TRANSFER LINE DESIGN

C. Milardi

CTF3 Transfer Line

General Requirements

$E_0 = 180\ MeV \div 350\ MeV$

$\frac{\Delta p}{p} \sim 5\%$

$\epsilon \simeq 1 \cdot 10^{-6}\ m.$

l_b tunability !

$-1.6\ mm \leq \Delta l \leq 1.6\ mm$

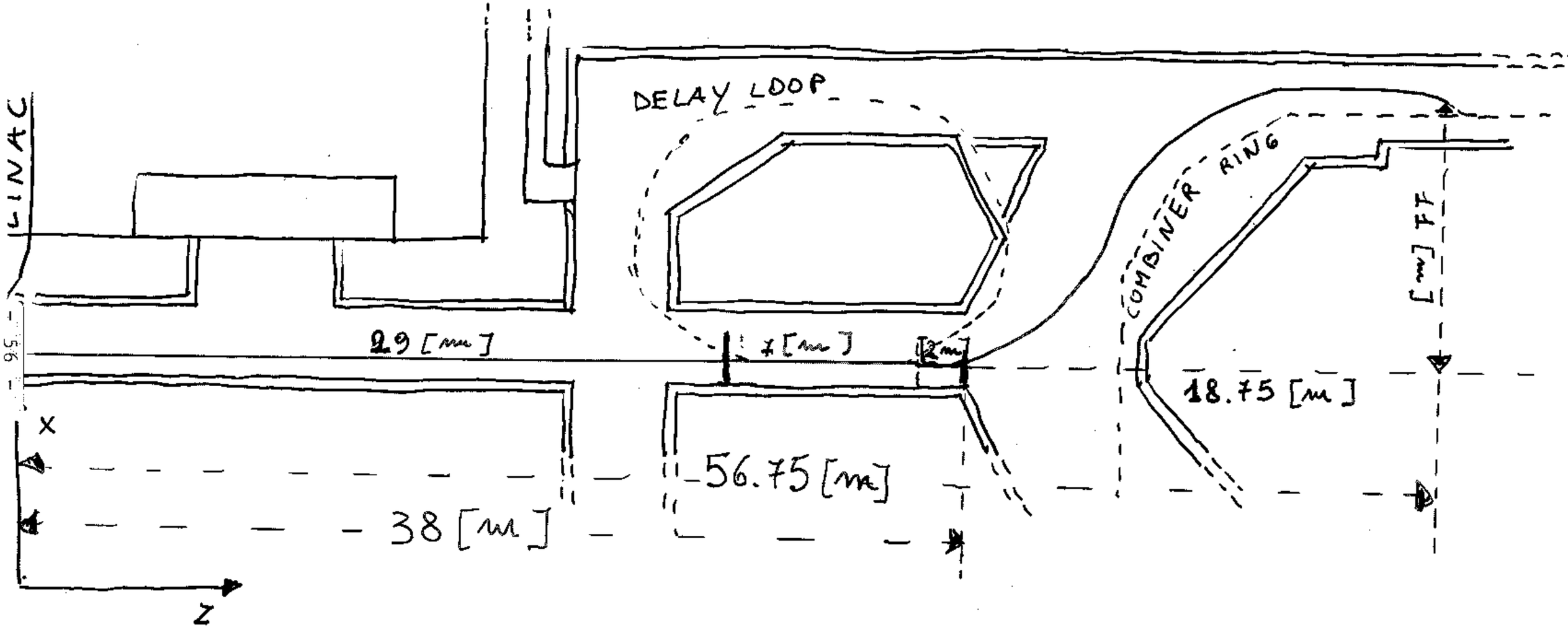
$$\frac{\Delta l}{l_b} = \alpha_c \frac{\Delta p}{p} \qquad \alpha_c = \frac{1}{l_b} \int_{s_1}^{s_2} \frac{\eta_x}{\rho(s)}\, ds$$

$$R_{56} = \int_{s_1}^{s_2} \frac{\eta_x}{\rho(s)}\, ds$$

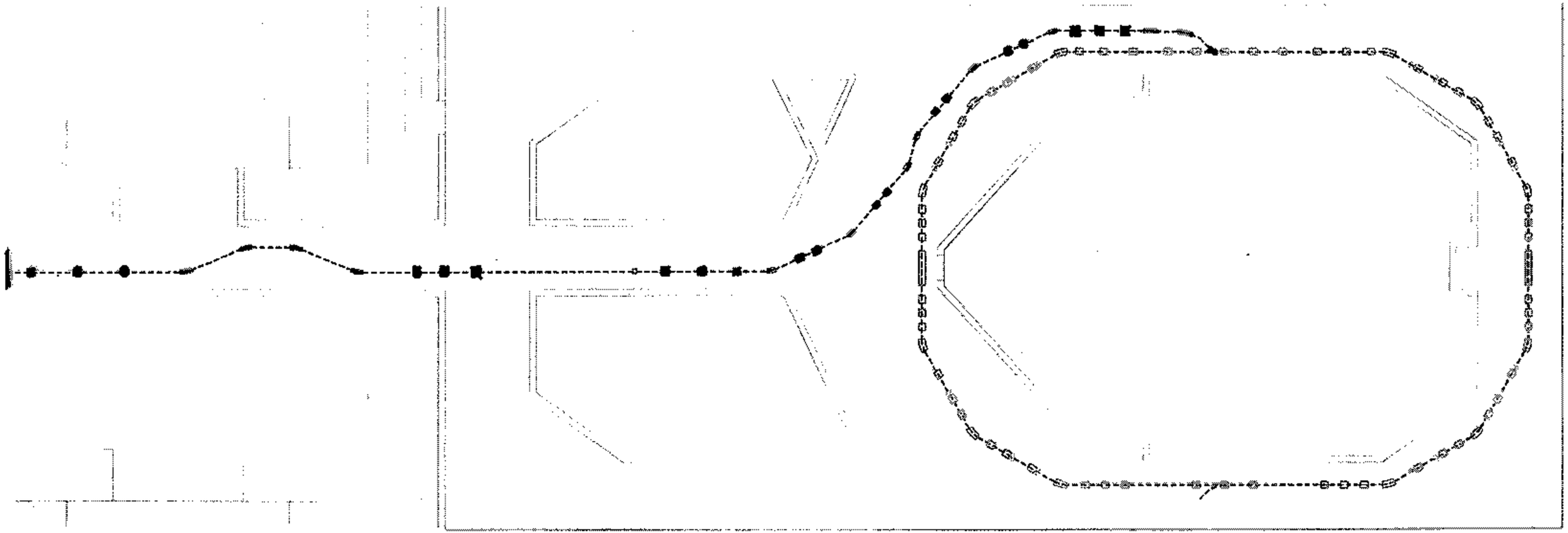
$$\boxed{\Delta l = R_{56} \frac{\Delta p}{p}}$$

$-.032\ m \leq R_{56} \leq .032\ m$

Geometrical Requirements

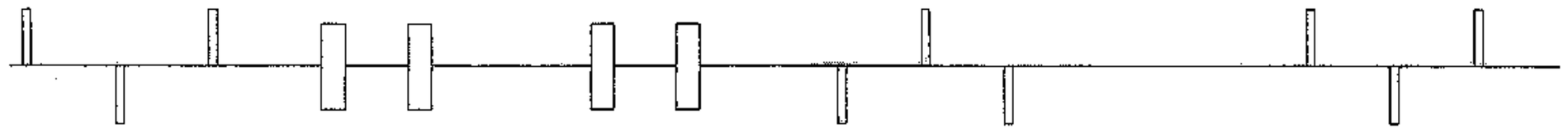


Preliminary Layout



= dipole
= quadrupole
= drift

$Z_T = 62.57$ m.



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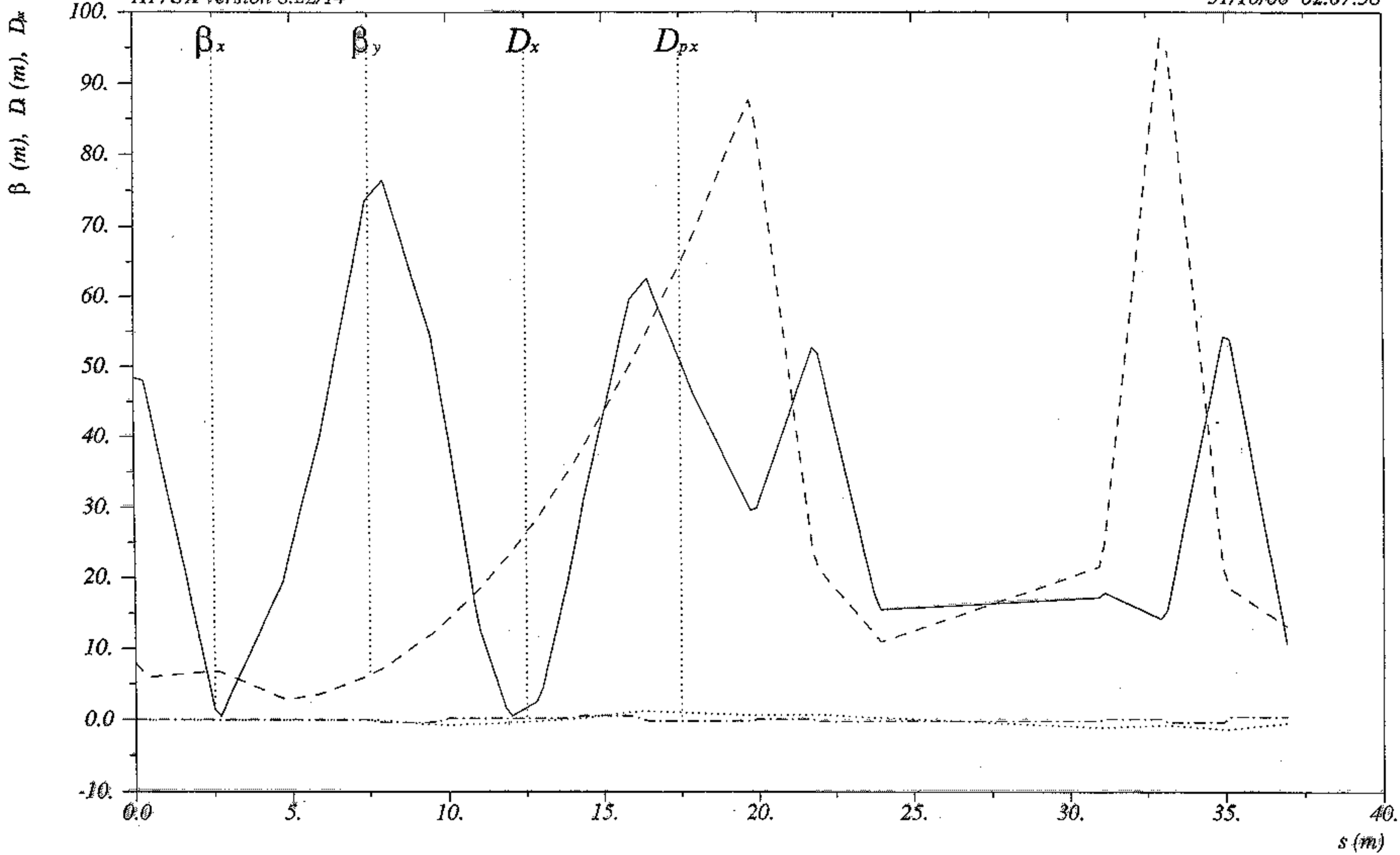
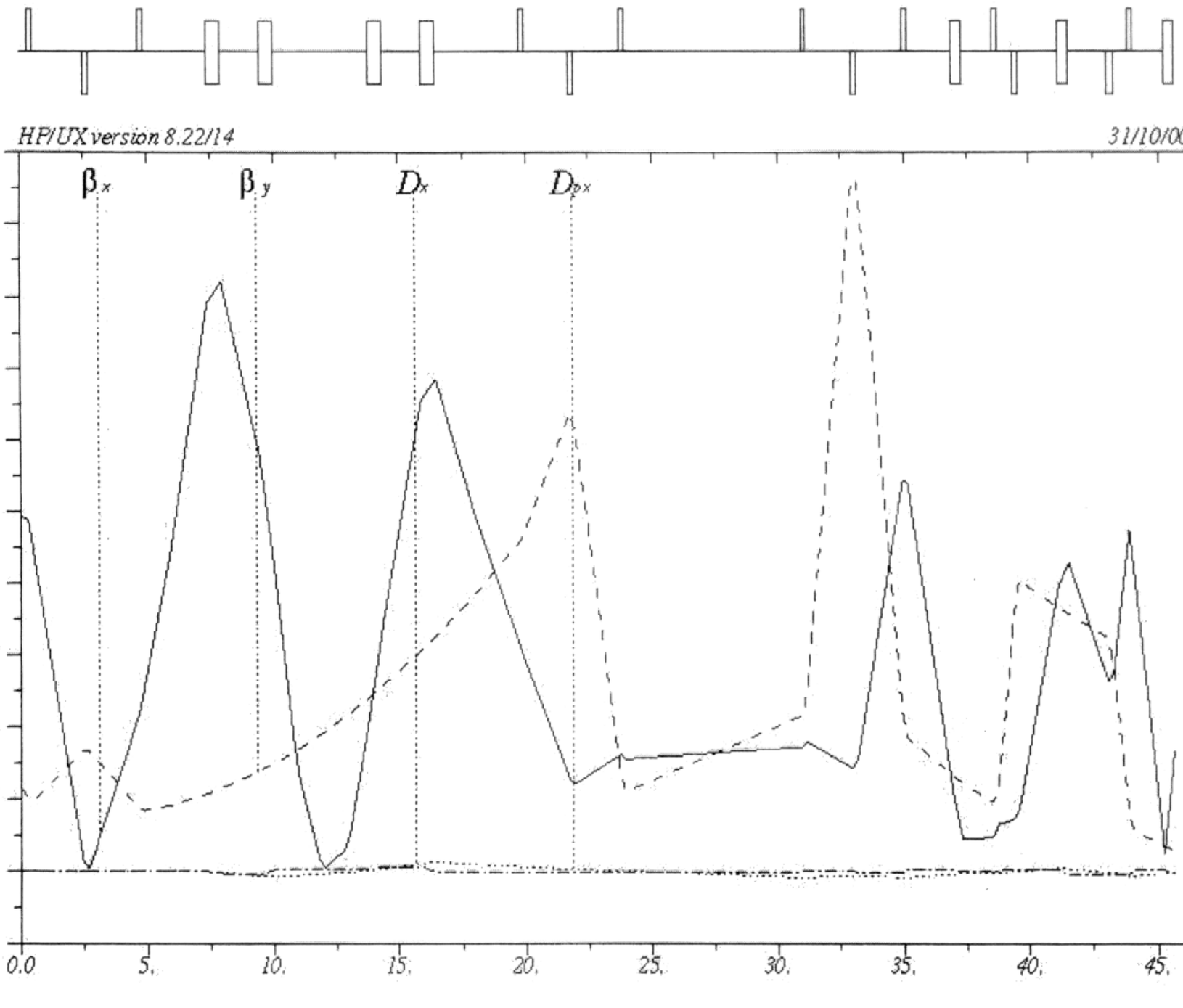


$\delta_{\sigma/p_0c} = 0.$

Table name = TWISS



$\delta_{\#}/p_o c = 0.$

Table name = TWISS

Kicker Accumulator

TRANSFER LINE COMPONENTS
FOR REFERENCE ONLY

SEPTUM RING AXIS

INJ. STRAIGHT SECTION ℄

43.299258

INTERFACE POINT

34°

ρ = 2077.814

34° SEPTUM MAGNET I.H.
"TESLA" DWG N. 53-738-A5
(LINE SUPPLIED ITEM)

2°

2° SEPTUM MAGNET I.H.
"LNF" DWG N. H.-04.27-A-0
(LINE SUPPLIED ITEM)

ρ = 17751.756

FLAG ASSY.
(LINE SUPPLIED ITEM)
(A.T.G. - AP0F0020)

BLANK OFF FLANGE

FRONT FACE OF SEPTUM STEEL

INJ. TUBE ℄

I.STEEL

425.6±0.2

37.5±0.1 CORNER OF SEPTUM STEEL

33.5±0.1

265±0.2

REF 251.4

BEAM ℄

BLANK OFF FLANGE

73.19

TOOLING HOLE

MAGNET STEEL END

197±0.2

REF 1141.4

1220.7±0.2

REF 2109

REF 689

390.536

1178.263

0.2 m

Conclusion

Fix: optical fuedie,
Vacuum chamber aperture,
Available elements