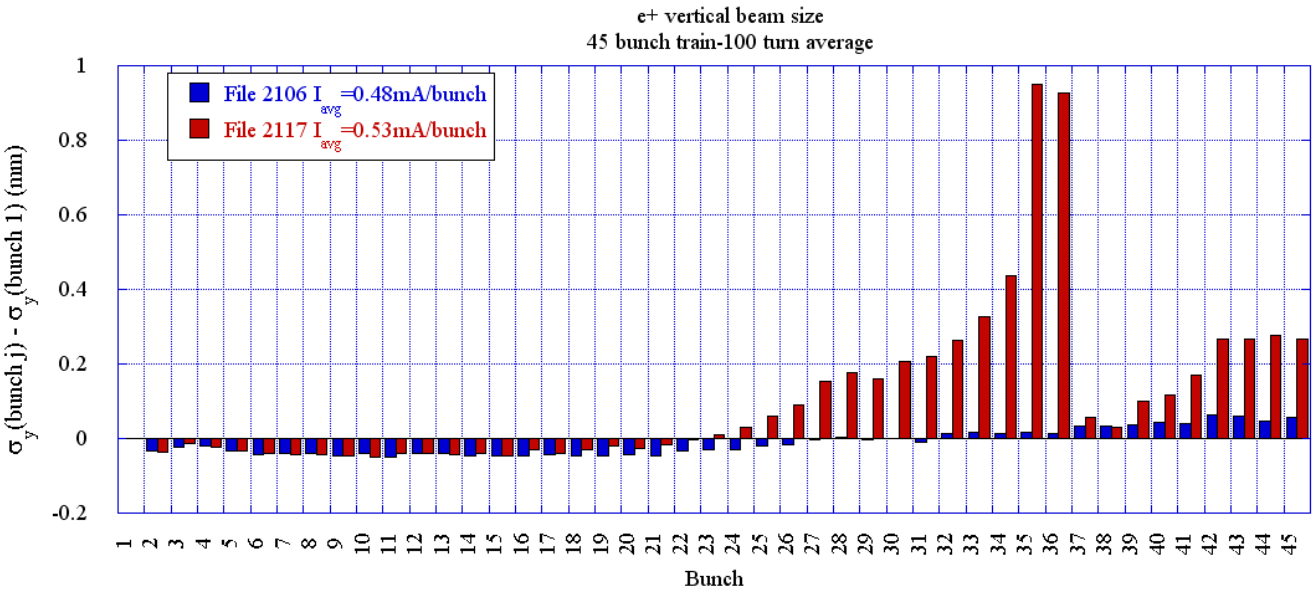
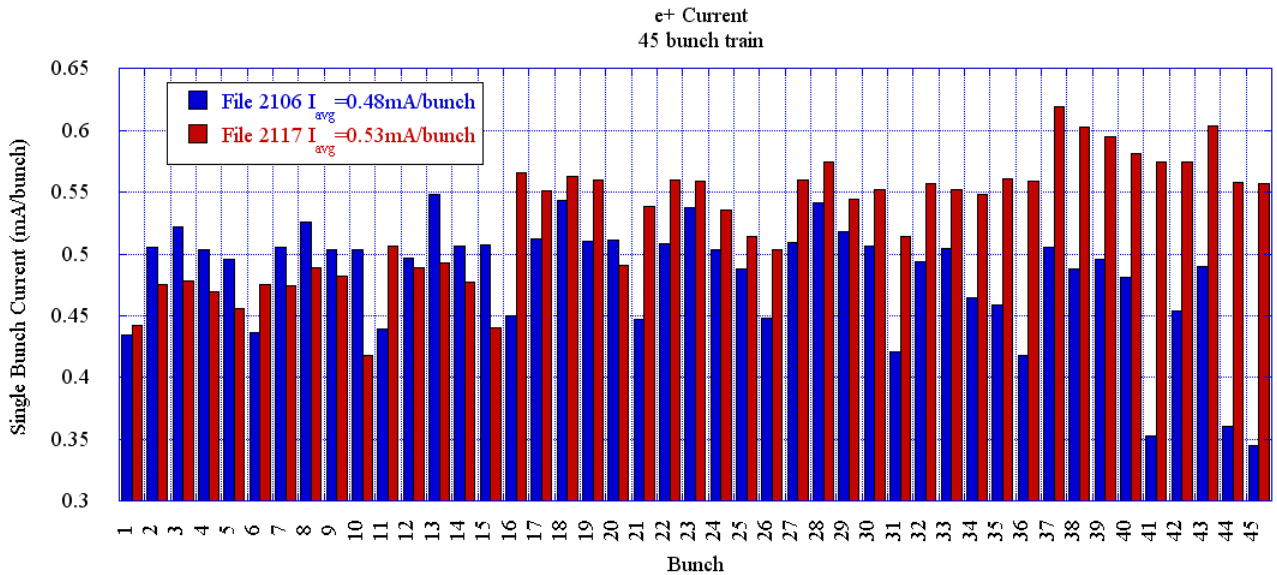
e+ 45 bunch train beam dynamics





e+ 100 turn average beam dynamics

45 bunch train with 14ns spacing at CESR-c energy.

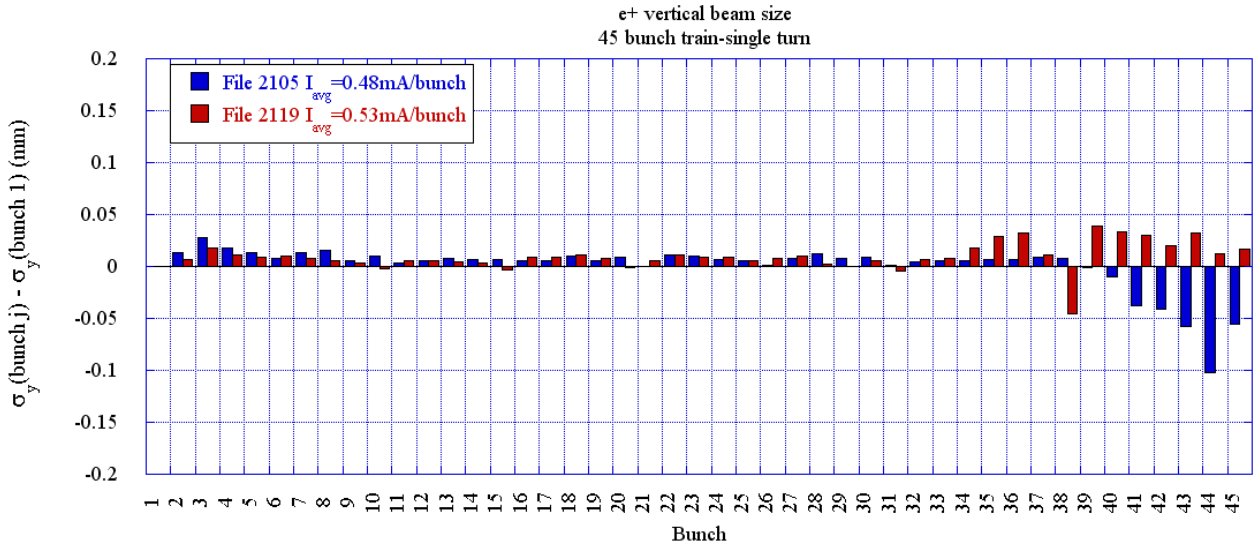
Measured σ_y (using PMT) and tune at four different bunch currents (only two current settings had uniform bunch currents).

Displayed are average vertical beam size (100 turn average) and current over 45 bunch train.

Vertical beam size growth and/or instability detected at bunch 26 for I=0.53mA/bunch.

GWC, DLH, RME, RLH
3/1/2008

e+ single turn beam dynamics

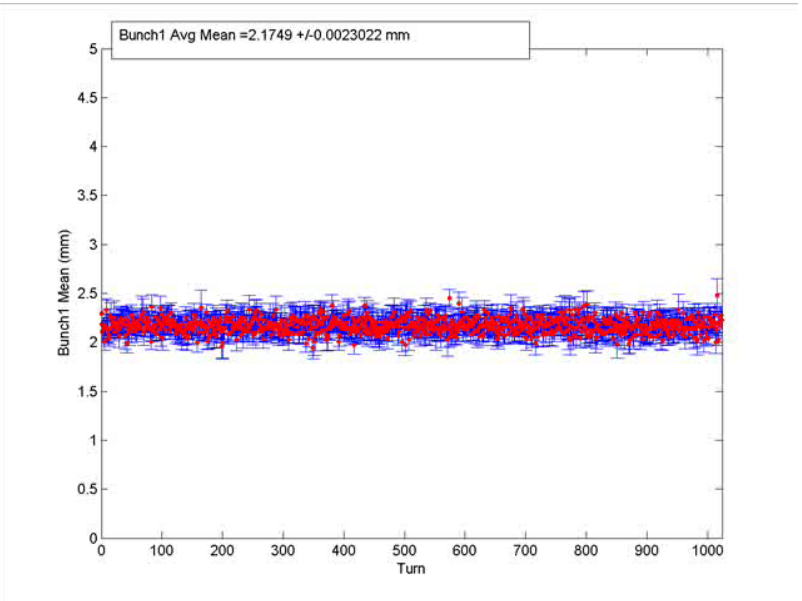


Displayed is single turn vertical beam size and movies of vertical position over 45 bunch train.

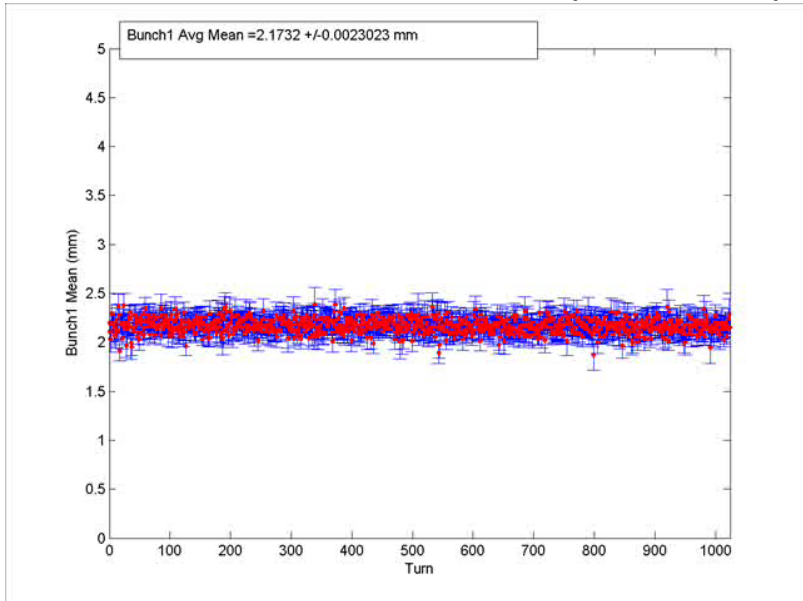
Single turn vertical beam size growth is not detected along the 45 bunch train.

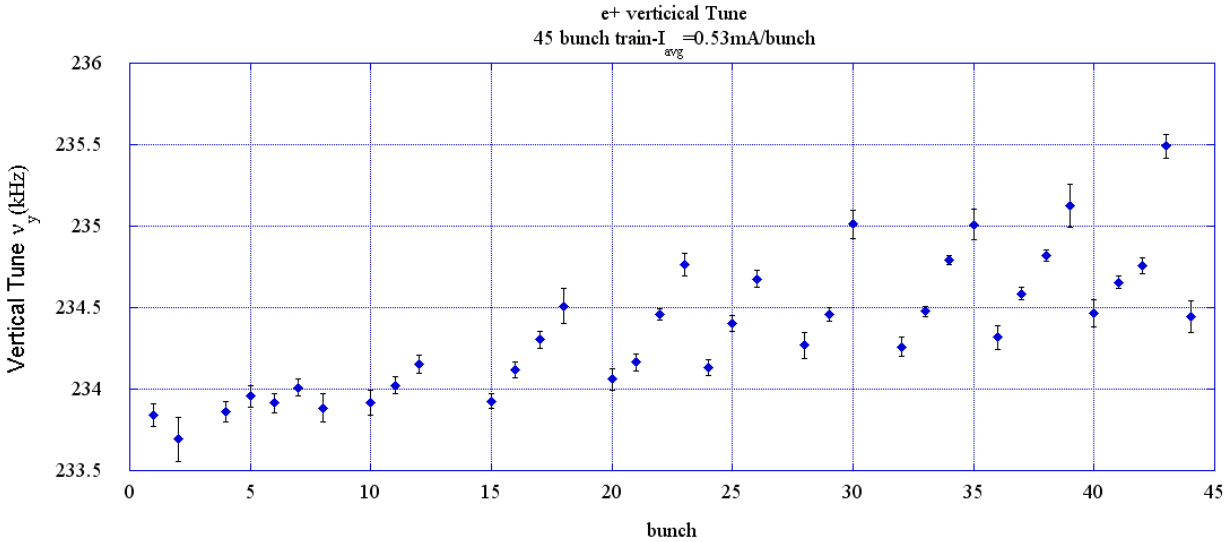
Large vertical position oscillation is detected at bunch 26 for I=0.53mA/bunch.

Movie File:2105 I=0.48mA/bunch (click to start)



Movie File:2119 I=0.53mA/bunch (click to start)





e+ vertical tune and FFT of position

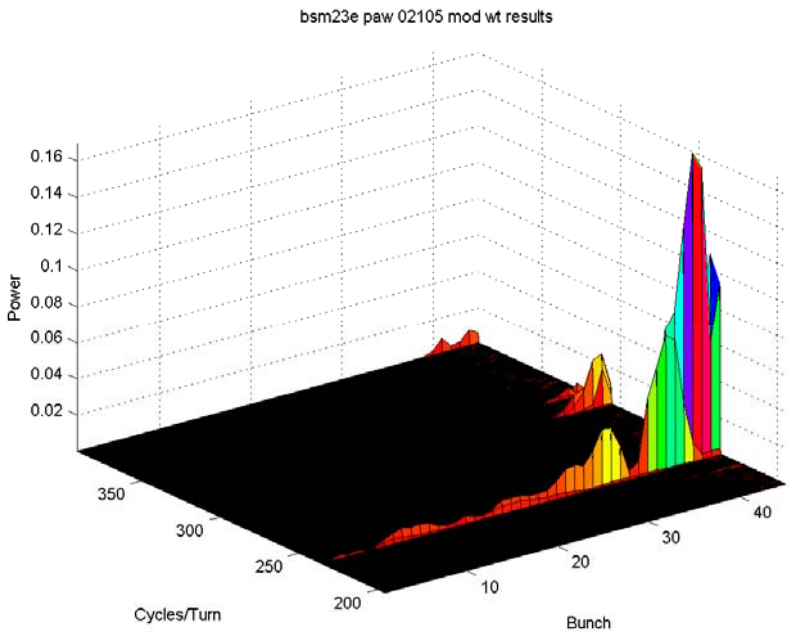
Displayed is vertical tune and FFT of vertical position over 45 bunch train.

Vertical tune has strange recoil behavior.

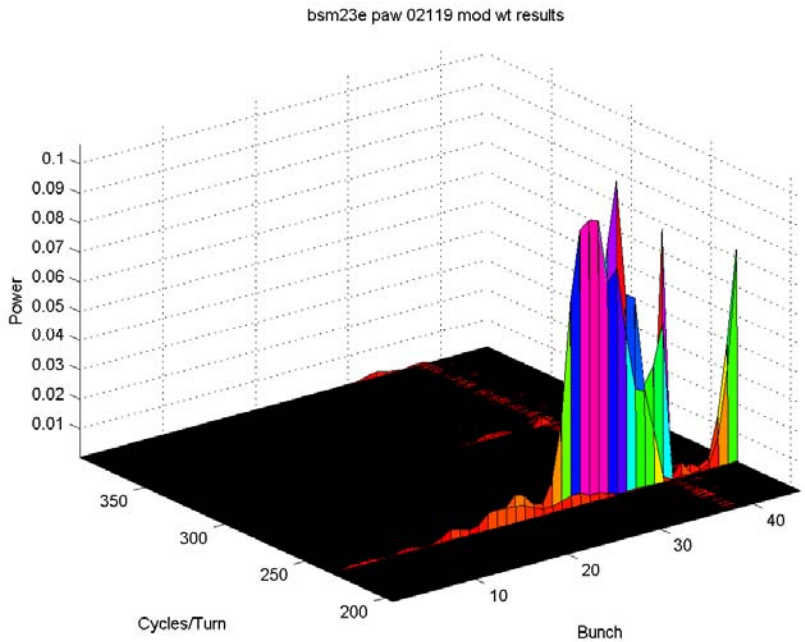
Vertical oscillation for both current settings is observed with a large vertical oscillation at bunch 26 for I=0.53mA/bunch setting.

FFT signal at 236, 306, and 321kHz

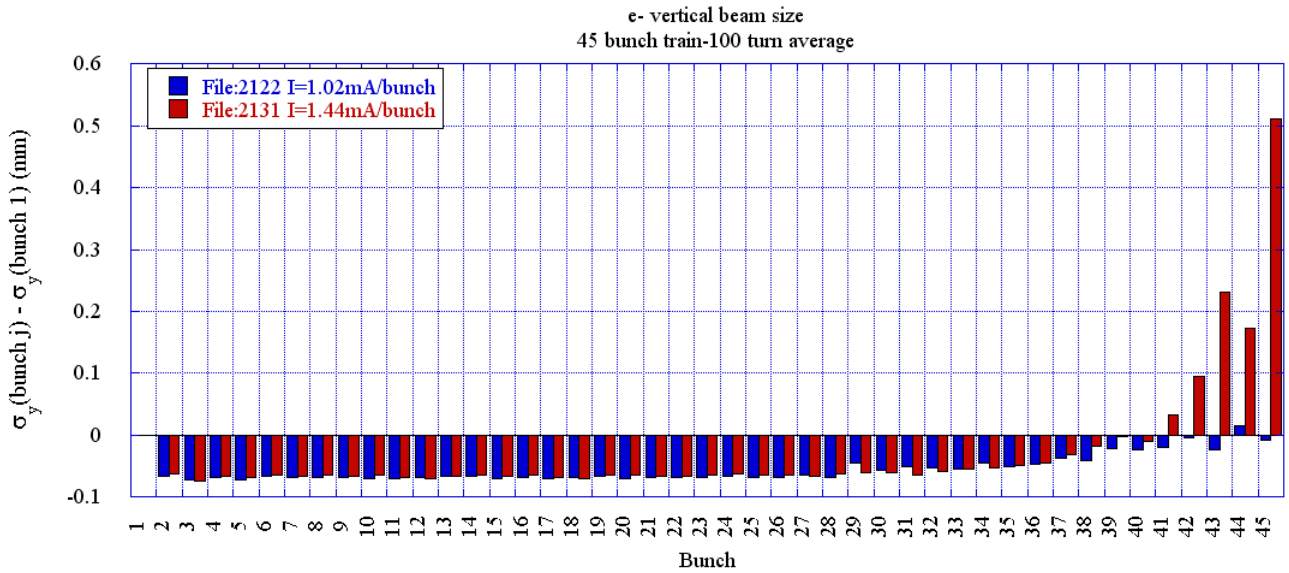
File:2105 I=0.48mA/bunch

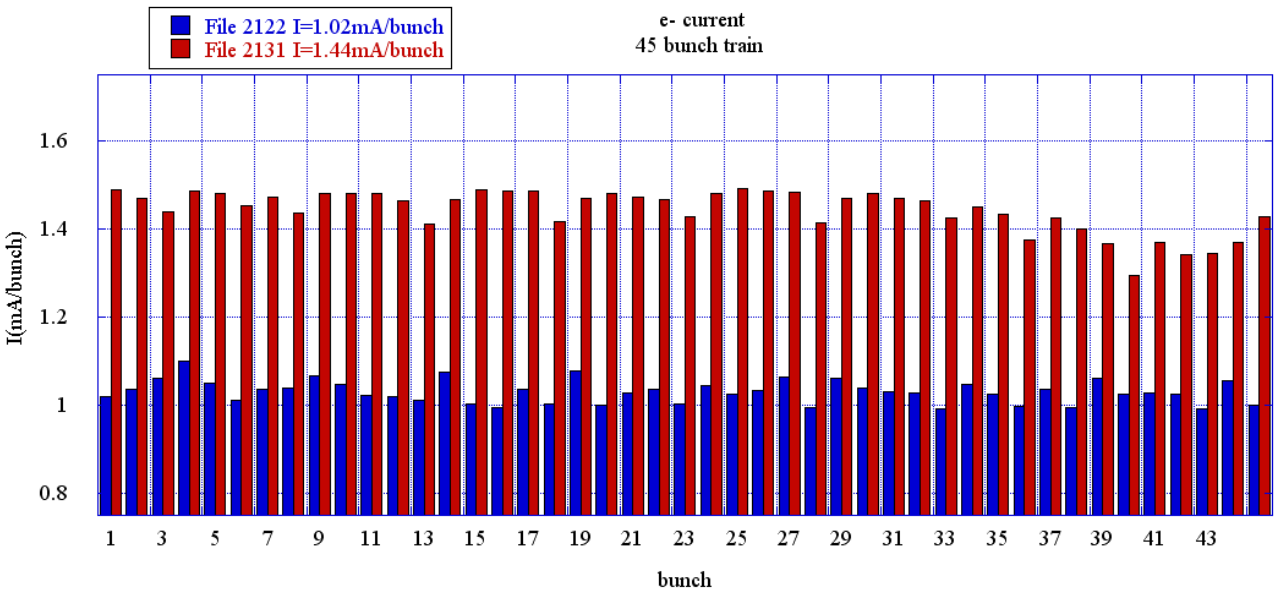


File:2119 I=0.53mA/bunch



e- 45 bunch train beam dynamics





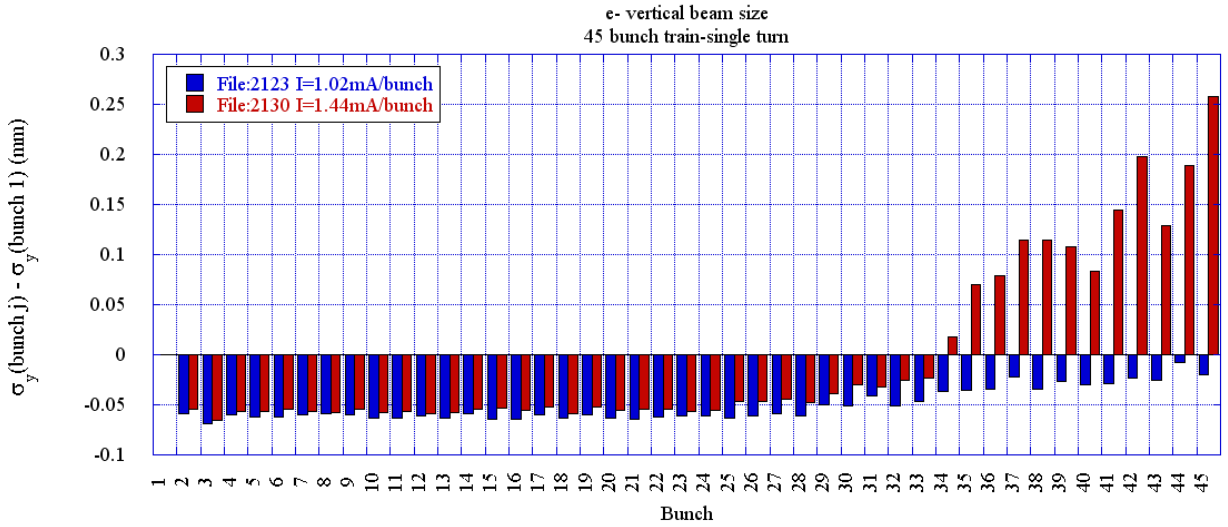
e- 100 turn average beam dynamics

45 bunch train with 14ns spacing at CESR-c energy.

Measured σ_y (using PMT) and tune at two different bunch currents.

Displayed are average vertical beam size (100 turn average) and current over 45 bunch train.

Vertical beam size growth or instability detected at bunch 41 for I=1.44mA/bunch.



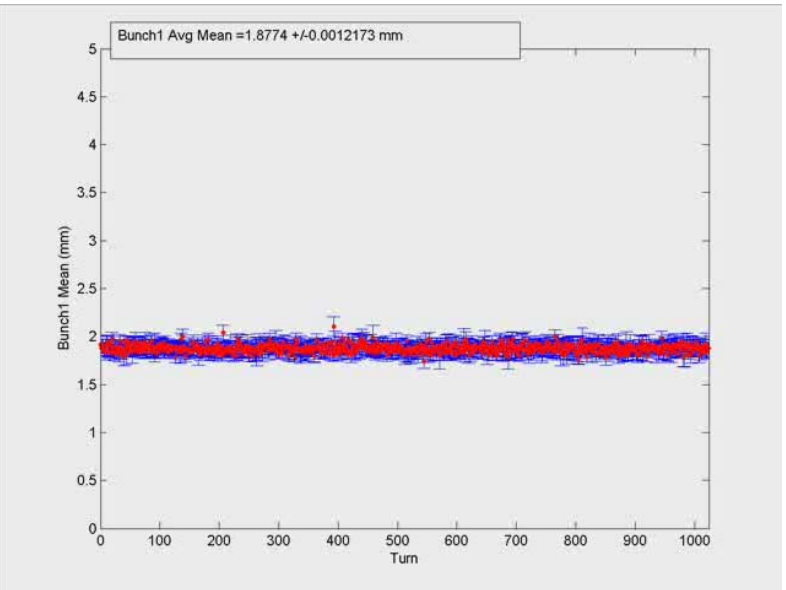
e- single turn beam dynamics

Displayed is single turn vertical beam size and movies of vertical position over 45 bunch train.

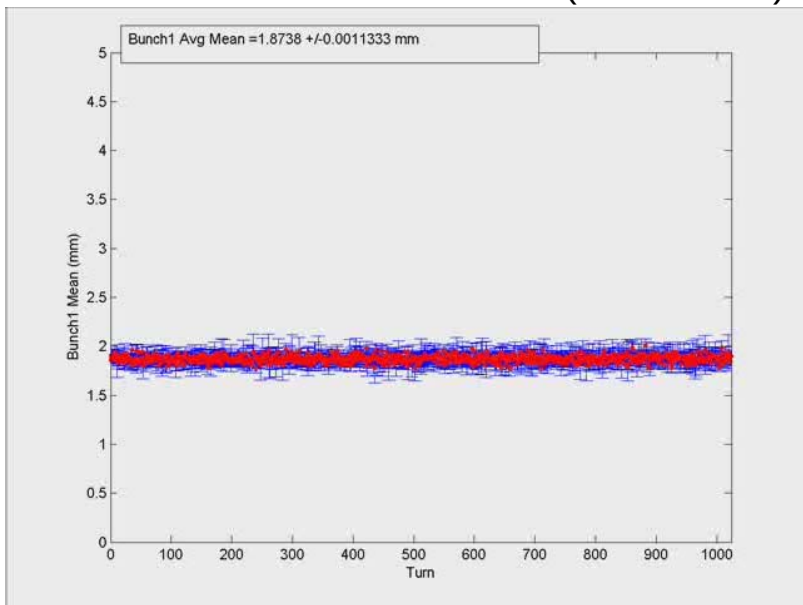
Single turn vertical beam size growth is detected along the 45 bunch train at I=1.44mA/bunch at bunch 34.

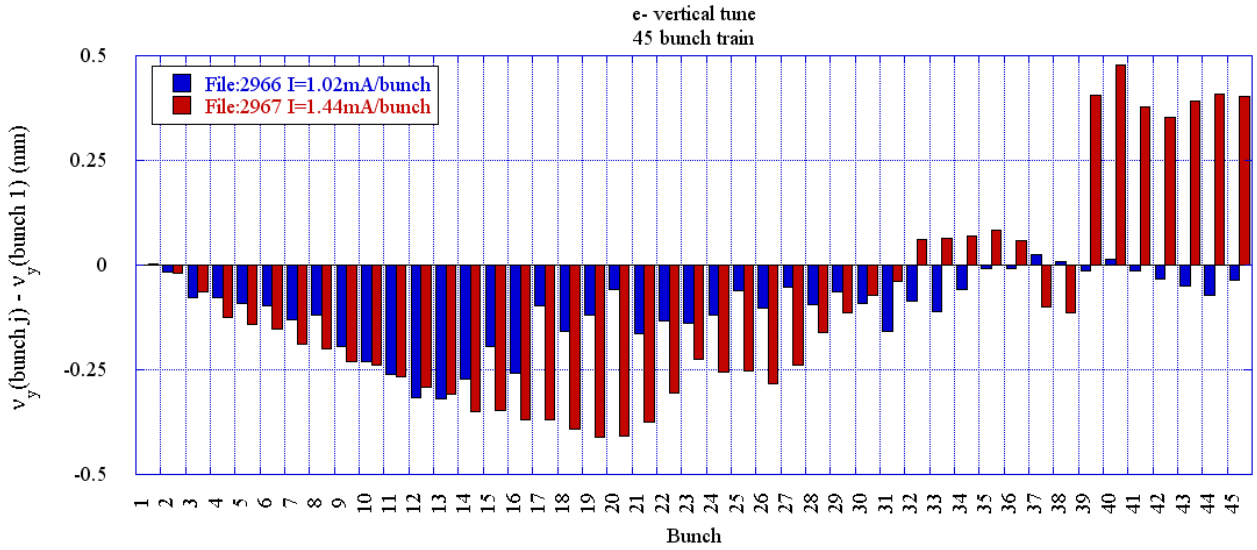
The onset of a vertical position oscillation is detected near the end of the train at both current settings.

Movie File:2123 I=1.02mA/bunch (click to start)



Movie File:2130 I=1.44mA/bunch (click to start)





e- vertical tune and FFT of position

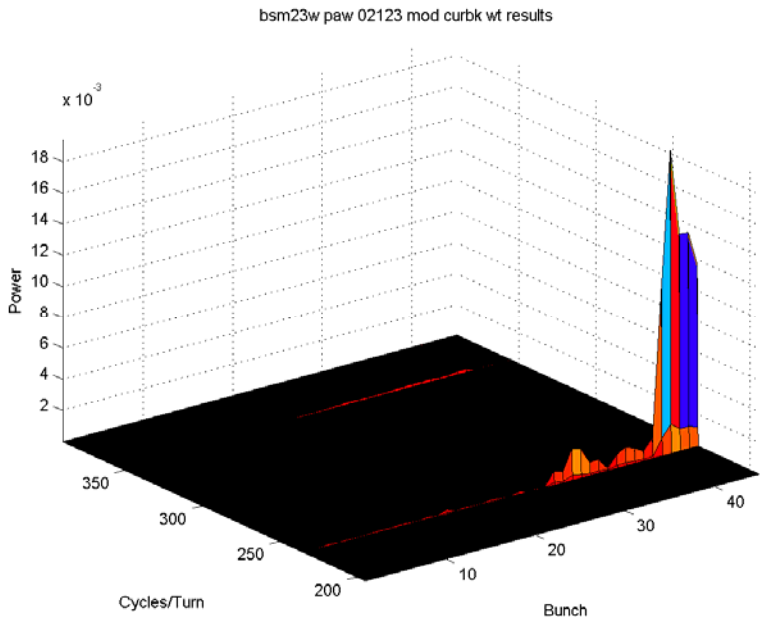
Displayed is vertical tune and FFT of vertical position over 45 bunch train.

Vertical tune starts negative and then grows. Tune jump for last 7 bunches at I=1.44mA/bunch (possible resonance).

From the FFT, a slight vertical oscillation at both current settings is observed.

FFT signal at 235 and 355kHz

File:2123 I=1.02mA/bunch



File:2130 I=1.44mA/bunch