TRISIM RESULTS (TRANSVERSE)

INPUT FILE NAME I90y53hqs (part 4) RUN DATE 29/11/95 TIME 18. 6. 45

Distributions are approximated by linear interpolation (10 ps step)
Longitudinal wake switched ON – Transverse wake switched ON

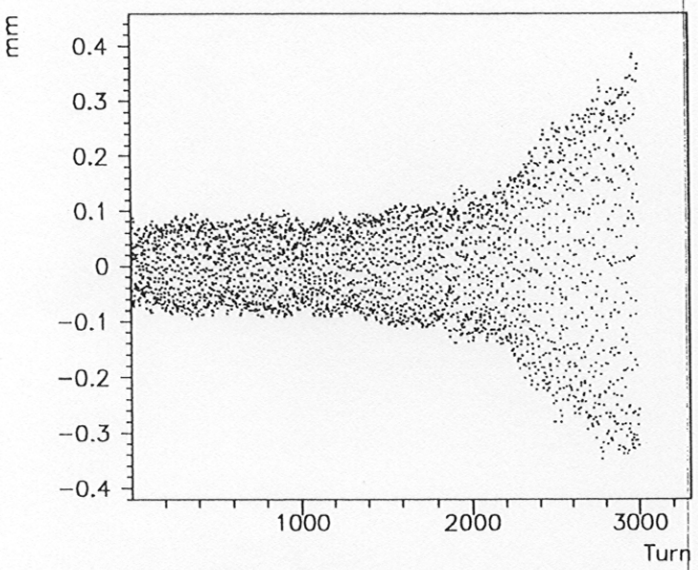
Number of particles	1000	Damping time (s)	0.103	Beam energy (GeV)	22
Number of turns	3000	Energy spread (MeV)	40.52	Radiation loss (MeV)	18.98

Bunch current (mA)	1.15	Betatron tune	76.329
Total RF Voltage (MV)	600	Synchrotron tune	0.159

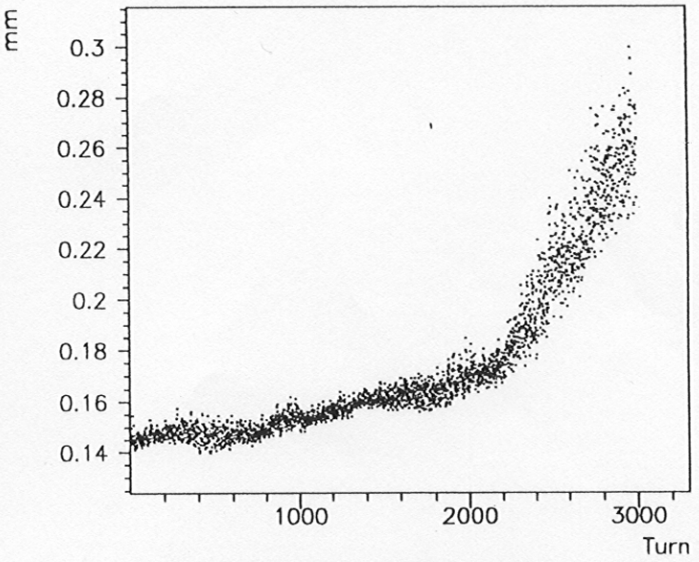
Equilibrium values (averaged over 1000 turns)

Bunch center (ps)	−53.601	Bunch length (ps)	30.133	Bunch width (mm)	0.21
Mean energy (MeV)	−9.086	Energy spread (MeV)	42.838	Total losses (MeV)	71.004

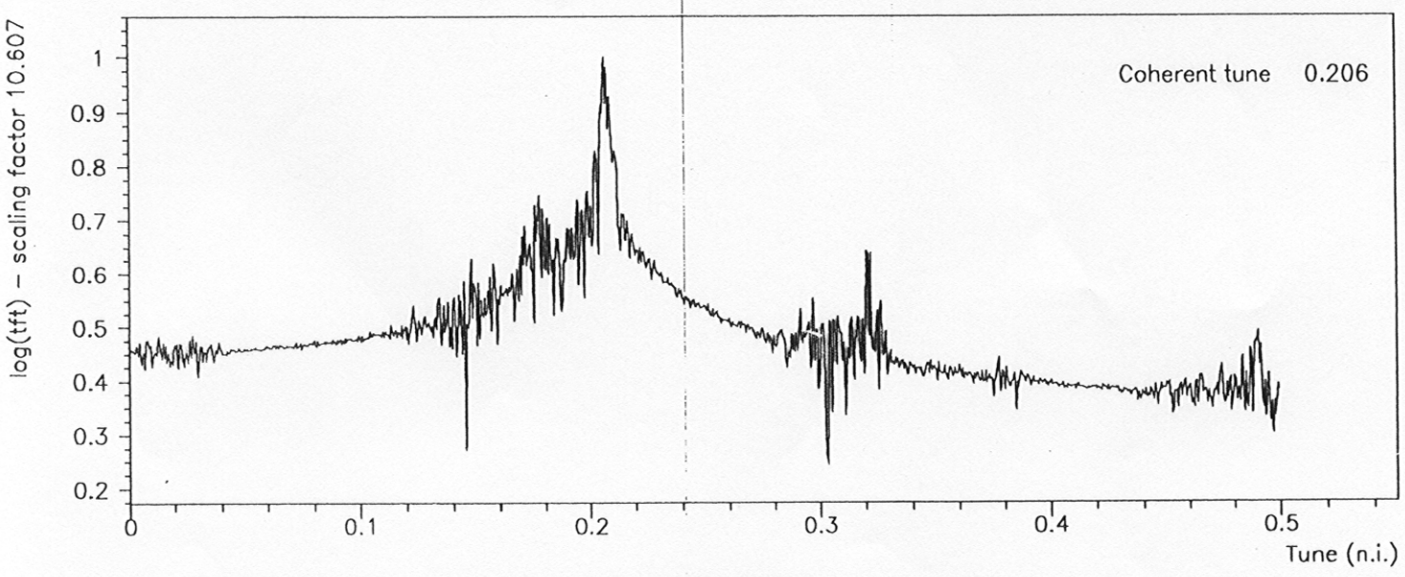
Total CPU time (s) 861.079 Number of particles lost 0



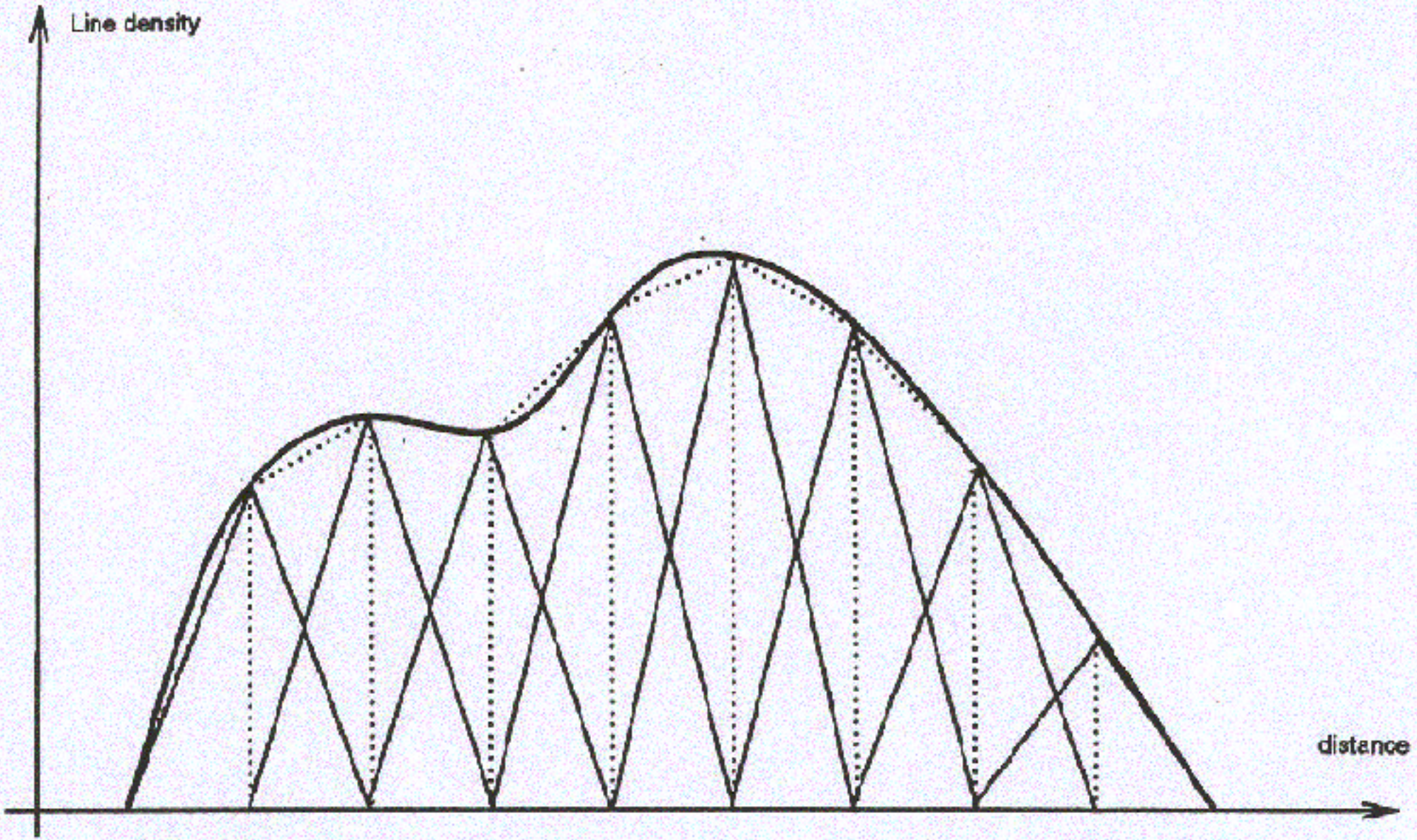
Transverse center–of–charge position



Vertical bunch width RMS

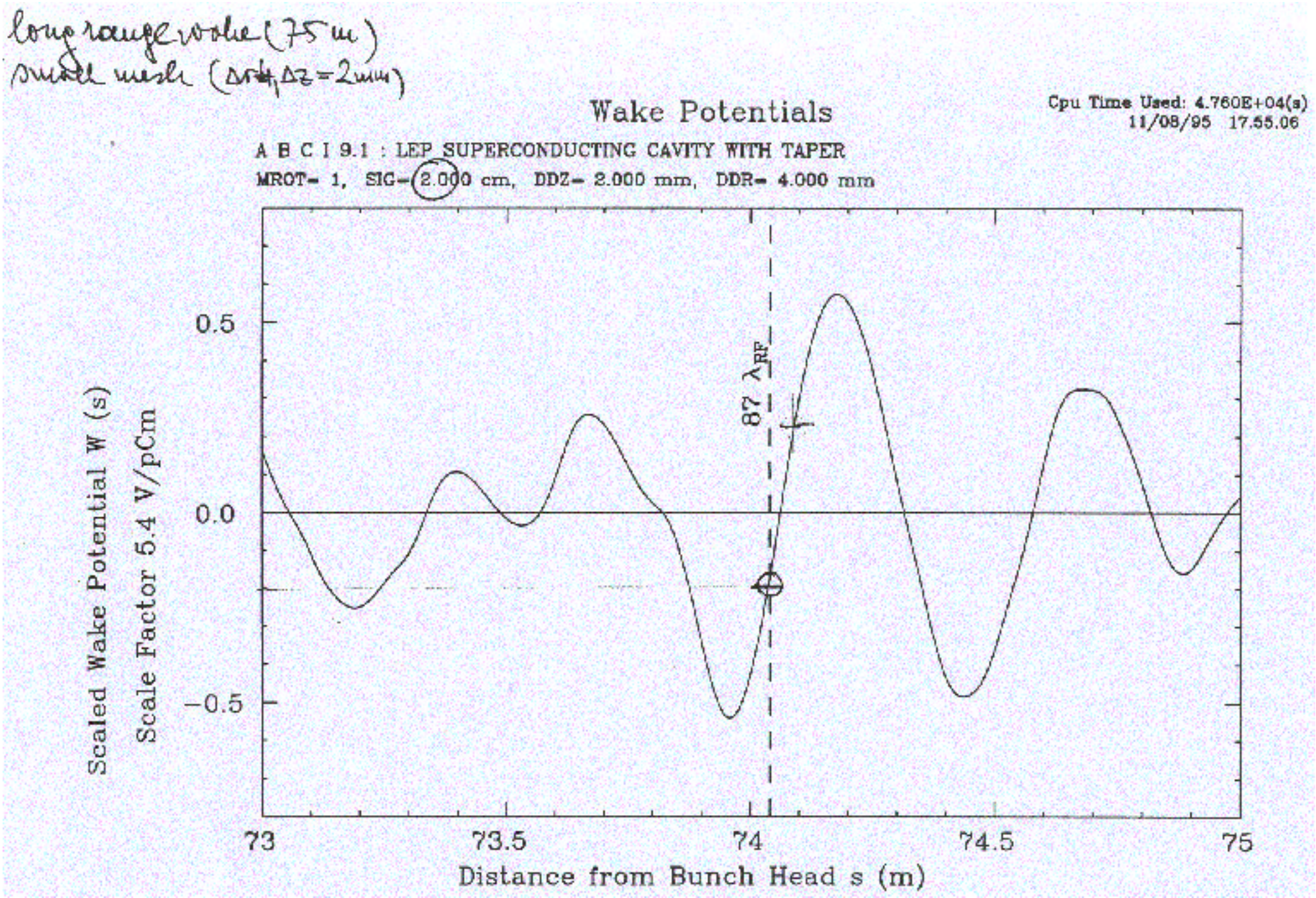


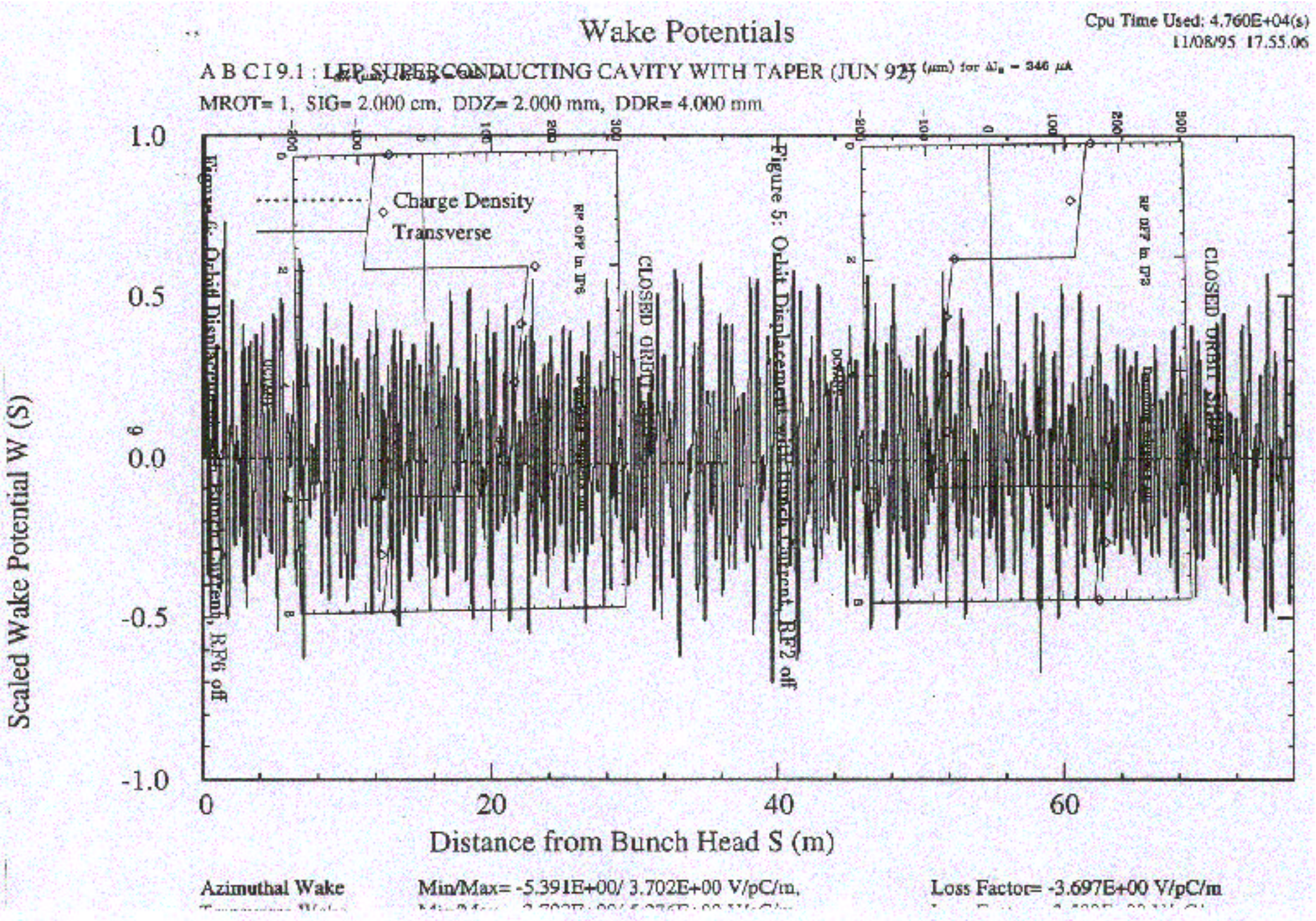
Transverse oscillation modes



Decomposition of a distribution into triangular linear basis functions.

long range wake (75 m)
small mesh ($\Delta r, \Delta z = 2$ mm)




Wake Potentials
Cpu Time Used: 4.760E+04(s)
11/08/95 17.55.06
A B C I 9.1 : LEP SUPERCONDUCTING CAVITY WITH TAPER (JUN 92)
MROT= 1, SIG= 2.000 cm, DDZ= 2.000 mm, DDR= 4.000 mm
Charge Density
Transverse
CLOSED ORBIT
Figure 5: Orbit Displacement with Bunch Current, RF2 off
Figure 6: Orbit Displacement with Bunch Current, RF6 off
Scaled Wake Potential W (S)
1.0
0.5
0.0
-0.5
-1.0
0
20
40
60
Distance from Bunch Head S (m)
Azimuthal Wake
Min/Max= -5.391E+00/ 3.702E+00 V/pC/m,
Loss Factor= -3.697E+00 V/pC/m

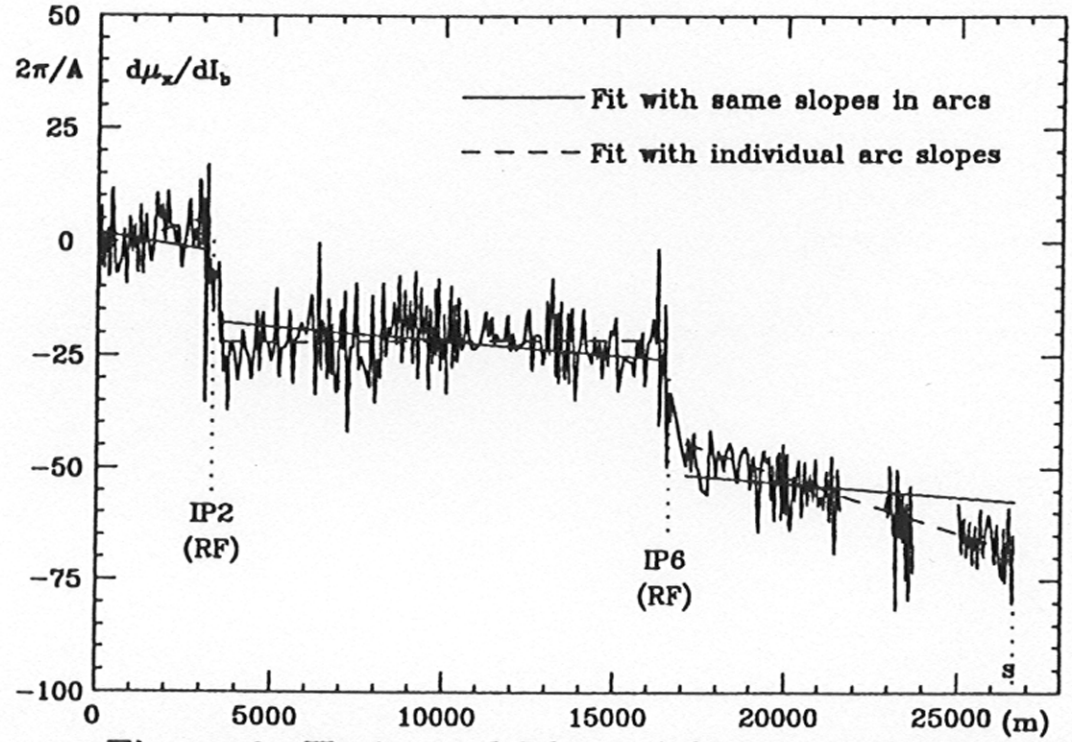


Figure 3: Horizontal Phase Advance with Bunch Current

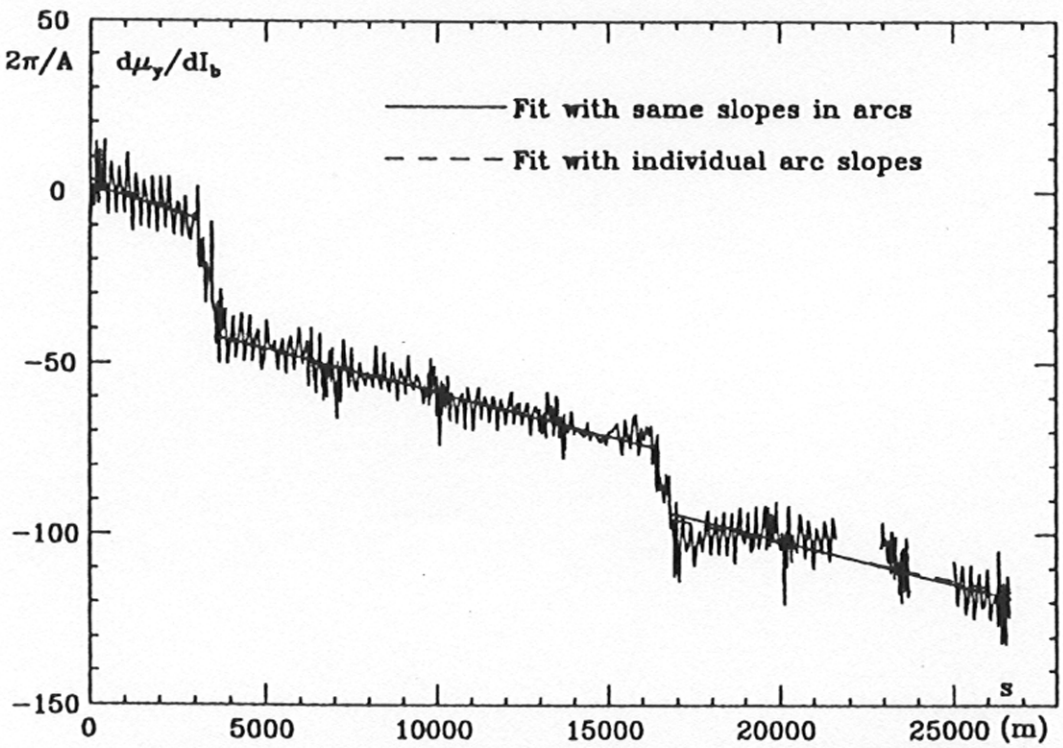


Figure 4: Vertical Phase Advance with Bunch Current

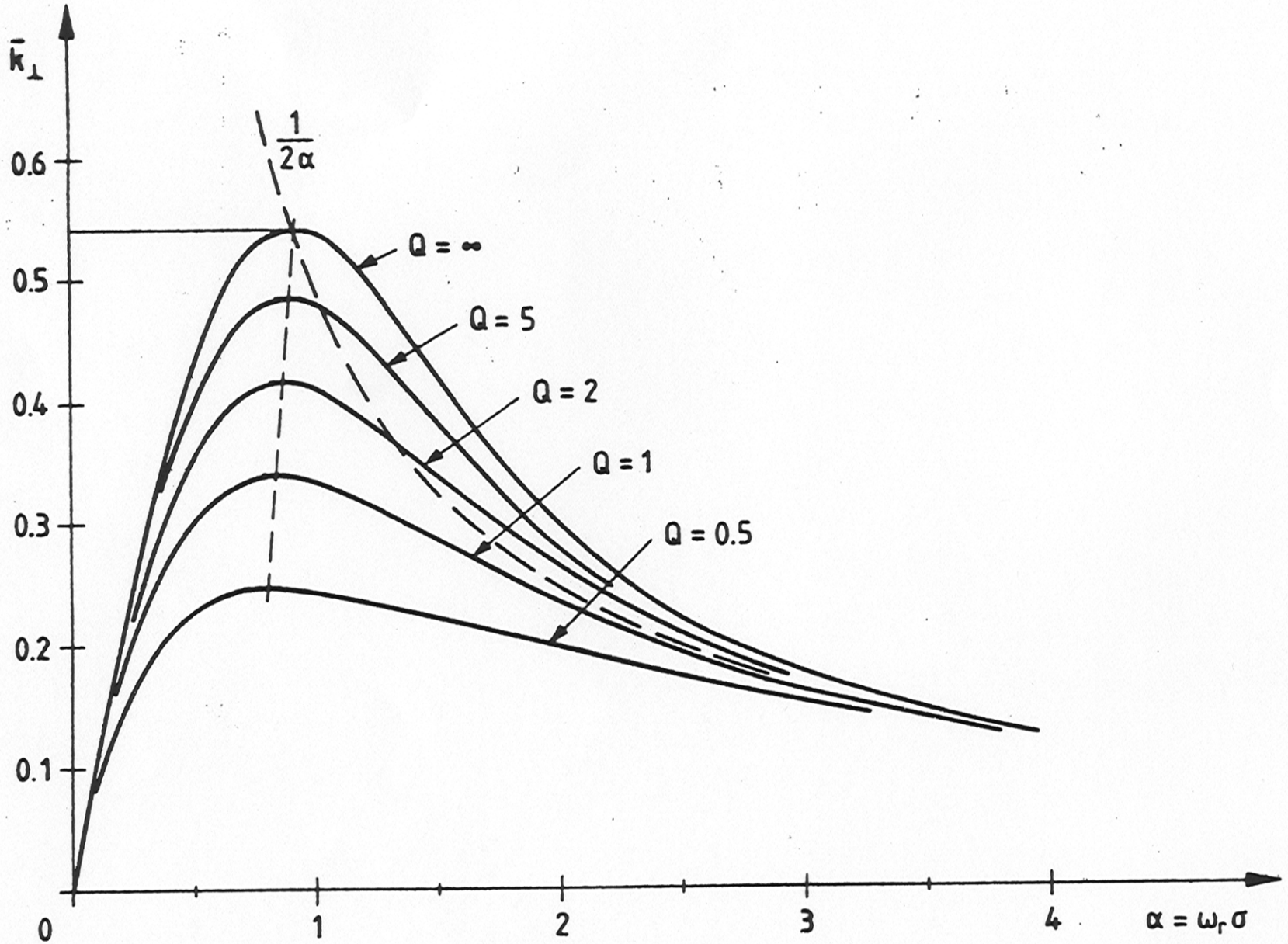


Fig. 3 - Normalized transverse loss factor of a Gaussian bunch in a resonator impedance, as function of (normalized) bunchlength, for several values of Q.

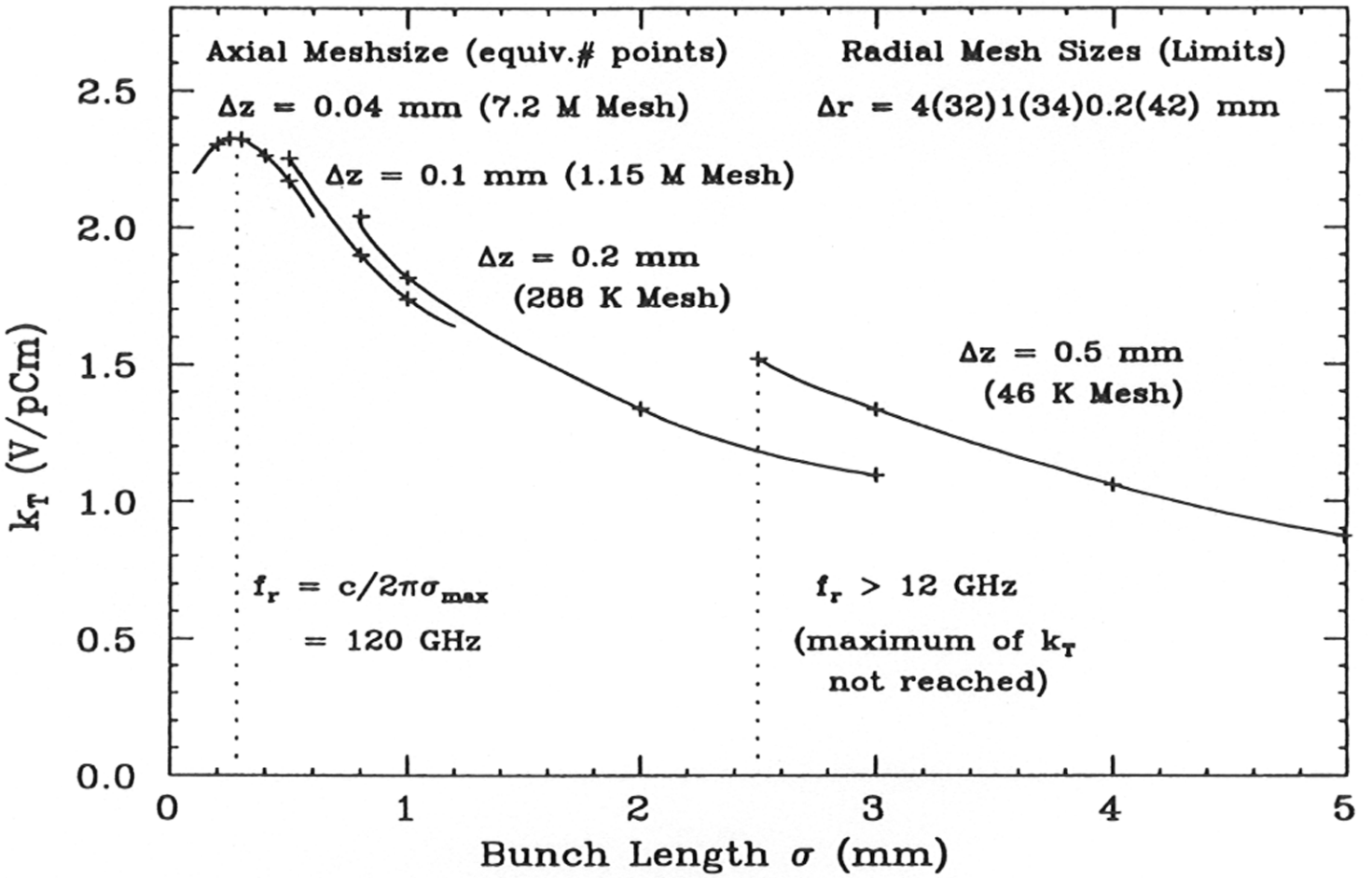


Figure 3: Transverse Kick Factors obtained with Program ABCI

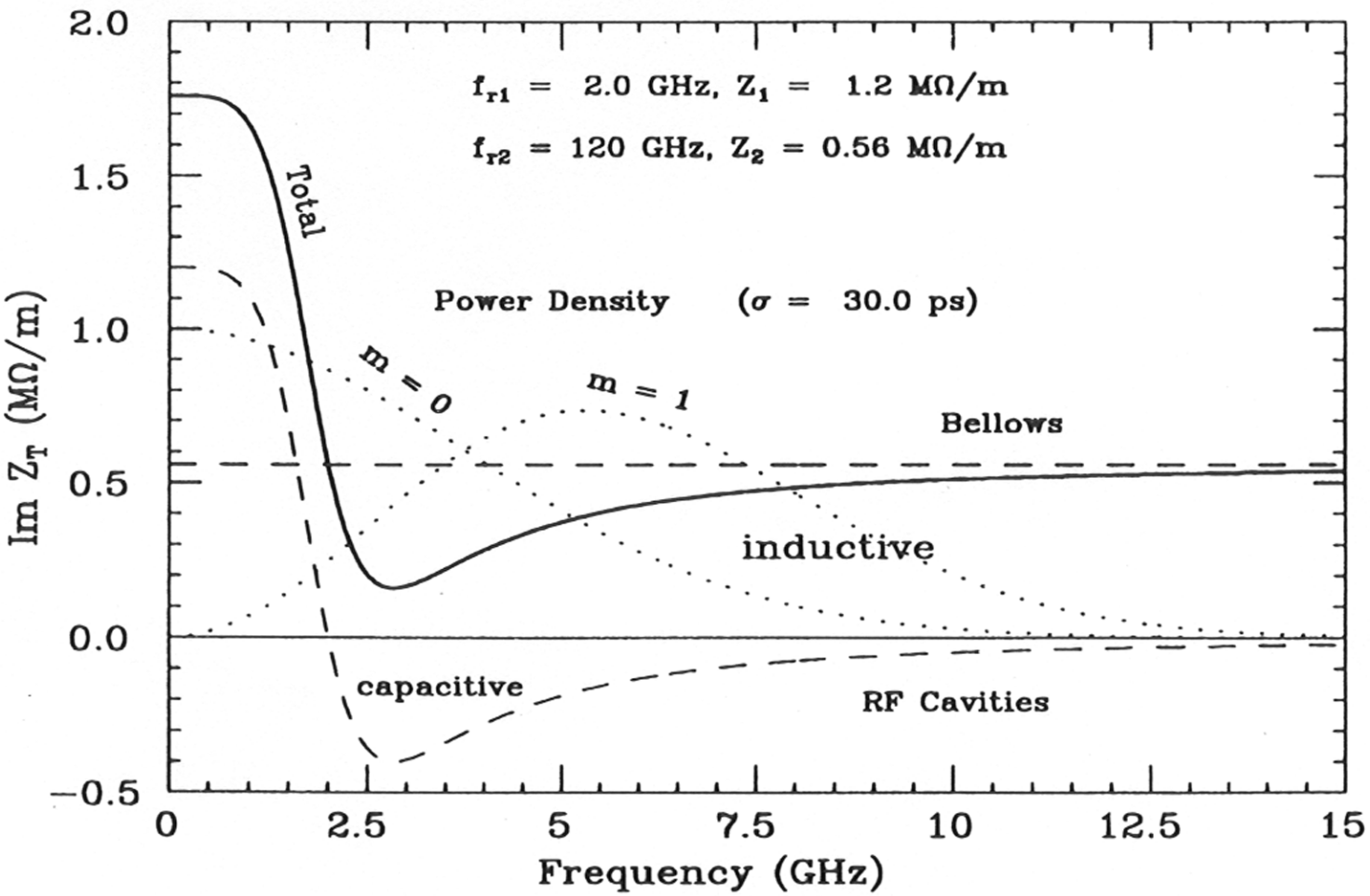


Figure 4: Transverse Impedance versus Frequency, Imaginary Part

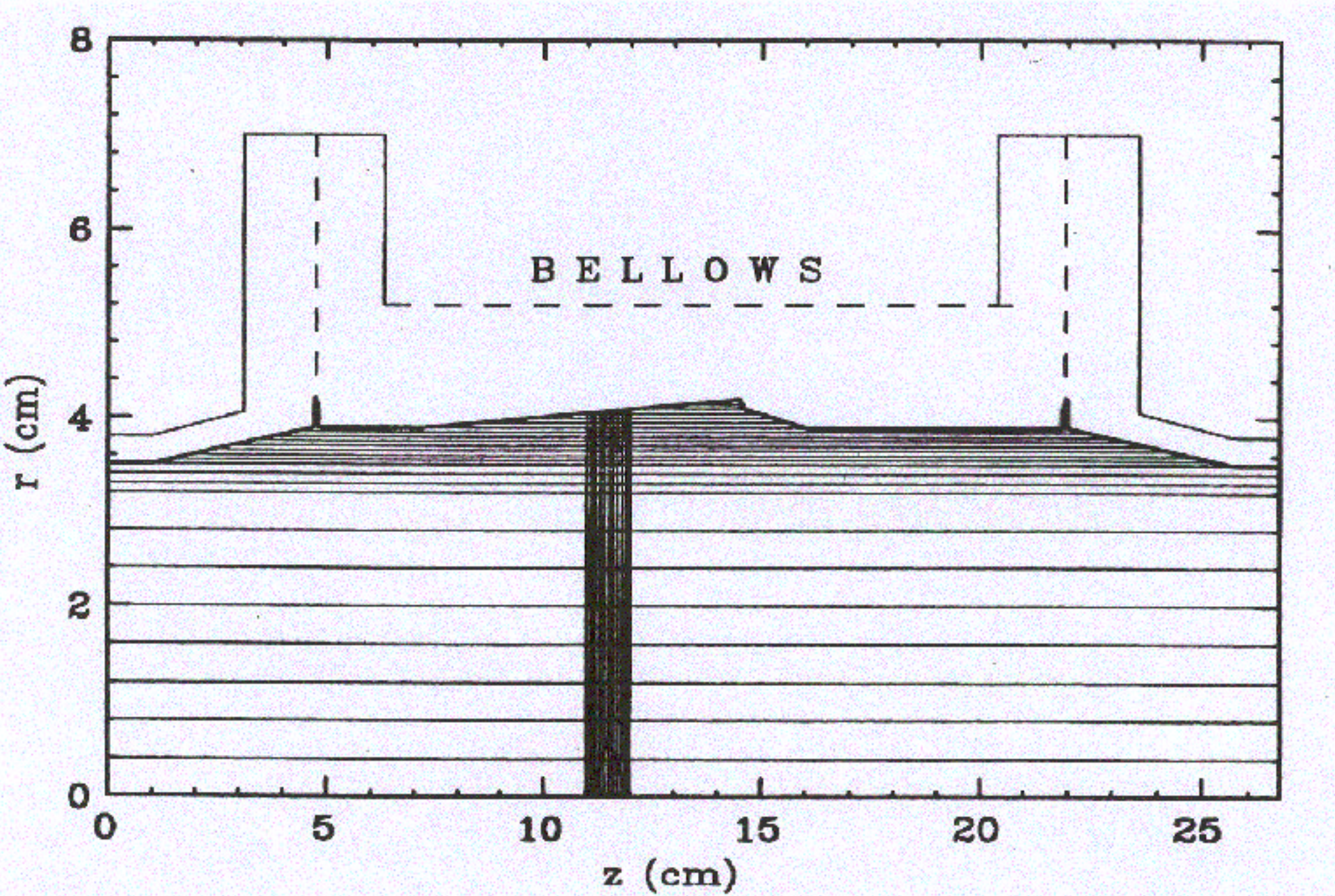


Figure 2: Cross Section of Shielded Bellows for Computer Evaluation

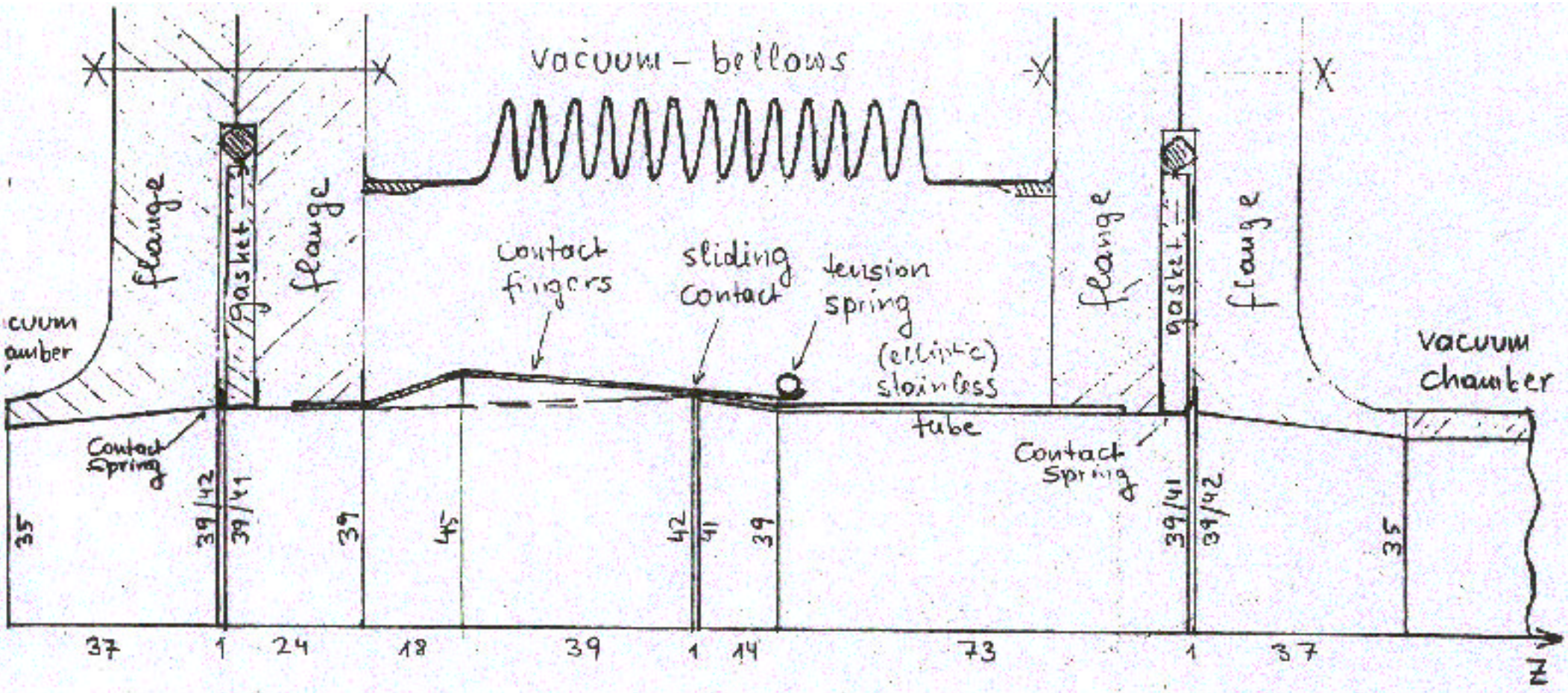


Fig. 1: Schematic Geometry of LEP-bellows assembly and dimensions (in mm) used for the computation of the transverse loss-factor $k_\perp(\sigma)$

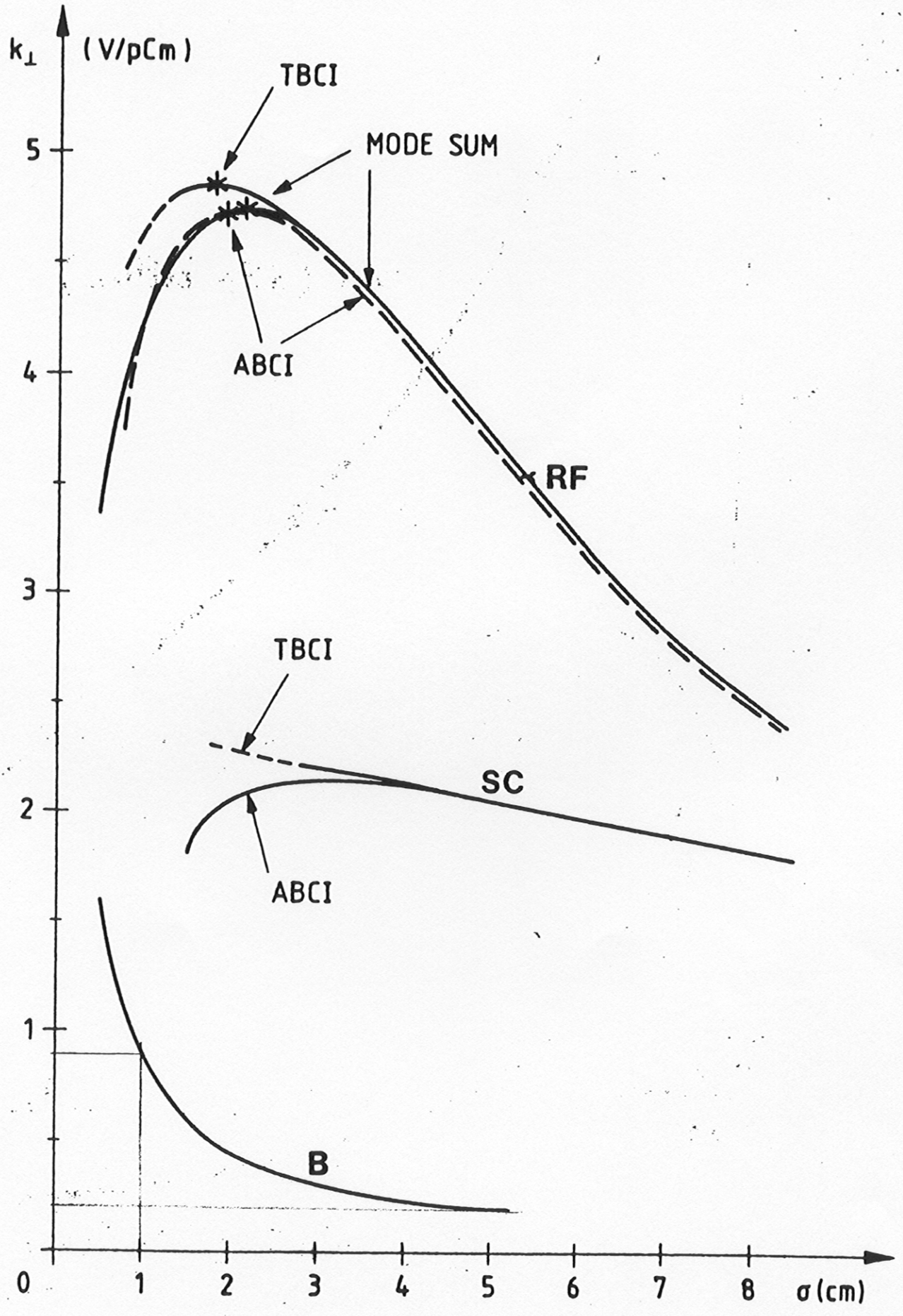


Fig. 5 - Transverse loss factors as function of bunch length for conventional RF cavity cell (RF), for a 4-cell superconducting cavity (SC), and a shielded bellows unit (B) in LEP.

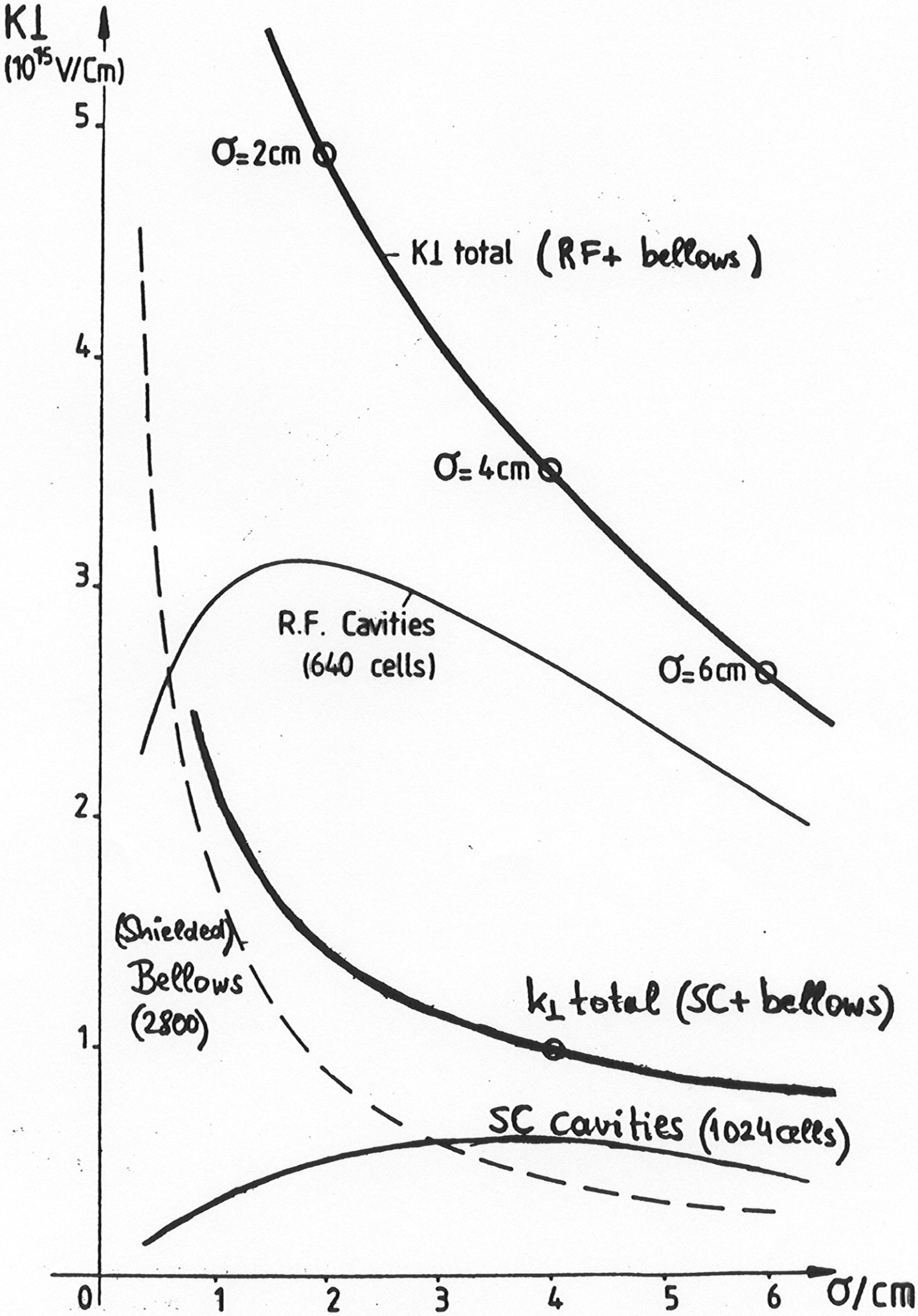


Fig. 5a - Total transverse lossfactor in LEP.

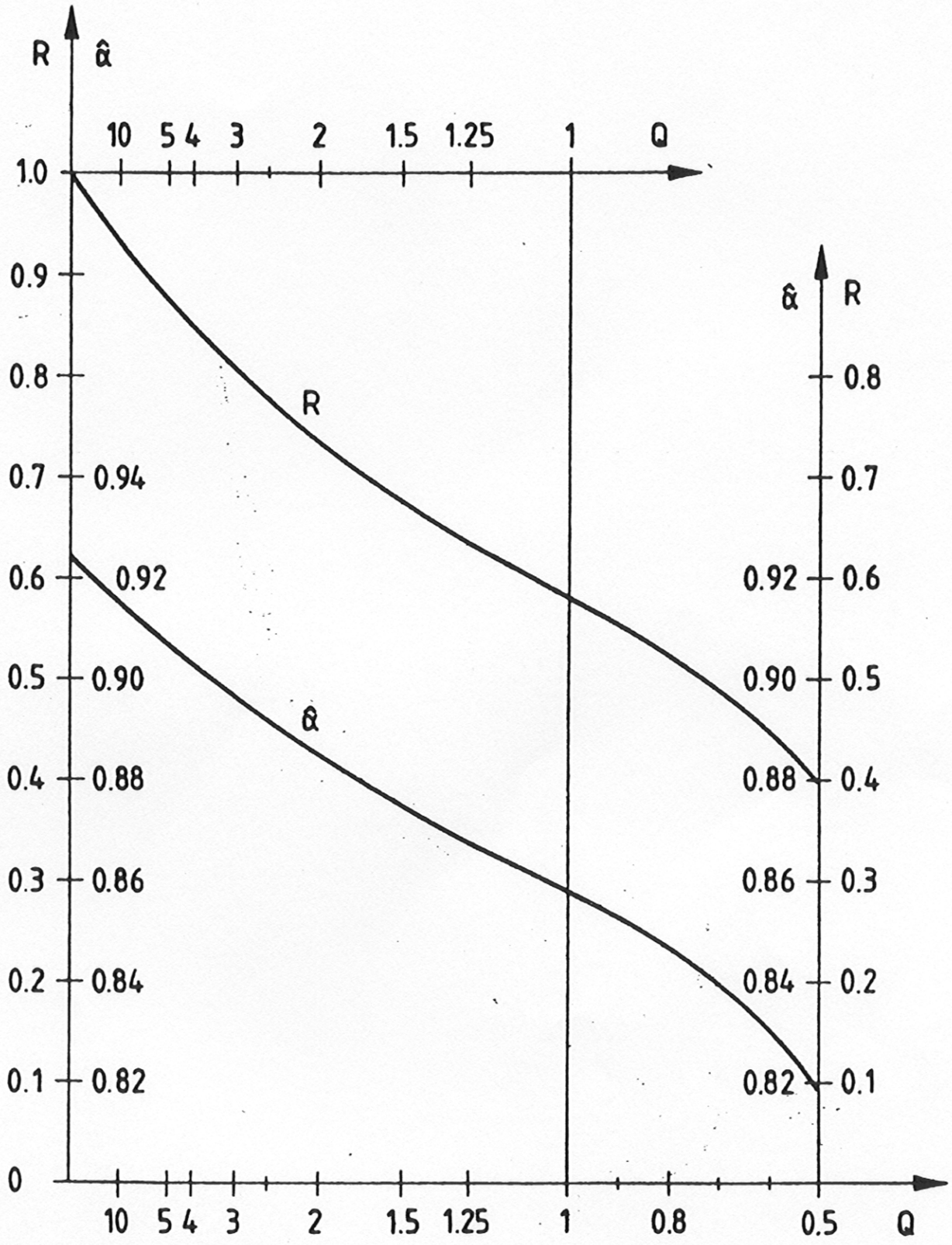


Fig. 4 - Diagram of the quality factor Q and the frequency parameter $\hat{\alpha} = \omega_r \hat{\sigma}$ as a function of ratio R (Eq. (5.9)), for easy determination of broadband resonator parameters.