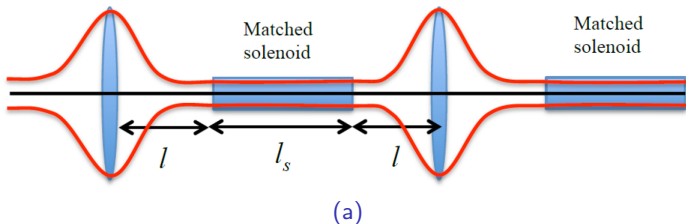


# CeC Physics

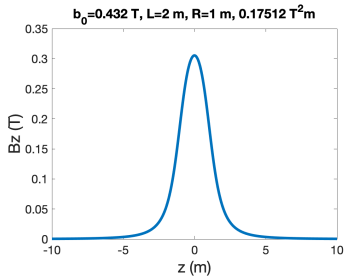
Jun Ma

Collider-Accelerator Department  
Brookhaven National Laboratory

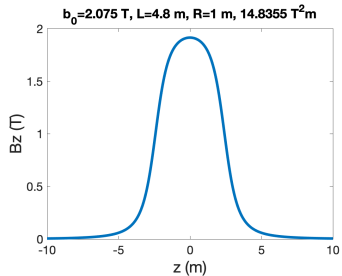
7/23/2021



- KV distribution
- Energy  $\gamma=293.1$ , R.M.S. energy spread  $\delta E/E=1e-4$
- Peak current  $I=150$  A
- Normalized KV emittance  $\varepsilon_{n,KV}=10 \mu\text{m}$
- Initial beam waist  $a_o=1.35e-4$  m
- Cell length 30 m, central solenoid length  $l_s=4.8$  m,  $l=12.6$  m

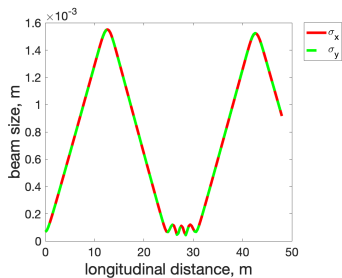


(a) Focus solenoid

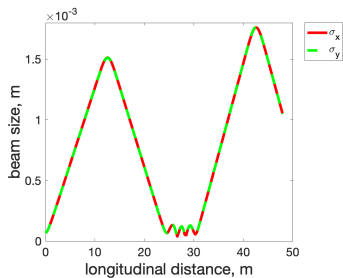


(b) Match solenoid

# Beam size

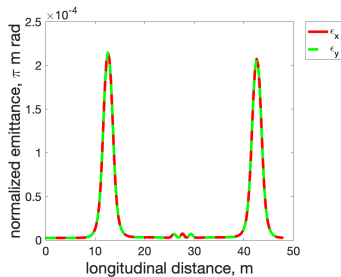


(a) With space charge

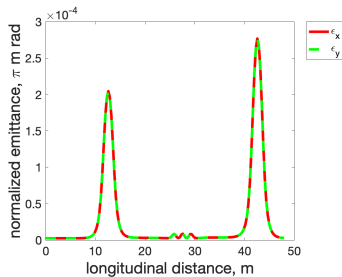


(b) No space charge

## Emittance

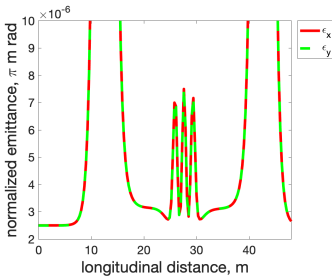


(a) With space charge

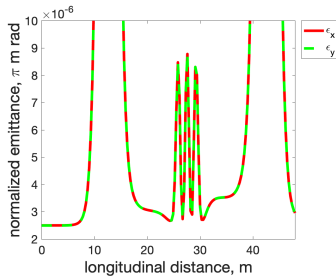


(b) No space charge

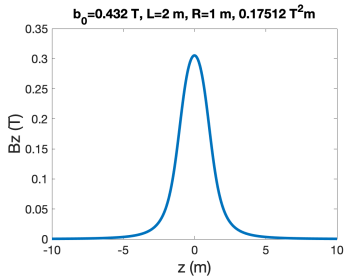
# Emittance



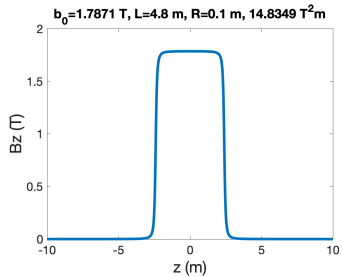
(a) With space charge



(b) No space charge

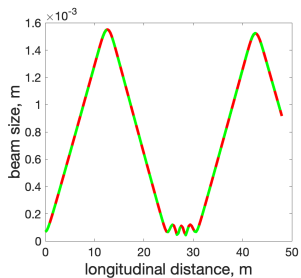


(a) Focus solenoid

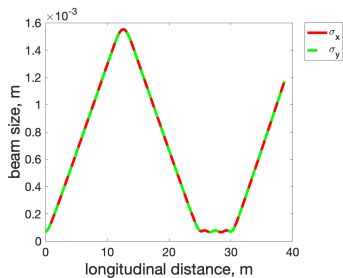


(b) Match solenoid

## Beam size



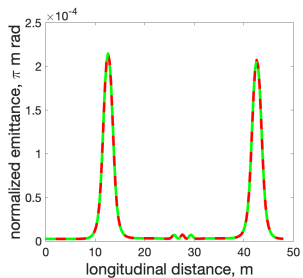
(a) Match sol R 1 m



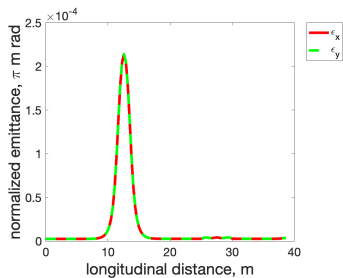
(b) Match sol R 0.1 m



# Emittance

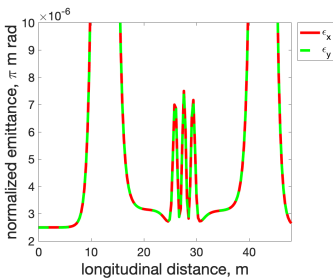


(a) Match sol R 1 m

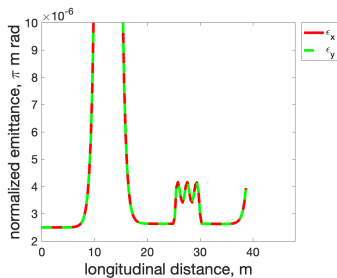


(b) Match sol R 0.1 m

## Emittance

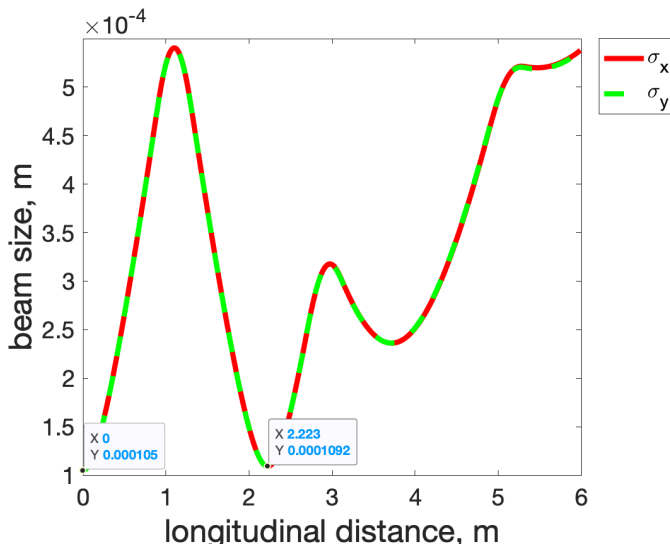


(a) Match sol R 1 m

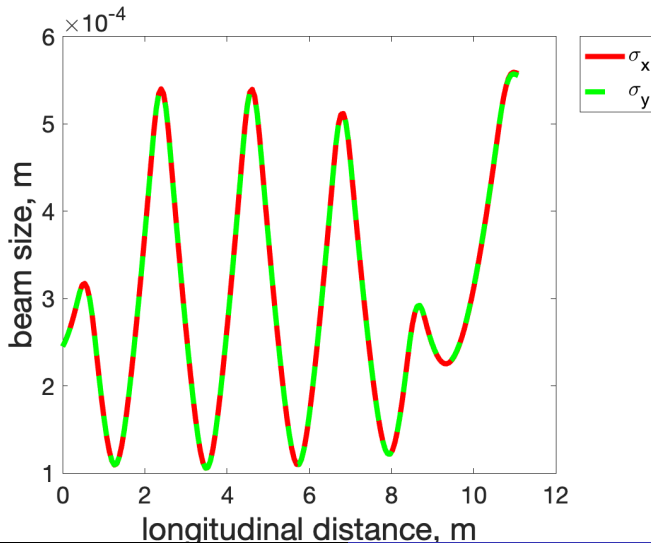


(b) Match sol R 0.1 m

## Beam size, peak current 50 A



## Beam size, peak current 50 A



## Beam size, peak current 50 A

