D Neuffer

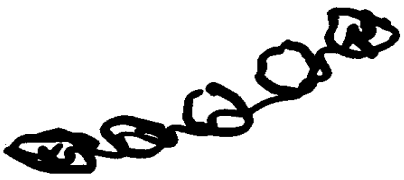
# Pseudo-Rotate & Bunch
## - First Attempt

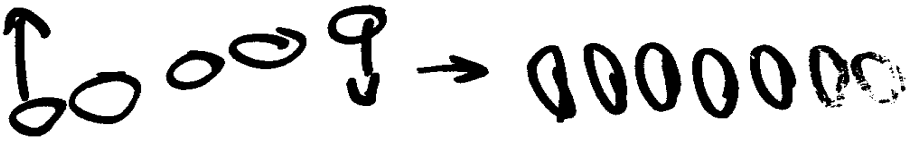
- Eliminate Induction Linac. + rf low-frequency rf

- Use ~ 150 - 300 MHz rf instead

- General Scheme

Drift 

- High frequency rf 

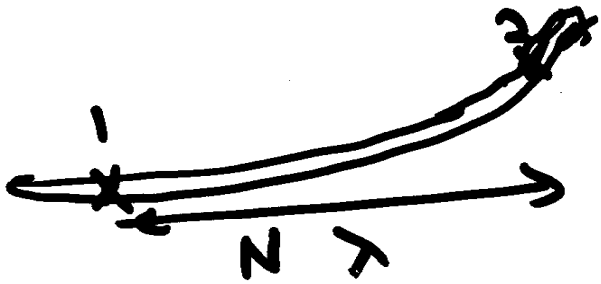
- rotate 

In Detail:

Drift:

100 m?

"adiabatic bunch"

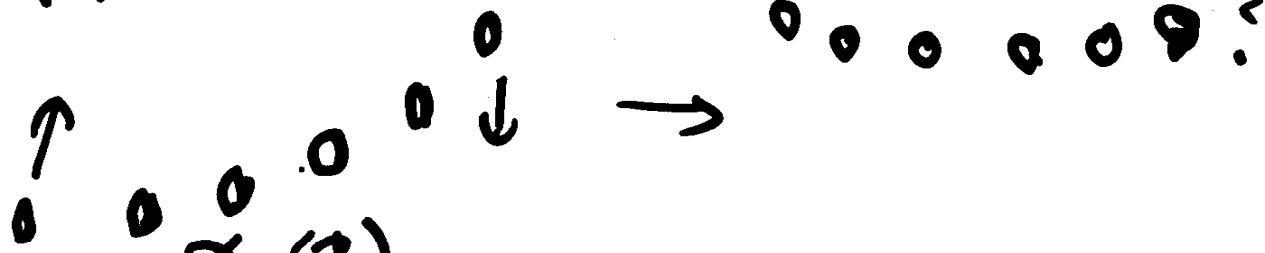



vary λ, fix N

300 MHz → 200 MHz

$V_{RF}(2)$, $\lambda_{RF}(2)$

"rf rotate"



$\phi_s(2)$

- can only do "linear ramp

Many Parameters !

(A) Drift

1 - Drift length (100 m)

2,3 - reference Energy & Width
( 125 ± 50 MeV ?)

---

(B) Bunch

4 - ref. frequency — 15 ?  $N_{bunch}$ $(E_2 - E_1)$

5,6,7 - rf program V'(z) $V_{max} \sim 5$ $L_{bunch}$ 40 waveform $V(\propto z^2?)$

---

(C) "rf rotate" $V \rightarrow$ ~~$V \sin \phi_s$~~ $V \sin[\omega t + \phi_s]$

8 L ~10 m $\phi_s \propto t_B$

9 V' ~10 MV/m

10 $\lambda_{Large}$ $\frac{1}{\lambda} \sim \frac{1}{\lambda_0} + \frac{1}{\lambda_{Large}}$ ~100 m ?

11 $\phi_0$ - central phase + (~ middle of bunch)

To do:

— "Optimize" ; "Debug"

"Add realistic distributions transverse motion" Icool

" Match into "cooling channel"
$\lambda_c, \beta_0, V_{cool}$, etc

" Understand why this
works better than it should"

Comments

- Should work for both signs

- Energy spread is "still" a bit large

— This is a <u>very</u> modest rf system

A: 40 m  0 → 5 MV/m

B: ~~10~~ 7 m  10 MV/m  (  )