

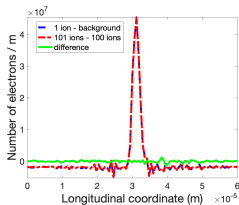
CeC Physics

Jun Ma

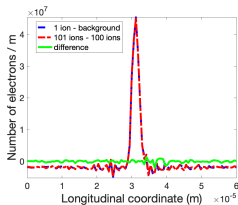
Collider-Accelerator Department
Brookhaven National Laboratory

9/2/2022

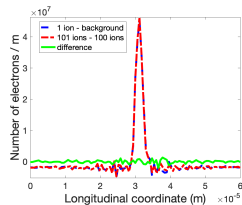
- background, background + 1 ion
- background + 100 ions, background + 101 ions, within z range 60 μm
- background + 100 ions, background + 101 ions, within z range 10 μm
- background + 100 ions, background + 101 ions, within z range 2 μm



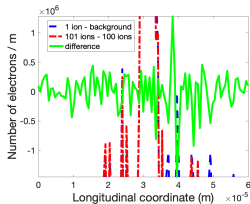
(a) 60 μm



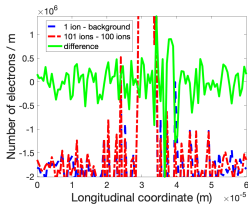
(b) 10 μm



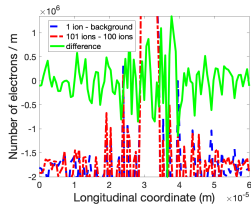
(c) 2 μm



(d) 60 μm

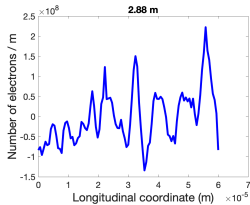


(e) 10 μm

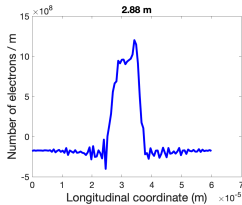


(f) 2 μm

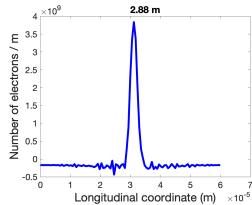
100 ions - background



(a) 60 μm

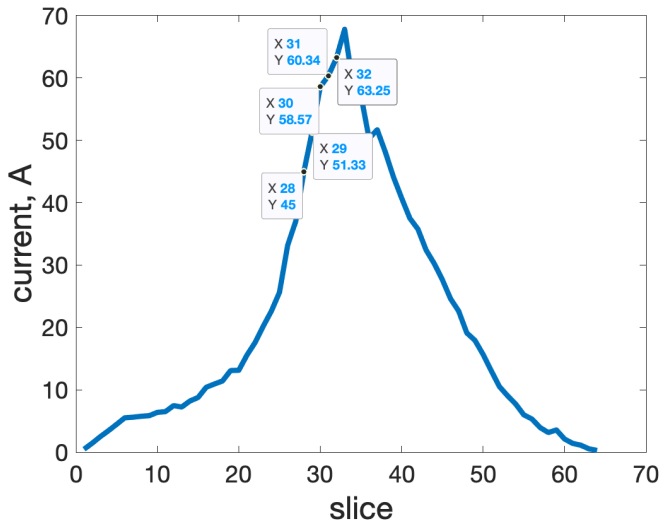


(b) 10 μm

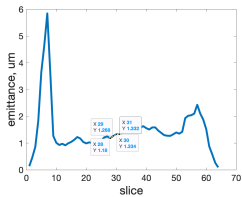


(c) 2 μm

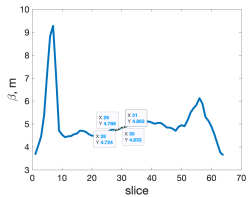
- Sol17 at 58.77 A, Sol26 at 117.54 A, Sol345 at 122.586 A
- Designed for beam current 50 A, KV emittance $6 \mu\text{m}$, energy spread $2\text{e-}4$, initial β 4.53 m, initial α -0.18
- Take slice parameters from beam dynamics simulations, entire beam has 200,000 computational particles, and is divided into 64 slices, with slice length 1.13 ps.



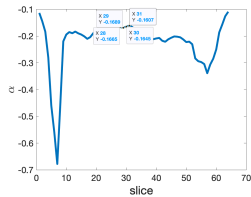
(a)



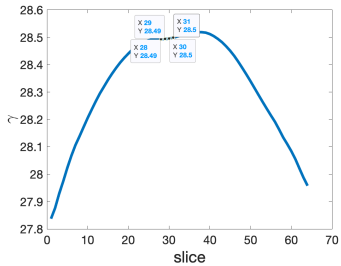
(a)



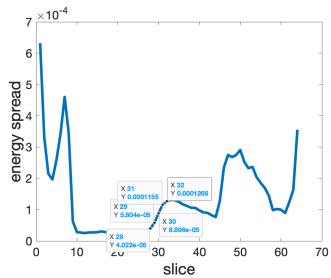
(b)



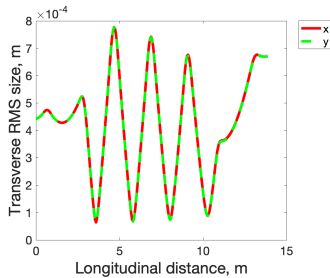
(c)



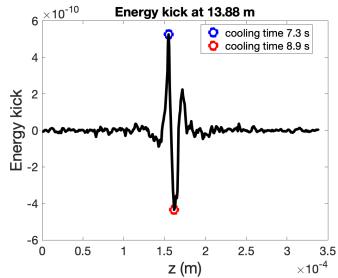
(a)



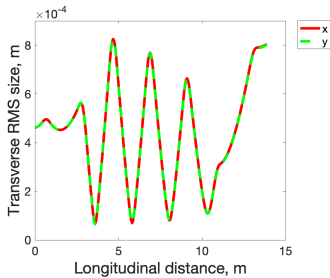
(b)



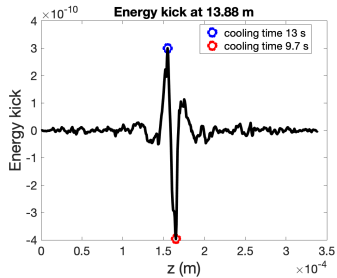
(a)



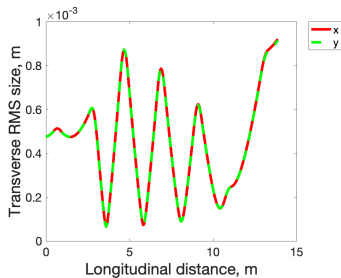
(b)



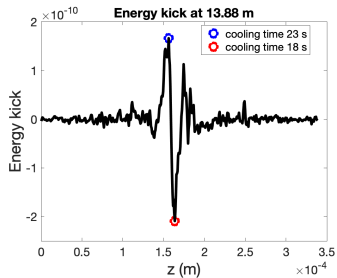
(a)



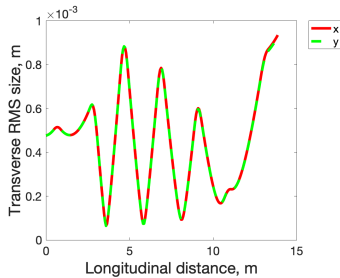
(b)



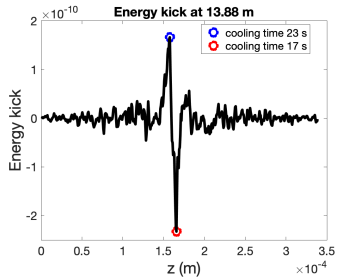
(a)



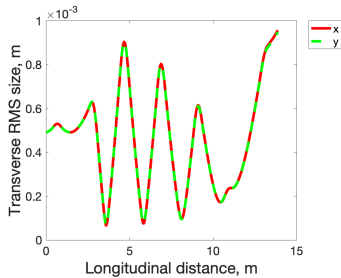
(b)



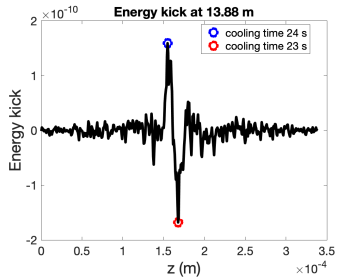
(a)



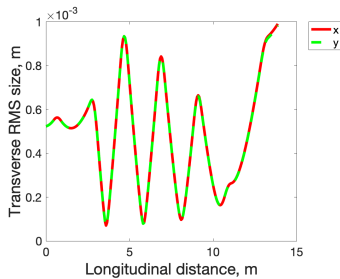
(b)



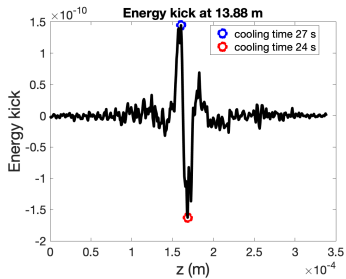
(a)



(b)

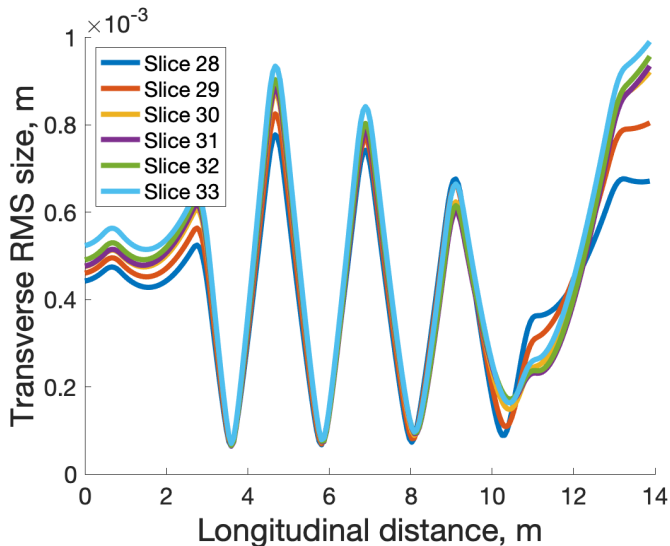


(a)



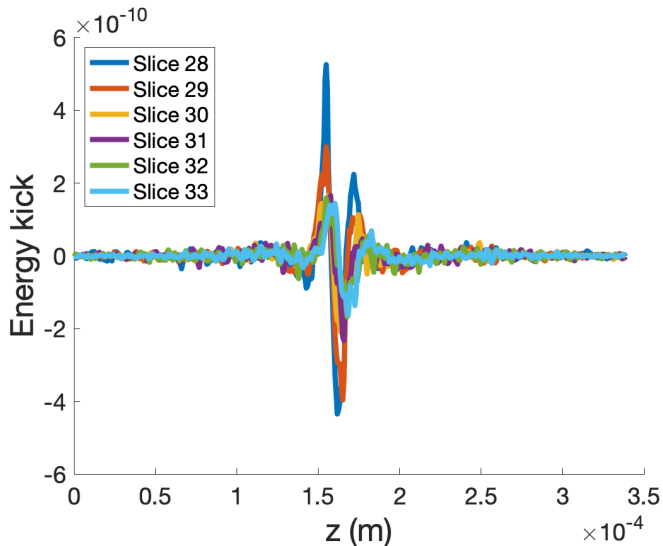
(b)

Compare beam size



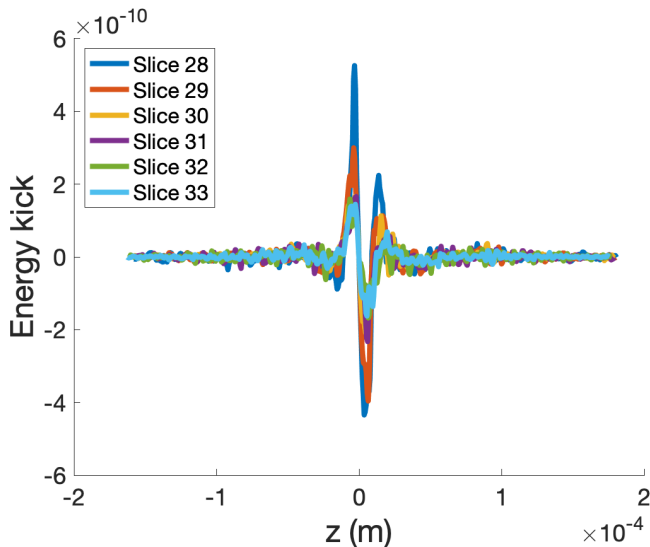
(a)

Compare energy kick



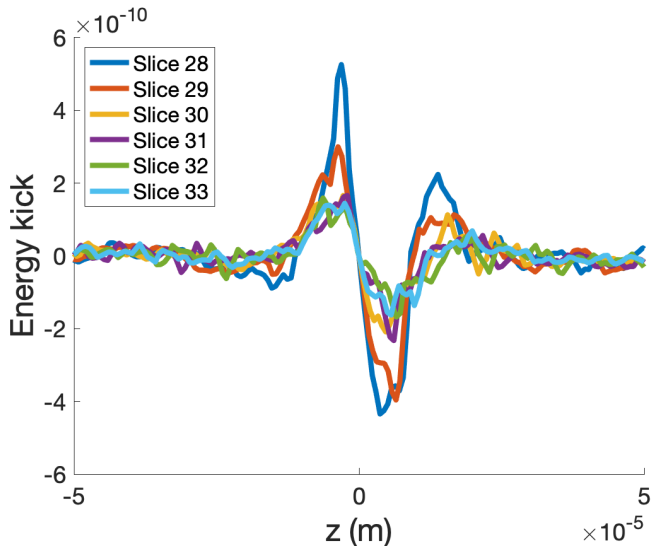
(a)

With shift to overlap zero kick position



(a)

With shift and zoom



(a)