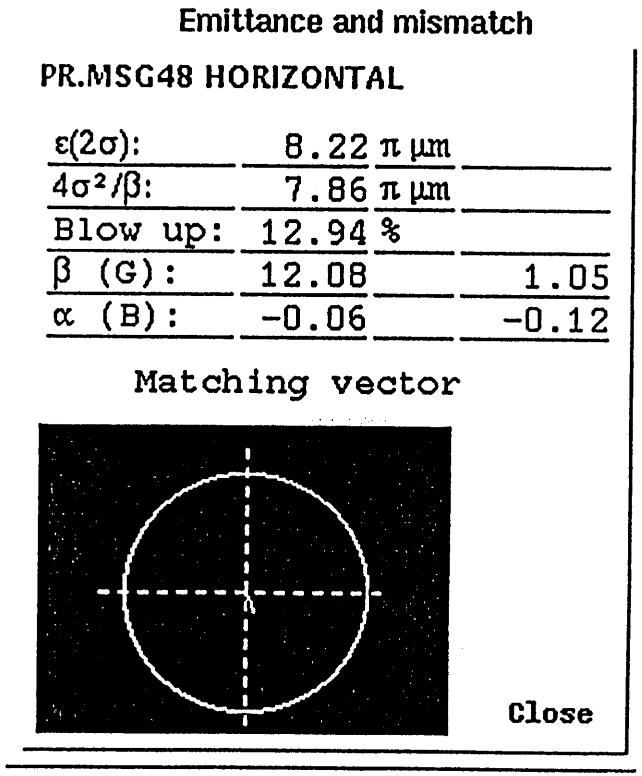
Eliminated PUs: 43 & 123



Eliminated PUs: 43 & 123



Beam profile and emittance measurements with SEM-grids
File
Controls
Options
View
Pls Option
Pls: MD
PR.TFA38-1 5.1 BX.ASGPS 360 -
Apr 26 19:54:12 1993
ε(2σ): 8.22 π µm Δp/p: 0.0010
Status
H IN
Gain 2
Plane HOR
% 20%
ADC Range 0
PR.MSG48
15 10 05 0 05 10 15
'Rejected data
Wire Nbs
Step: 2.0 mm
Spline fit
4σ²/β 7.86 π µm
µ -5.22 mm
σ 4.85 mm
G 1.05
B -0.12
15.4% ADC Range
PR.MSG52
Spline fit
4σ²/β 8.64 π µm
µ -6.25 mm
σ 4.90 mm
G 0.95
B 0.11
16.2% ADC Range
PR.MSG54
Spline fit
4σ²/β 7.37 π µm
µ 2.64 mm
σ 4.68 mm
G 1.11
B 0.06
14.8% ADC Range
Rest Position
Single Shot
Unfreeze
Programme in pause !!!

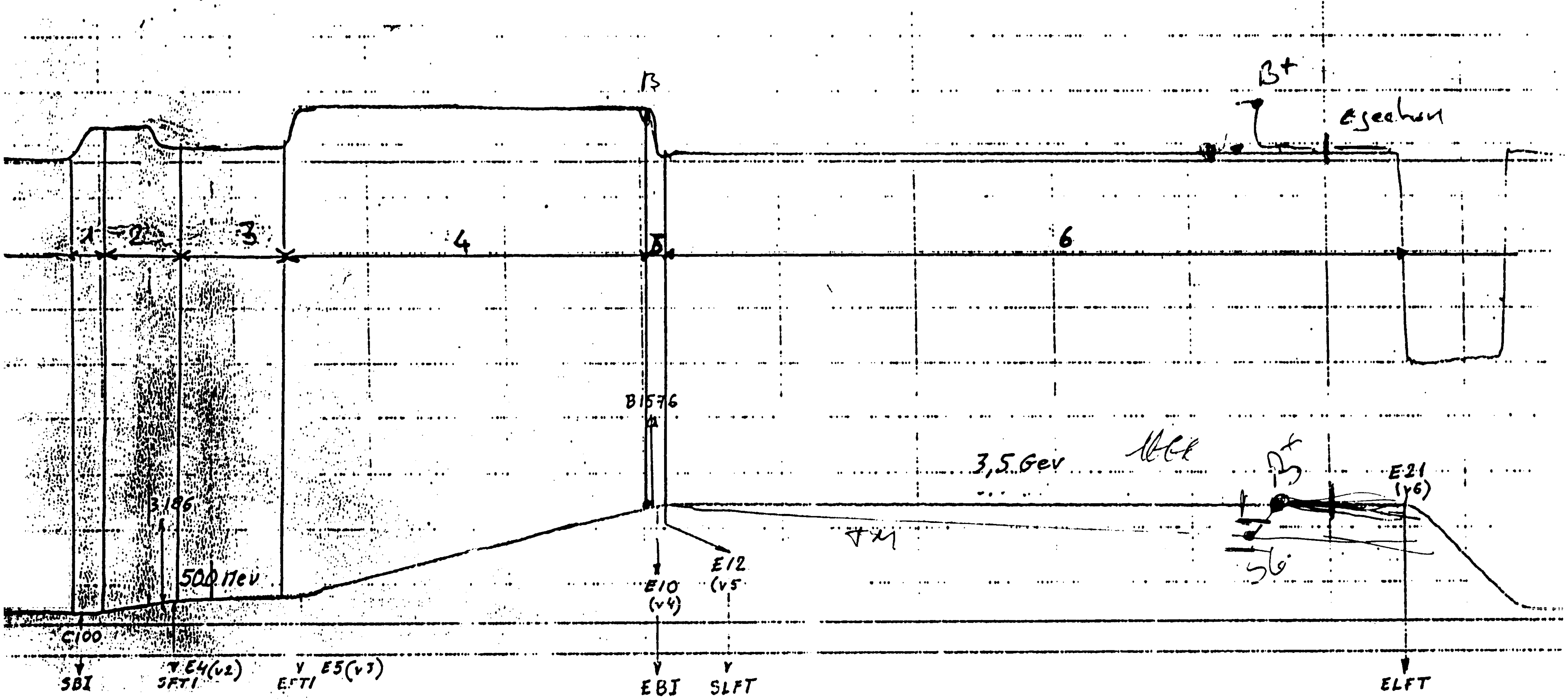


Emittance and mismatch
PR.MSG48 HORIZONTAL
ε(2σ): 8.22 π µm
4σ²/β: 7.86 π µm
Blow up: 12.94 %
β (G): 12.08 1.05
α (B): -0.06 -0.12
Matching vector
Close

position des vecteurs
dans le cycle E-21

(sans by-pass) 21

B = 1666.5 à C 953



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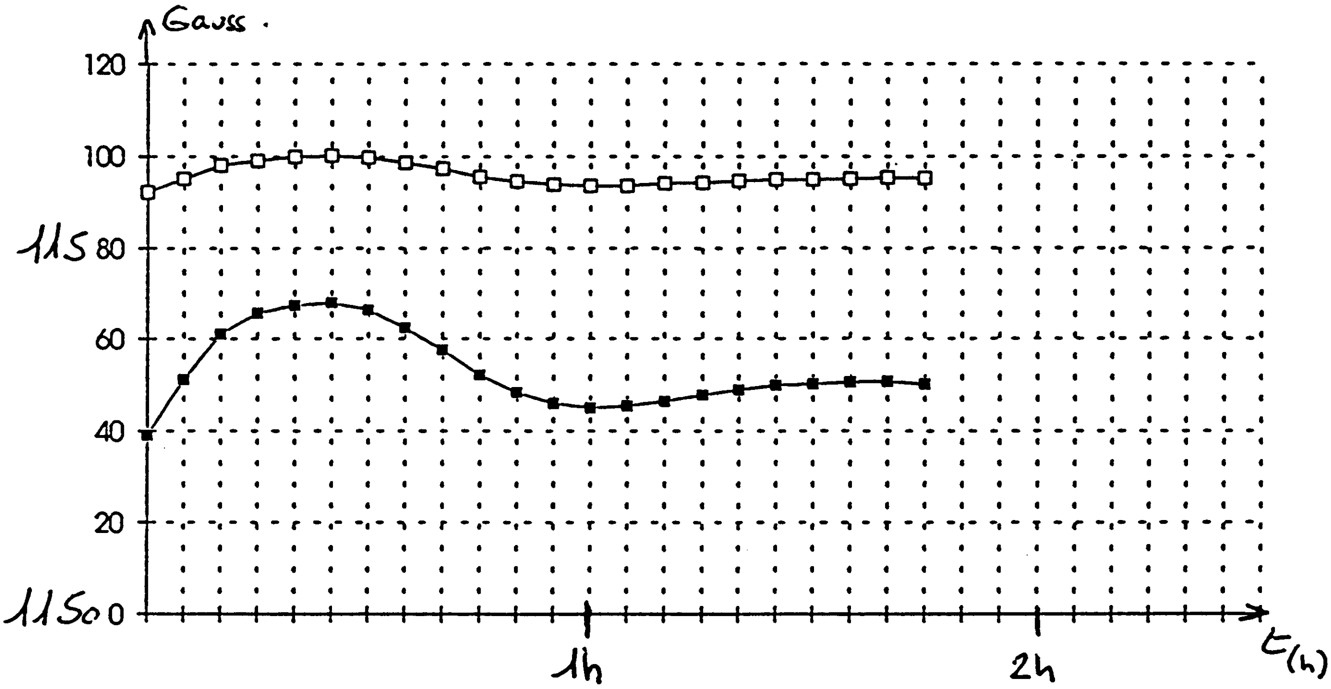
N. Blaziano

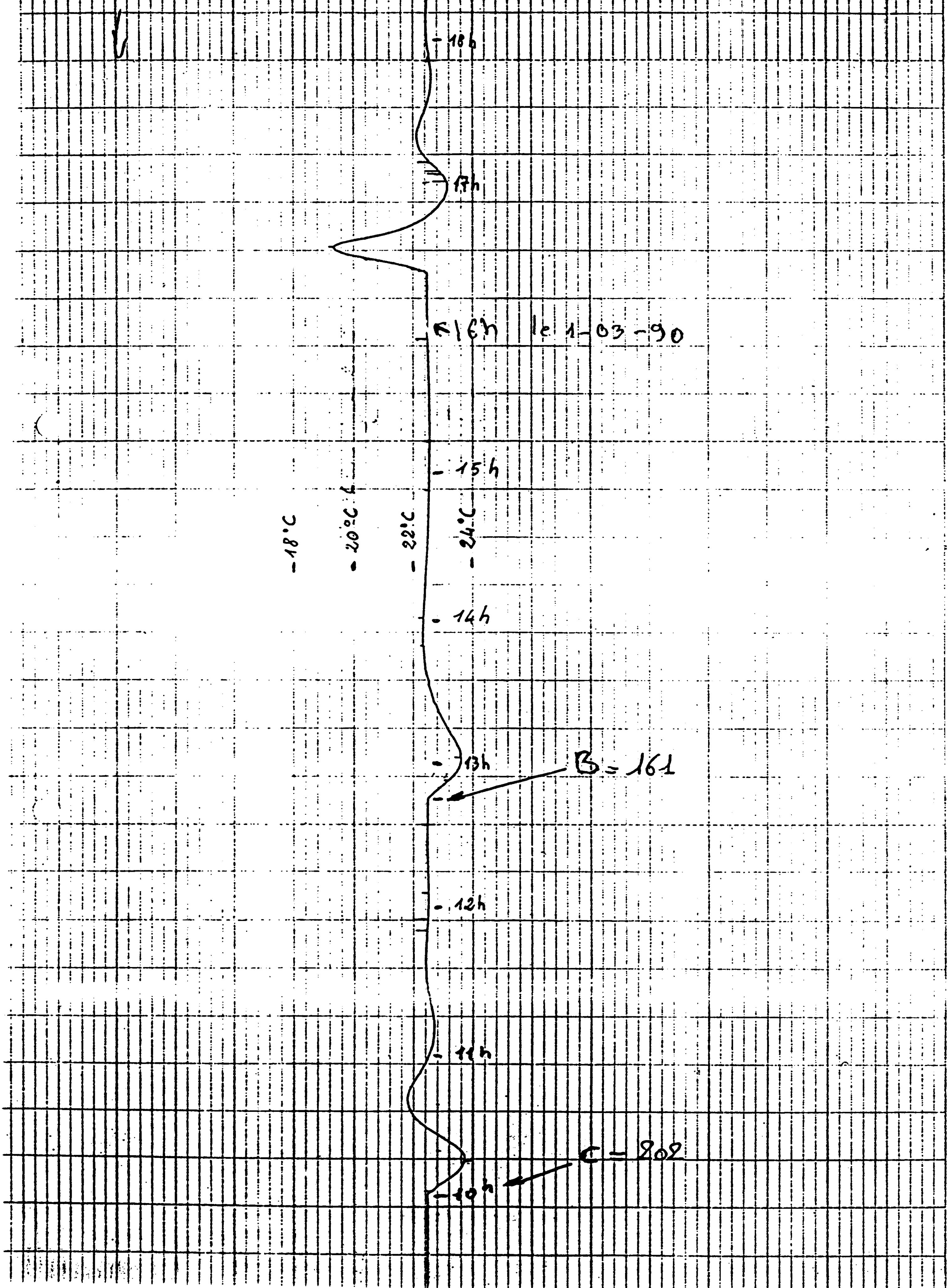
Super. cycle : 2A C 2D B 4E

Supercycle avant-mesure : 2A C B C 4E



REFROIDISSEMENT ANNEAU PS

3carreaux/h



LPPC Distribution List

V. Agoritsas	PS
B.W. Allardyce	PS
B. Autin	PS
S. Baird	PS
N. Blazianu	PS
J. Boillot	PS
J. Bosser	PS
M. Bouthéon	PS
E. Brouzet	SL
R. Cappi	PS
F. Caspers	PS
M. Chanel	PS
V. Chohan	PS
G. Cyvoct	PS
G. Daems	PS
D. Dekkers	PS
J.P. Delahaye	PS
D. Dumollard	PS
L. Durieu	PS
J. Evans	PS
B. Frammery	PS
R. Garoby	PS
G. Gelato	PS
R. Giannini	PS
J. Gruber	PS
S. Hancock	PS
H. Haseroth	PS
J.Y. Hémery	PS
Ch. Hill	PS
K. Hübner	PS
E. Jensen	PS
H. Koziol	PS
K. Langbein	PS
D. Rivalli	PS
Fraser	DG
J.P. Perinet	PS
P. Lefèvre	PS
R. Ley	PS
J. Madsen	PS
D. Manglunki	PS
M. Martini	PS
C.-Mazeline	PS
S. Maury	PS
D. Moehl	PS
U. Oeftiger	PS
A. Pace	PS
F. Pedersen	PS
F. Perriollat	PS
J.P. Potier	PS
N. Rasmussen	PS
A. Riche	PS
L. Rinolfi	PS
J.P. Riunaud	PS
Cl. Saulnier	PS
K. Schindl	PS
G. Schneider	PS
H. Schonauer	PS
E. Schulte	PS
T.R. Sherwood	PS
D. Simon	PS
C. Steinbach	PS
P. Tavares	PS
P. Têtu	PS
G. Tranquille	PS
H. Ullrich	PS
H. Umstatter	PS
M. Vretenar	PS
D. Warner	PS
E. Wildner-Malandain	PS