



Cornell University



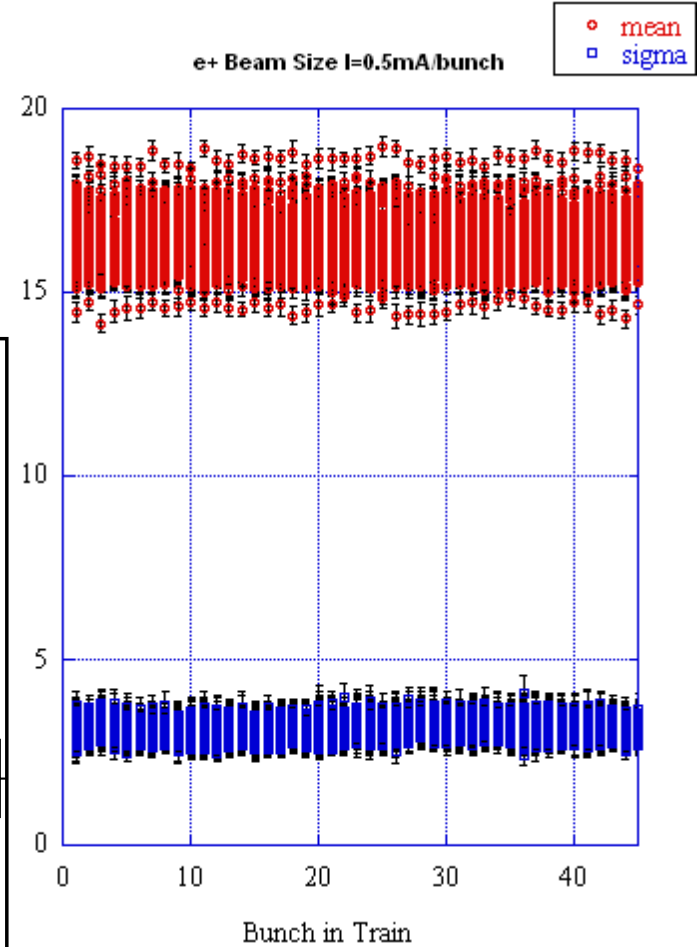
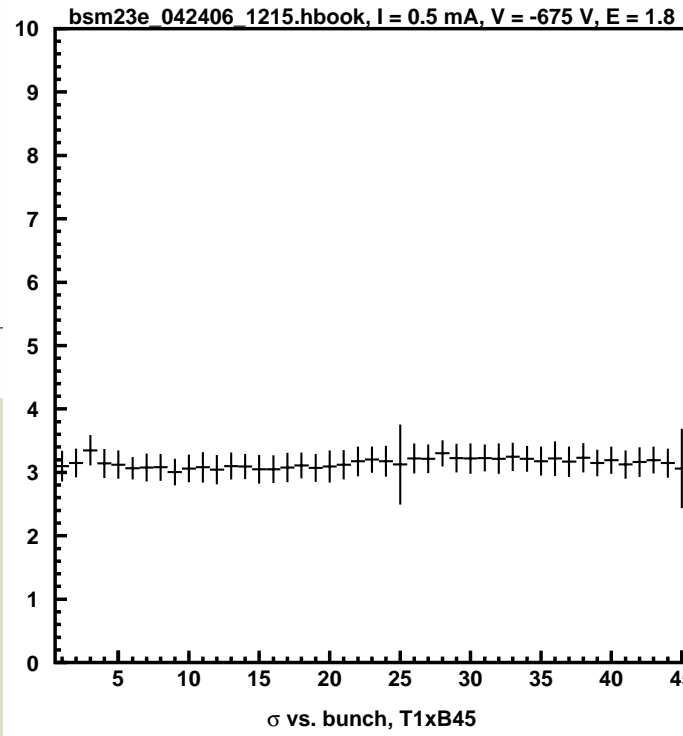
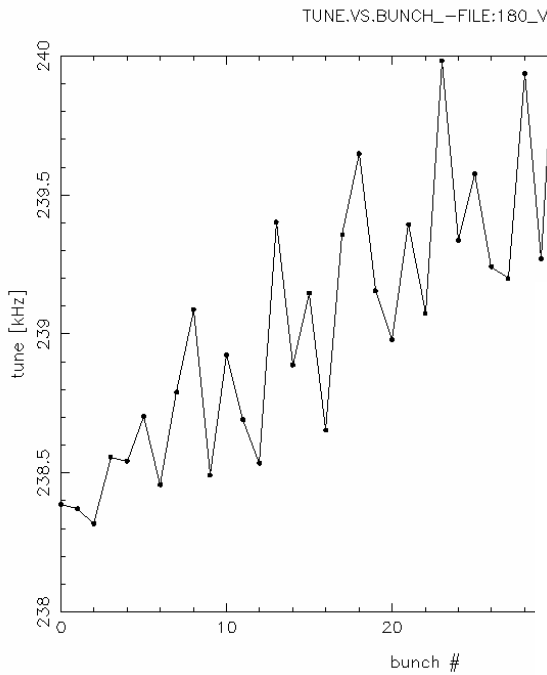
# Preliminary Analysis of April 24, 2006

## CESR Bunch Measurements

M. Billing, G. Codner, R. Holtzapple,  
M. Palmer, D. Rice, E. Tanke,  
M. Watkins

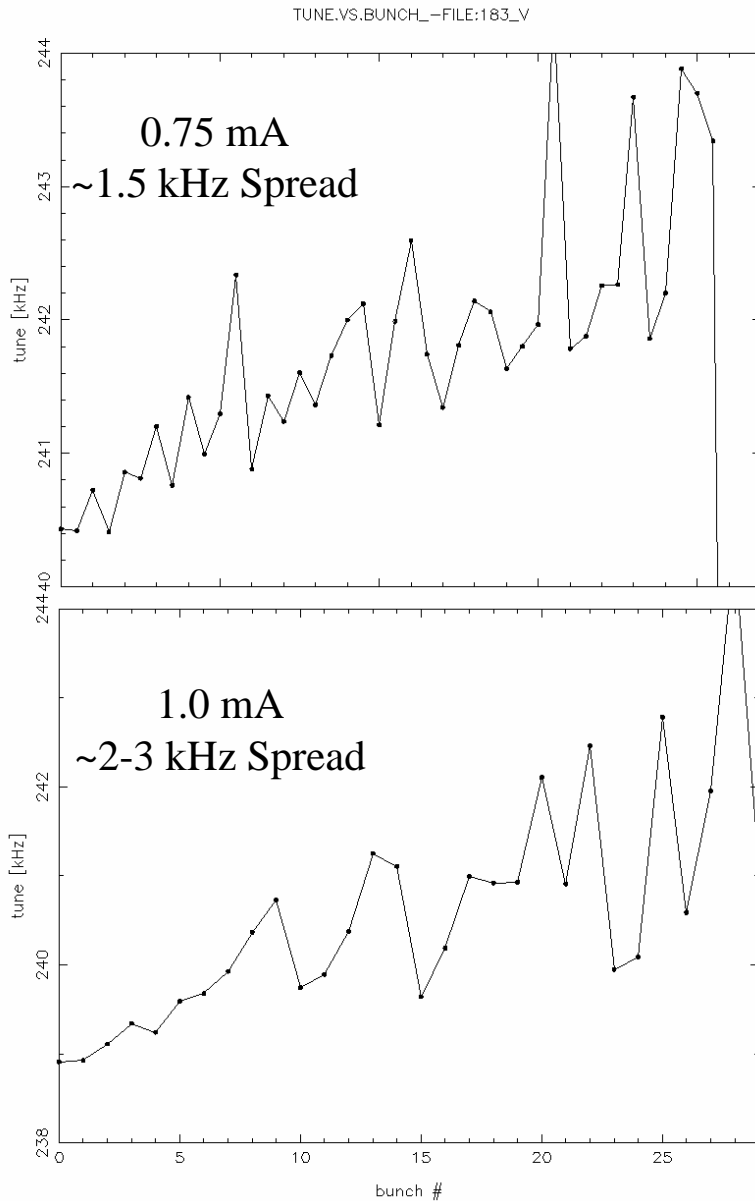


- April 24, 2006
  - BSM 23E ( $e^+$ ) setup
  - 2 GeV  $e^- e^+$  Cloud Studies
    - ◆ 1x45 positrons vs bunch current
      - Bunch tunes (BPM 6W1)
      - Bunch sizes (BSM 23W)
    - ◆ 1x45 electrons vs bunch current
      - Bunch tunes (BPM 6W1)
      - Bunch sizes (BSM 23E)
  - 5 GeV  $e^-$  Cloud Studies
    - ◆ CHES positron pattern (on-axis)
    - ◆ CHES electron pattern (on-axis)

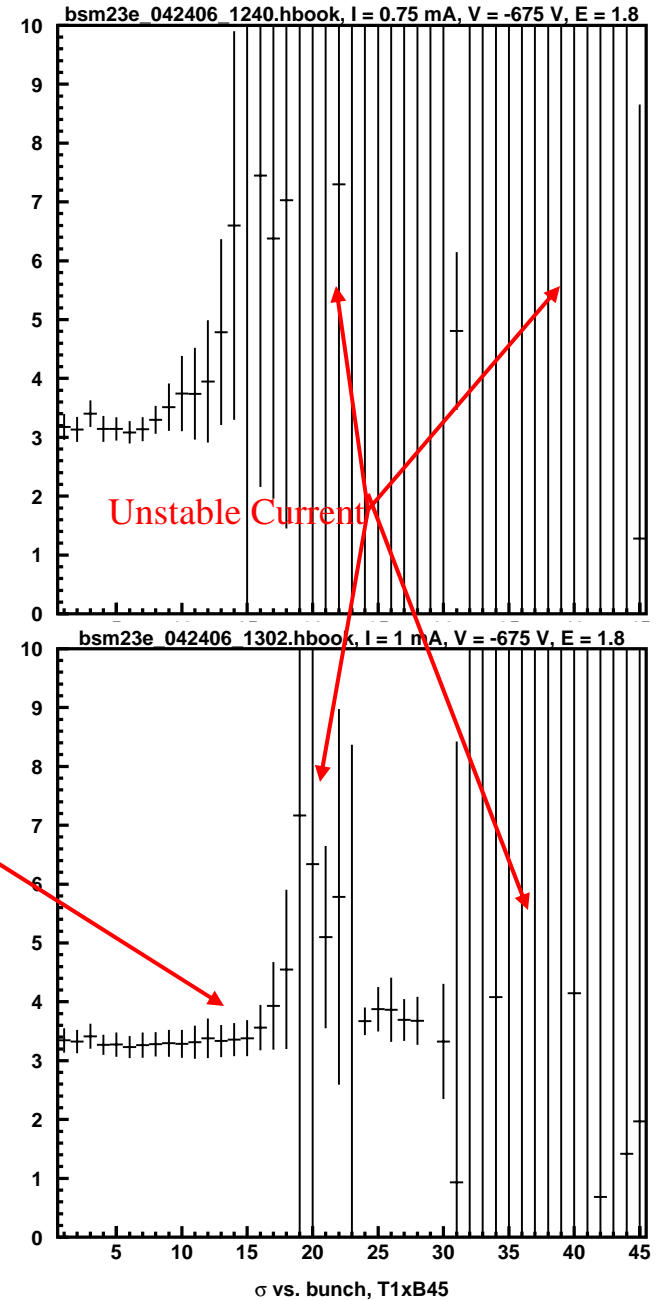


- Stable Beam
- ~1 kHz tune variation from start to end of train
- Minimal variation size

Vertical Units: PMT Channel = mm

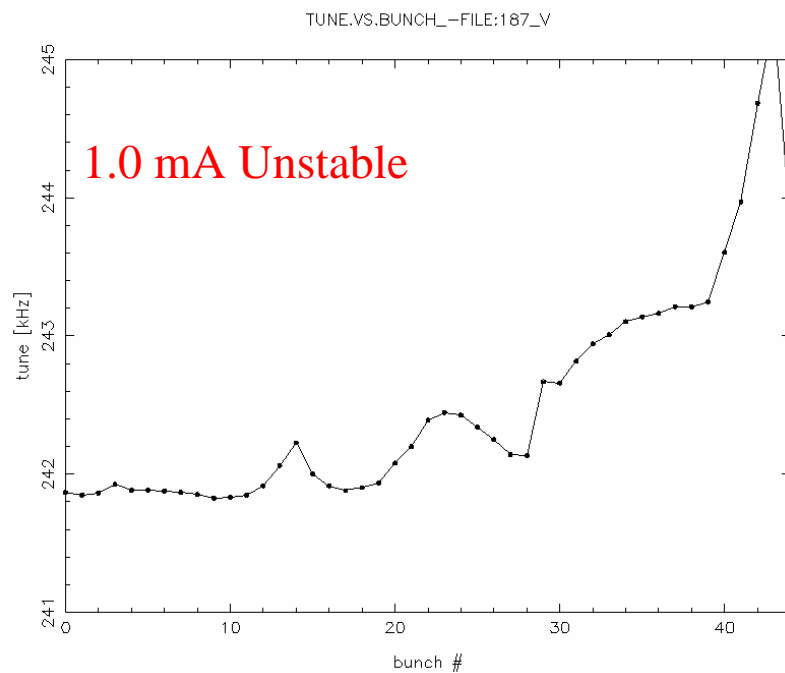
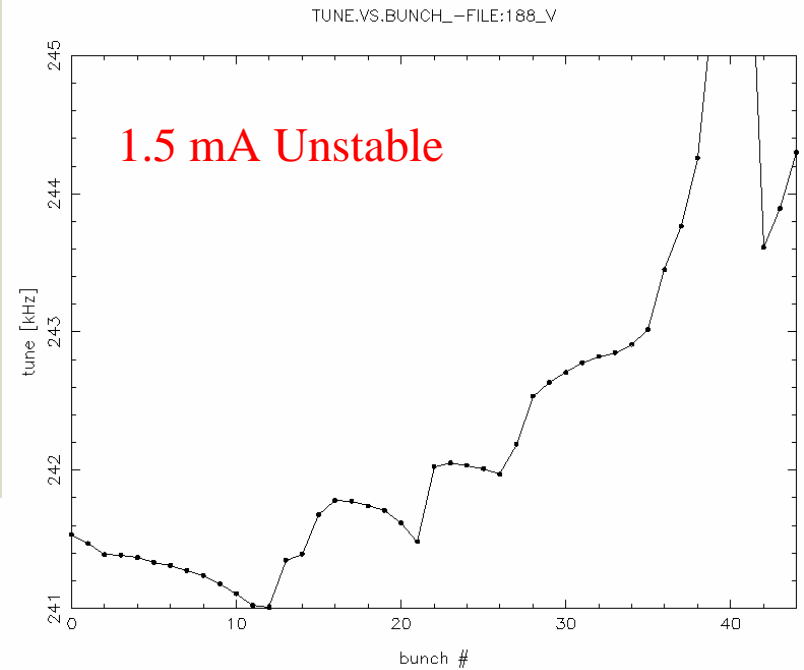
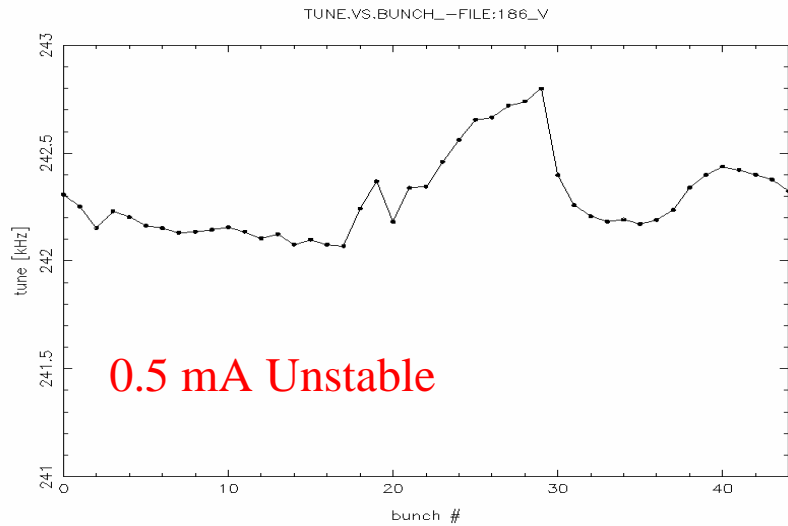


Why is width  
stable  
longer?



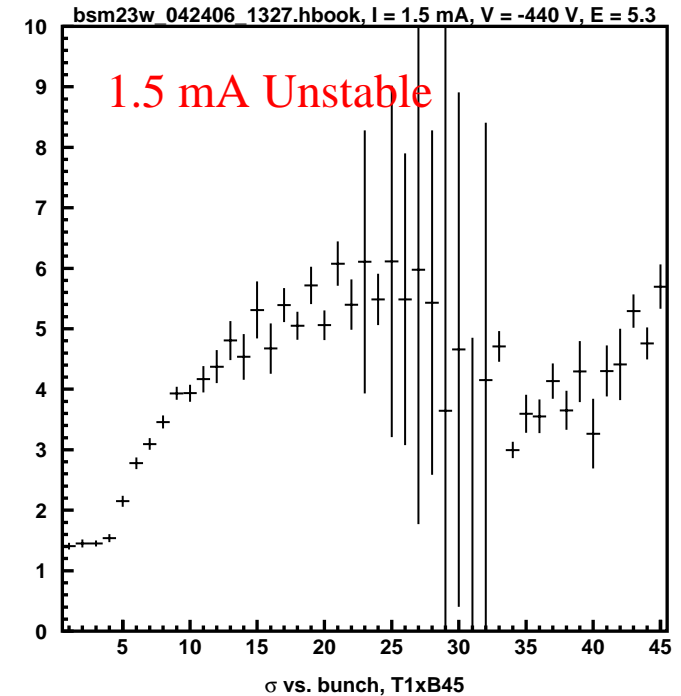
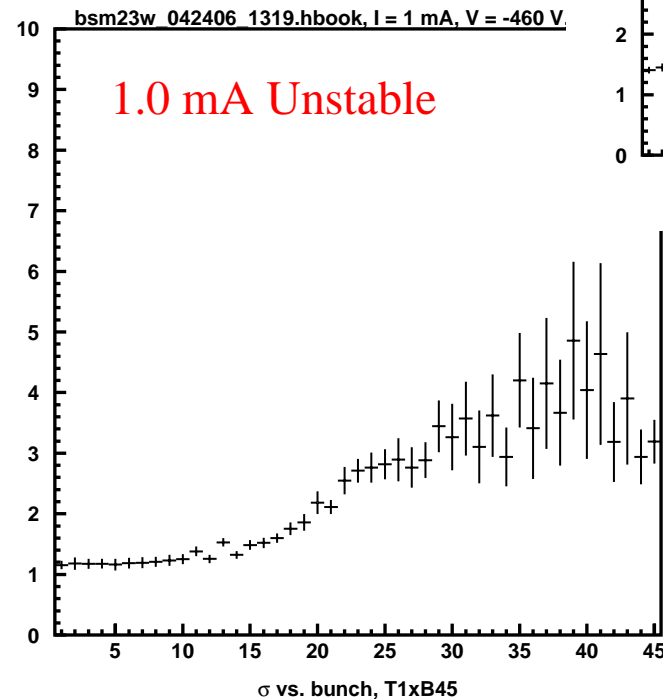
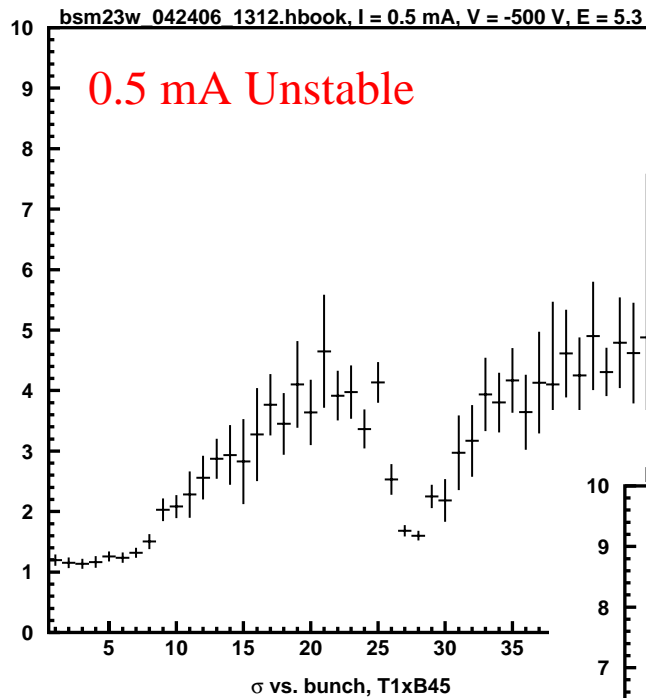


# 2.08 GeV e<sup>-</sup> Tunes





# 2.08 GeV $e^-$ Beamsizes

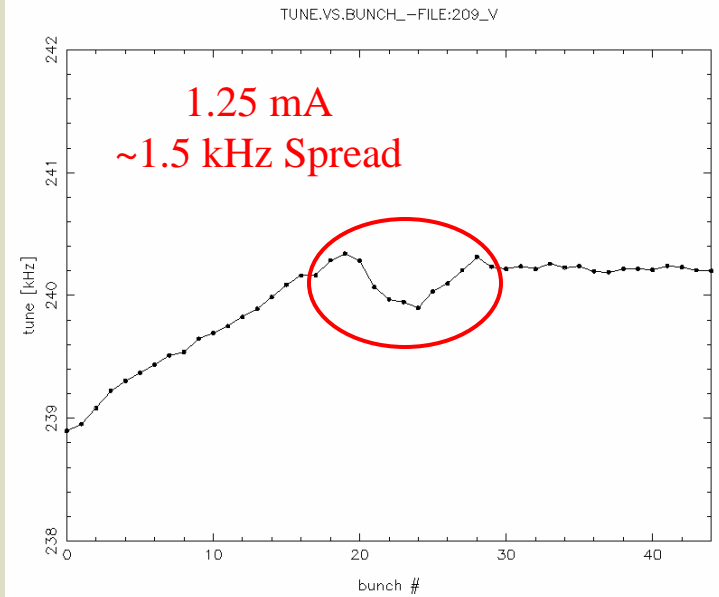
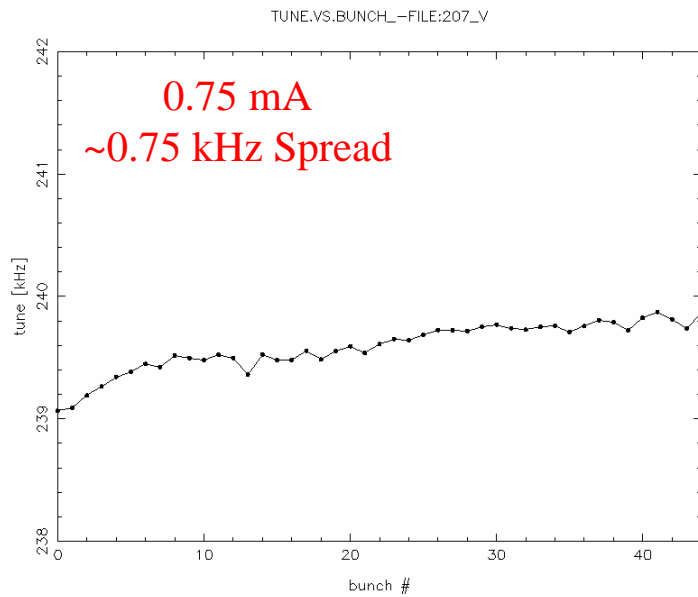
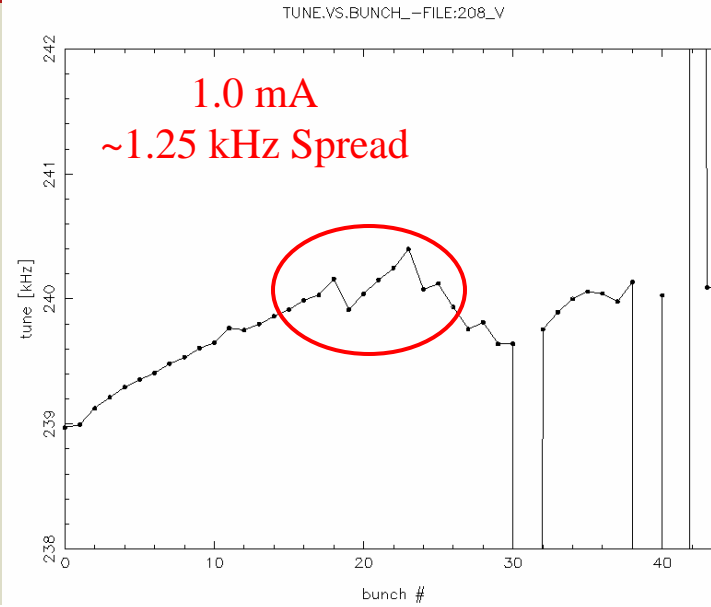
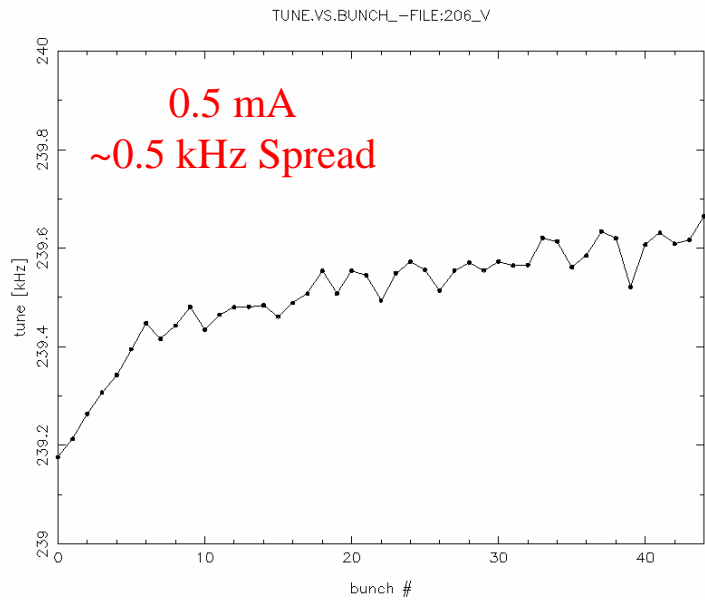


- Appears that we didn't have stable conditions from the outset
- Not a valid electron cloud measurement

- Will need to repeat more carefully
- Set conditions at max bunch current and then make measurements vs current without changing machine setup

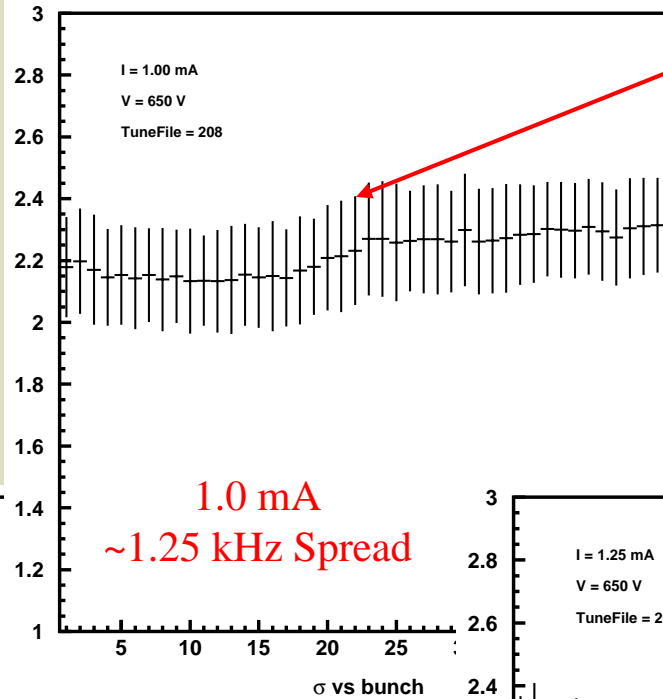
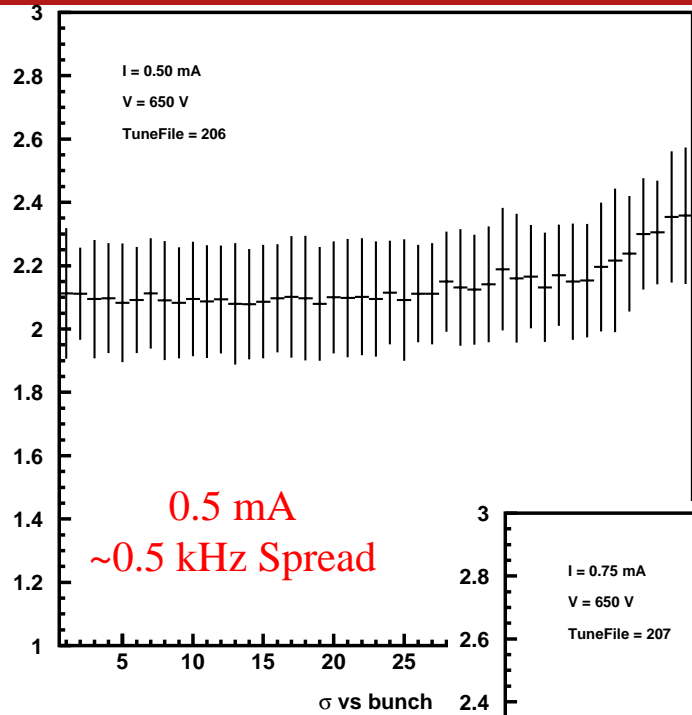


# 5 GeV $e^+$ 1x45 Tunes

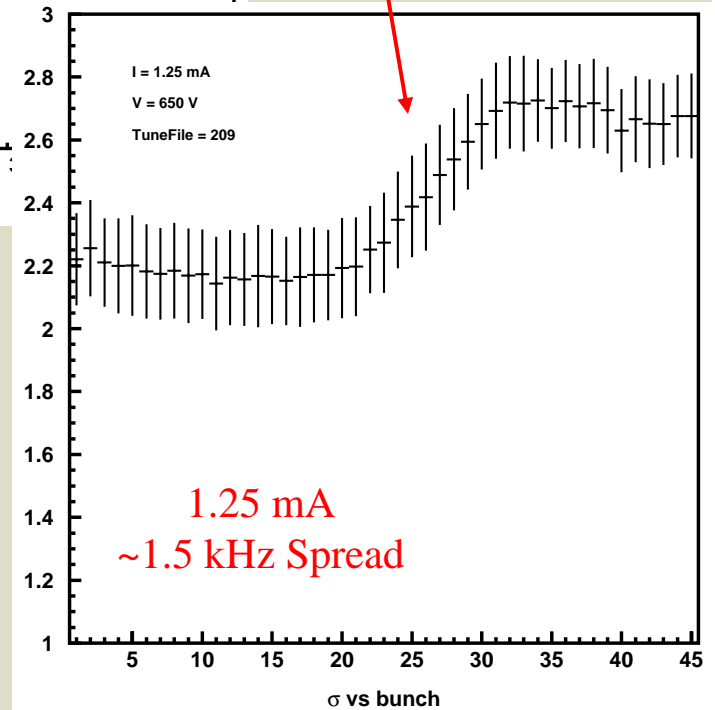
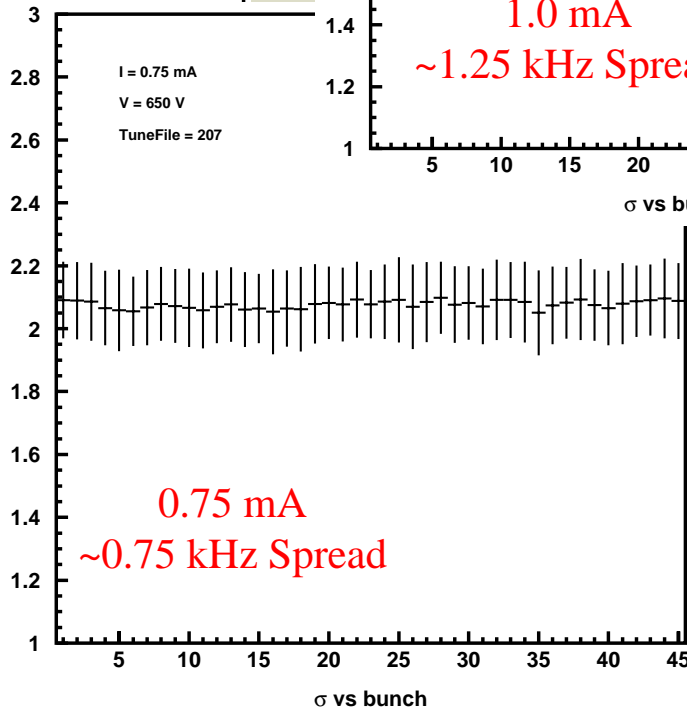




# 5 GeV $e^+$ 1x45 Beamsizes



Onset of instability  
Need to take some  
turn-by-turn data  
to understand fully  
(separate centroid  
motion from  
width)







# Septum Analysis

- In Progress ...