Wiggler Simulations

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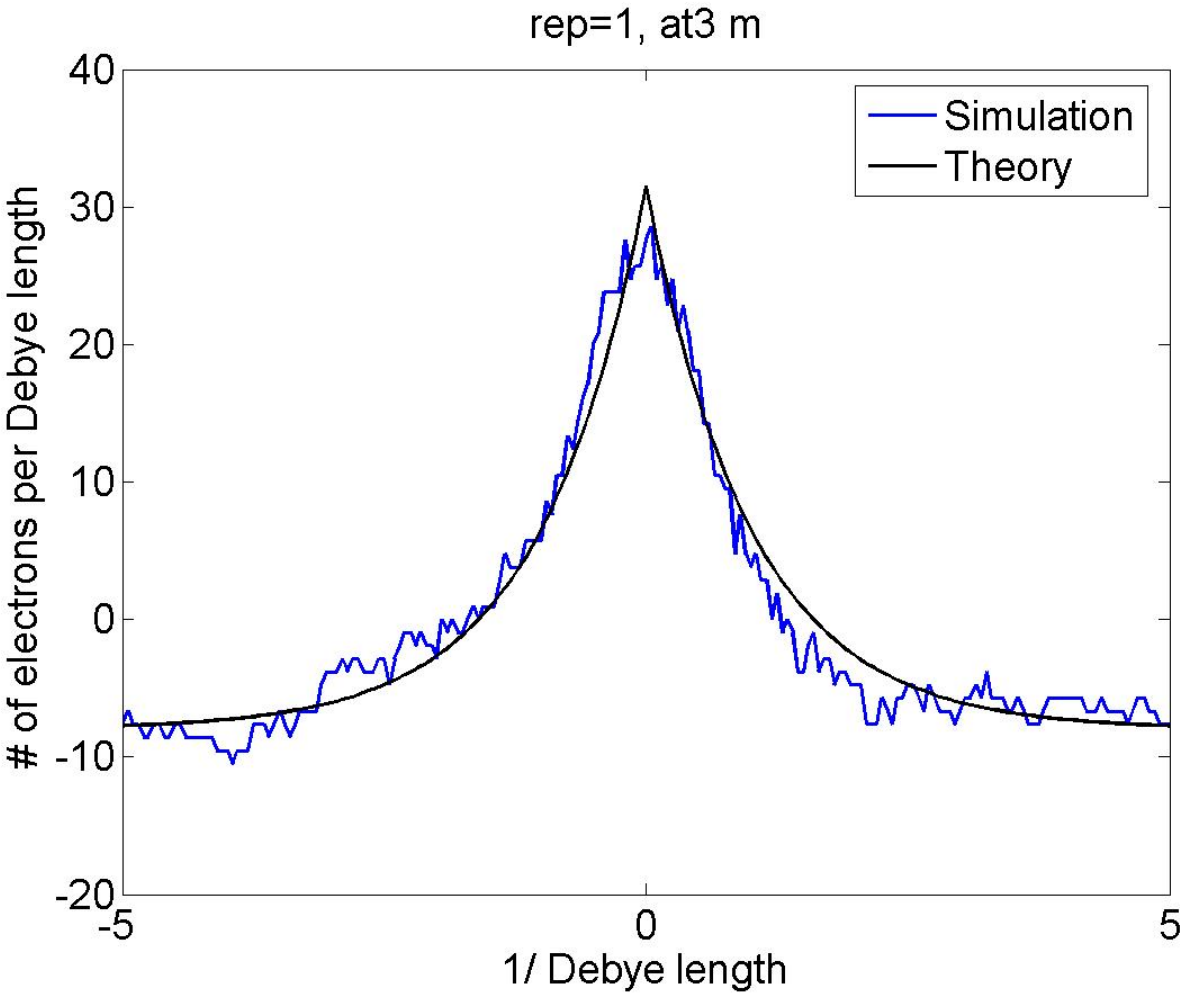
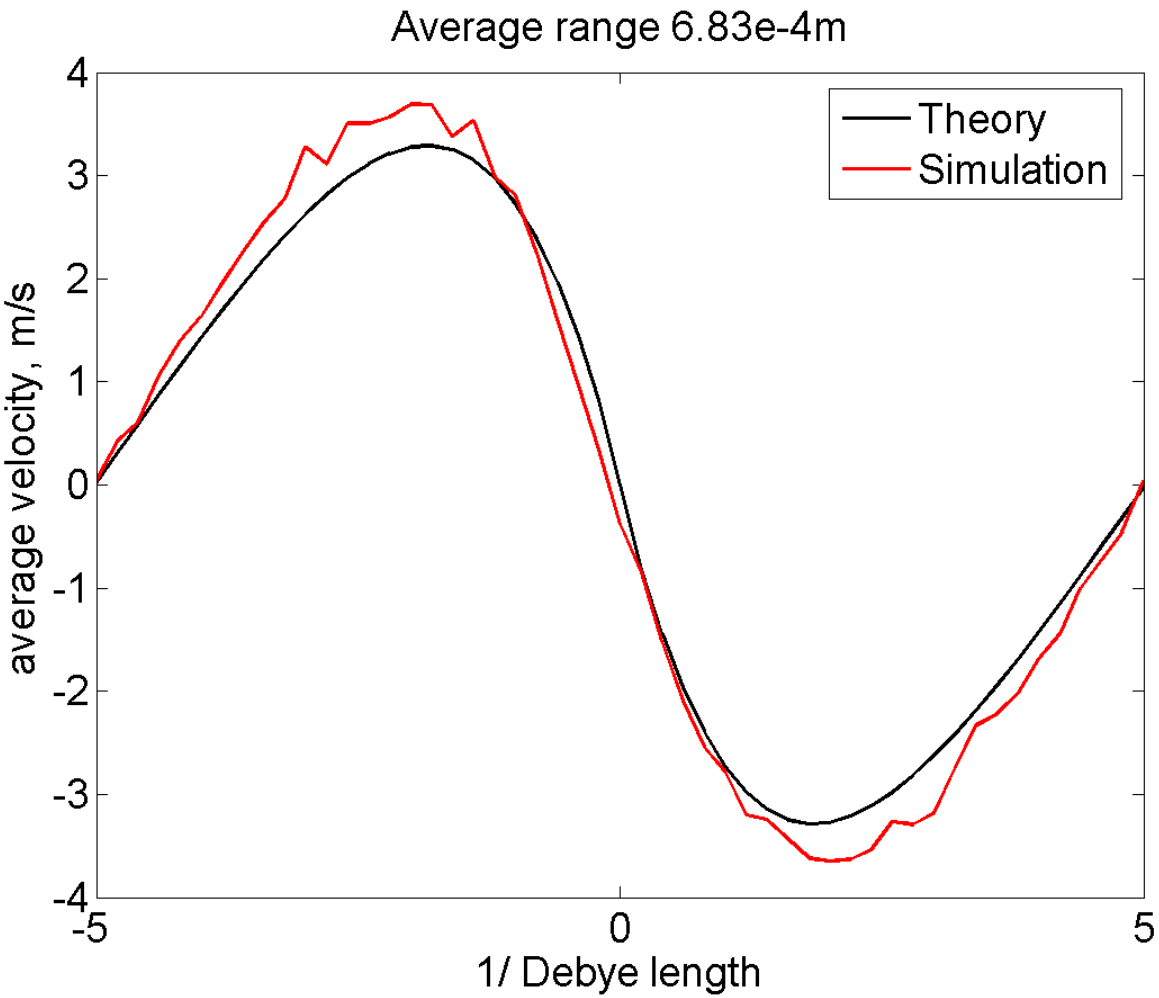
Beam parameters

- Number density : $5.59e+17/m^3$
- Energy spread : $1e-3$
- Domain size : 10 Debye Length
- Boundary : periodic in 3D

Density modulation



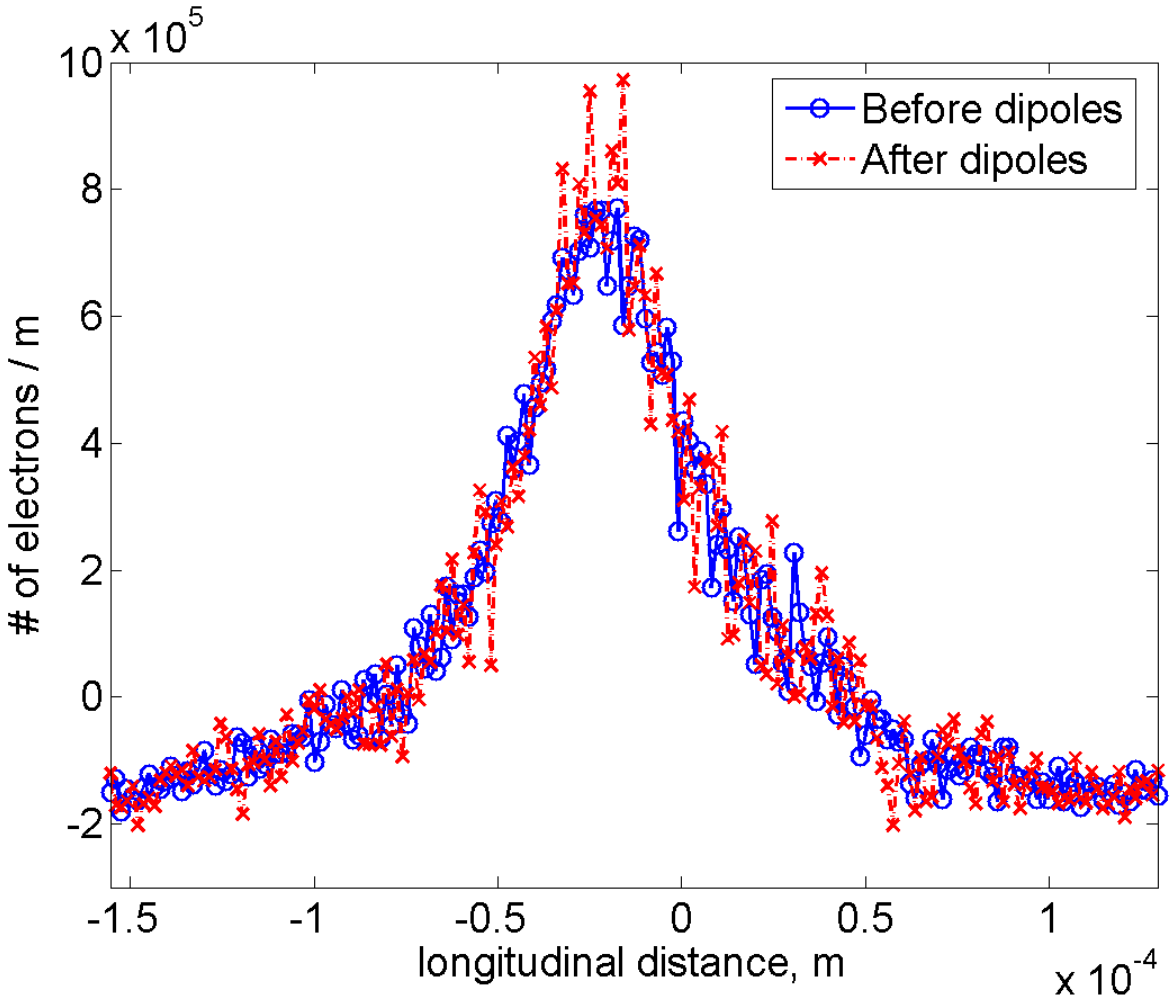
Velocity modulation



Magnetic field of dipoles

- $B_x(s) = B_0 \sin(k_w \cdot s)$
- $B_y(s) = -B_0 \cos(k_w \cdot s)$
- $k_w = 2\pi/\lambda_w$
- $\lambda_w = 4cm$
- $B_0 = 0.2T$

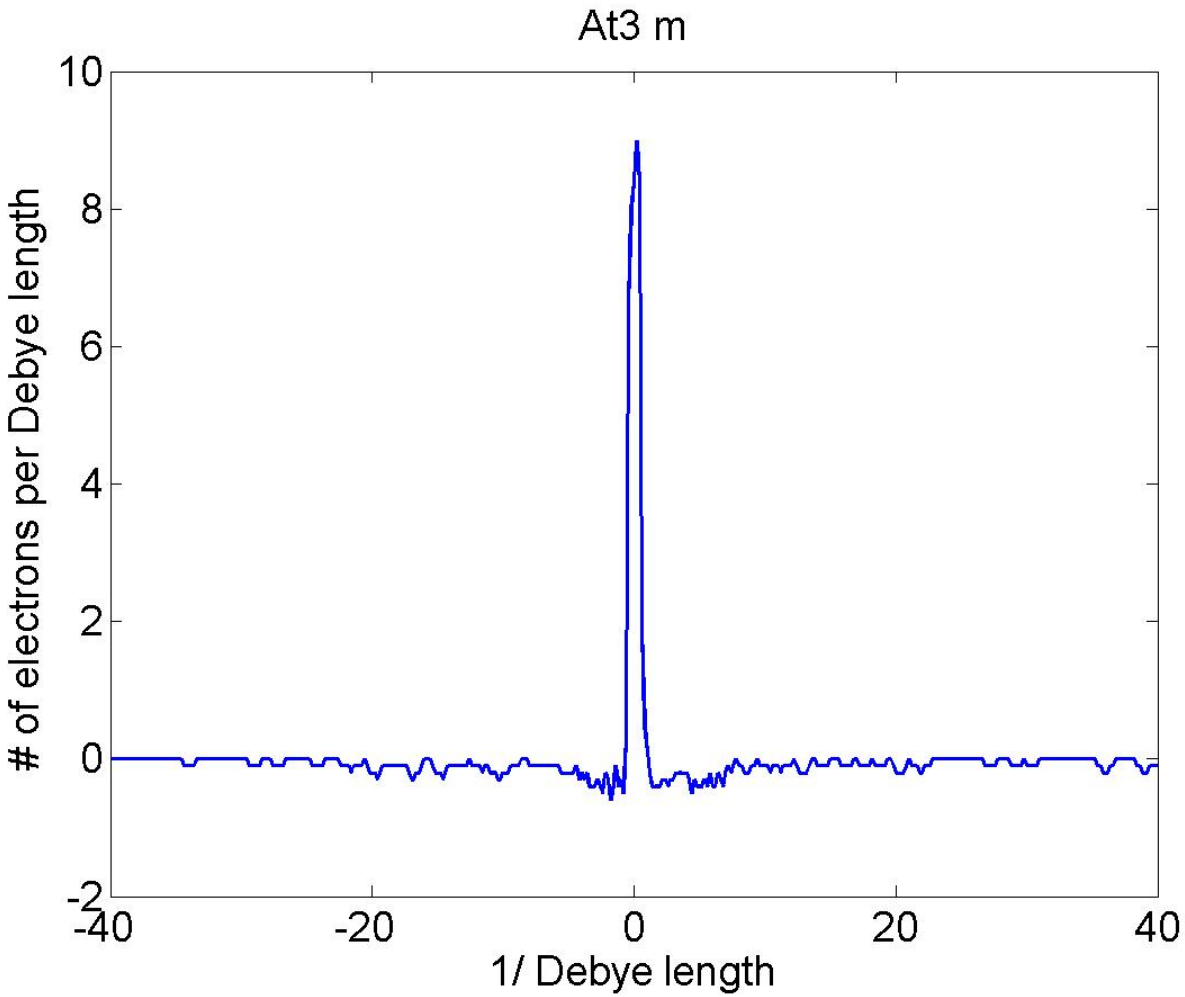
Simulation results



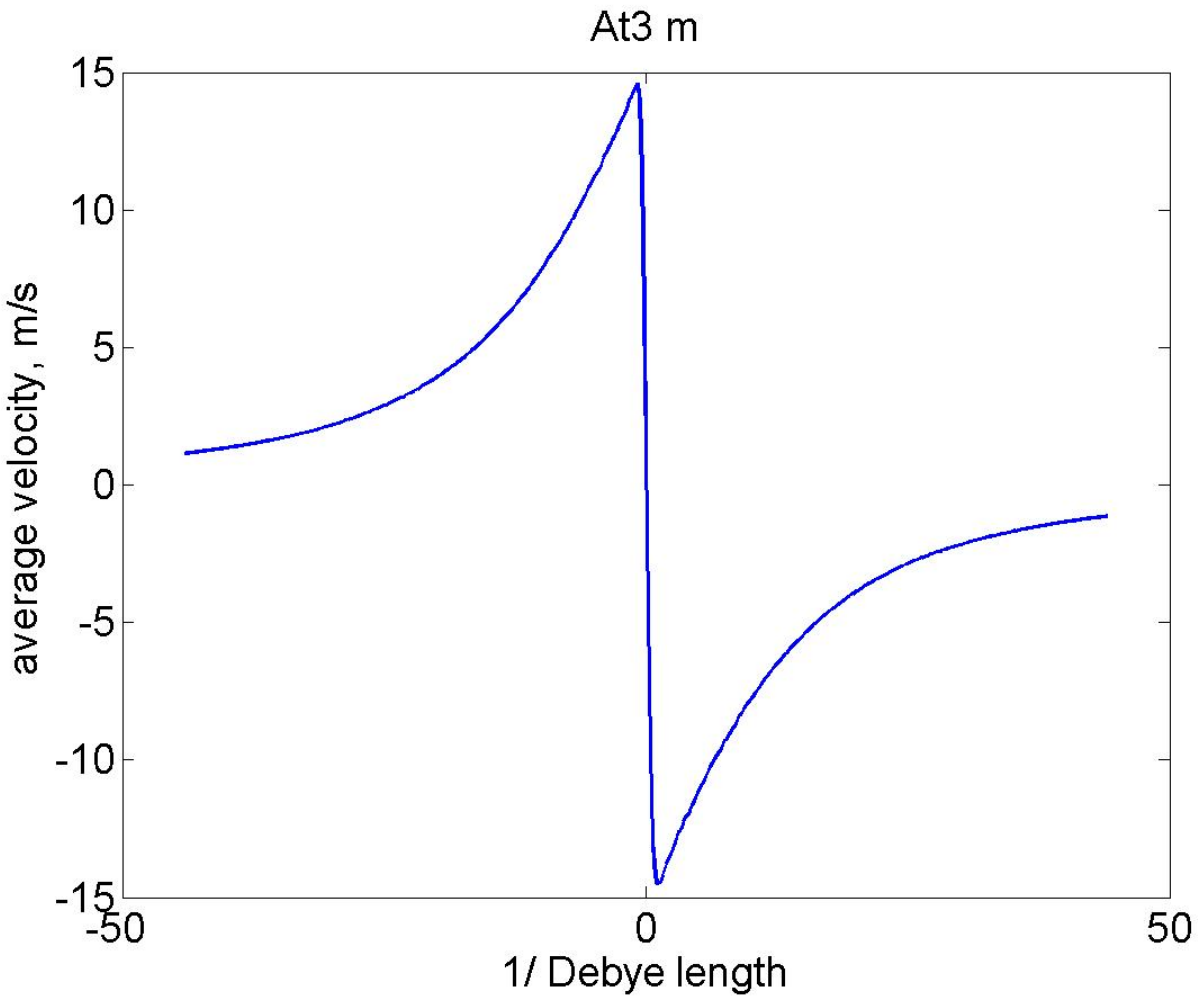
Beam parameters

- 1/10 number density
- 10 times larger computational domain
- open boundary in 3D

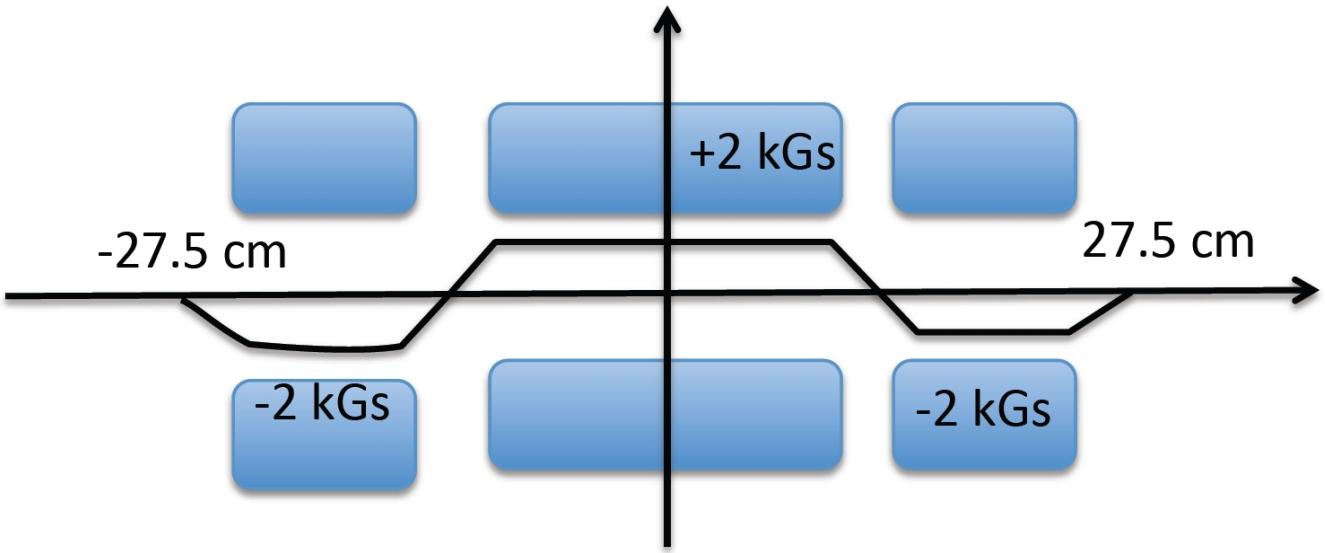
Density modulation



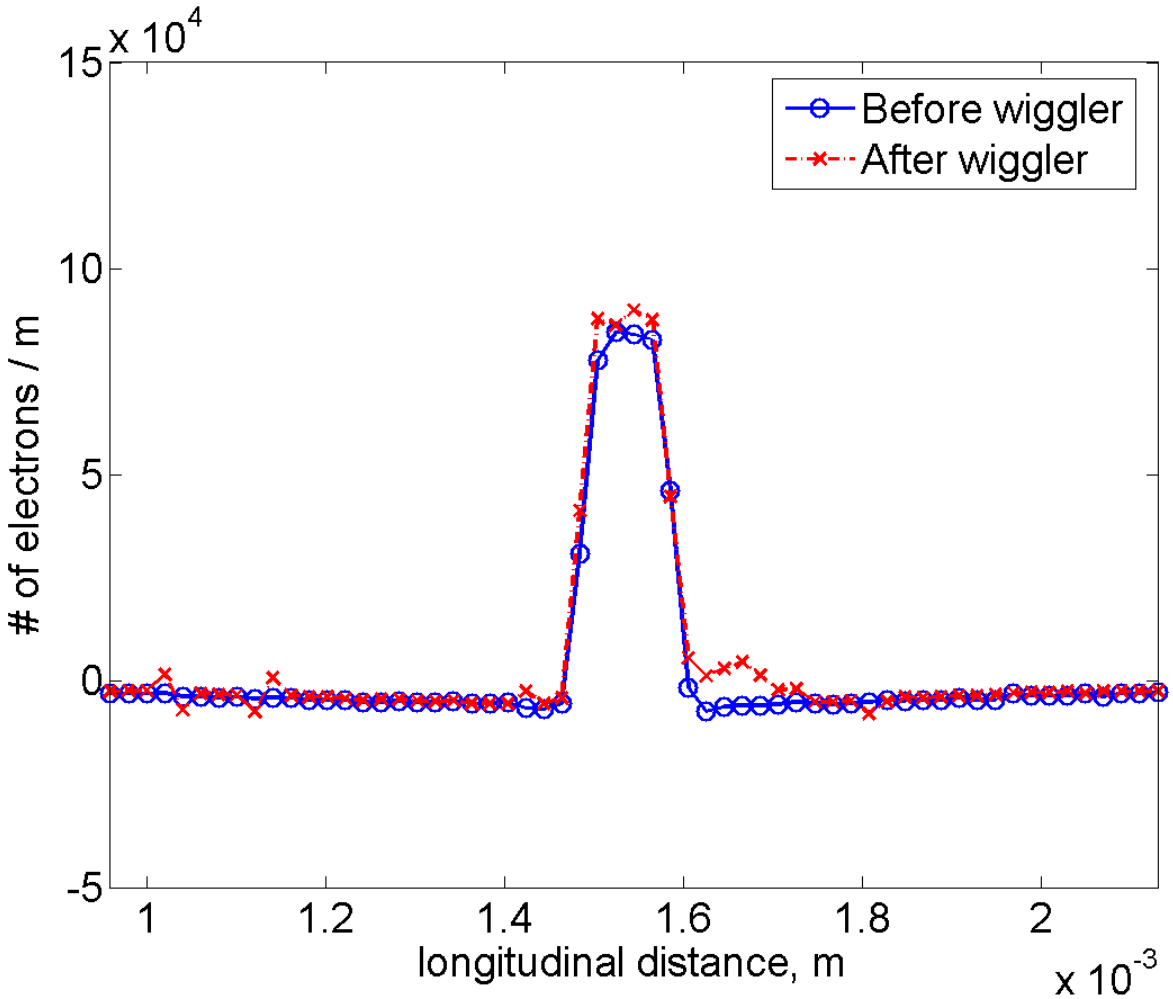
Velocity modulation



Three-pole wiggler



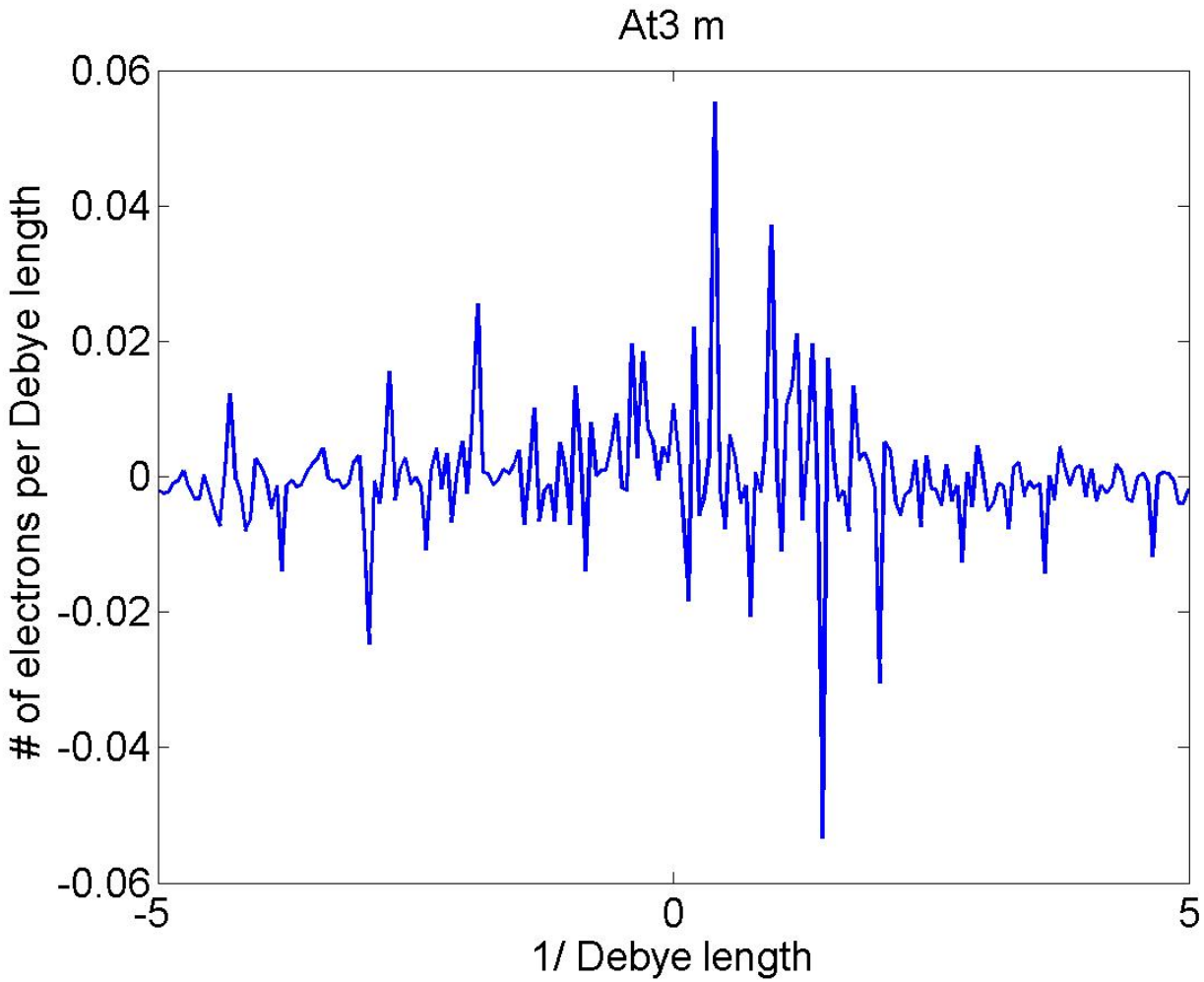
Simulation results



Beam parameters

- Number of computational particles decreases from 3.2e+7 to 8e+3
- Representing number increases from 1 to 4e+3

Density modulation



Velocity modulation