

Tracking studies of the Final Focus

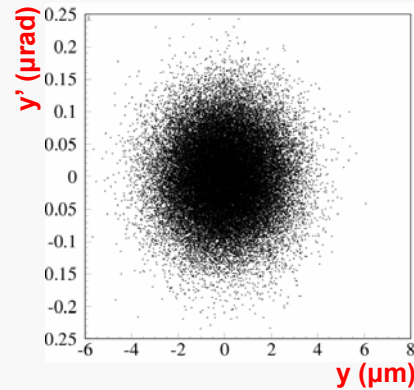
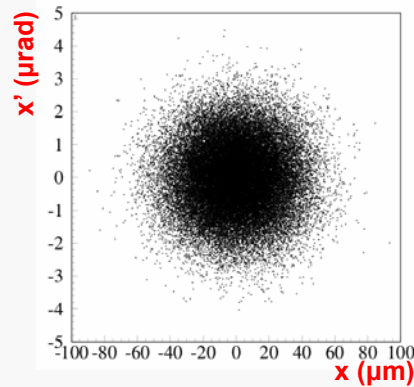
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17 May 2005

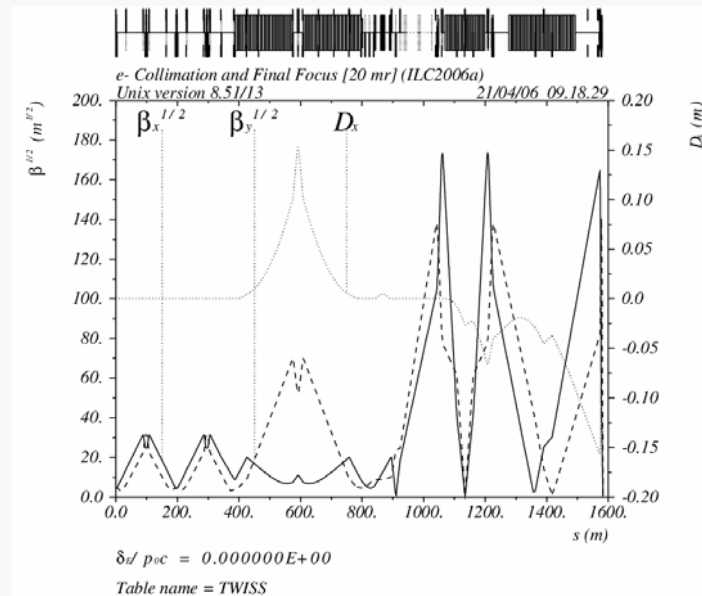
Optics studies (1): Tracking through the BDS

Distribution of particles

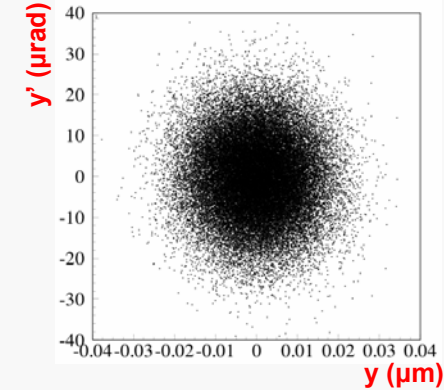
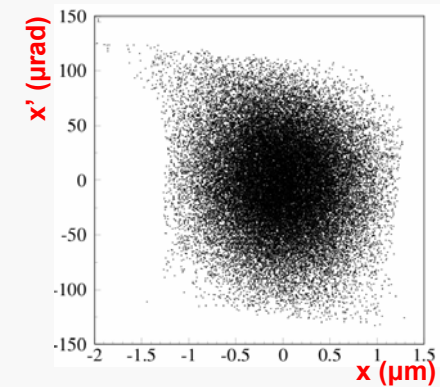
at the entrance of the BDS created with PLACET



Beam tracked through the BDS with MAD



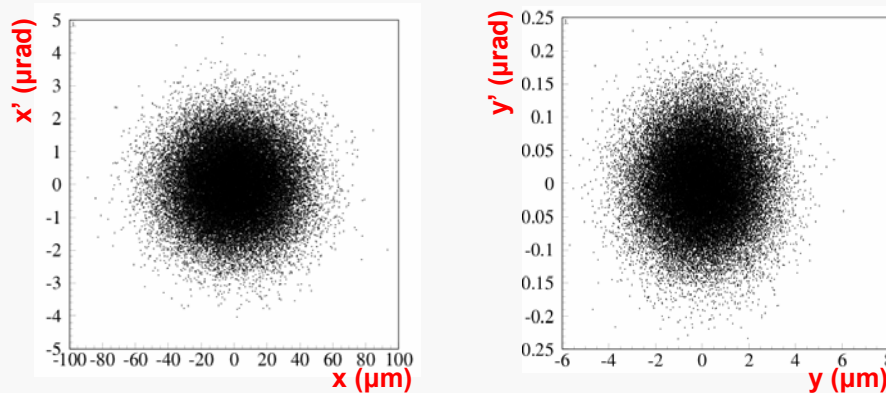
Obtained beam used to simulate the collision with GUINEA-PIG



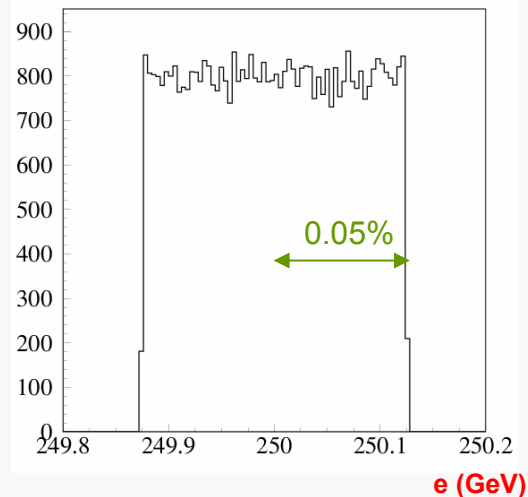
Optics studies (2): Optical bandwidth

Distribution of particles at the entrance of the BDS created with PLACET:

- For the corresponding twiss parameters:

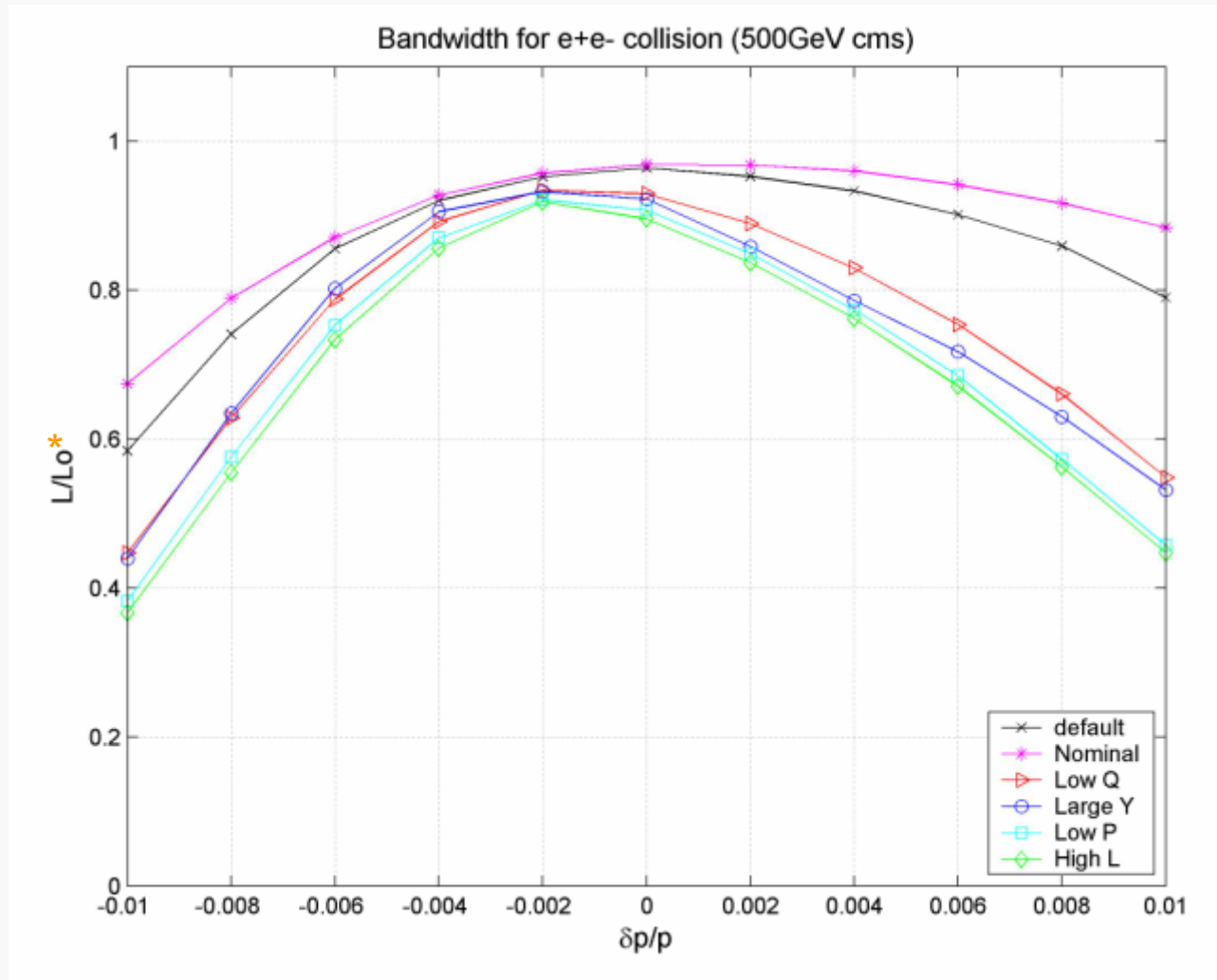


- For a flat distribution with 0.1% of energy spread:



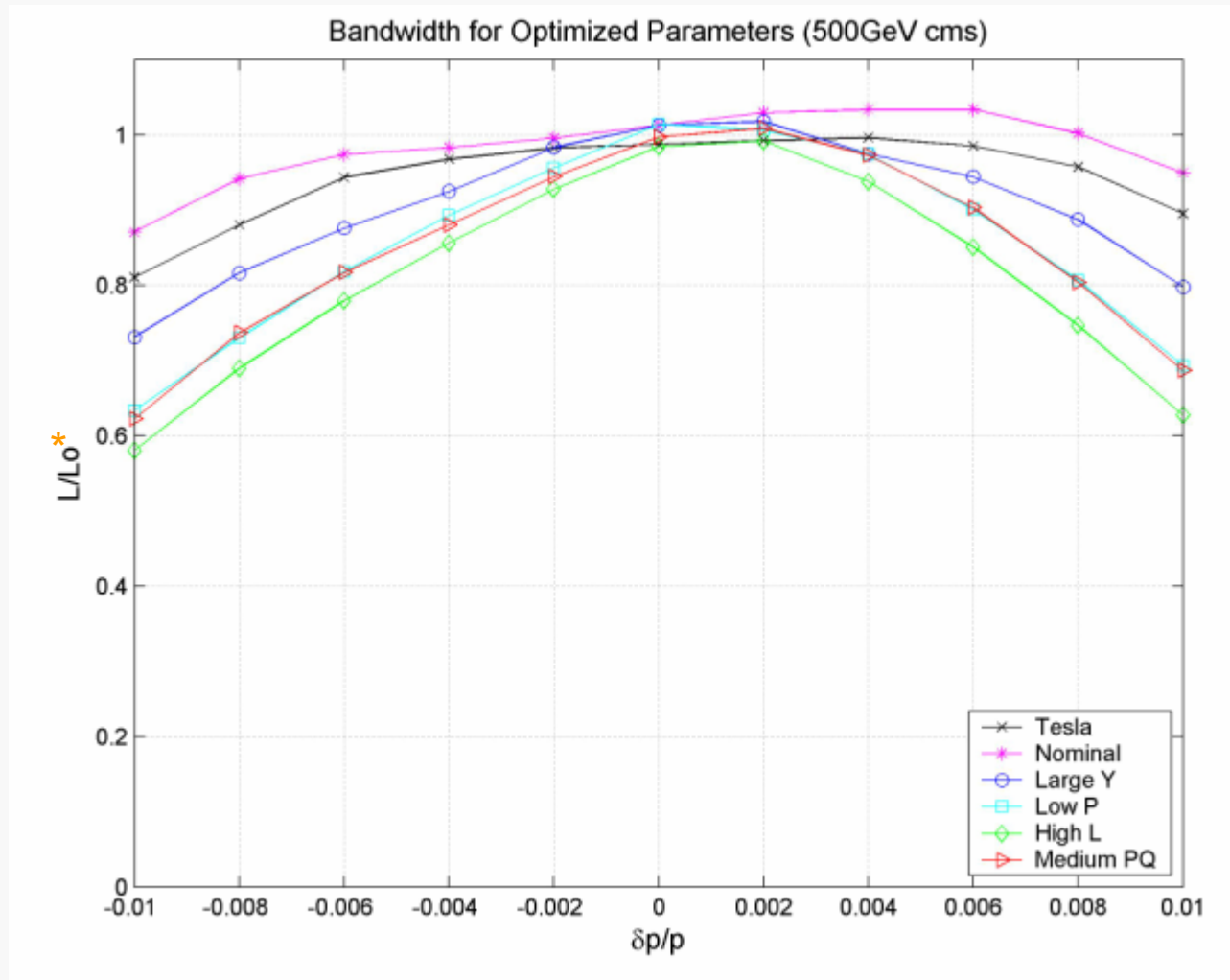
for different central energies
until $\pm 1\%$ of the nominal
energy (250GeV)

Optical bandwidth (official lattice, 20mrad)



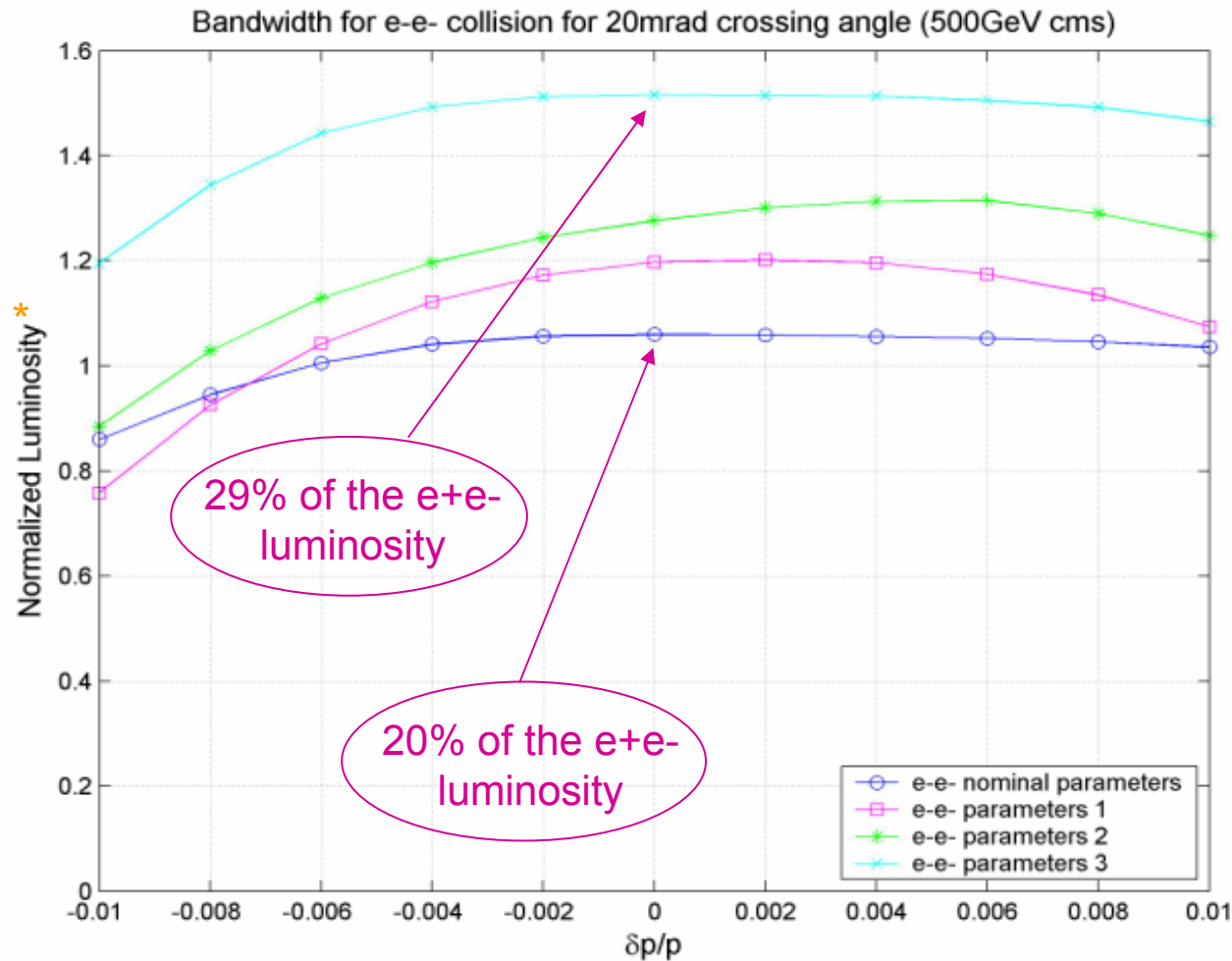
*Luminosities normalized to the value obtained with Guinea-Pig for ideal beams

Optical bandwidth (optimized parameters by J.Payet)



*Luminosities normalized to the value obtained with Guinea-Pig for ideal beams

Optical bandwidth (e⁻e⁻ collision)



Parameters 1

$$\sigma_z = 0.7\sigma_{z0}$$

$$\sigma_x = 0.7\sigma_{x0}$$

$$\sigma_y = 1.5\sigma_{y0}$$

$$\beta_x = 10.3\text{mm}$$

$$\beta_y = 0.9\text{mm}$$

Parameters 2

$$\sigma_z = 0.5\sigma_{z0}$$

$$\sigma_x = 0.8\sigma_{x0}$$

$$\sigma_y = 1.5\sigma_{y0}$$

$$\beta_x = 13.4\text{mm}$$

$$\beta_y = 0.9\text{mm}$$

Parameters 3

$$\sigma_z = 0.5\sigma_{z0}$$

$$\sigma_x = 0.9\sigma_{x0}$$

$$\sigma_y = 1\sigma_{y0}$$

$$\beta_x = 17.0\text{mm}$$

$$\beta_y = 0.4\text{mm}$$

*Luminosities normalized to the value obtained with Guinea-Pig for ideal beams for nominal parameters