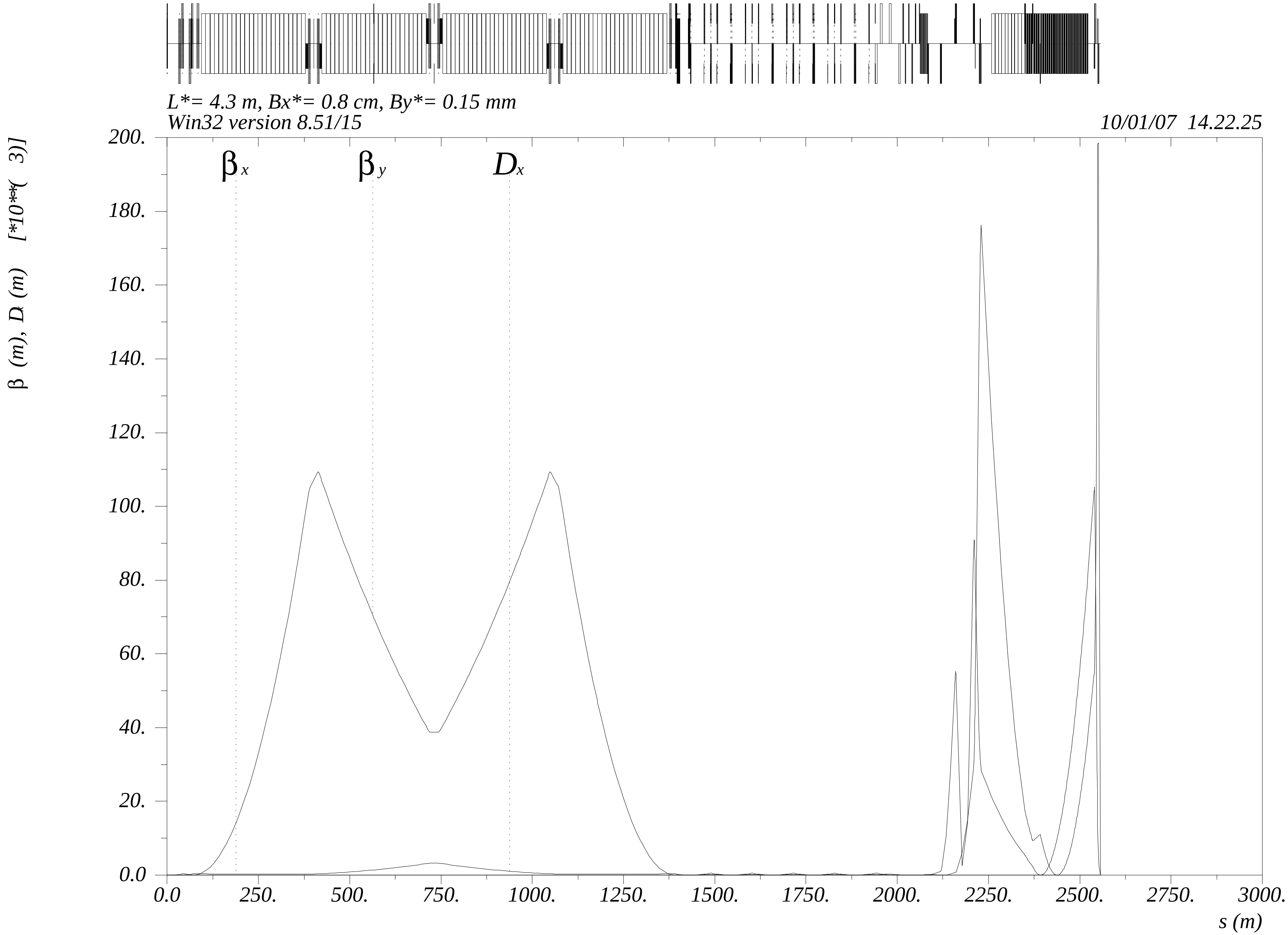
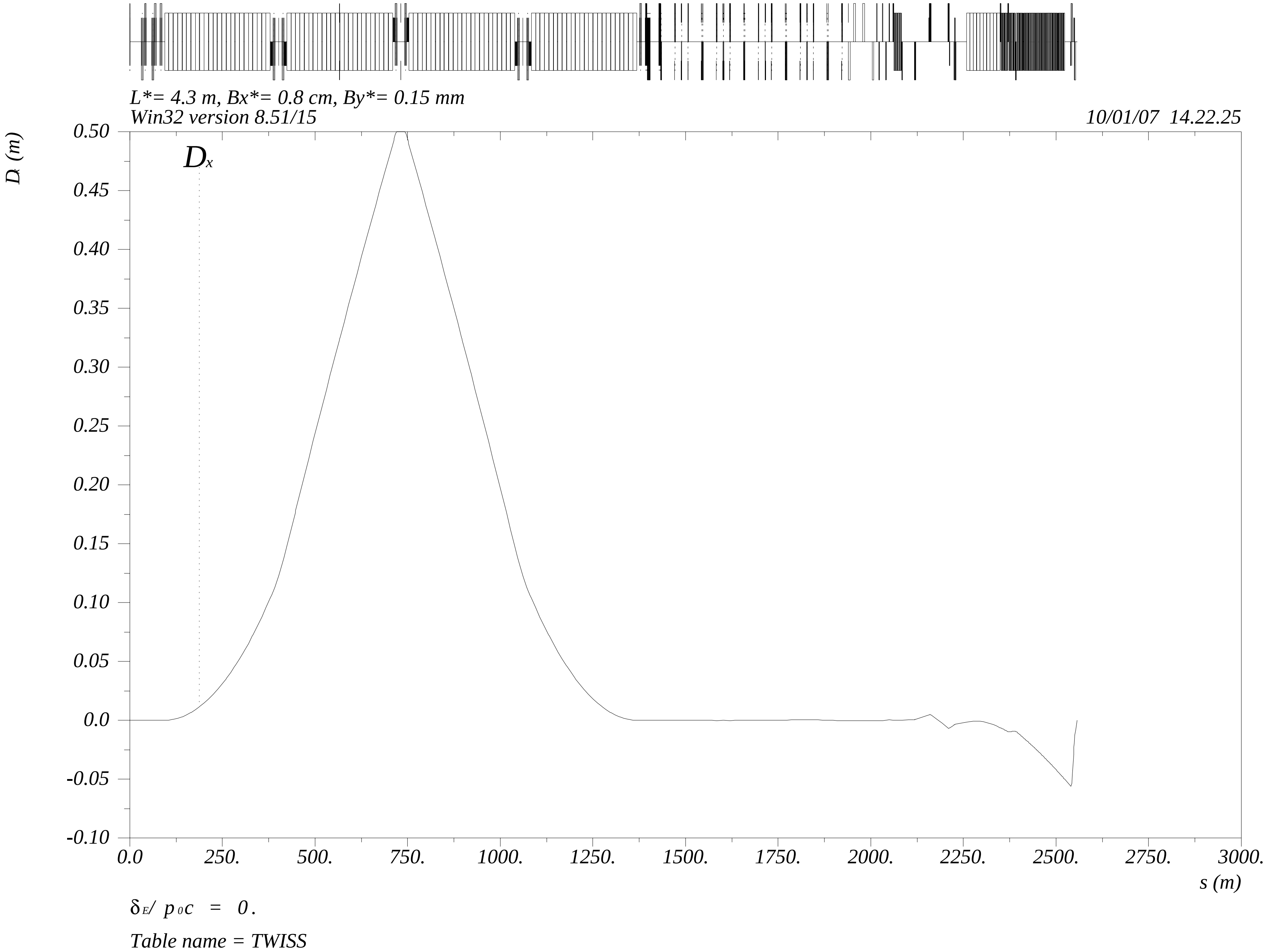


$\delta_E / p_0 c = 0.$

Table name = TWISS

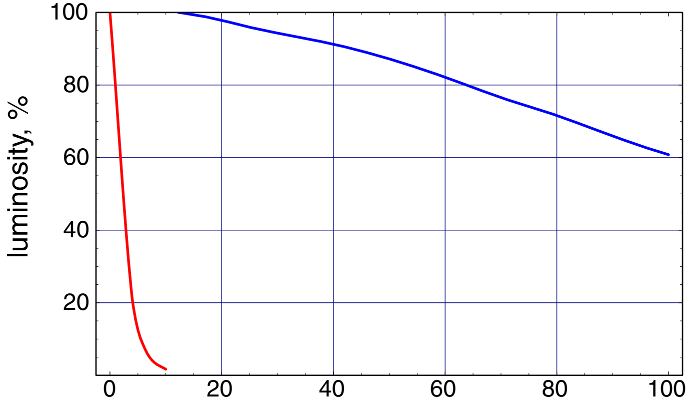


L*= 4.3 m, Bx*= 0.8 cm, By*= 0.15 mm
Win32 version 8.51/15
10/01/07 14.22.25
Dx (m)
Dx
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.0
-0.05
-0.10
0.0
250.
500.
750.
1000.
1250.
1500.
1750.
2000.
2250.
2500.
2750.
3000.
s (m)
δE/ p0c = 0.
Table name = TWISS

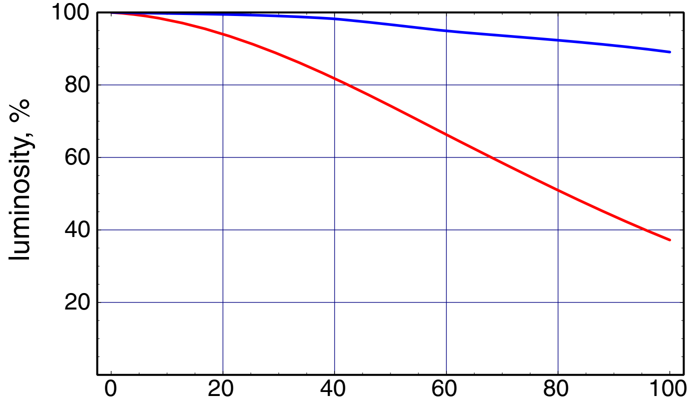
TRANSVERSE MISALIGNMENT OF QUADRUPOLES

The red curve is luminosity versus rms transverse misalignment assigned to all quadrupoles of the BDS.

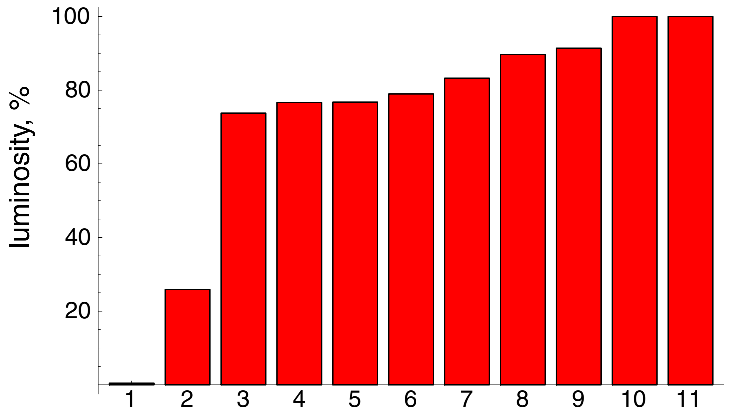
The blue curve presents luminosity versus rms transverse misalignment assigned to the BDS quadrupoles excepting 10 final quadrupoles located before IP.



RMS vertical misalignment of quadrupoles, nm

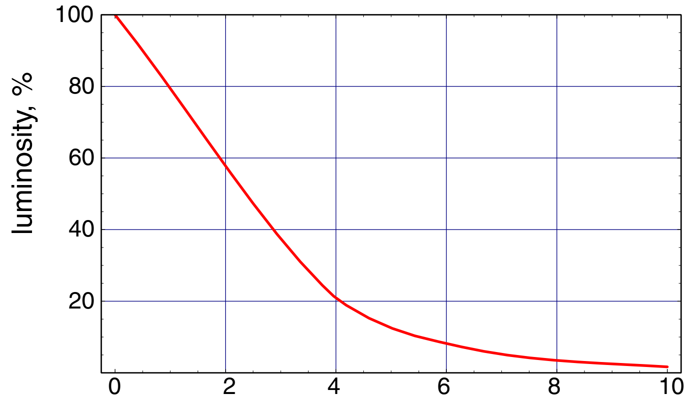


RMS horizontal misalignment of quadrupoles, nm



quadrupole #

Decrease of luminosity due to vertical misalignment of the final 11 quadrupoles. The vertical misalignment of 10 nm was separately assigned to each of them.

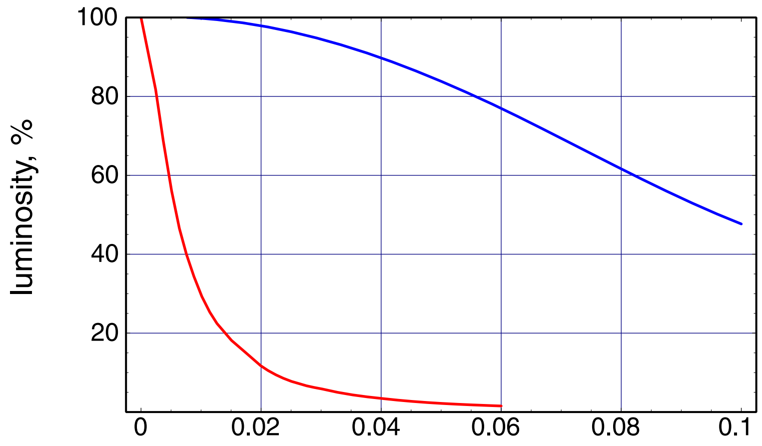


RMS vertical misalignment of quadrupoles, nm

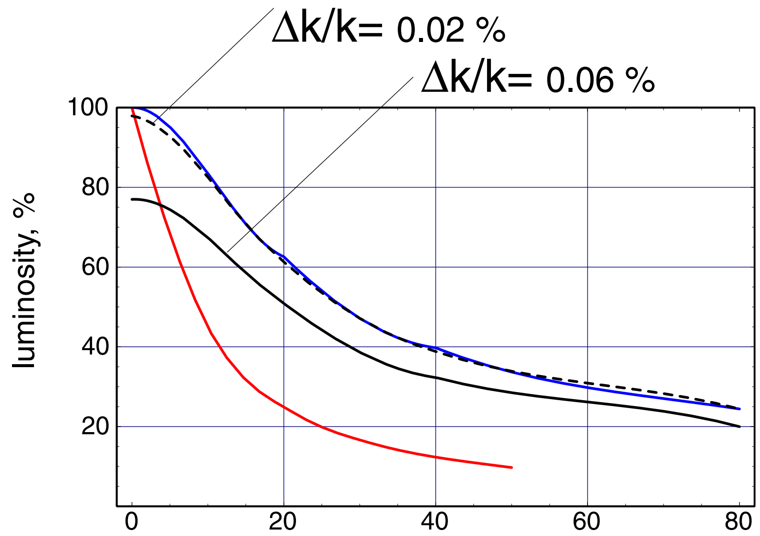
The luminosity decrease versus rms vertical misalignment of all quadrupoles located in the BDS.

FIELD ERROR IN QUADRUPOLES

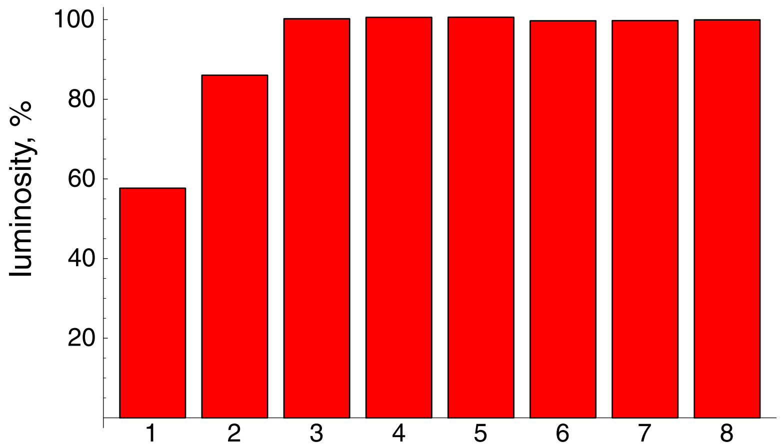
ROLL ANGLE OF QUADRUPOLES



RMS deviation of quadrupole strength, %

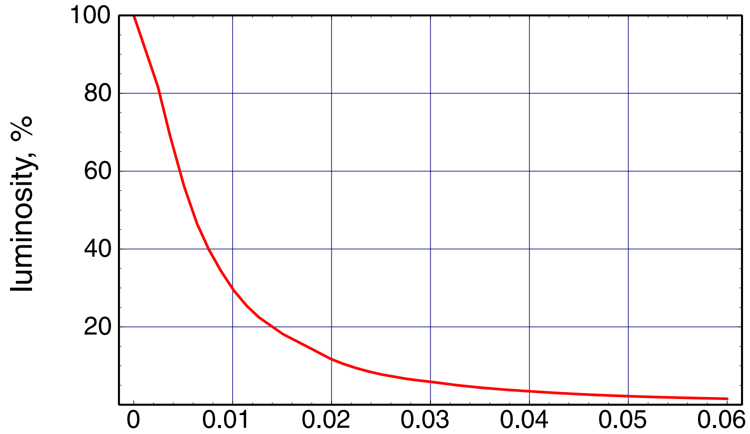


RMS roll angle of the quadrupoles, μrad



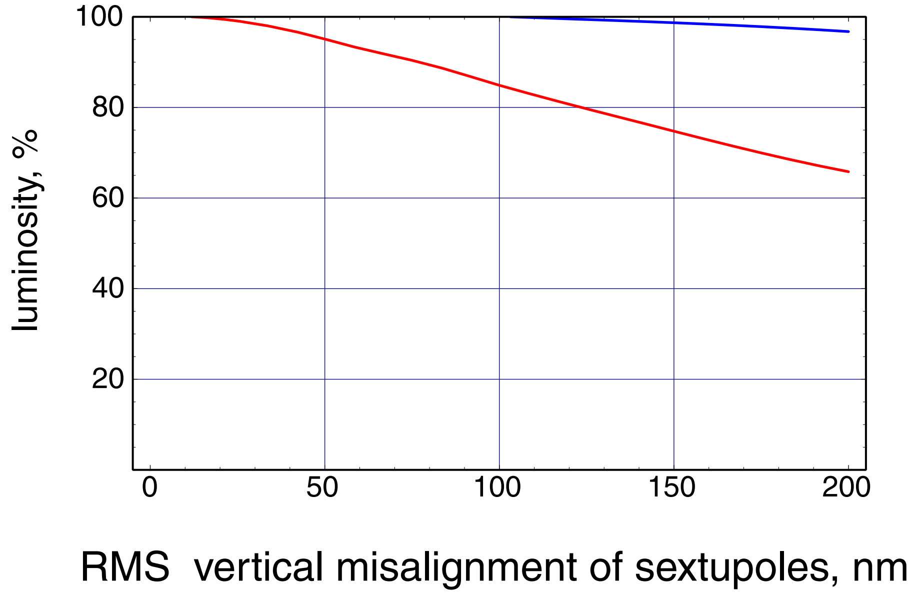
quadrupole #

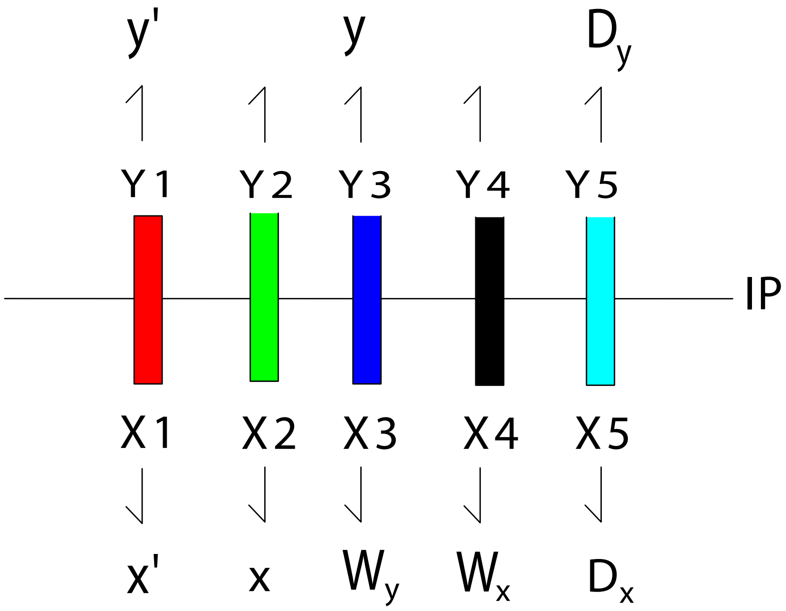
The luminosity resulted from independently change of the quadrupole strength of each quadrupole to 0.006 %.



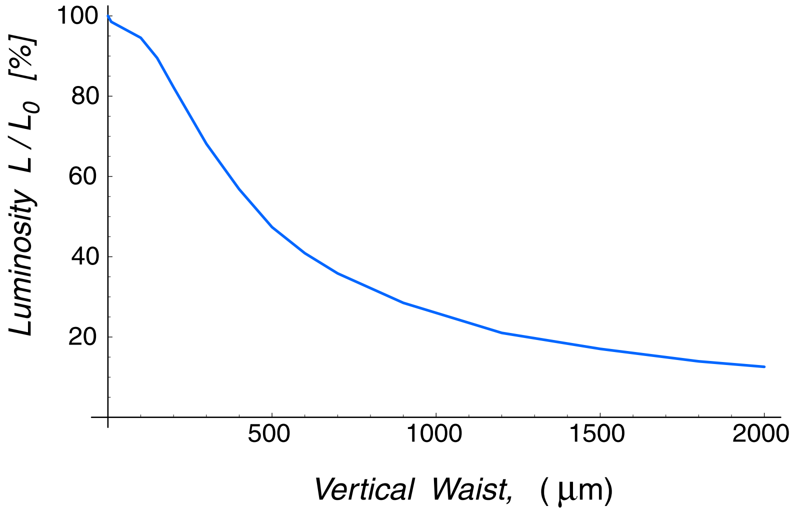
RMS deviation of quadrupole strength, %

TRANSVERSE MISALIGNMENT OF SEXTUPOLES

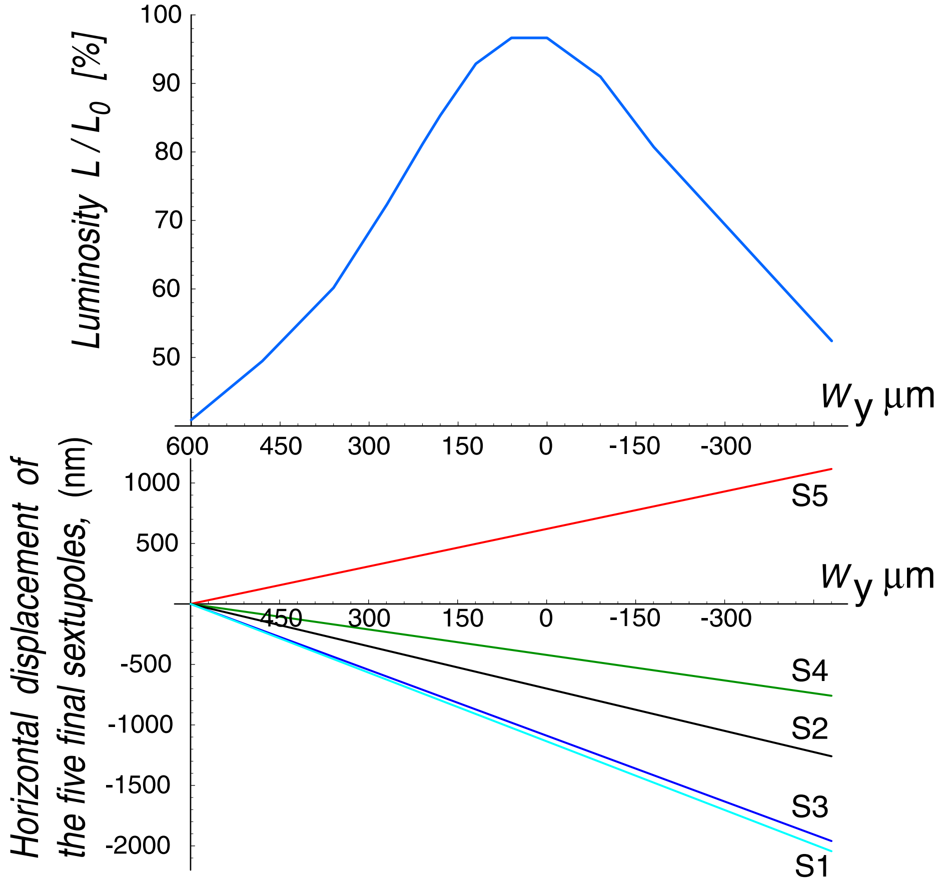



y'
y
Dy
Y1
Y2
Y3
Y4
Y5
IP
X1
X2
X3
X4
X5
x'
x
Wy
Wx
Dx

Knobs Based on FFS Sextupoles



The luminosity loss as a function of the longitudinal displacement of the vertical waist



The recovery of luminosity loss by the horizontal movements of sextupoles

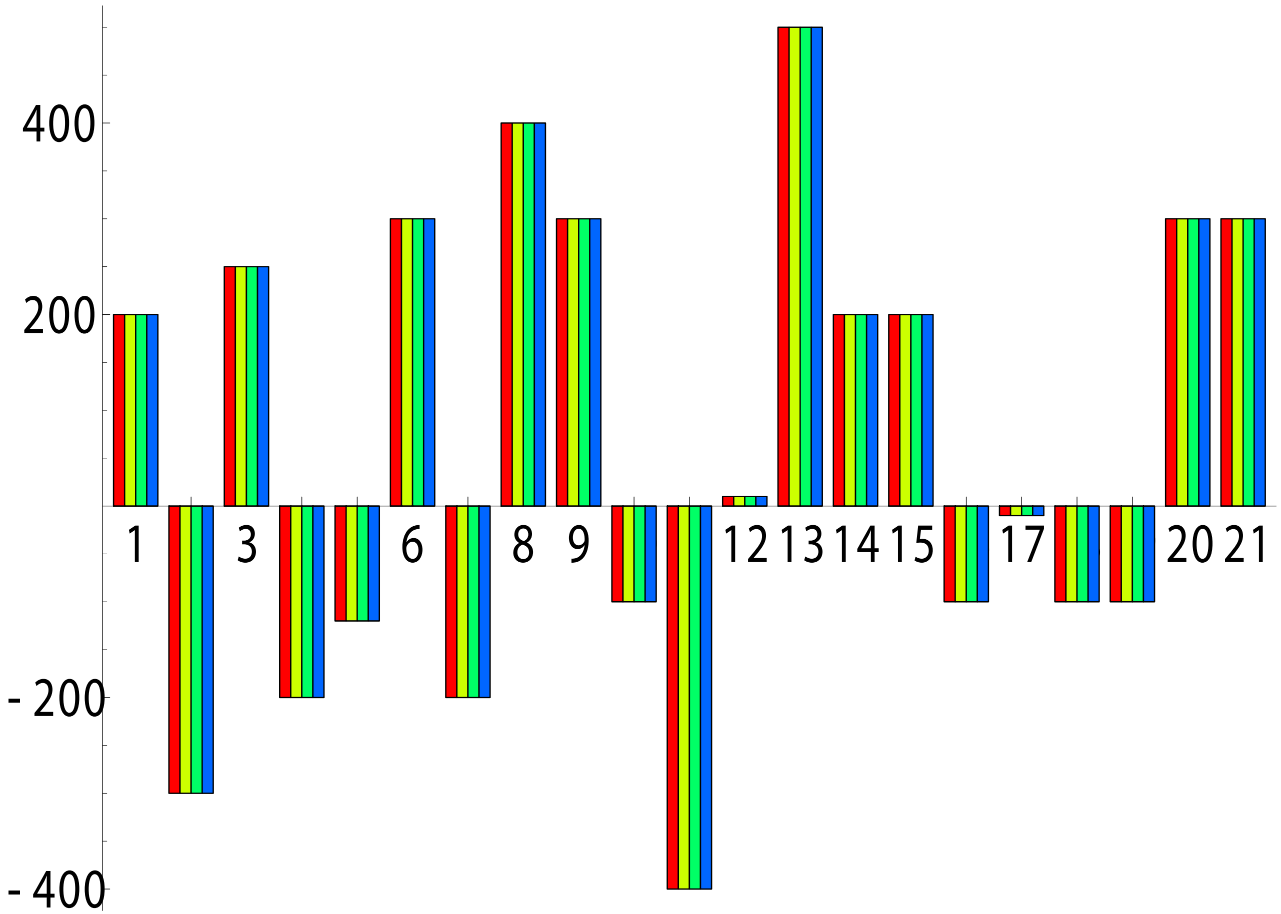
$$\mathbf{M} = \begin{pmatrix} M^{1\to 1} & 0 & 0 & \dots & 0 \\ M^{1\to 1}_{\delta_1} & 0 & 0 & \dots & 0 \\ M^{1\to 1}_{\delta_2} & 0 & 0 & \dots & 0 \\ M^{1\to 2} & M^{2\to 2} & 0 & \dots & 0 \\ M^{1\to 2}_{\delta_1} & M^{2\to 2}_{\delta_1} & 0 & \dots & 0 \\ M^{1\to 2}_{\delta_2} & M^{2\to 2}_{\delta_2} & 0 & \dots & 0 \\ M^{1\to 3} & M^{2\to 3} & M^{3\to 3} & \dots & 0 \\ M^{1\to 3}_{\delta_1} & M^{2\to 3}_{\delta_1} & M^{3\to 3}_{\delta_1} & \dots & 0 \\ M^{1\to 3}_{\delta_2} & M^{2\to 3}_{\delta_2} & M^{3\to 3}_{\delta_2} & \dots & 0 \\ \vdots & \vdots & \vdots & \vdots & \vdots \\ M^{1\to n} & M^{2\to n} & M^{3\to n} & \dots & M^{n\to n} \\ M^{1\to n}_{\delta_1} & M^{2\to n}_{\delta_1} & M^{3\to n}_{\delta_1} & \dots & M^{n\to n}_{\delta_1} \\ M^{1\to n}_{\delta_2} & M^{2\to n}_{\delta_2} & M^{3\to n}_{\delta_2} & \dots & M^{n\to n}_{\delta_2} \end{pmatrix}$$

$$\mathbf{X} = \begin{pmatrix} x^1 \\ \Delta x^1(\delta_1) \\ \Delta x^1(\delta_2) \\ x^2 \\ \Delta x^2(\delta_1) \\ \Delta x^2(\delta_2) \\ x^3 \\ \Delta x^3(\delta_1) \\ \Delta x^3(\delta_2) \\ \vdots \\ x^n \\ \Delta x^n(\delta_1) \\ \Delta x^n(\delta_2) \end{pmatrix}$$

$$\mathbf{W} = \begin{pmatrix} W^1 \\ W^1_\Delta(\delta_1) \\ W^1_\Delta(\delta_2) \\ W^2 \\ W^2_\Delta(\delta_1) \\ W^2_\Delta(\delta_2) \\ W^3 \\ W^3_\Delta(\delta_1) \\ W^3_\Delta(\delta_2) \\ \vdots \\ W^3 \\ W^3_\Delta(\delta_1) \\ W^3_\Delta(\delta_2) \end{pmatrix}$$

$$\mathbf{d} = \begin{pmatrix} d^1_x \\ d^2_x \\ d^3_x \\ \vdots \\ d^n_x \end{pmatrix}$$

$$\min ||\mathbf{W}(\mathbf{X} + \mathbf{Md})||$$


400
200
- 200
- 400
1
3
6
8
9
12
13
14
15
17
20
21