Spin insertion for SuperB project
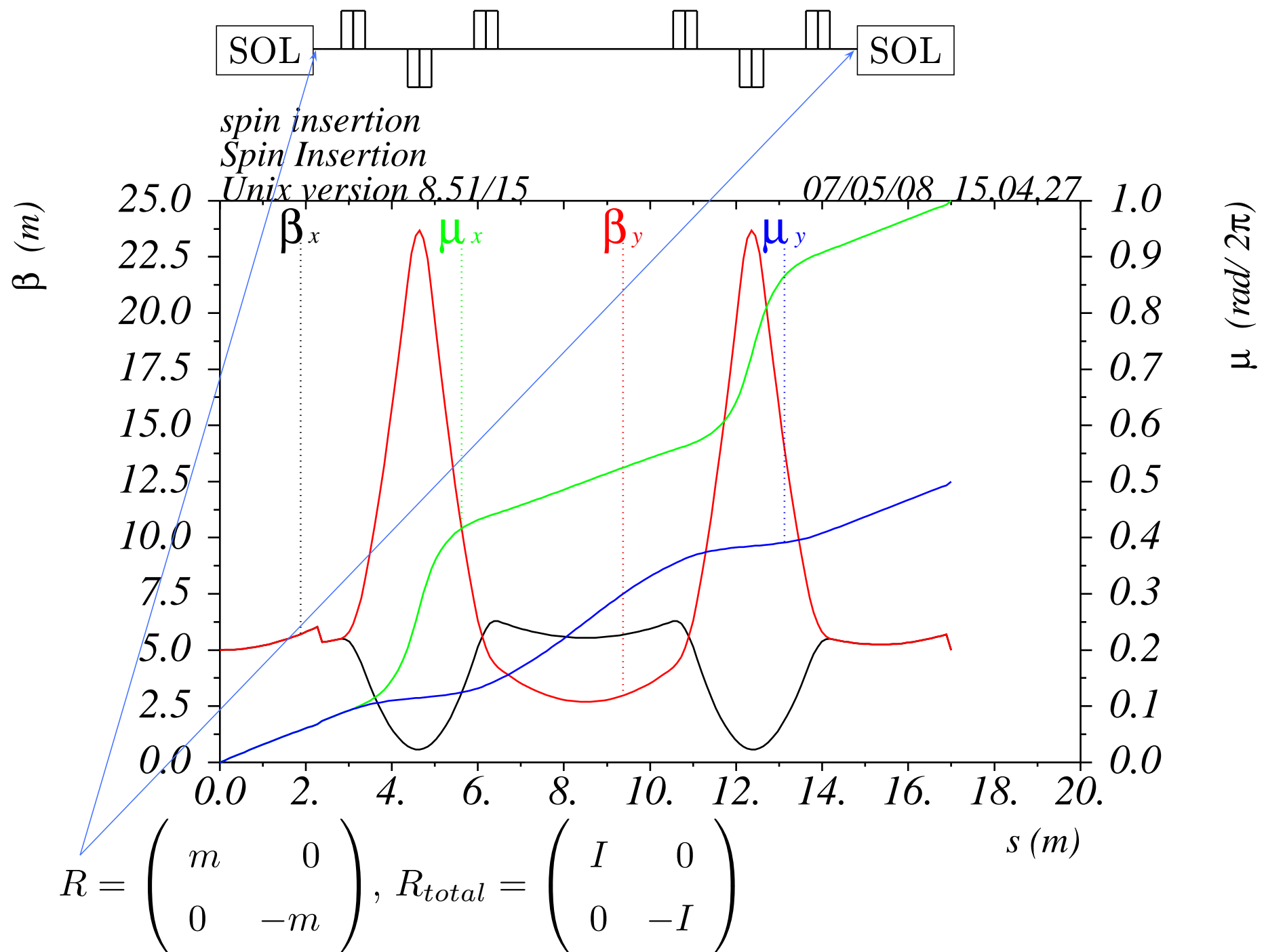
Bogomyagkov Anton, Nikitin Sergey
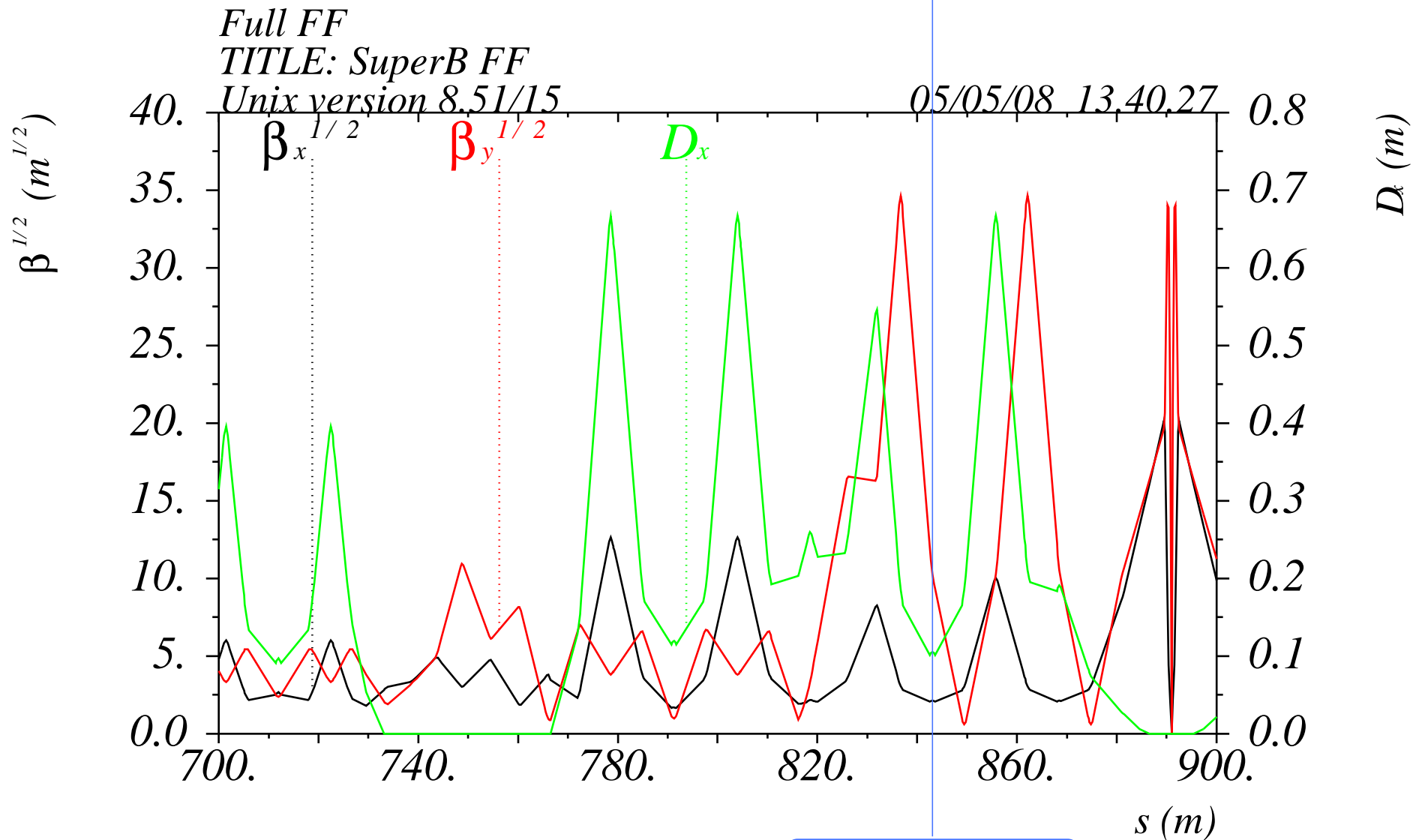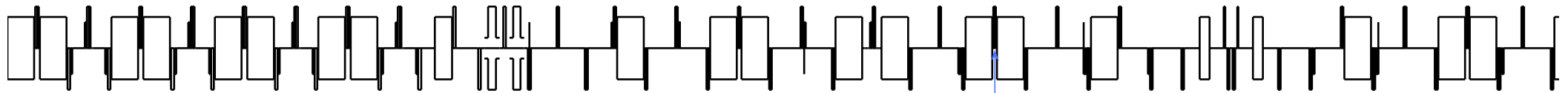
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❖ No distortion for the present lattice.

❖ The central magnet spin bend equals $\pi/2$ in order to minimize spin orbit function. The only place is by QFY3, after first B2.

❖ Coupling is constrained within the insertion.

❖ Two solenoids with spin angle $\pi/4$ and separated by appropriate map.

❖ As simple as possible.

$$R = \begin{pmatrix} m & 0 \\ 0 & -m \end{pmatrix}, R_{total} = \begin{pmatrix} I & 0 \\ 0 & -I \end{pmatrix}$$

Place for spin insertion

Full FF
TITLE: SuperB FF
Unix version 8.51/15   05/05/08 13.40.27

$\beta_x^{1/2}$ $\beta_y^{1/2}$ D_x

$\delta_E/\,p_0 c \;=\; 0.000000E+00$

Here, QFY3!

Table name = TWISS

Full FF
TITLE: SuperB FF
Unix version 8.51/15   *06/05/08 10.37.38*

$\beta_x^{1/2}$ $\beta_y^{1/2}$ D_x
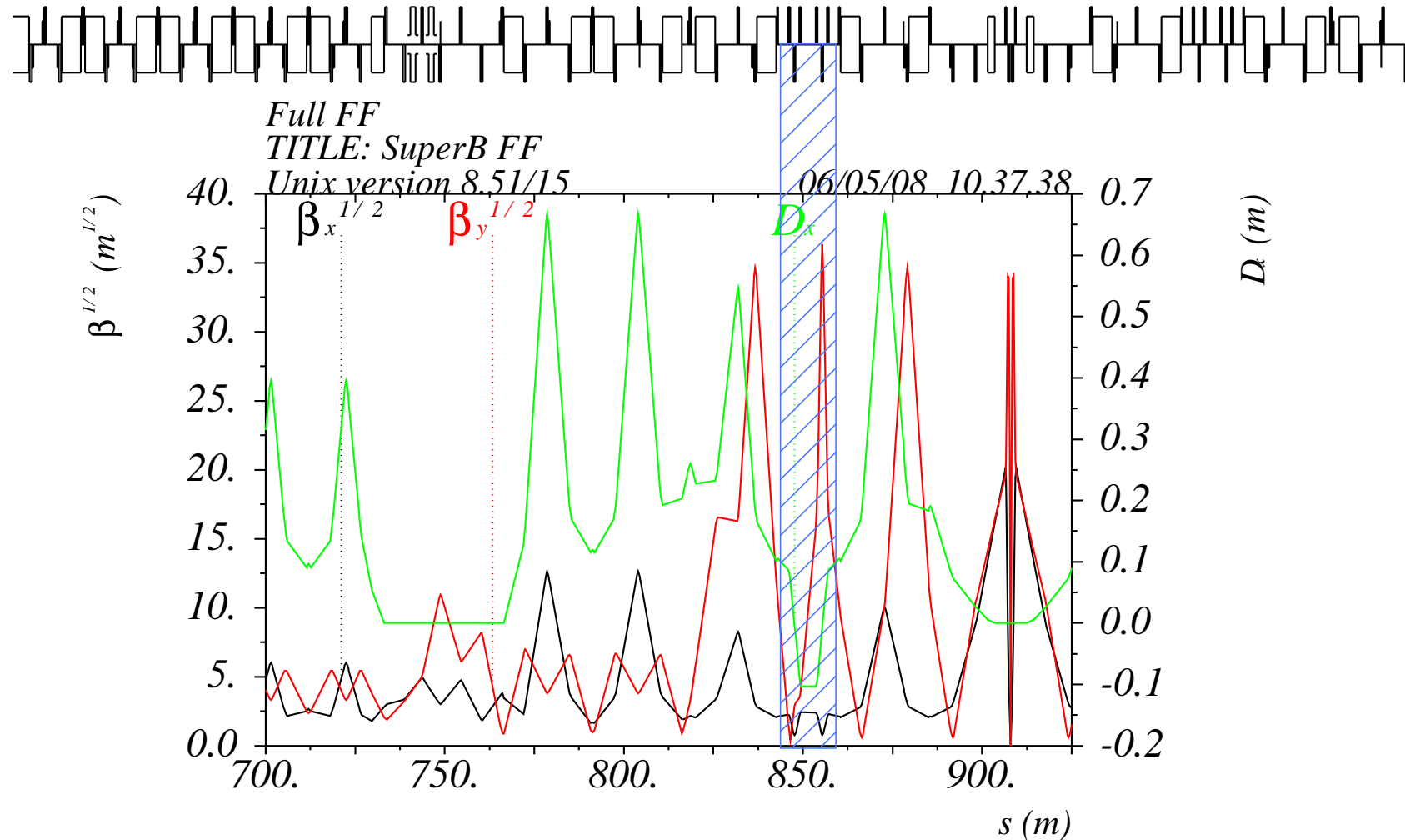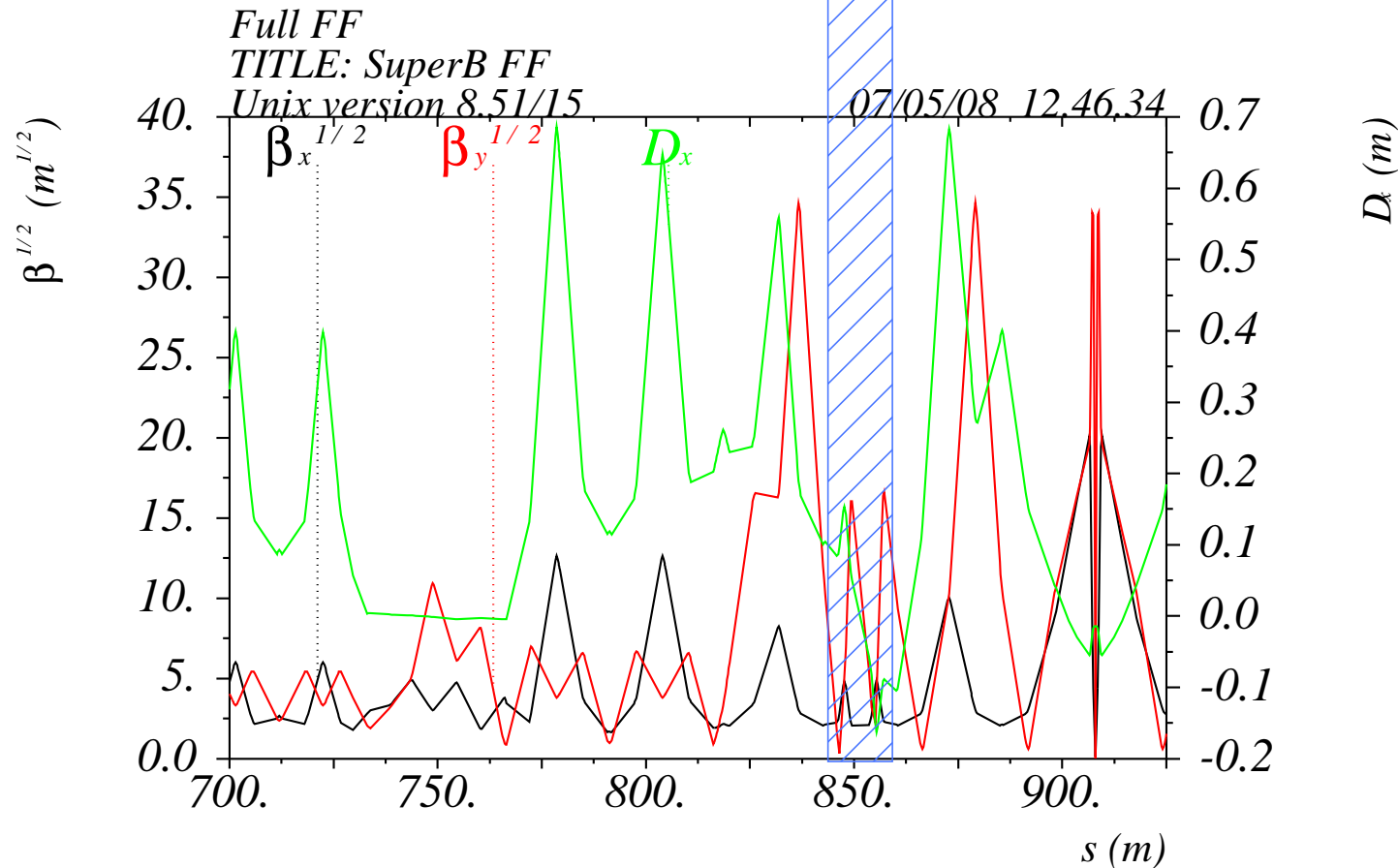
$\delta_E / p_0 c = 0.000000E+00$

Table name = TWISS

❖ $T_{pol} = 0.367$ hours.

❖ $\mu_y(SDY4/SDY0) = 2\pi$. Geometrical aberrations do not cancel!

Full FF
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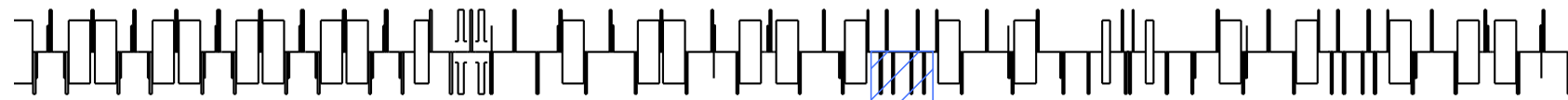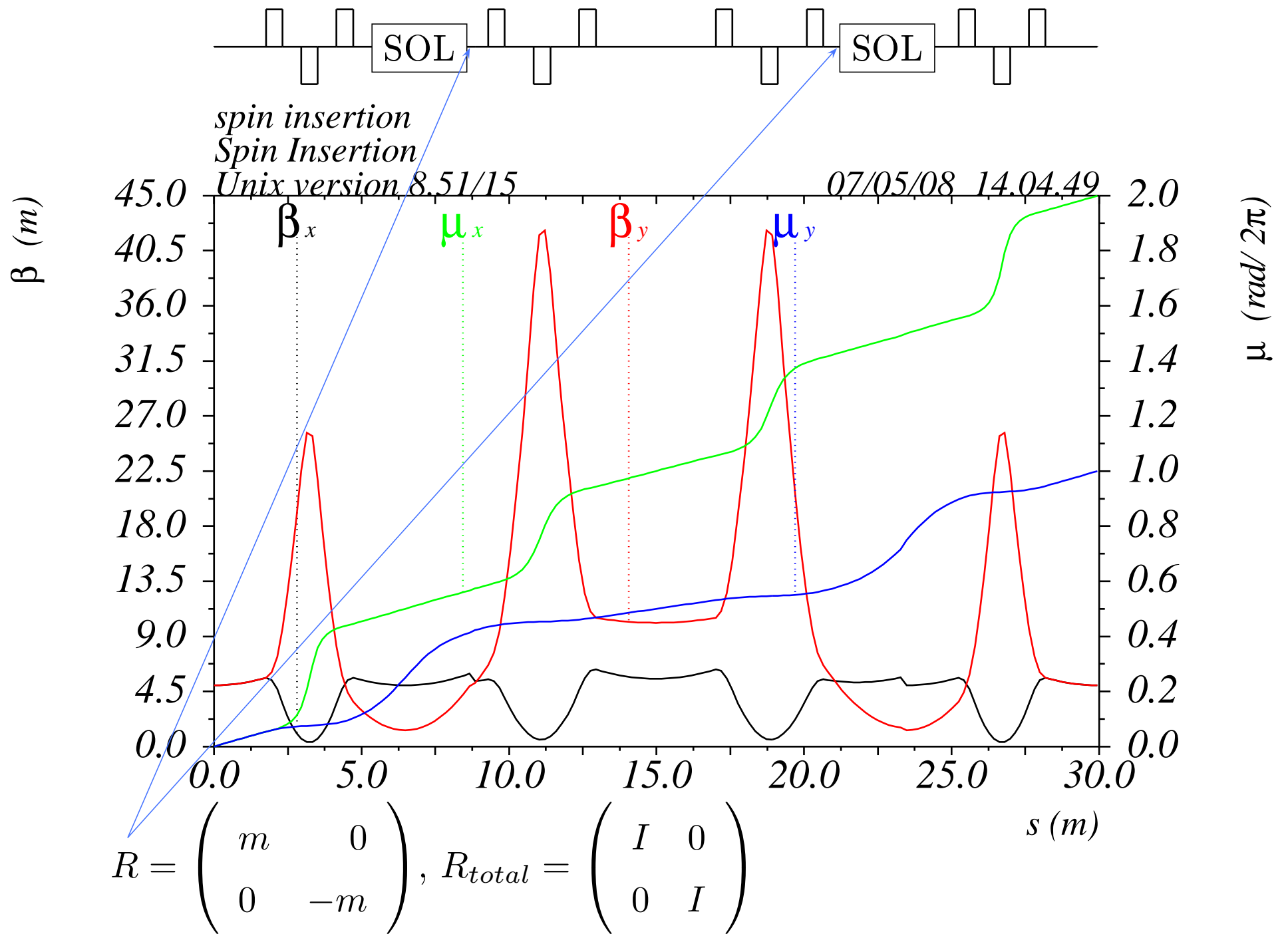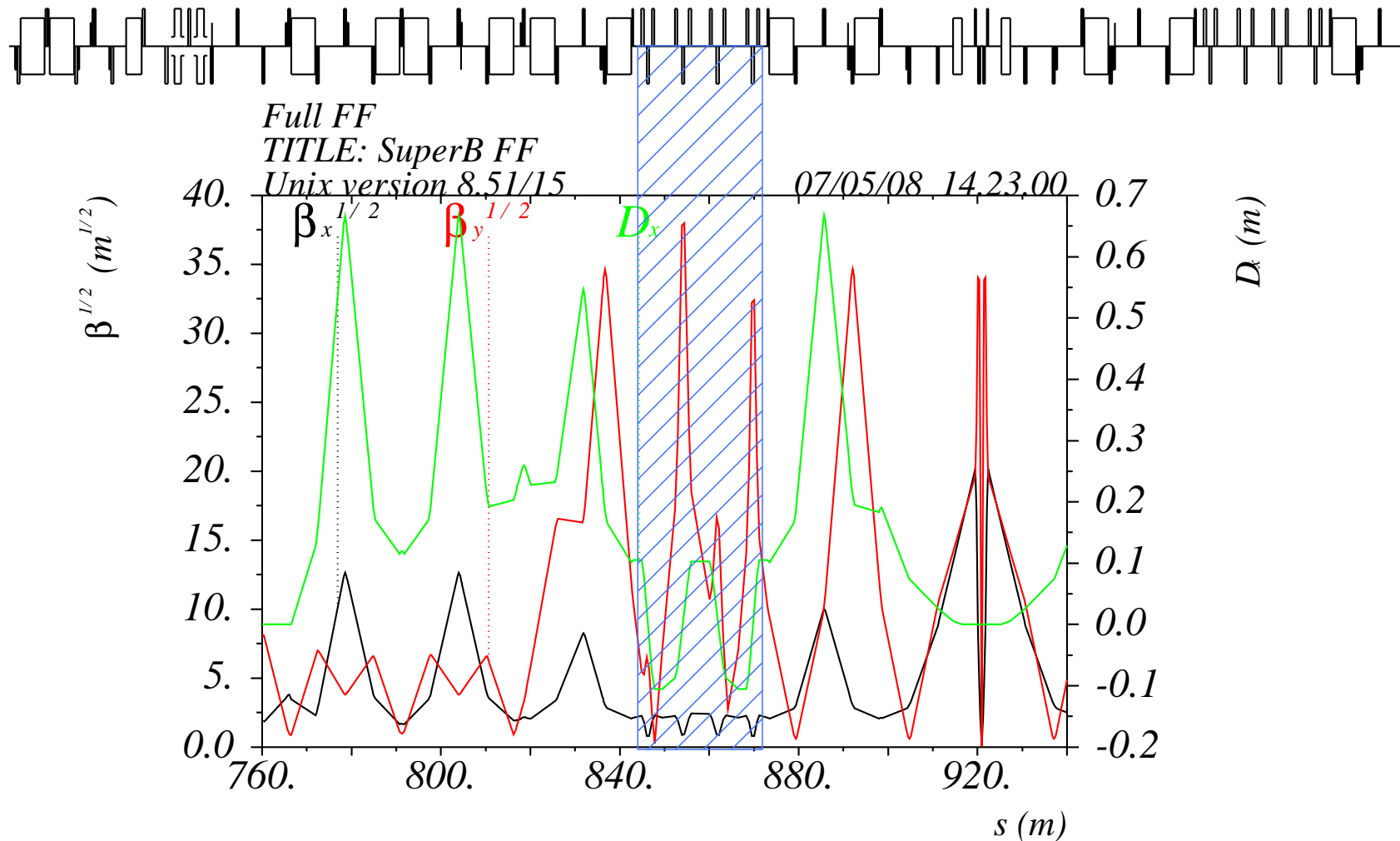
$\delta_E/p_0c = 0.000000E+00$

Table name = TWISS

❖ $T_{pol} = 0.6$ hours.

❖ $\mu_y(SDY4/SDY0) = 3\pi$. Geometrical aberrations do cancel!

❖ Dispersion at IP is not zero.

spin insertion
Spin Insertion
Unix version 8.51/15   07/05/08 14.04.49

β_x μ_x β_y μ_y

$\beta\ (m)$

$\mu\ (rad/2\pi)$

$s\ (m)$

$$R = \begin{pmatrix} m & 0 \\ 0 & -m \end{pmatrix}, R_{total} = \begin{pmatrix} I & 0 \\ 0 & I \end{pmatrix}$$

Full FF
TITLE: SuperB FF
Unix version 8.51/15   07/05/08 14,23,00

$\delta_E / p_0 c = 0.000000E+00$

Table name = TWISS

- ❖ $T_{pol} = 0.6$ hours.

- ❖ $\mu_y(SDY4/SDY0) = 3\pi$. Geometrical aberrations do cancel!

- ❖ Optical functions are not disturbed.

Qx=50.573, Qy=26.6