ILC FFS $\sqrt{s} = 500$GeV status

Hector Garcia Morales[1,2], Rogelio Tomas[2]

[1] Universitat Politècnica de Catalunya, Barcelona
[2] CERN, Geneve

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- Matching using: Matching quads + QD6, QD4, QF3, QD2A, QD2A, QF1, QD0.
- Target: $\beta_x = 0.011$m and $\beta_y = 0.00048$m.

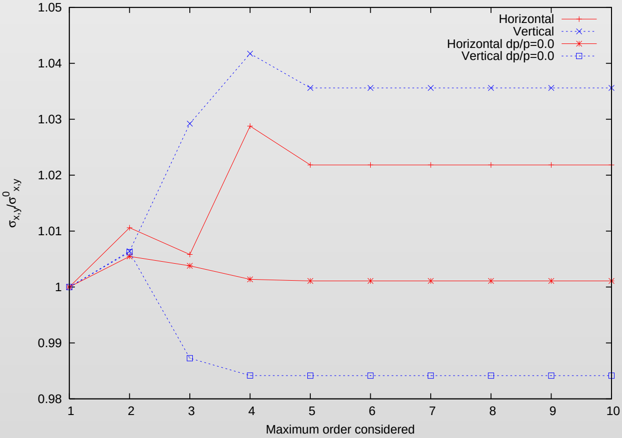
$l^* = 3.50$ m

$\beta_x = 0.01099976171$ m
$\beta_y = 0.0004799986132$ m
$\alpha_x = -0.2009932895$
$\alpha_y = 0.3923269404$
$D_x = 6.658178479 \cdot 10^{-5}$ m
$D_y = 0.0$ m

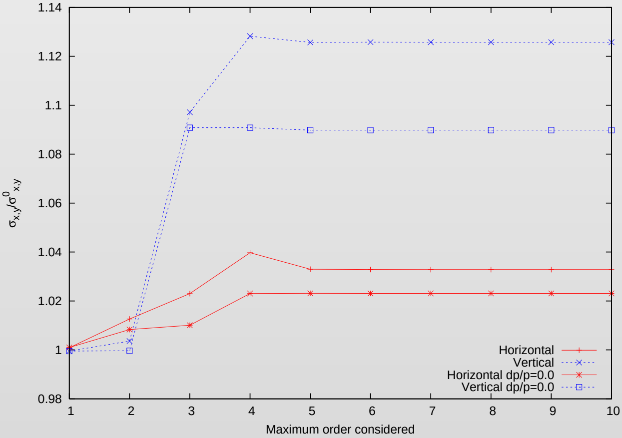
$l^* = 4.30$ m

$\beta_x = 0.01099999724$ m
$\beta_y = 0.0004799999637$ m
$\alpha_x = 0.08804825728$
$\alpha_y = -0.02902843874$
$D_x = 1.080846343 \cdot 10^{-5}$ m
$D_y = 0.0$ m

- Optimization using 5 sextupoles: SF6, SF5, SD4, SF1, SD0.
- Momentum spread: $\Delta p/p = 0.00125$.
- MAPCLASS computation.
- Order 10 beam sizes: $\sigma_x^{10} = 491.92$nm. $\sigma_y^{10} = 6.06$nm.

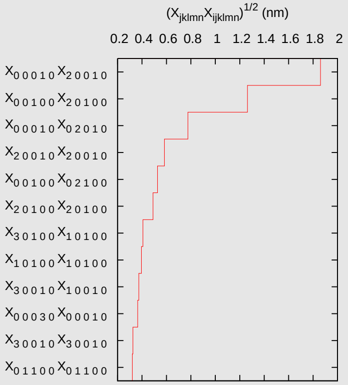


- Optimization using 5 sextupoles: SF6, SF5, SD4, SF1, SD0.
- Momentum spread: $\Delta p/p = 0.00125$.
- MAPCLASS computation.
- Order 10 beam sizes: $\sigma_x^{10} = 489.50$nm. $\sigma_y^{10} = 6.60$nm.

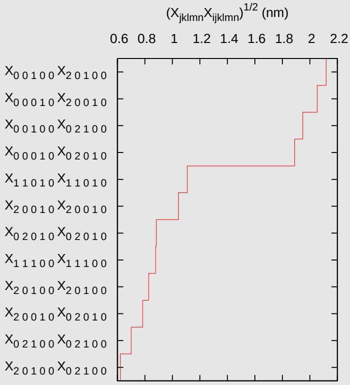


$$\langle x_q^2 \rangle = \sum_{\substack{jklmn \\ i'k'l'm'n'}} X_{jklmn} X_{j'k'l'm'n'} \int x_0^{j+j'} p_{x0}^{k+k'} y_0^{l+l'} p_{y0}^{m+m'} \delta_0^{n+n'} \rho_0 \, dv_0$$

$l^\star = 3.51\text{m}$



$l^\star = 4.30\text{m}$

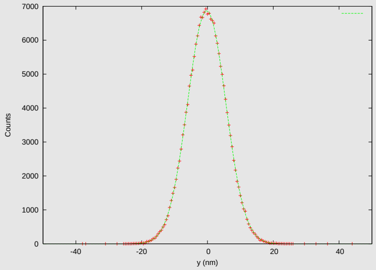


- 200000 particles with synchrotron radiation effects.
- Core beam size calculation from Gaussian fit.
- Negligible SR radiation effect.

$l^\star = 3.50$m

$$\sigma_x^{\text{core}} = (476 \pm 1)\text{nm}$$

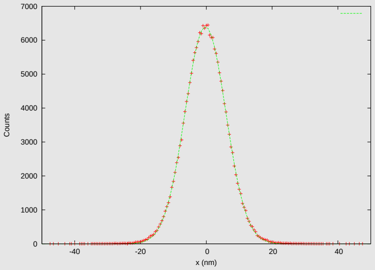
$$\sigma_y^{\text{core}} = (5.79 \pm 0.02)\text{nm}$$



$l^\star = 4.30$m

$$\sigma_x^{\text{core}} = (480 \pm 1)\text{nm}$$

$$\sigma_y^{\text{core}} = (6.20 \pm 0.01)\text{nm}$$



- Energy offset $E = E_0\left(1 + \frac{\Delta E}{E_0}\right)$
- Placet tracking