

Error propagation in xx' -TWISS parameter transport ...

Second step (12 march 2008) : Load «Hybrid optics" ... and performed TWISS parameter measurement

From QF6X scan :

At entrance of QF6X quad :

$$\text{Beta}_x = 24.3 \pm 1.3 \text{ m}$$

$$\text{Alpha}_x = -8.4 \pm 0.7$$

$$\text{Gamma}_x = (1 + \text{Alpha}_x^2) / \text{beta}_x \pm 0.5$$

From Multi-wire scan :

At entrance of MWOX quad :

$$\text{Beta}_x = 0.45 \pm 0.15 \text{ m}$$

$$\text{Alpha}_x = 0.66 \pm 0.79$$

$$\text{Gamma}_x = (1 + \text{Alpha}_x^2) / \text{beta}_x \pm 2.6$$

At entrance of EXT line :

$$\text{Beta}_x = 6.5 \pm 72 \text{ m}$$

$$\text{Alpha}_x = 1.6 \pm 25$$

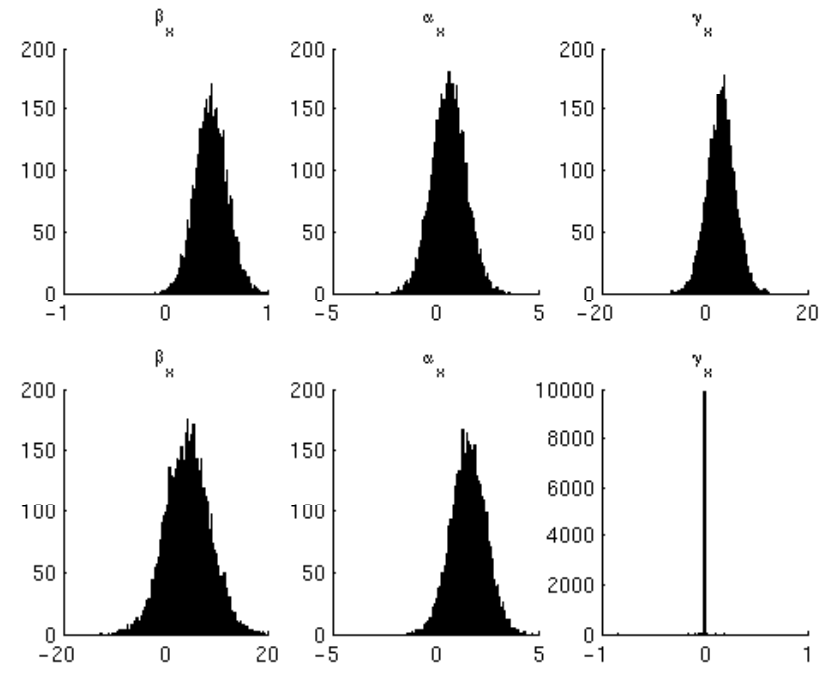
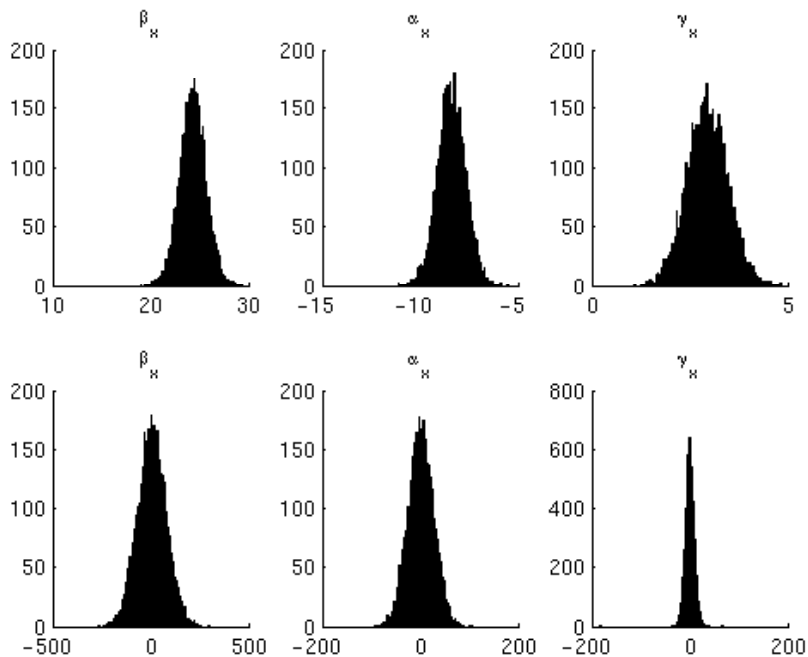
$$\text{Gamma}_x = 0.4 \pm 14.6$$

At entrance of EXT line :

$$\text{Beta}_x = 4.4 \pm 4.19 \text{ m}$$

$$\text{Alpha}_x = 1.6 \pm 0.8$$

$$\text{Gamma}_x = -0.9 \pm 70$$



Error propagation in yy' -TWISS parameter transport ...

Second step (12 march 2008) : Load «Hybrid optics» ... and performed TWISS parameter measurement

From QF5X scan :

At entrance of QF5X quad :

$$\text{Beta}_y = 9.1 \pm 0.5 \text{ m}$$

$$\text{Alpha}_y = 10.5 \pm 0.6$$

$$\text{Gamma}_y = (1 + \text{Alpha}_y^2) / \text{beta}_y \pm 1.5$$

From Multi-wire scan :

At entrance of MWOX quad :

$$\text{Beta}_y = 3.01 \pm 2.16 \text{ m}$$

$$\text{Alpha}_y = 1.8 \pm 2.0$$

$$\text{Gamma}_y = (1 + \text{Alpha}_y^2) / \text{beta}_y \pm 2.6$$

At entrance of EXT line :

$$\text{Beta}_y = 0.63 \pm 0.06 \text{ m} \quad 0.5 \pm 0.3 \text{ m}$$

$$\text{Alpha}_y = 1.5 \pm 1.4 \quad 0.4 \pm 2.9$$

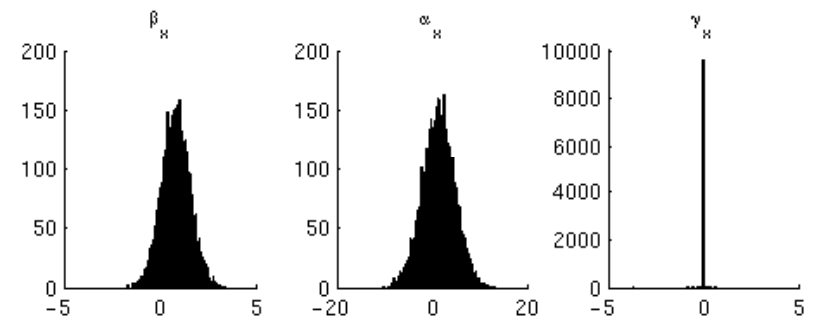
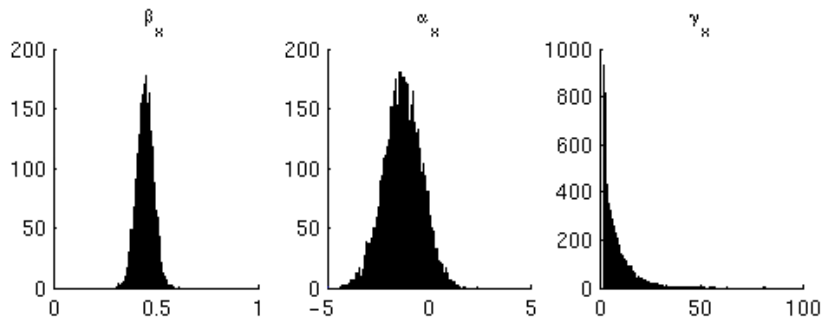
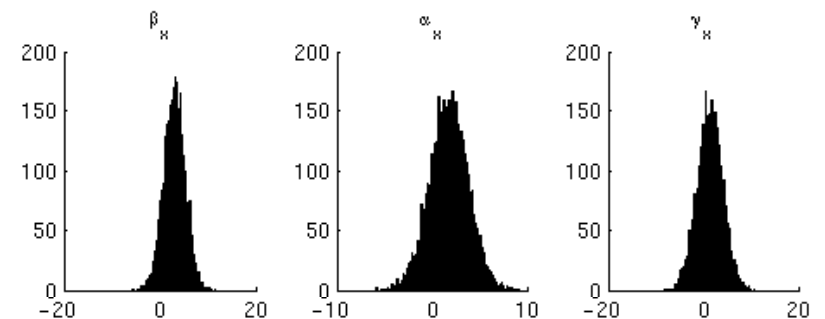
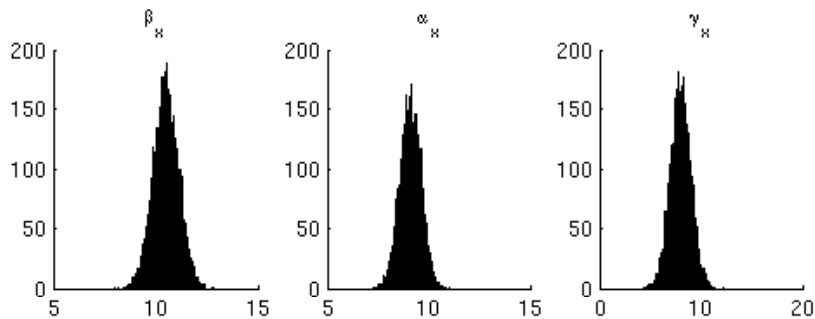
$$\text{Gamma}_y = 7.7 \pm 6.6 \quad 18 \pm 1260$$

At entrance of EXT line :

$$\text{Beta}_y = 0.8 \pm 0.7 \text{ m}$$

$$\text{Alpha}_y = 1.4 \pm 3.3$$

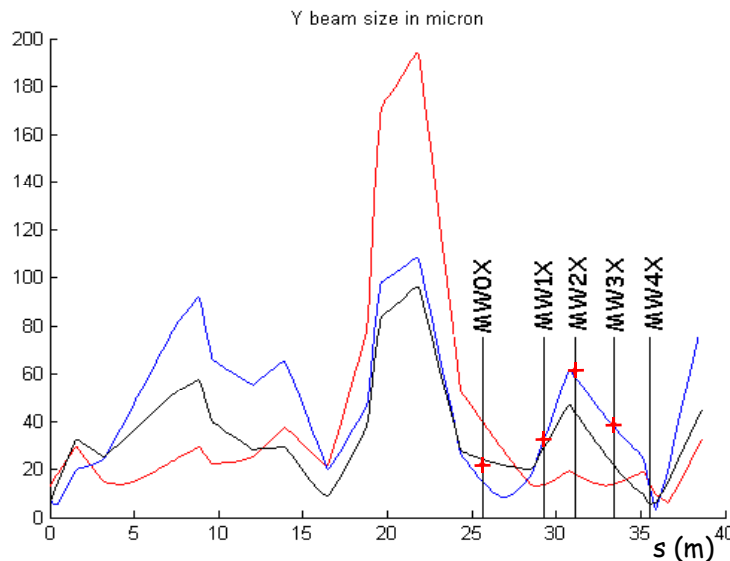
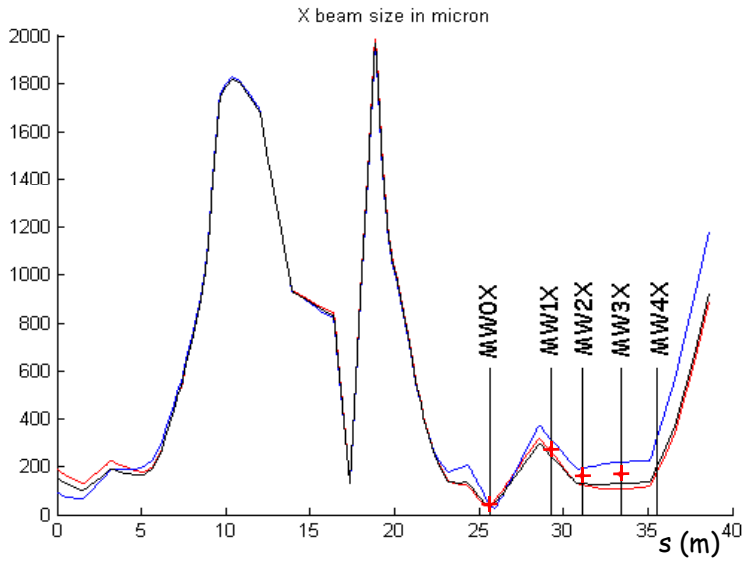
$$\text{Gamma}_y = -10 \pm 530$$



Error propagated using Monte-Carlo simulation (10 000 seeds)

Beam size and phase advance for 3 different input Twiss parameter set in extraction line (optics from 12th march shift)

Results from 12 march 2008 shift

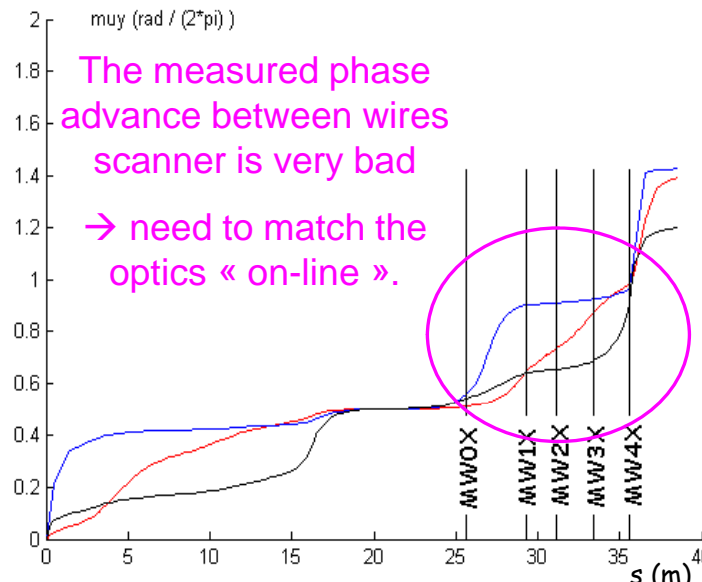
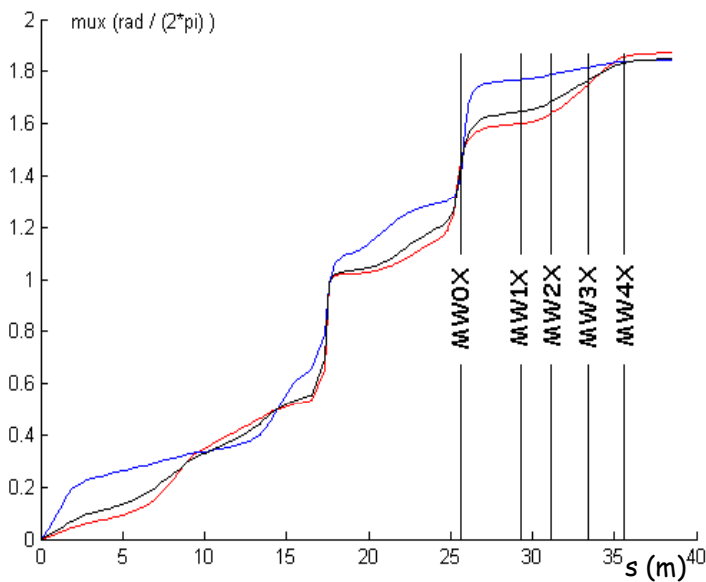


Input from the « DR solution » :
 $\beta_x = 10.63 \text{ m}$
 $\alpha_x = 2.39$
 $\beta_y = 2.11 \text{ m}$
 $\alpha_y = -1.61$

Input from multi-wire meas. :
 $\beta_x = 2.5 \text{ m}$
 $\alpha_x = 1.0$
 $\beta_y = 0.68 \text{ m}$
 $\alpha_y = 1.1$

Old values

Input from quad scan meas. :
 $\beta_x = 6.7 \text{ m}$
 $\alpha_x = 1.6$
 $\beta_y = 0.62 \text{ m}$
 $\alpha_y = 1.38$



The measured phase advance between wires scanner is very bad
 → need to match the optics « on-line ».

Short conclusion

The matching of the diagnostic section is sensible to TWISS parameter measurement estimation.

Is it possible to performed an « on-line » matching of the diagnostic section ?

What is the precision on TWISS parameter reconstruction required to performe an accurate matching ?

What is the more appropriate method for TWISS parameter estimation ?

If quad scan is used, who is the best couple (Quad+Wire) to be used ?