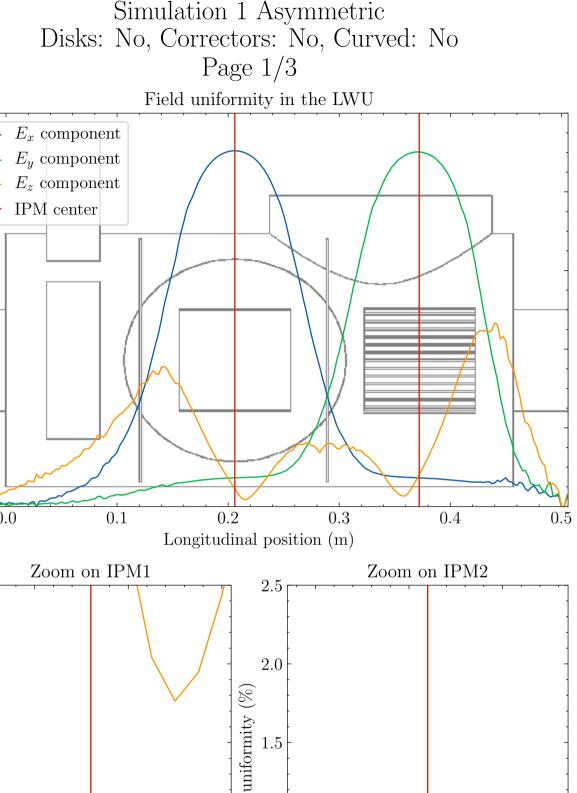
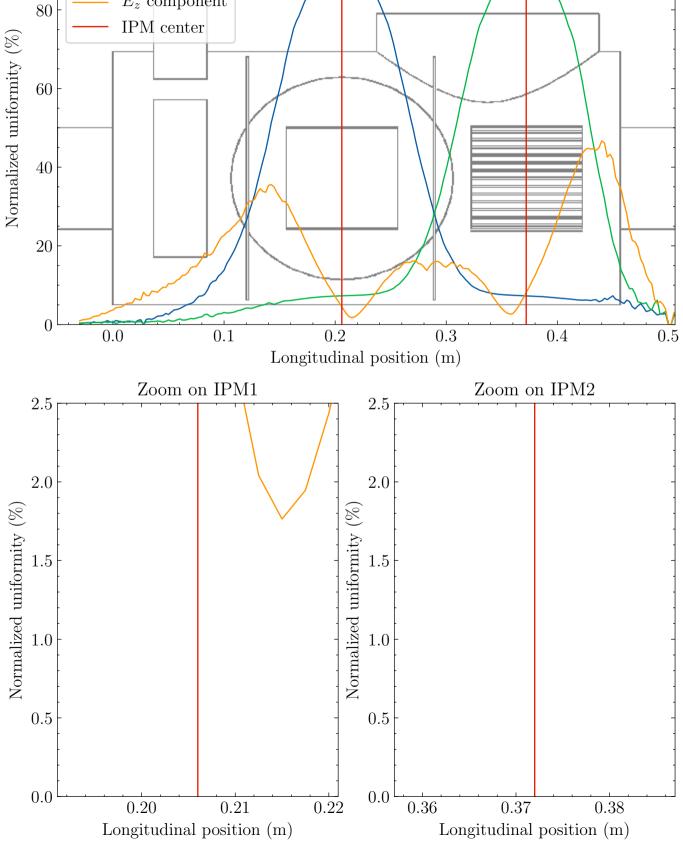
Simulation 1 Asymmetric

100

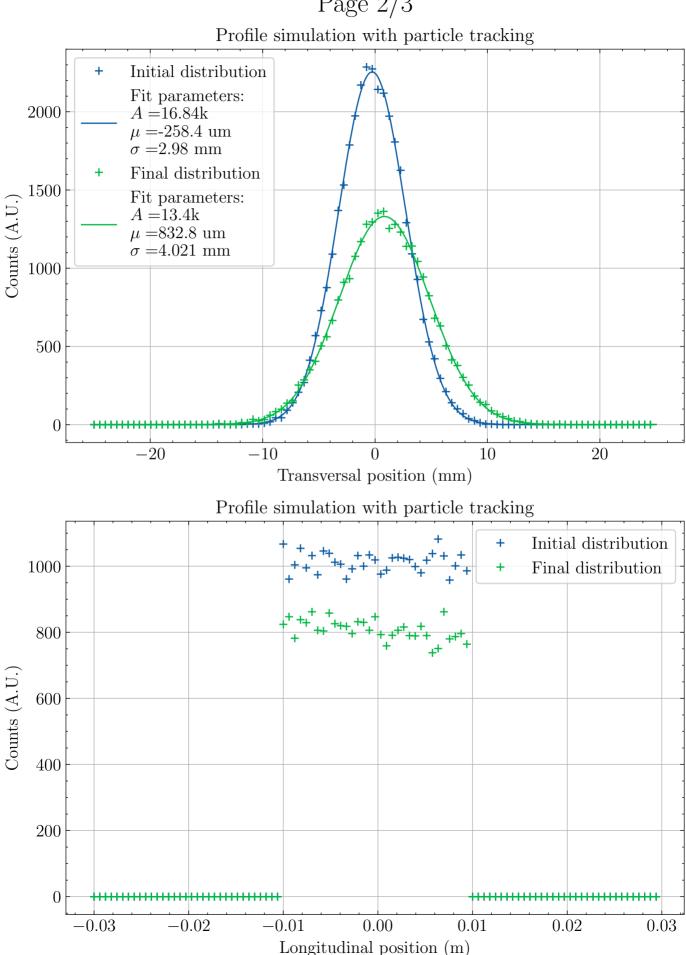




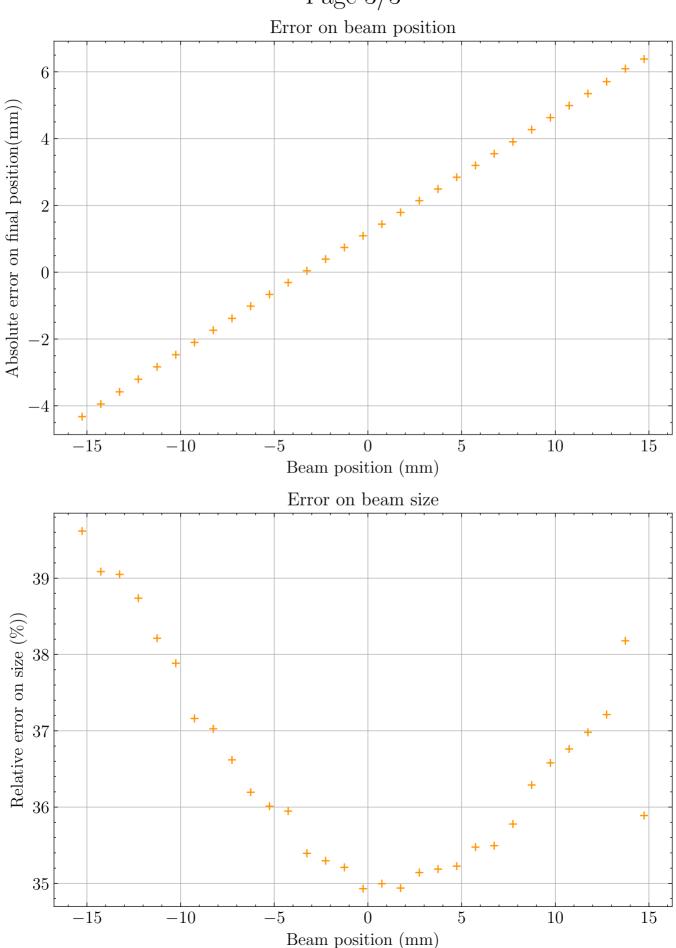
Simulation 1 Asymmetric

Disks: No, Correctors: No, Curved: No

Page 2/3

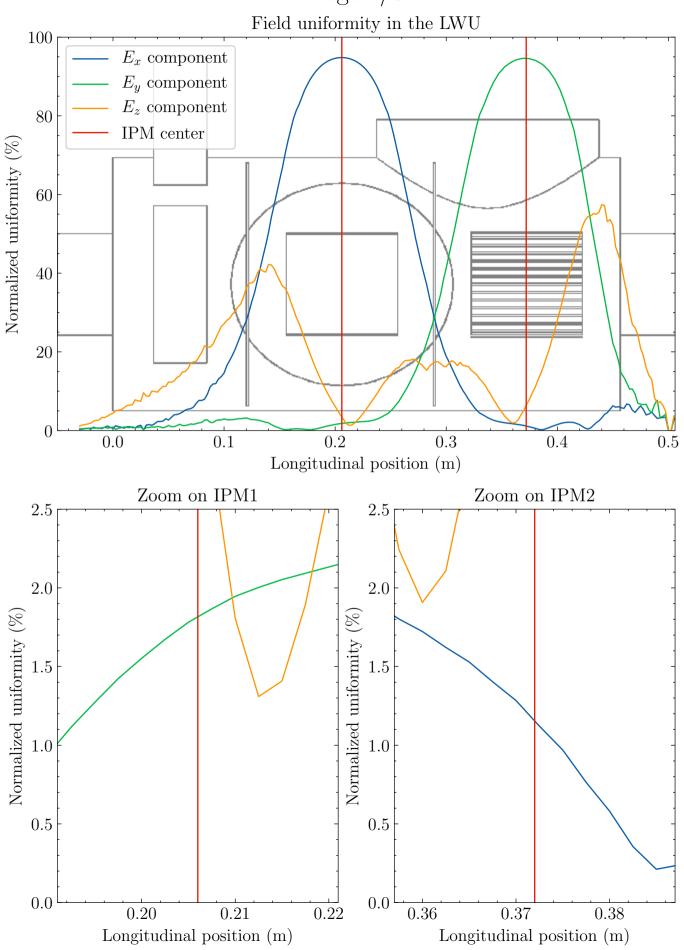


Simulation 1 Asymmetric
Disks: No, Correctors: No, Curved: No
Page 3/3



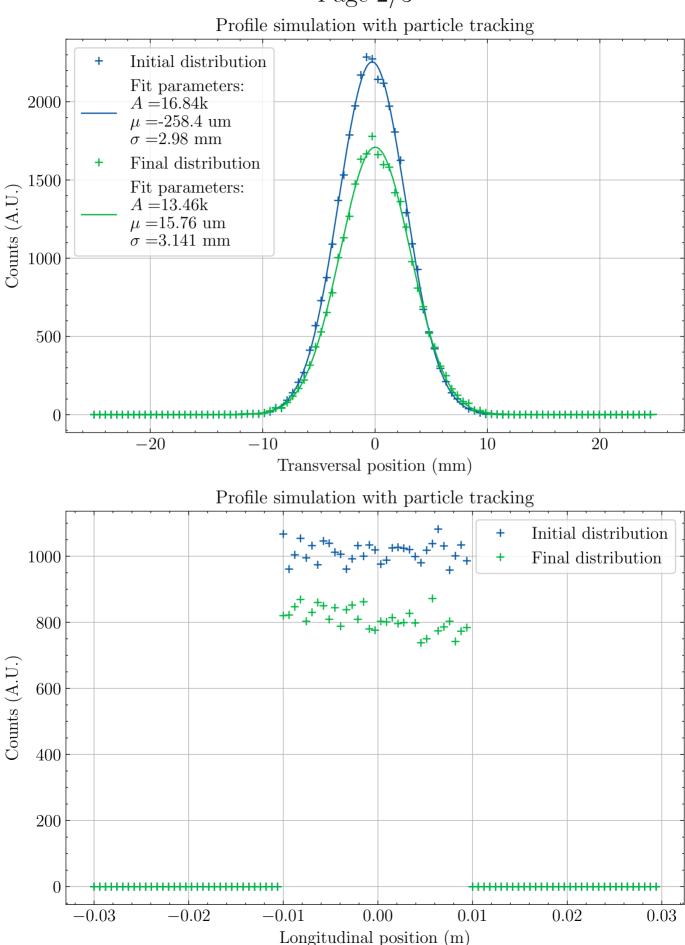
Simulation 2 Asymmetric:

Disks: No, Correctors: Yes, Curved: No Page 1/3



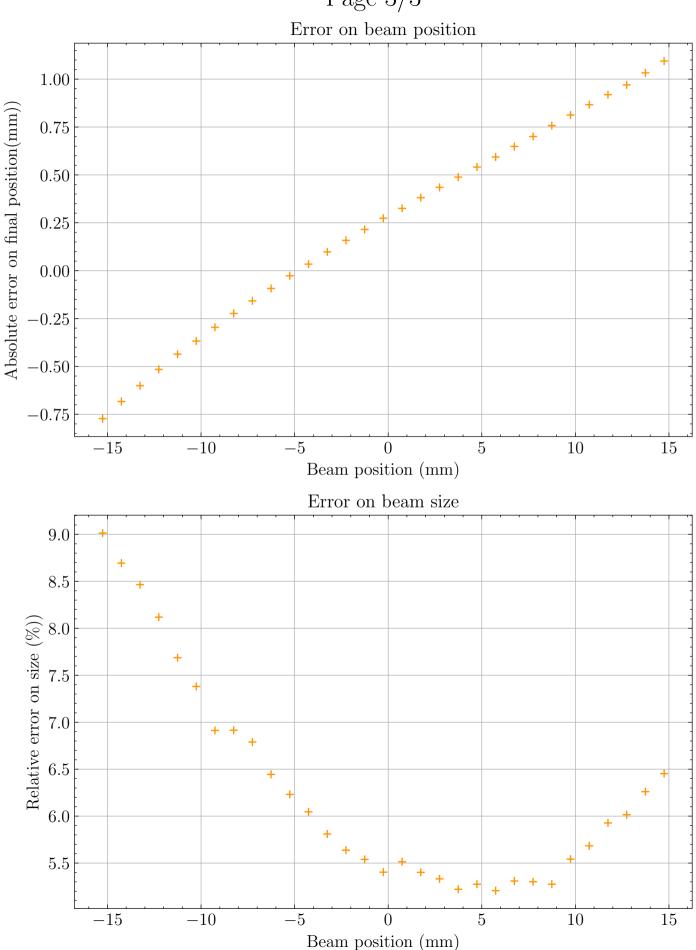
Simulation 2 Asymmetric:

Disks: No, Correctors: Yes, Curved: No Page 2/3



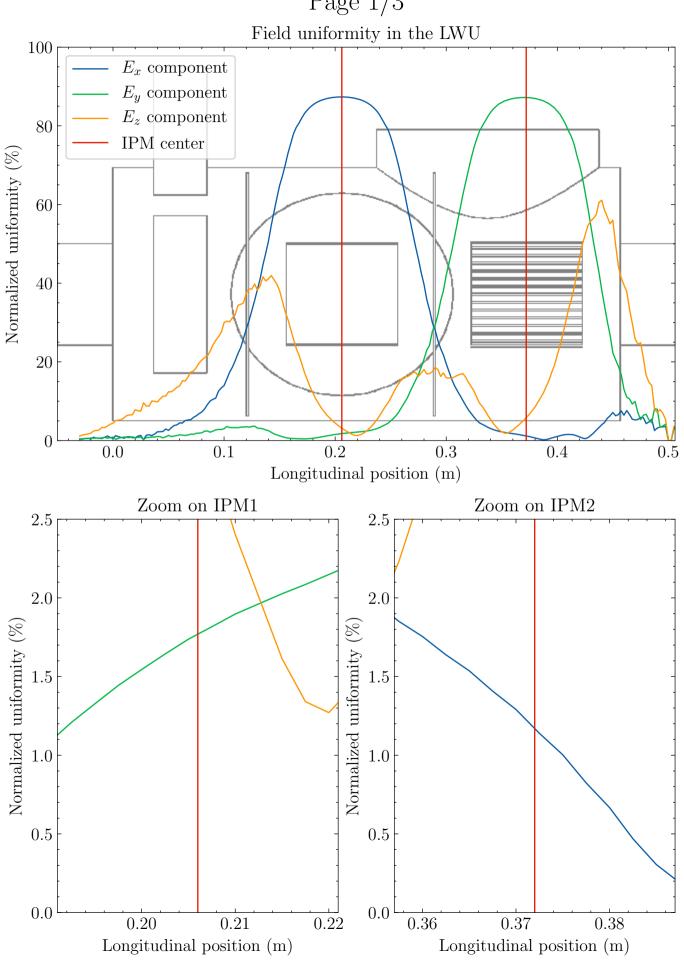
Simulation 2 Asymmetric: Disks: No, Correctors: Yes, Curved: No

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Simulation 3 Asymmetric: Disks: No, Correctors: Yes, Curved: Yes

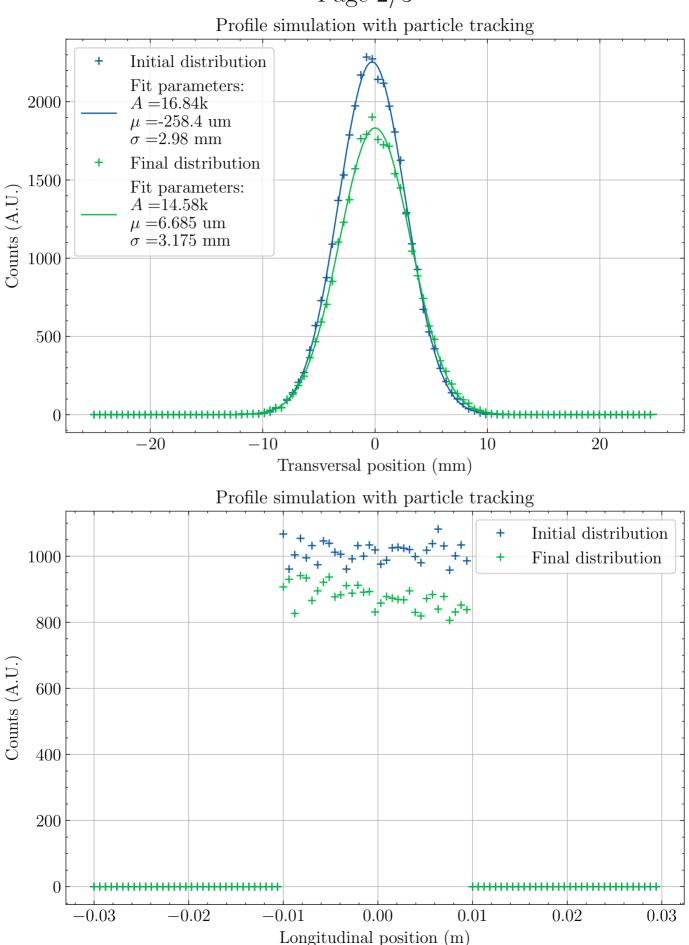
Page 1/3



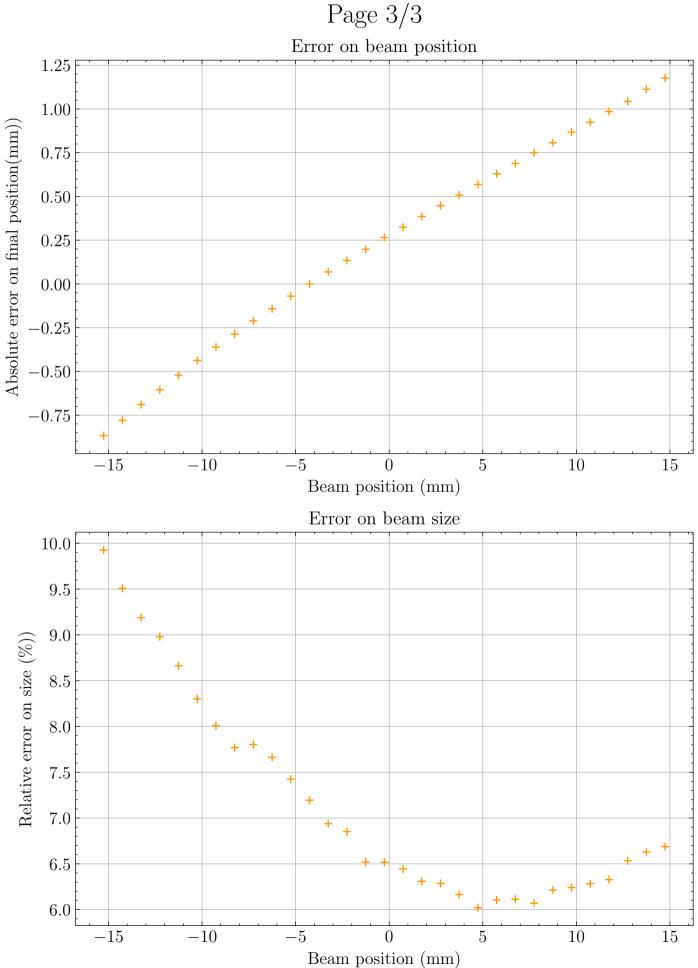
Simulation 3 Asymmetric:

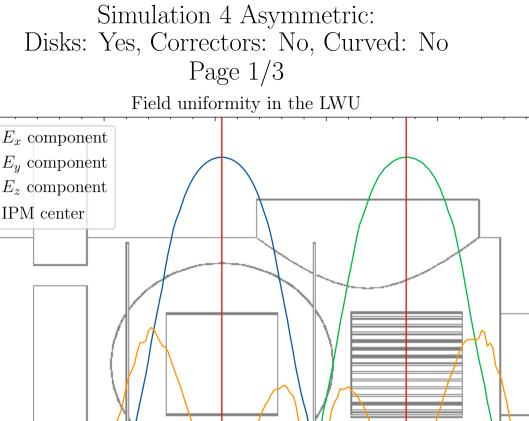
Disks: No, Correctors: Yes, Curved: Yes

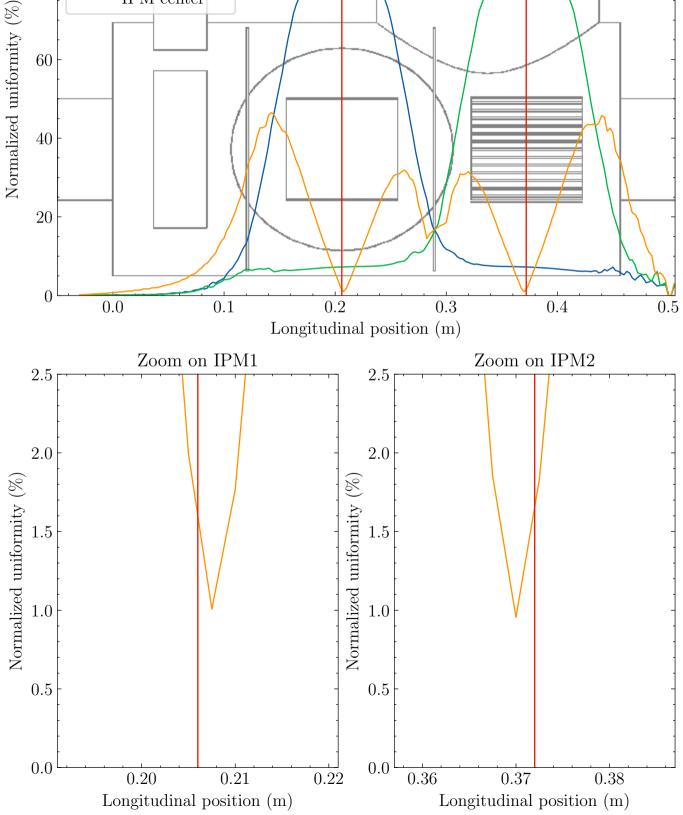
Page 2/3



Simulation 3 Asymmetric:
Disks: No, Correctors: Yes, Curved: Yes

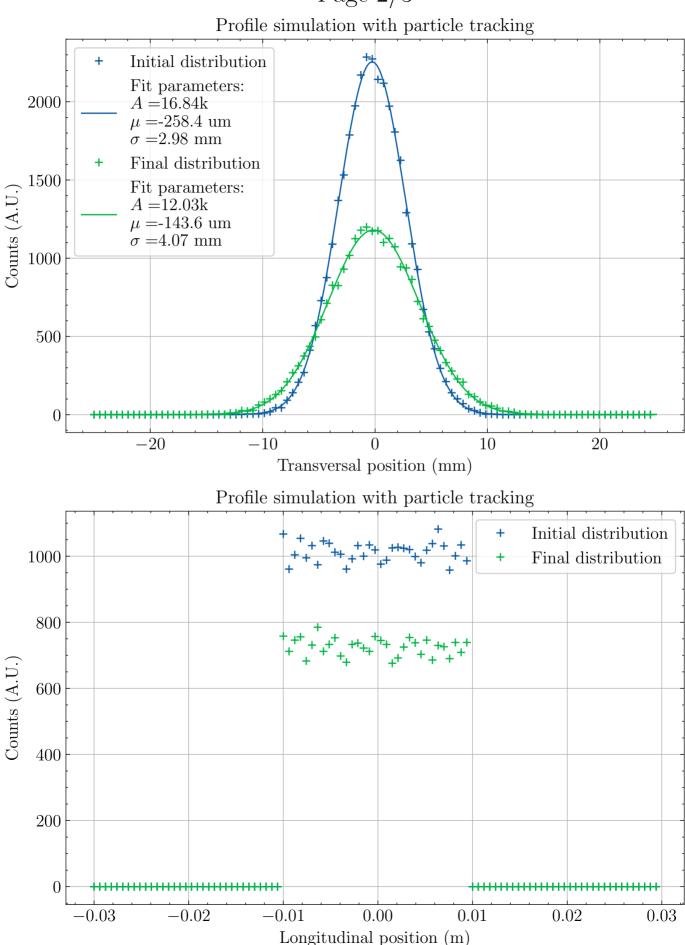






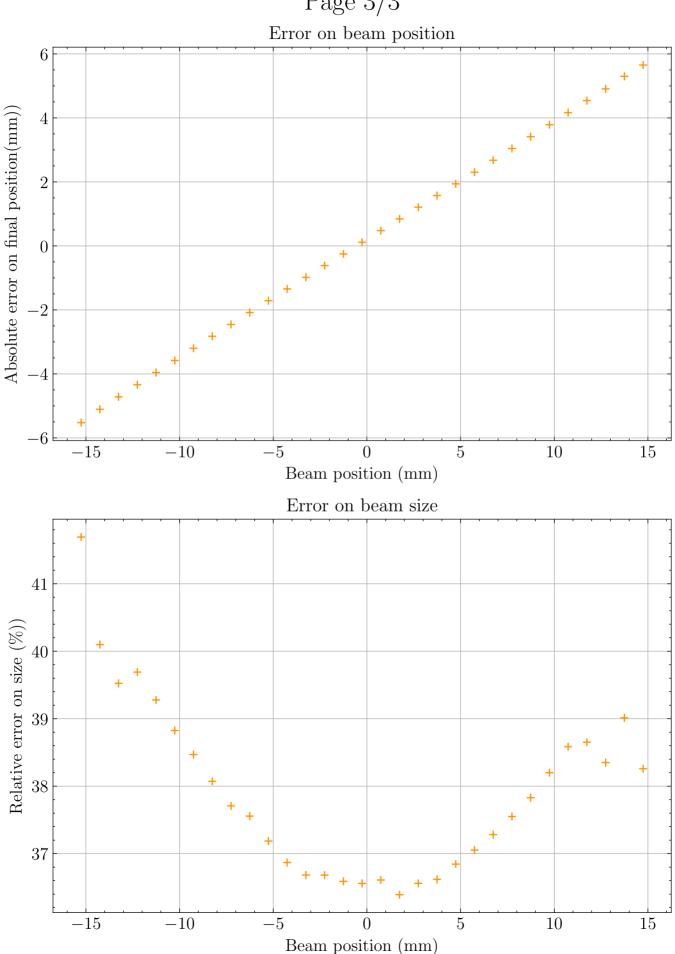
Simulation 4 Asymmetric:

Disks: Yes, Correctors: No, Curved: No Page 2/3



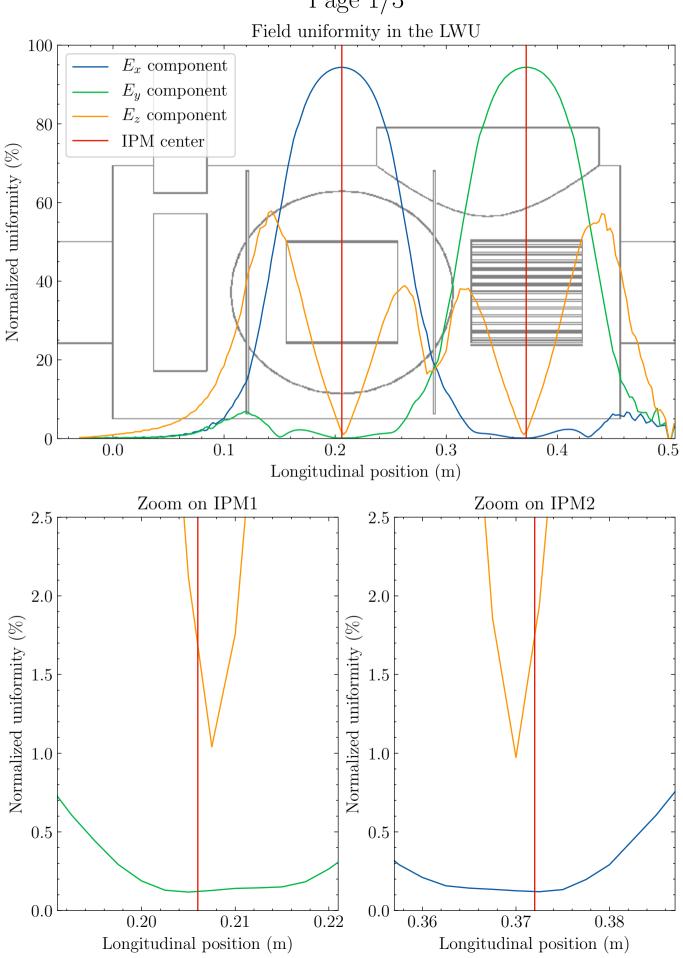
Simulation 4 Asymmetric: Disks: Yes, Correctors: No, Curved: No

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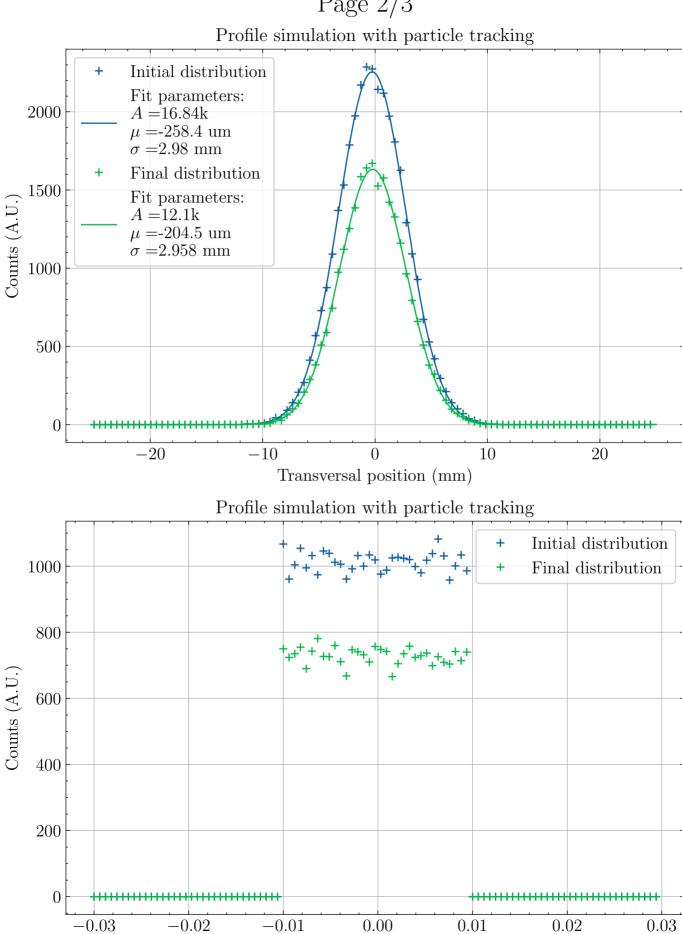
Simulation 5 Asymmetric: Disks: Yes, Correctors: Yes, Curved: No

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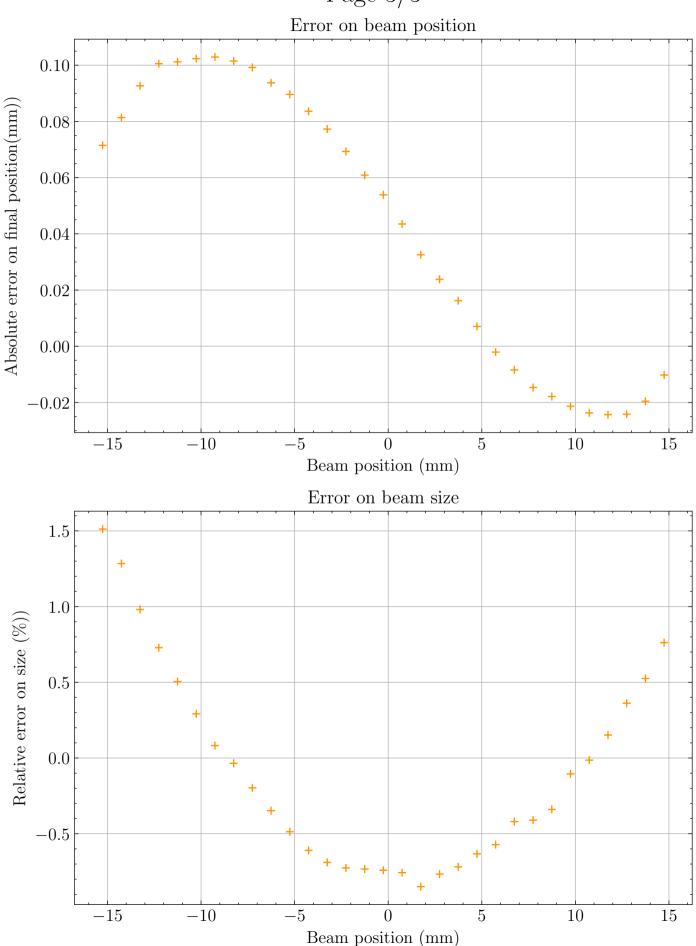
Simulation 5 Asymmetric:

Disks: Yes, Correctors: Yes, Curved: No Page 2/3



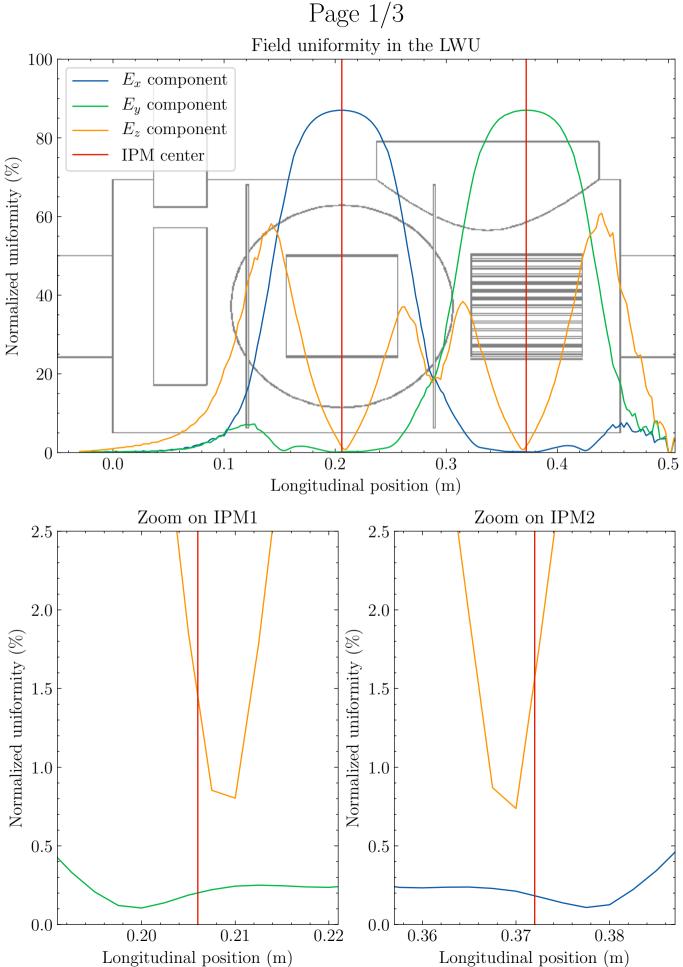
Simulation 5 Asymmetric: Disks: Yes, Correctors: Yes, Curved: No

Page 3/3



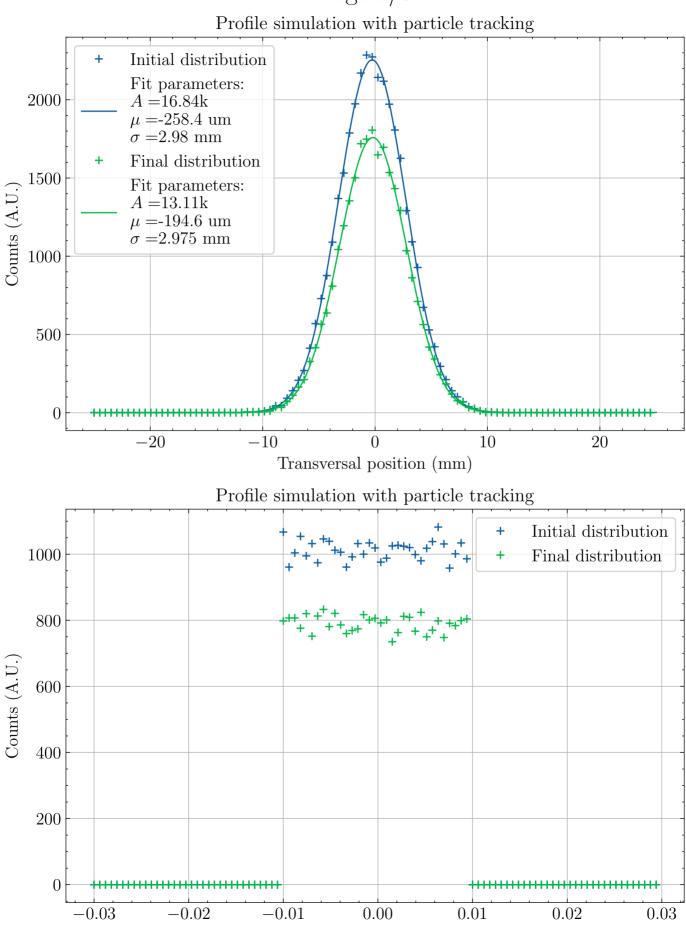
Simulation 6 Asymmetric:

Disks: Yes, Correctors: Yes, Curved: Yes Page 1/3

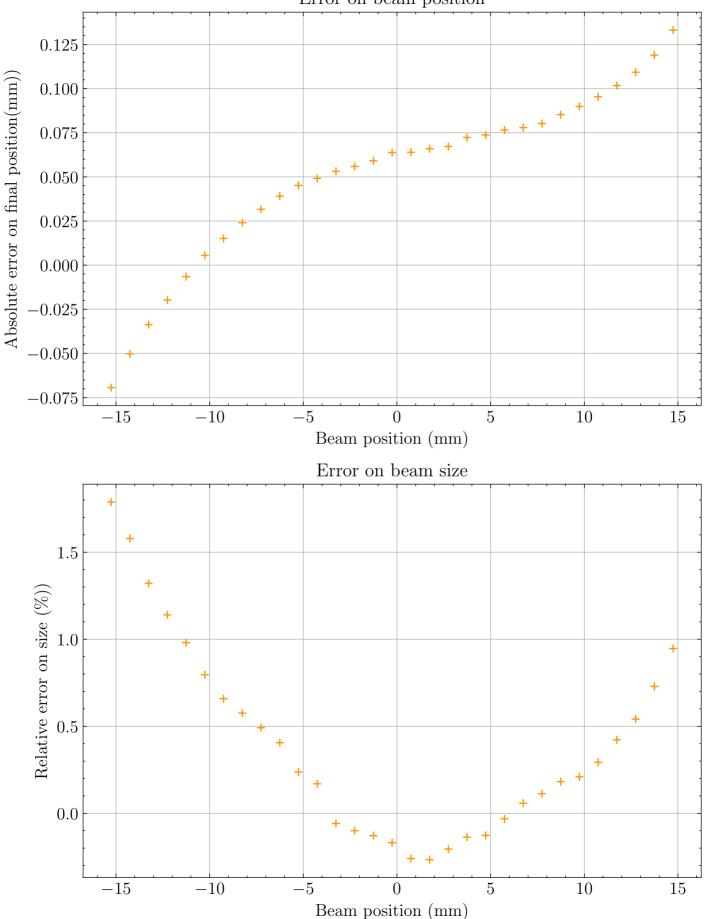


Simulation 6 Asymmetric:

Disks: Yes, Correctors: Yes, Curved: Yes Page 2/3



Simulation 6 Asymmetric: Disks: Yes, Correctors: Yes, Curved: Yes Page 3/3 Error on beam position



Simulation 7 Symmetric: Disks: No, Correctors: No Page 1/3 Field uniformity in the LWU 100  $E_x$  component  $E_y$  component  $E_z$  component 80 IPM center Normalized uniformity (%) 60 40 20 0 0.1 0.3 0.4 0.50.0 0.2 Longitudinal position (m) Zoom on IPM1 Zoom on IPM2 2.5 2.5 2.0 2.0 Normalized uniformity (%)Normalized uniformity (%) 1.5 1.5 1.0 1.0 0.50.5 0.0 0.00.20 0.21 0.22 0.36 0.37 0.38 Longitudinal position (m) Longitudinal position (m)

Simulation 7 Symmetric: Disks: No, Correctors: No Page 2/3

Page 2/3Profile simulation with particle tracking Initial distribution 2500 Fit parameters: A = 16.84 k $\mu = -258.4 \text{ um}$ 2000  $\sigma = 2.98 \text{ mm}$ Final distribution Fit parameters: Counts (A.U.) 1500 A = 17.81 k $\mu = 616.2 \text{ um}$  $\sigma = 2.846 \text{ mm}$ 1000 500 0 -1010 -2020 Transversal position (mm) Profile simulation with particle tracking Initial distribution Final distribution 1000 800 Counts (A.U.) 600 400 200 0 -0.03-0.02-0.010.000.010.020.03

Simulation 7 Symmetric: Disks: No, Correctors: No Page 3/3Error on beam position 1.75 1.50 Absolute error on final position (mm))  $\,$ 1.25 1.00 0.75 0.50 0.25 0.00 -15-1010 15 Beam position (mm) Error on beam size -4.5-5.0Relative error on size (%)-5.5-6.0-6.5-7.0-10-15-510 0 15 5 Beam position (mm)

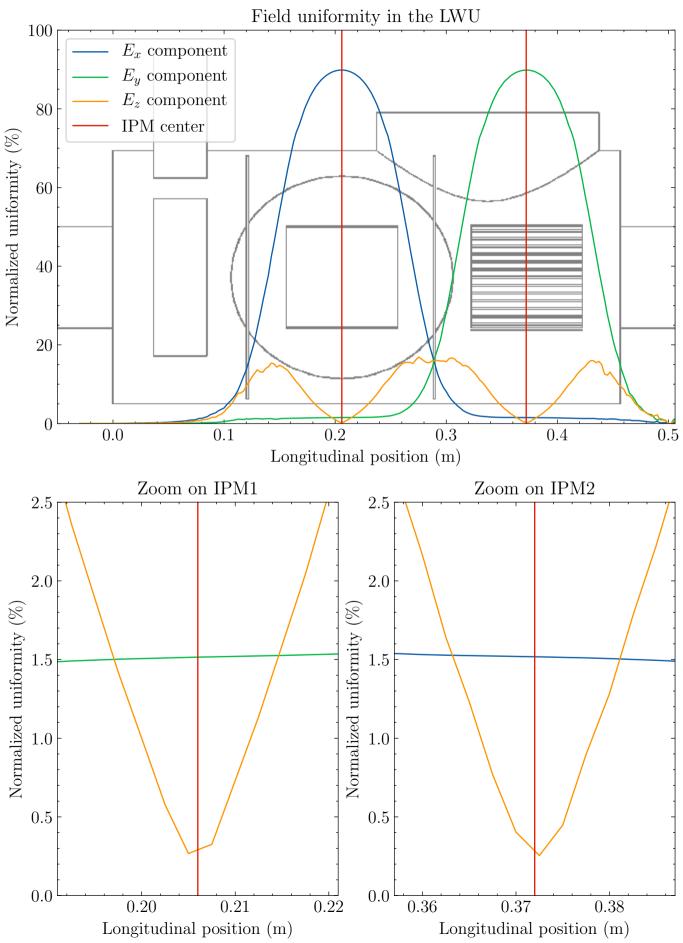
Simulation 8 Symmetric: Disks: No, Correctors: Yes Page 1/3Field uniformity in the LWU 100  $E_x$  component  $E_y$  component  $E_z$  component 80 IPM center Normalized uniformity (%) 60 40 20 0 0.1 0.3 0.4 0.50.0 0.2 Longitudinal position (m) Zoom on IPM1 Zoom on IPM2 2.5 2.5 2.0 2.0 Normalized uniformity (%)Normalized uniformity (%) 1.5 1.5 1.0 1.0 0.50.5 0.0 0.00.20 0.21 0.22 0.36 0.37 0.38 Longitudinal position (m) Longitudinal position (m)

Simulation 8 Symmetric: Disks: No, Correctors: Yes Page 2/3

Profile simulation with particle tracking 2500 Initial distribution Fit parameters: A = 16.84 k $\mu = -258.4 \text{ um}$ 2000  $\sigma = 2.98 \text{ mm}$ Final distribution Fit parameters: Counts (A.U.) 1500 A = 17.77 k $\mu = -27.7 \text{ um}$  $\sigma = 2.989 \text{ mm}$ 1000 500 0 -10-2010 20 Transversal position (mm) Profile simulation with particle tracking 1200 Initial distribution Final distribution 1000 800 Counts (A.U.) 600 400 200 0 -0.03-0.02-0.010.000.010.020.03

Simulation 8 Symmetric: Disks: No, Correctors: Yes Page 3/3 Error on beam position 0.22 Absolute error on final position (mm))  $\,$ 0.20 0.18 0.16 0.14 -15-1010 15 Beam position (mm) Error on beam size 1.0 Relative error on size (%)0.5 0.0 -0.5-1.0-15-10 $\overline{-5}$ 0 5 10 15 Beam position (mm)

Simulation 9 Symmetric:
Disks: Yes, Correctors: No
Page 1/3
Field uniformity in the LWU



Simulation 9 Symmetric: Disks: Yes, Correctors: No Page 2/3

Profile simulation with particle tracking Initial distribution 2500 Fit parameters: A = 16.84 k $\mu = -258.4 \text{ um}$  $\sigma = 2.98 \text{ mm}$ 2000 Final distribution Fit parameters: Counts (A.U.) A = 17.96 k1500  $\mu = -146 \text{ um}$  $\sigma = 2.839 \text{ mm}$ 1000 500 0 -10-2010 20 Transversal position (mm) Profile simulation with particle tracking 1200 Initial distribution Final distribution 1000 800 Counts (A.U.) 600 400 200 0 -0.03-0.02-0.010.000.010.020.03

Simulation 9 Symmetric: Disks: Yes, Correctors: No Page 3/3 Error on beam position 1.00 0.75Absolute error on final position(mm)) 0.50 0.25 0.00 -0.25-0.50-0.75-15-1010 15 Beam position (mm) Error on beam size -4.75-5.00Relative error on size (%)-5.25-5.50-5.75+ -6.00-6.25-6.50-6.75-15-10-510 15 0 5 Beam position (mm)

Simulation 10 Symmetric: Disks: Yes, Correctors: Yes Page 1/3 Field uniformity in the LWU 100  $E_x$  component  $E_y$  component  $E_z$  component 80 IPM center Normalized uniformity (%) 60 40 20 0 0.10.3 0.4 0.50.0 0.2 Longitudinal position (m) Zoom on IPM1 Zoom on IPM2 2.5 2.5 2.0 2.0 Normalized uniformity (%) Normalized uniformity (%) 1.5 1.5 1.0 1.0 0.50.5 0.0 0.00.20 0.21 0.22 0.36 0.37 0.38 Longitudinal position (m) Longitudinal position (m)

Simulation 10 Symmetric: Disks: Yes, Correctors: Yes Page 2/3

Profile simulation with particle tracking 2500 Initial distribution Fit parameters: A = 16.84 k2000  $\mu = -258.4 \text{ um}$  $\sigma = 2.98 \text{ mm}$ Final distribution Fit parameters: Counts (A.U.) 1500 A = 17.89 k $\mu = -201.5 \text{ um}$  $\sigma = 2.989 \text{ mm}$ 1000 500 0 -10-2010 20 Transversal position (mm) Profile simulation with particle tracking 1200 Initial distribution Final distribution 1000 800 Counts (A.U.) 600 400 200 0 -0.03-0.02-0.010.000.010.020.03

Simulation 10 Symmetric: Disks: Yes, Correctors: Yes Page 3/3Error on beam position 0.06 Absolute error on final position(mm)) 0.05 0.04 0.03 0.02 -5-15-1010 15 Beam position (mm) Error on beam size 0.5 0.4 Relative error on size (%)0.3 0.2 0.1 0.0 -15-10-50 10 15 5 Beam position (mm)