

Modulator Simulations

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2017.7.20

Beam energy is lower

- $\gamma : 42.9 \rightarrow 28.7$

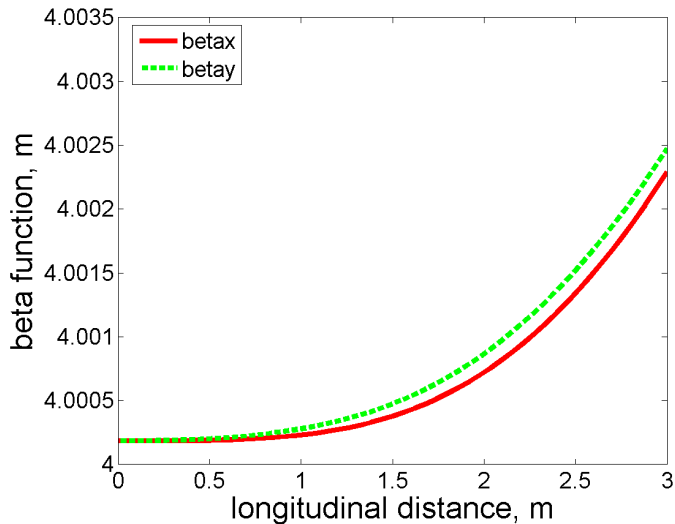
Rerun modulator simulations using

- Continuous focusing
- Quadrupole focusing

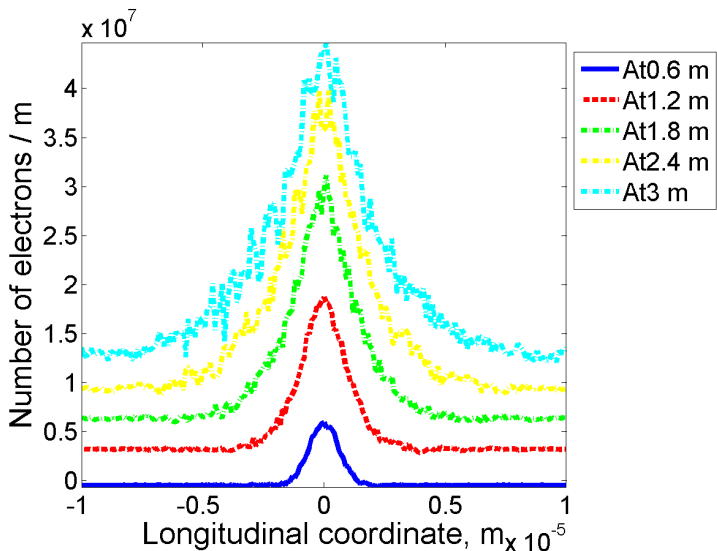
Beam Parameters

- $\varepsilon^* = 5 \pi \text{ mm mrad}$
- $\beta = 4 \text{ m} / 0.3 \text{ m}$

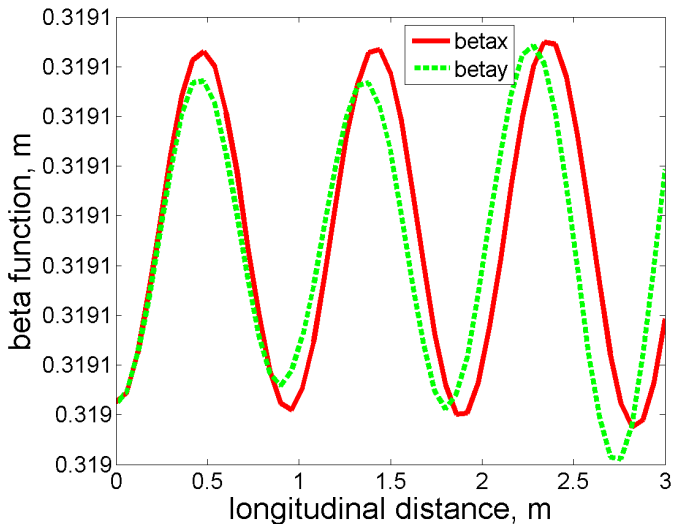
$$\beta = 4 \text{ m}$$



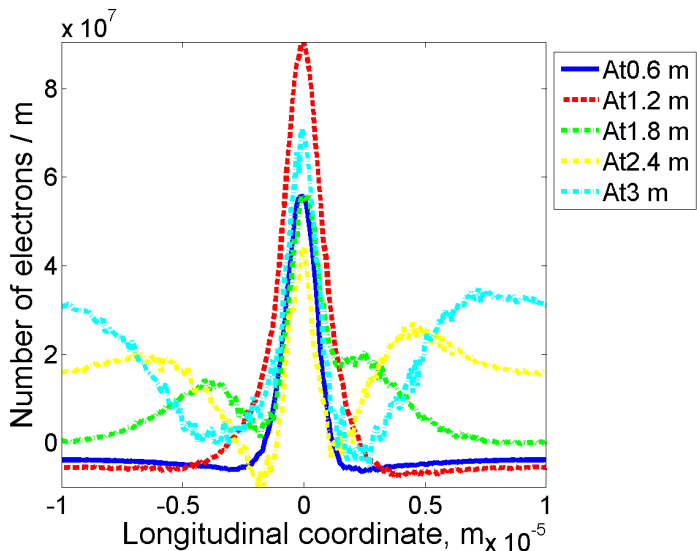
$$\beta = 4 \text{ m}$$



$$\beta = 0.3 \text{ m}$$



$$\beta = 0.3 \text{ m}$$



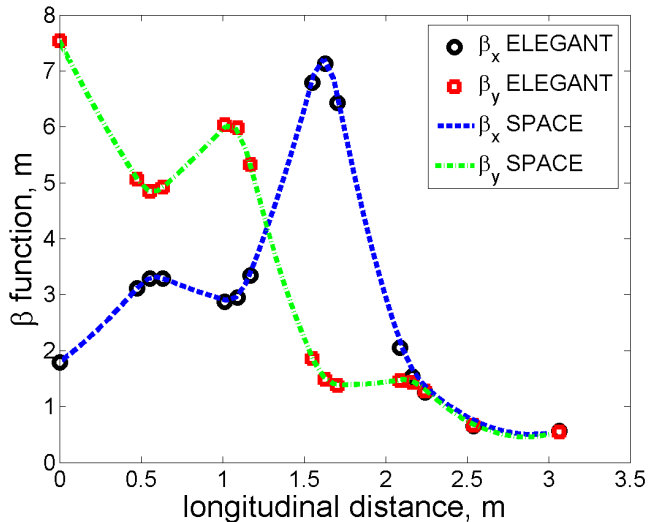
Beam Parameters at Entrance of Modulator

- $\varepsilon^* = 3 \pi$ mm mrad
- Peak current = 100 A
- $\beta_x = 1.8$ m
- $\beta_y = 7.5$ m
- $\alpha_x = -1.1$
- $\alpha_y = 2.9$

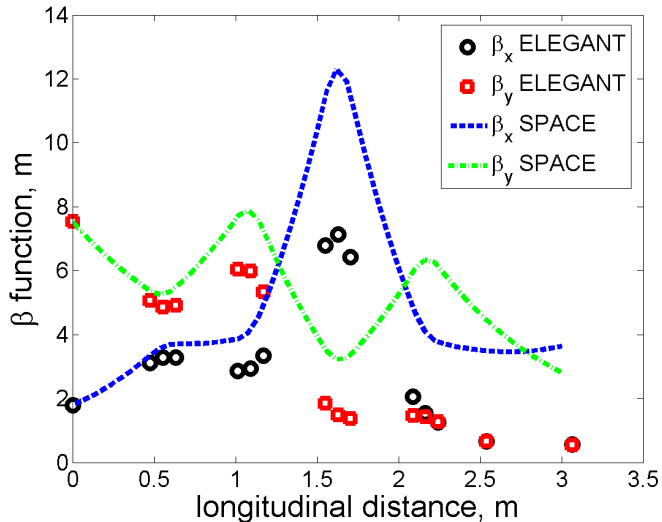
Quadrupole setting

Element	Length, m	Magnetic field gradient, T/m
Drift	0.4756	
Q1 quadrupole	0.1568	0.226
Drift	0.3802	
Q2 quadrupole	0.1568	-0.403
Drift	0.3802	
Q3 quadrupole	0.1568	0.583
Drift	0.3802	
Q4 quadrupole	0.1568	-0.393
Drift	0.8206	

Space Charge Off



Space Charge On



Space Charge On

