

CESR-c e- Cloud Machine Studies
e- with witness bunch
3/13/2007

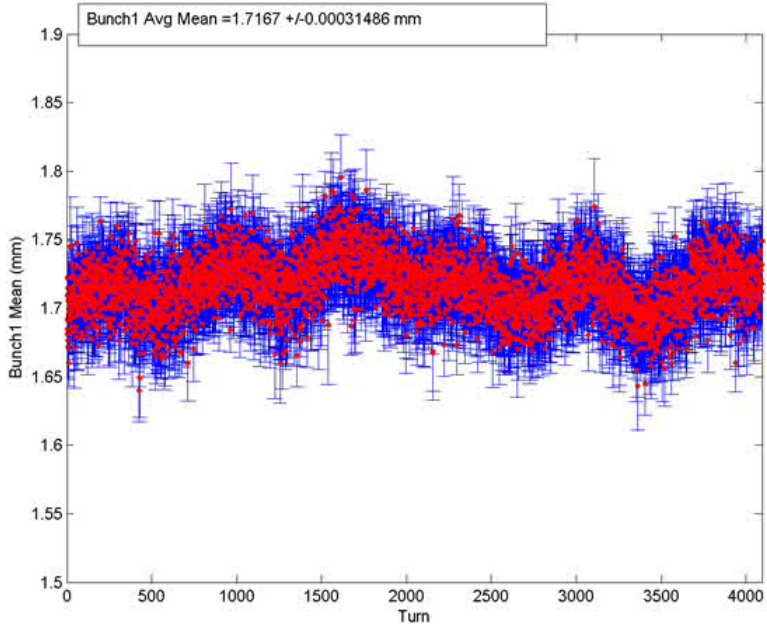
Introduction

e- cloud witness bunch measurements were made at the CESR-C operating energy with only e- present in CESR.

Turn-by-turn vertical beam distribution measurements were made using the photomultiplier tube array. The vertical distribution was measured for 4096 turns with an e- train of 10 bunches and e- witness bunches located behind the main train.

The e- bunch current was 0.75mA/bunch (on average). The e- feedback was on and the horizontal/vertical separators were off.

Displayed on the following slides is a movie of the turn-by-turn mean vertical position and beam size as well as the FFT of these quantities. The main 10 bunch train is displayed first in the movie and FFT. The witness bunches are displayed in order from closest to furthest from the main train.



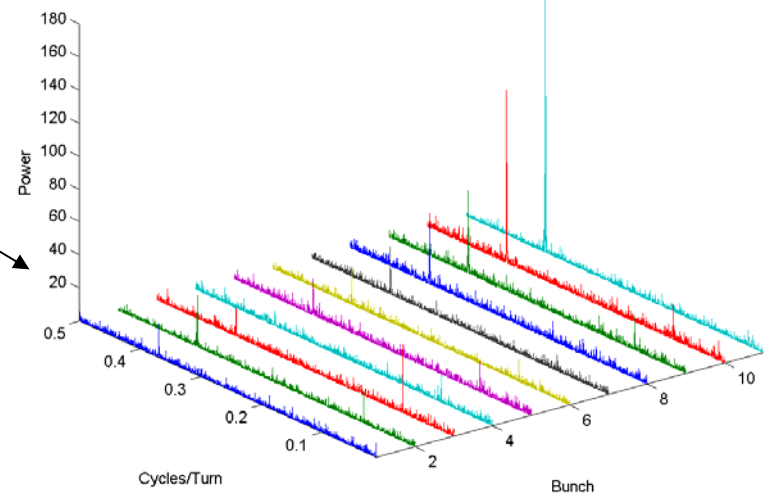
Vertical mean position (movie)



FFT Vertical position

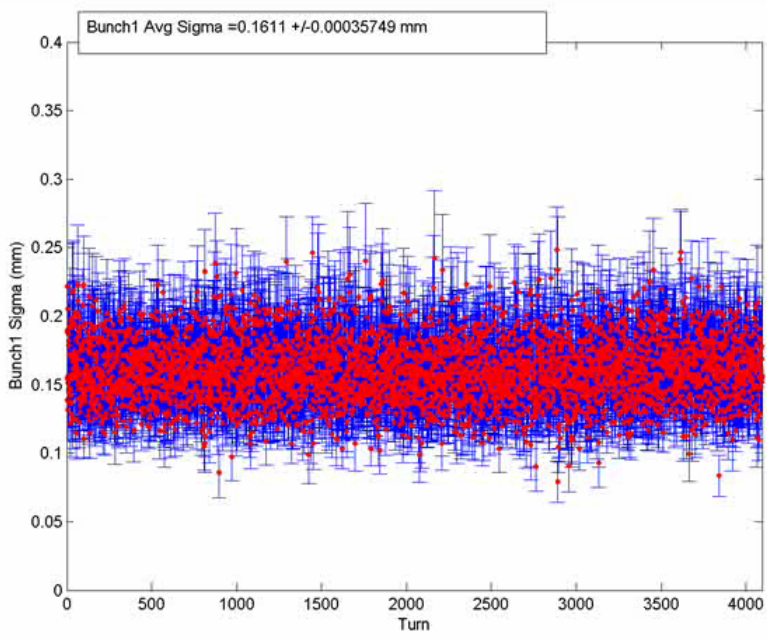


bsm23w01069 results



e- vertical dynamics
 Witness bunch 42
 File: 1069

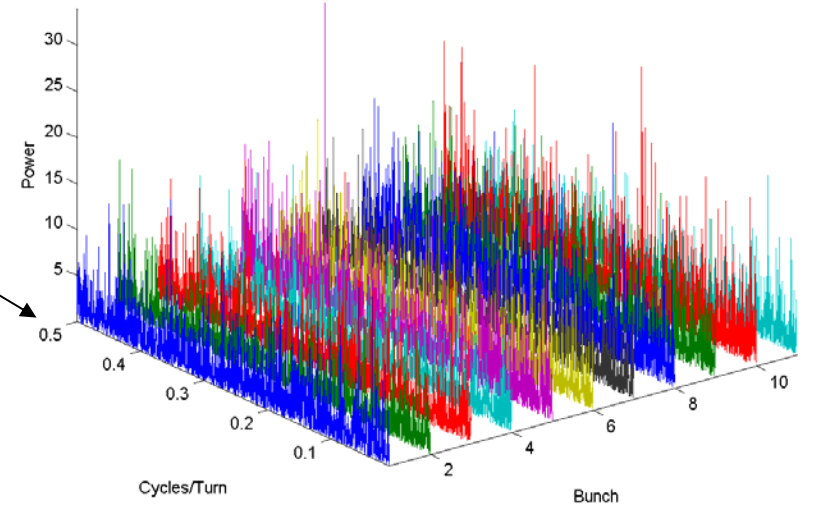
bsm23w01069 results



σ_v (movie)

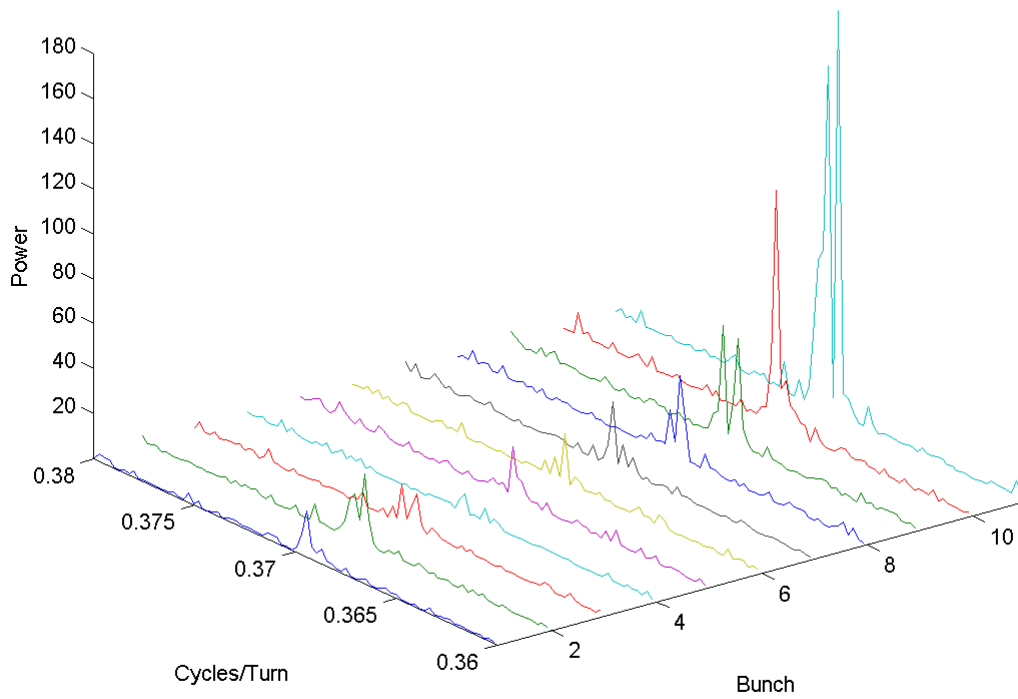


FFT σ_v



FFT of mean vertical position from 242.0-249.8 kHz

bsm23w01069 results

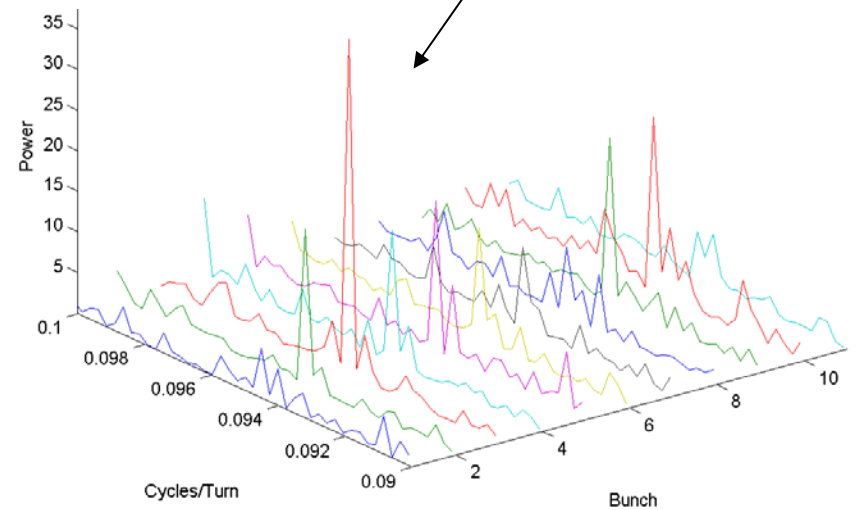


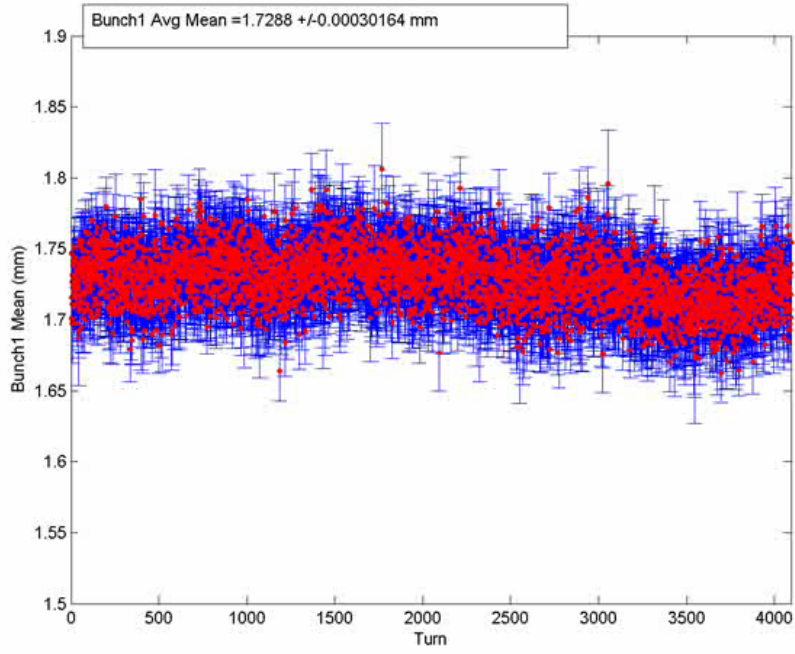
e- vertical dynamics
Witness bunch 42
File: 1069

FFT of mean vertical position from 35-39 kHz

bsm23w01069 results

Weak signal at v_s

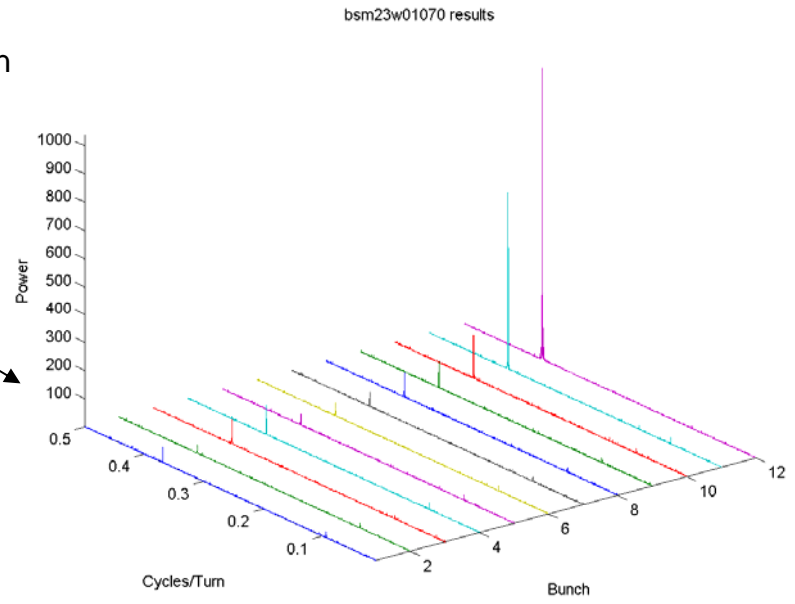




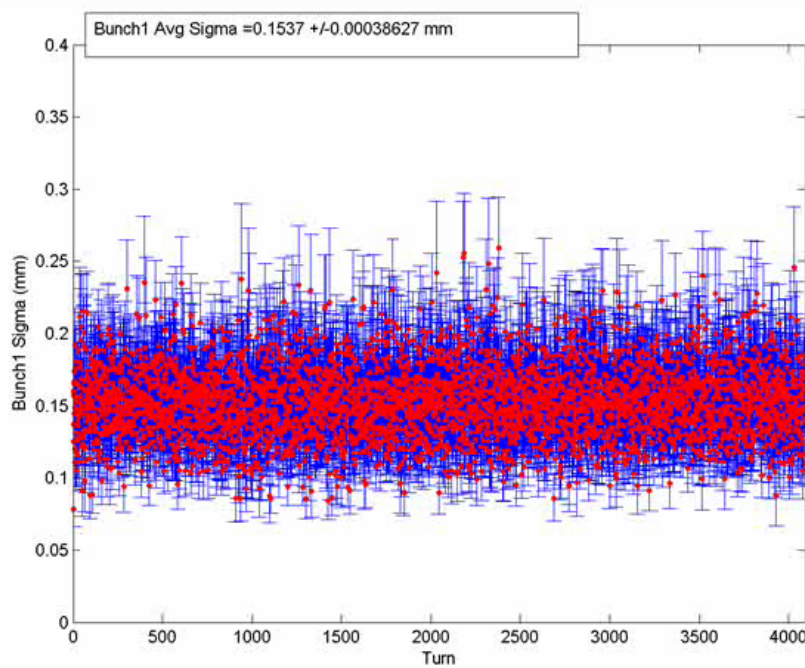
Vertical mean position (movie)



FFT Vertical position



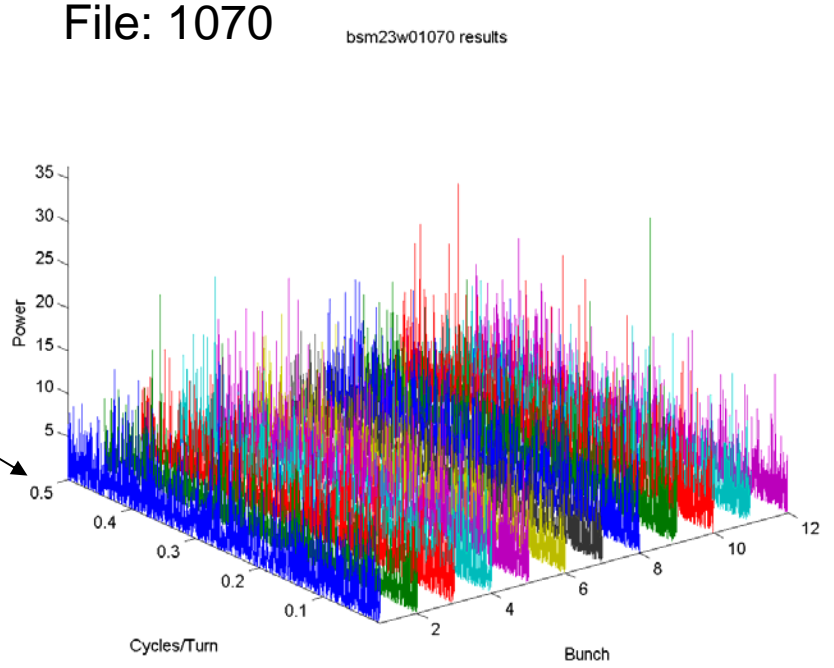
e- vertical dynamics
 Witness bunches 38,42
 File: 1070



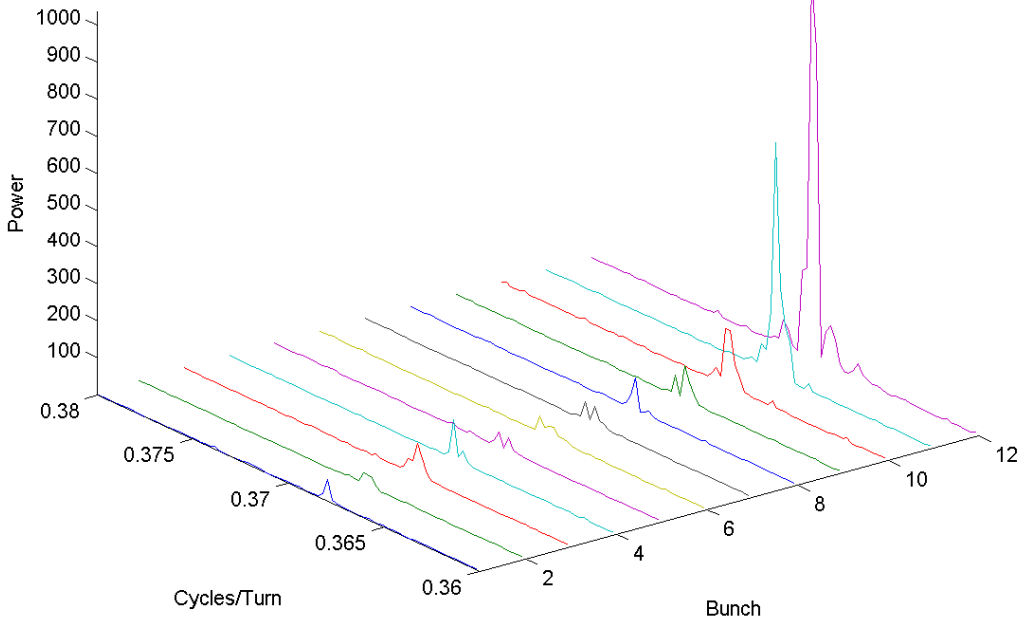
σ_v (movie)



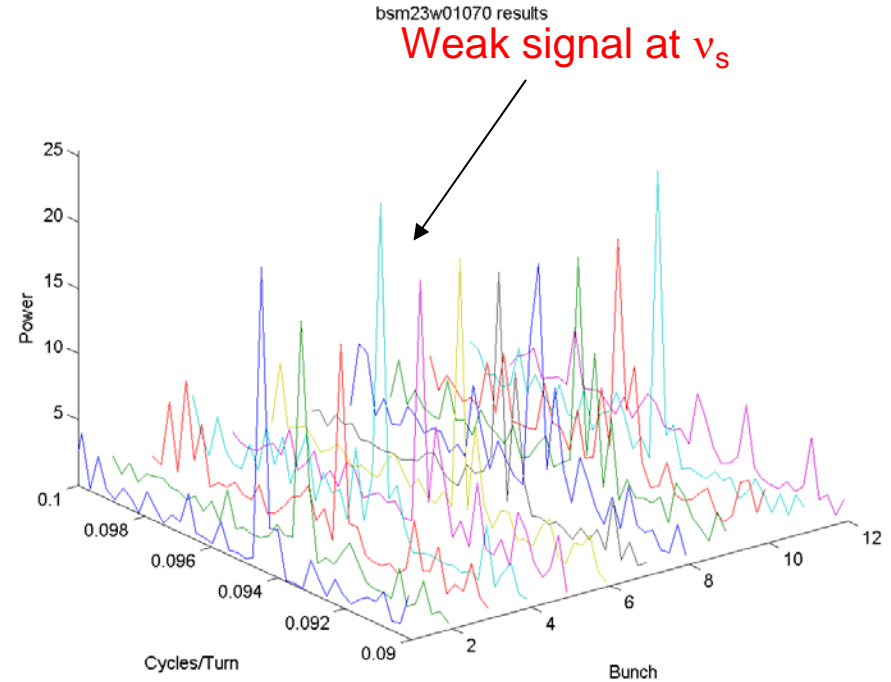
FFT σ_v

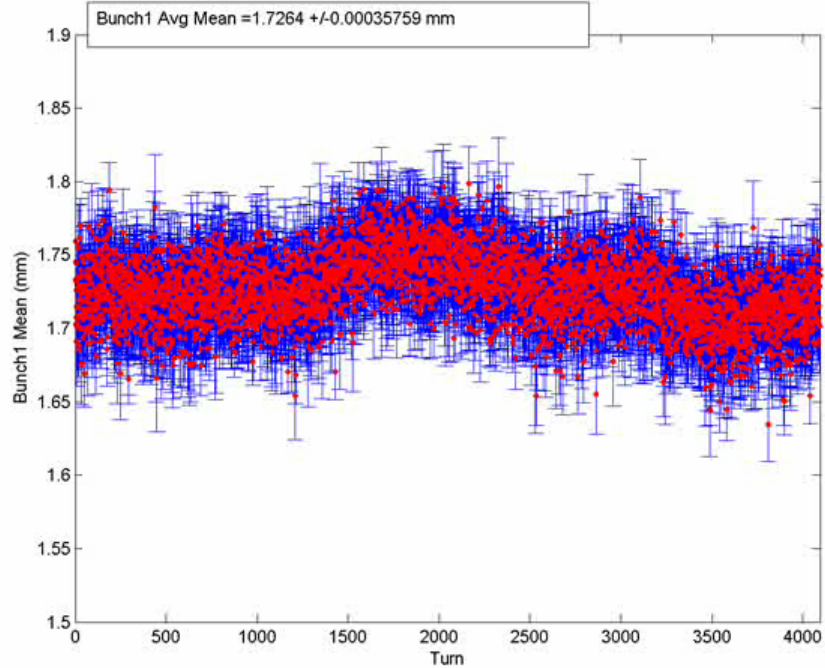


FFT of mean vertical
position from 242.0-249.8 kHz



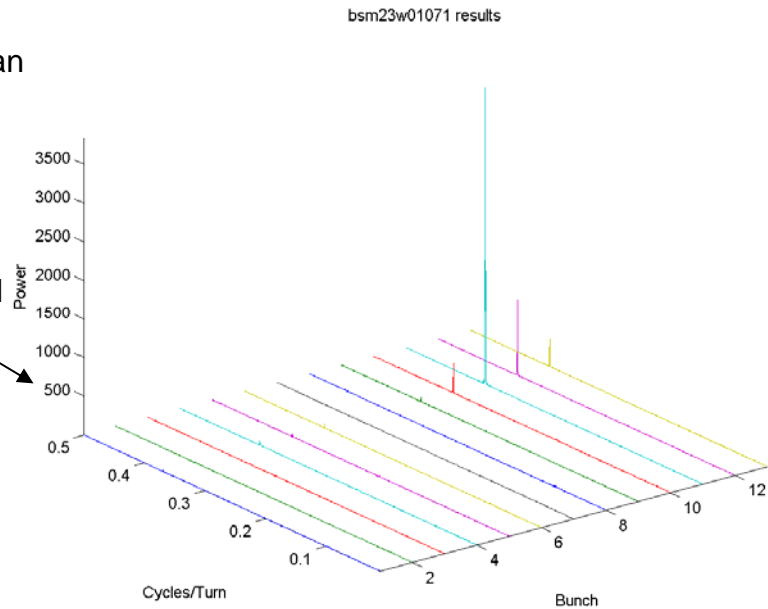
FFT of mean vertical
position from 35-39 kHz



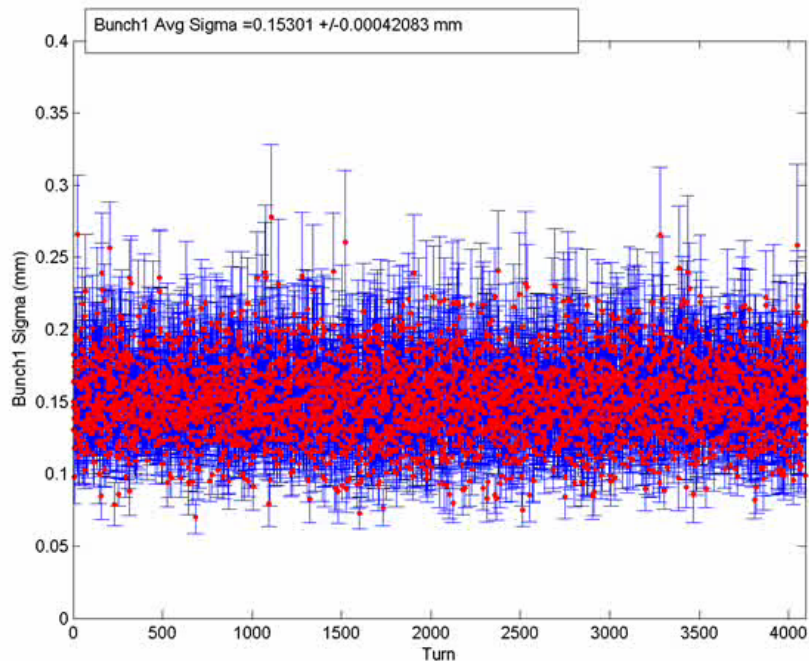


Vertical mean position (movie)

FFT Vertical position

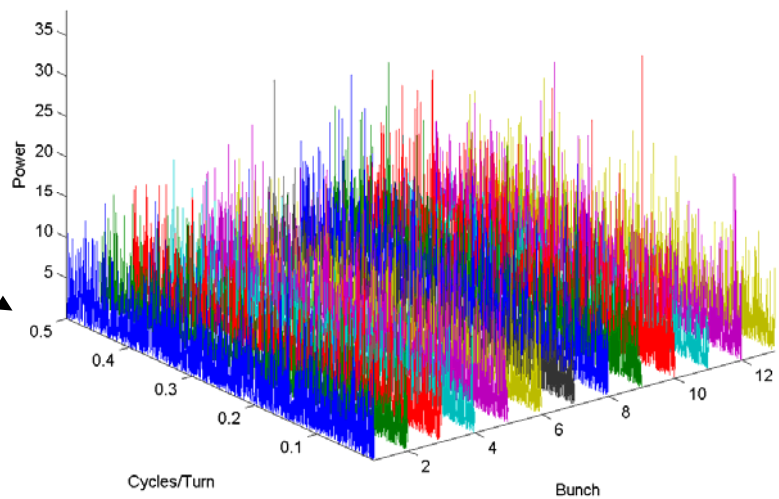


e- vertical dynamics
 Witness bunches 34,38,42
 File: 1071



σ_v (movie)

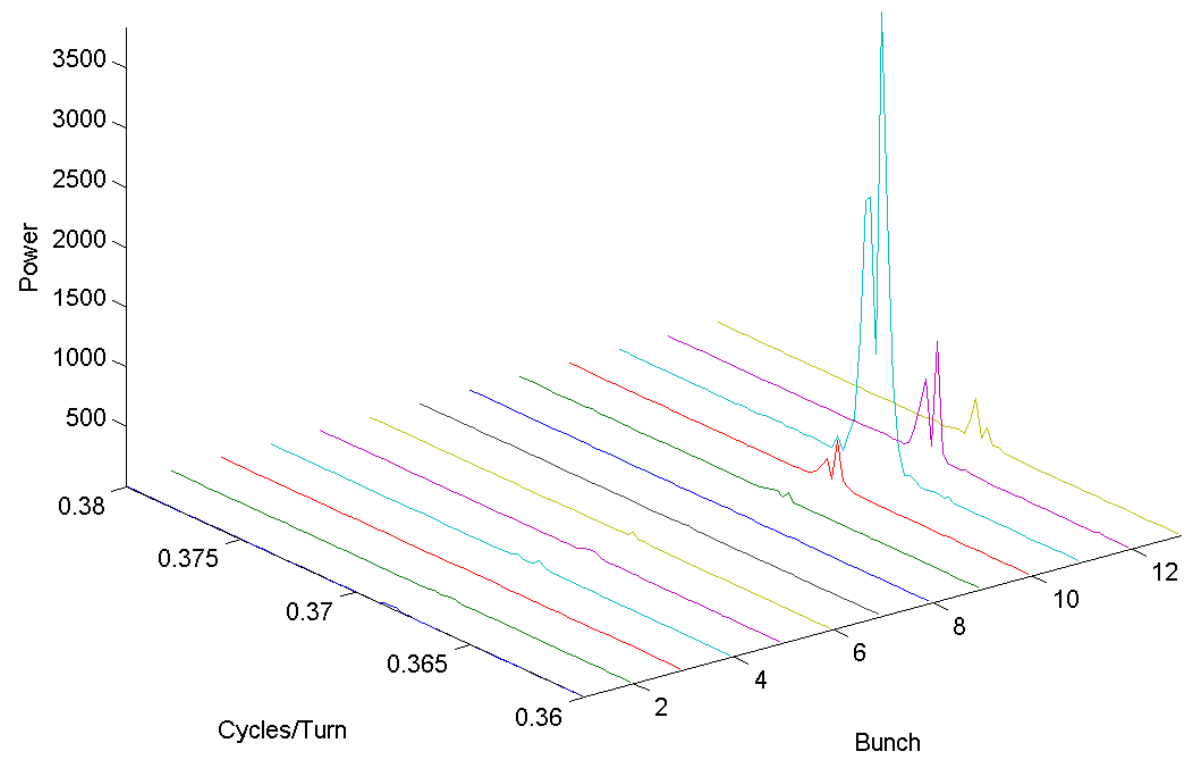
FFT σ_v

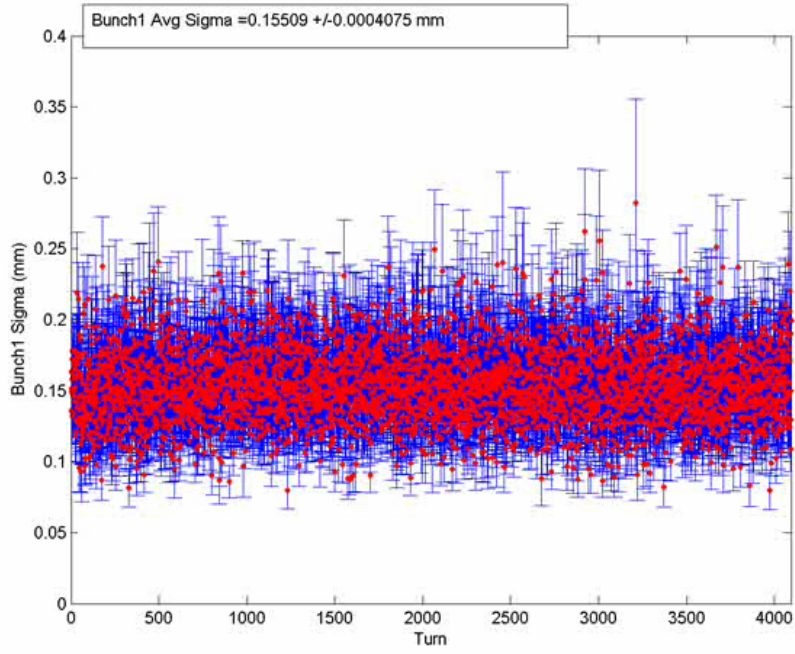


FFT of mean vertical position from 242.0-249.8 kHz

bsm23w01071 results

e- vertical dynamics
Witness bunches 34,38,42
File: 1071

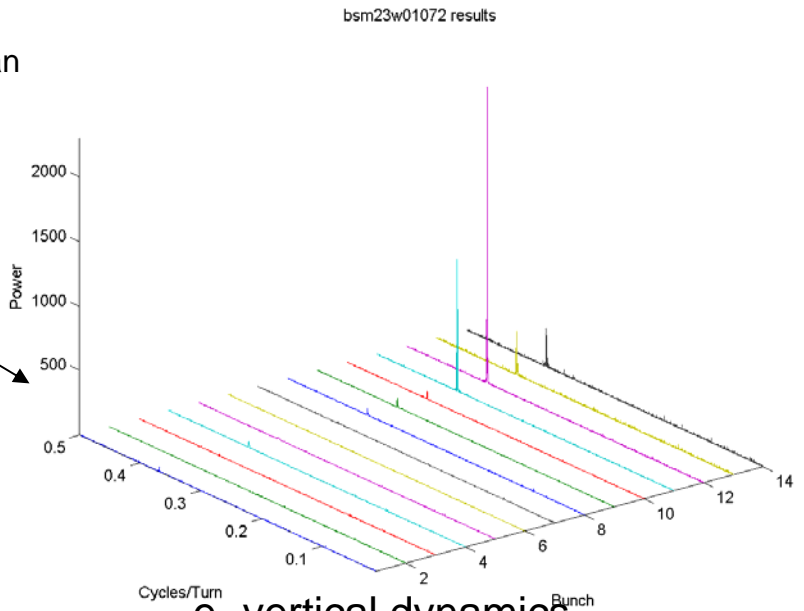




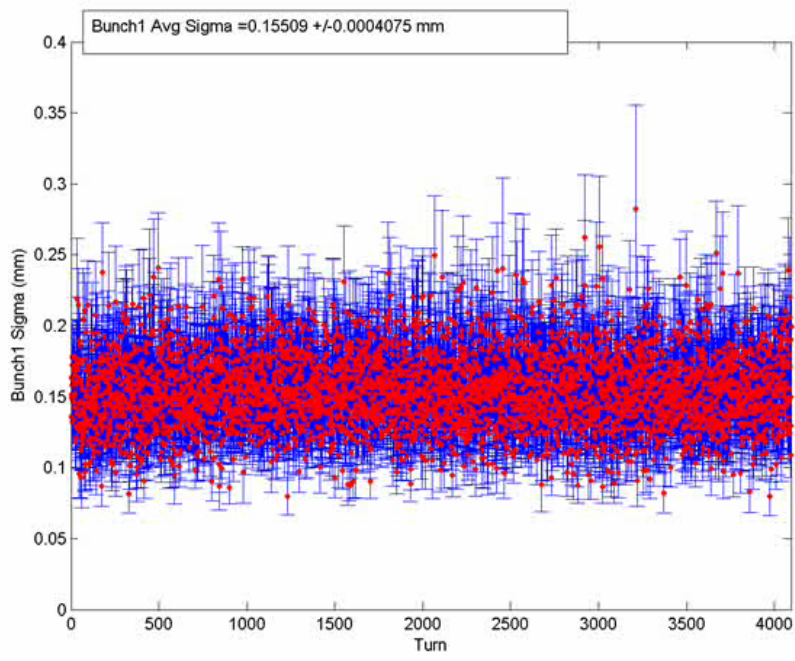
Vertical mean position (movie)



FFT Vertical position



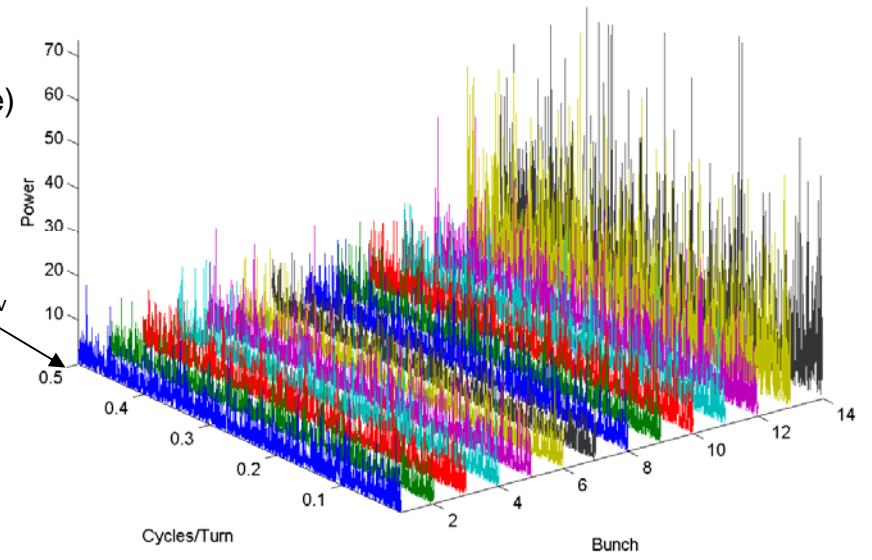
e- vertical dynamics
 Witness bunches 30,34,38,42
 File: 1072
 bsm23w01072 results



σ_v (movie)



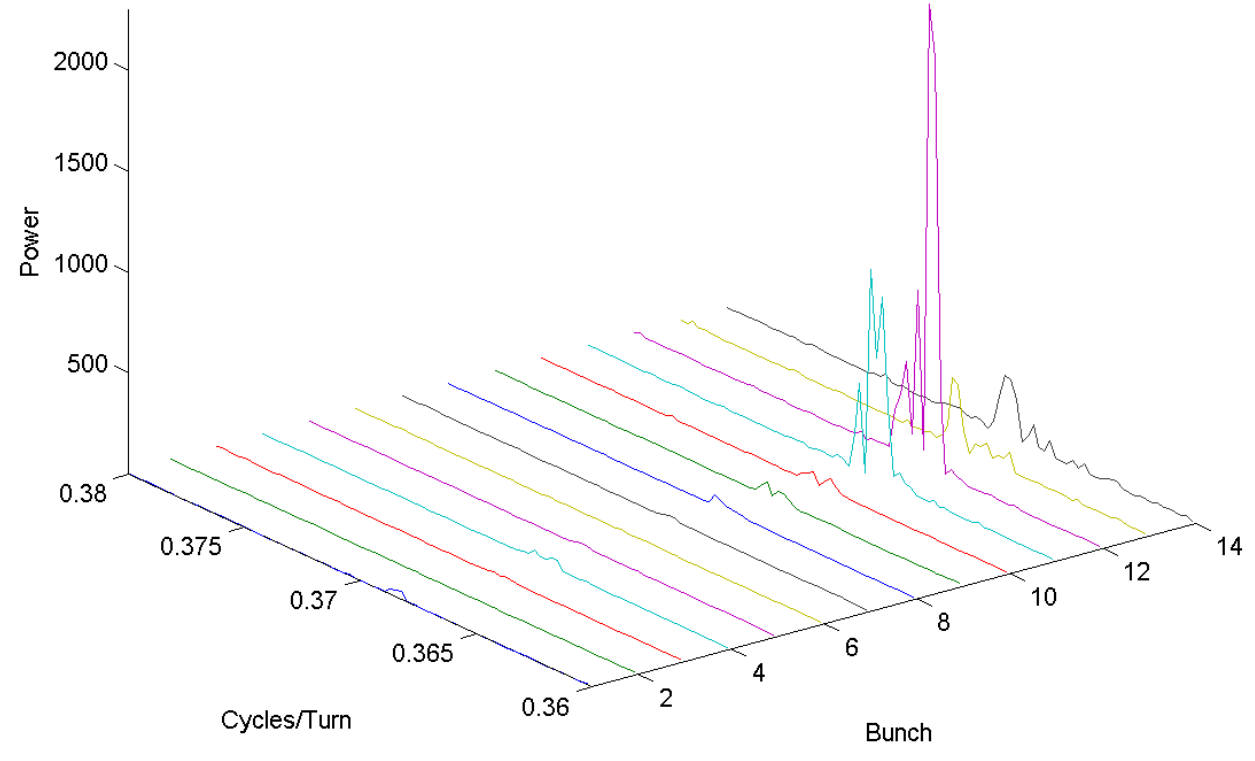
FFT σ_v

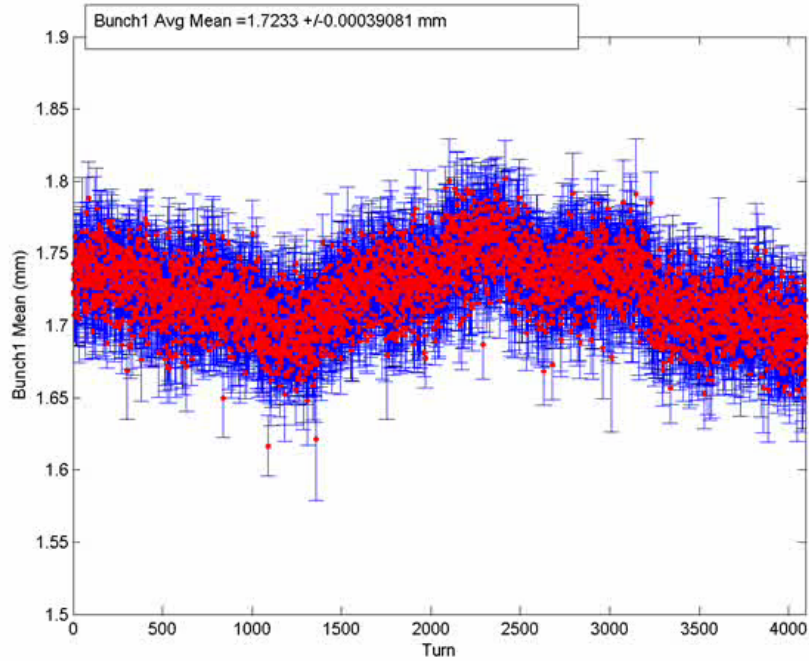


FFT of mean vertical
position from 242.0-249.8 kHz

bsm23w01072 results

e- vertical dynamics
Witness bunches 30,34,38,42
File: 1072

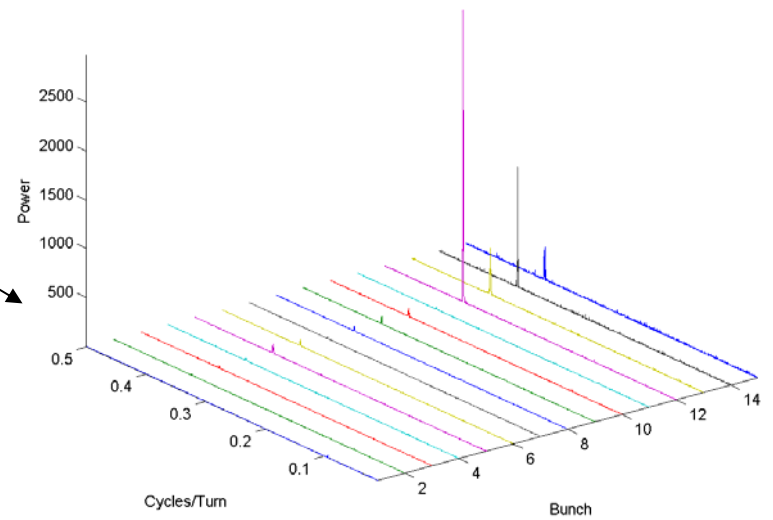




Vertical mean position (movie)

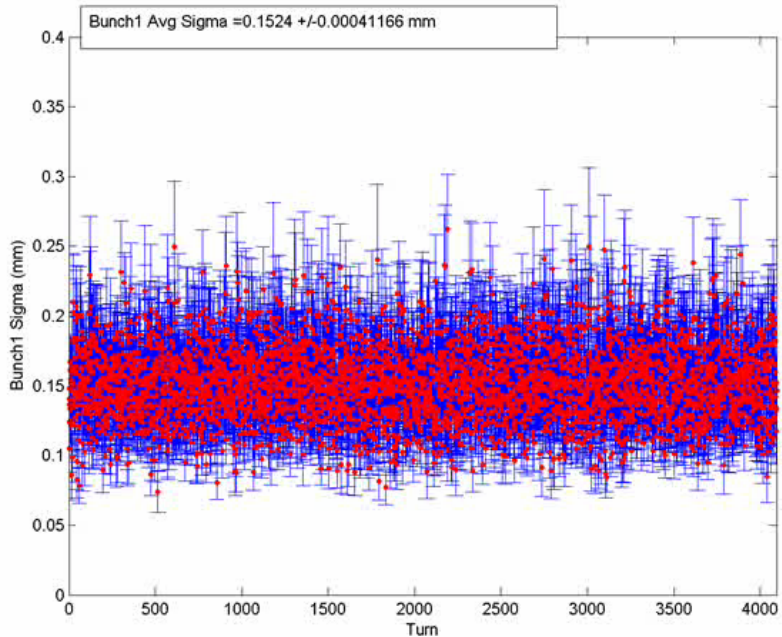
FFT Vertical position

bsm23w01073 results



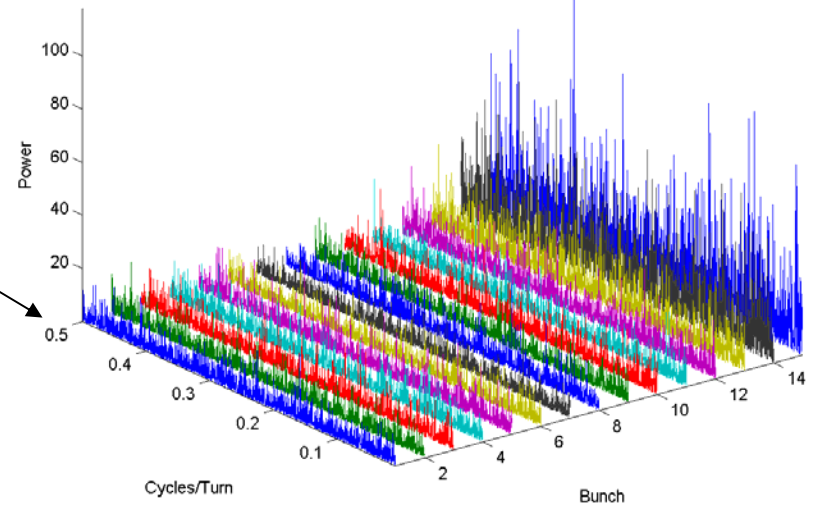
e- vertical dynamics
 Witness bunches 28,30,34,38,42
 File: 1073

bsm23w01073 results



σ_v (movie)

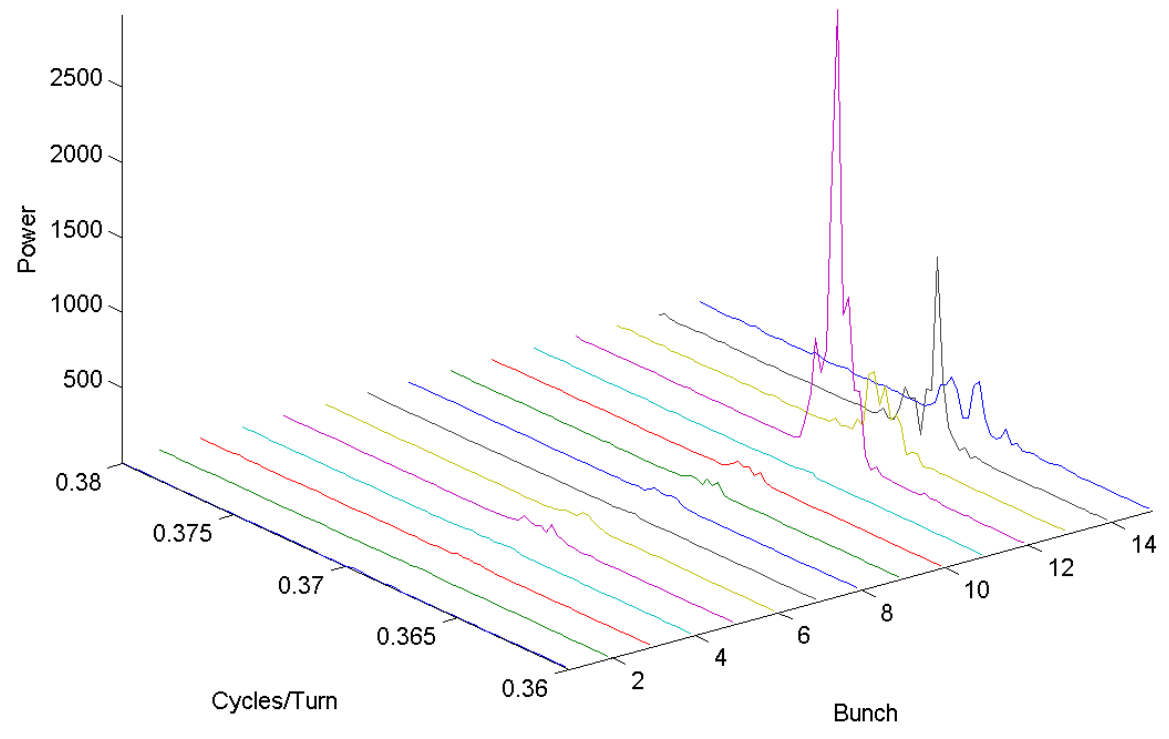
FFT σ_v



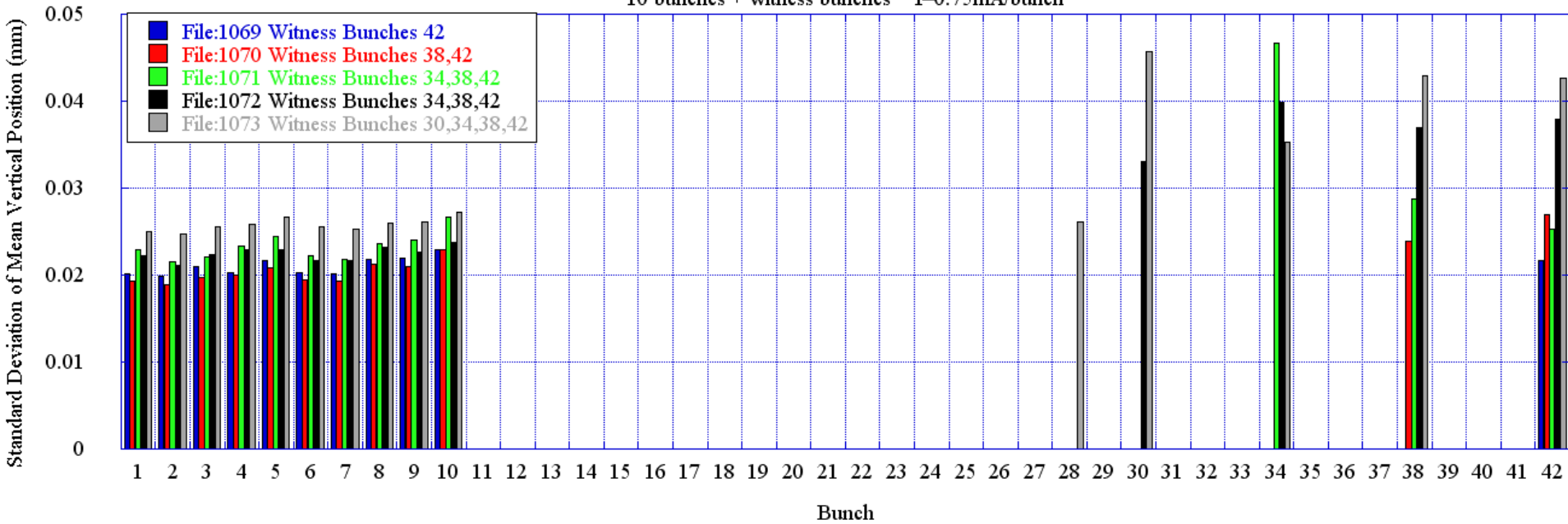
FFT of mean vertical
position from 242.0-249.8 kHz

bsm23w01073 results

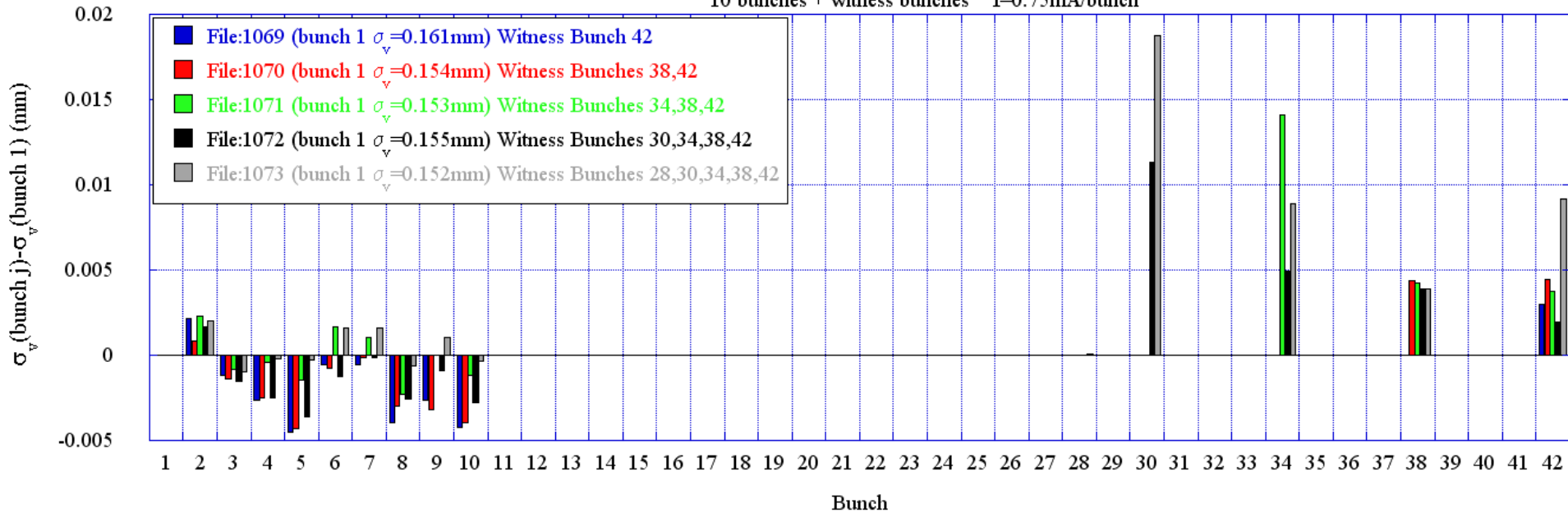
e- vertical dynamics
Witness bunches 28,30,34,38,42
File: 1073

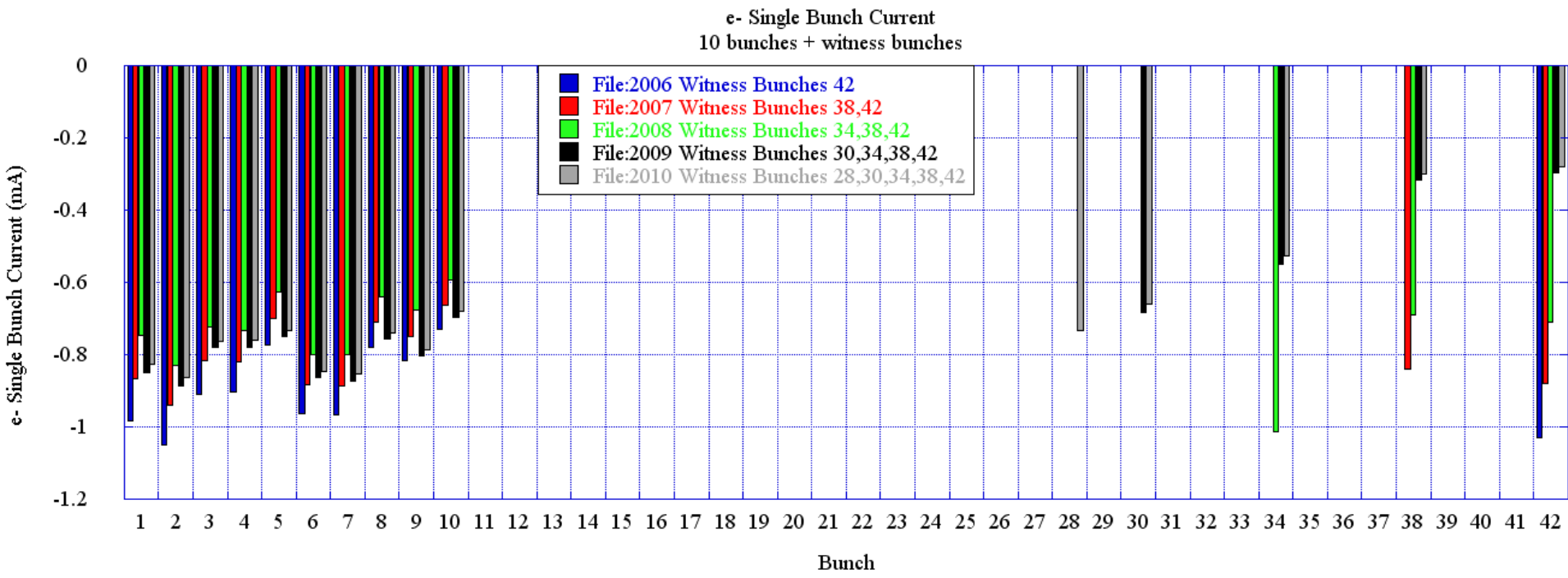
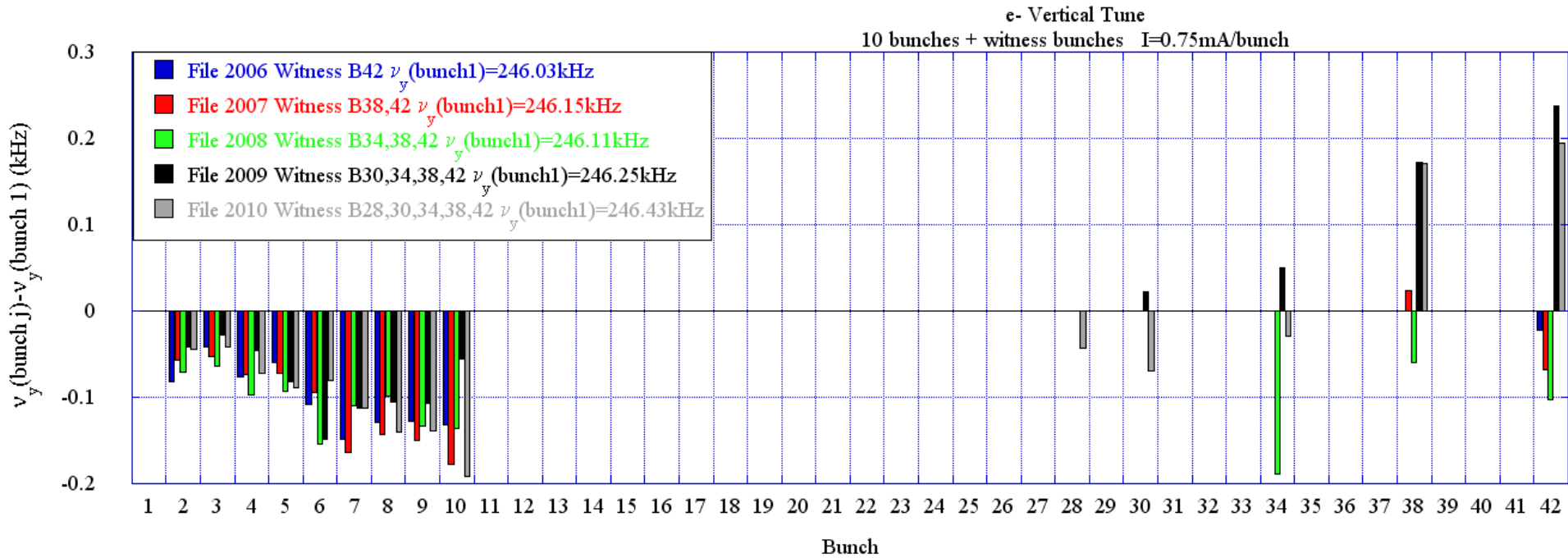


e- Vertical Oscillation Amplitude
10 bunches + witness bunches I=0.75mA/bunch

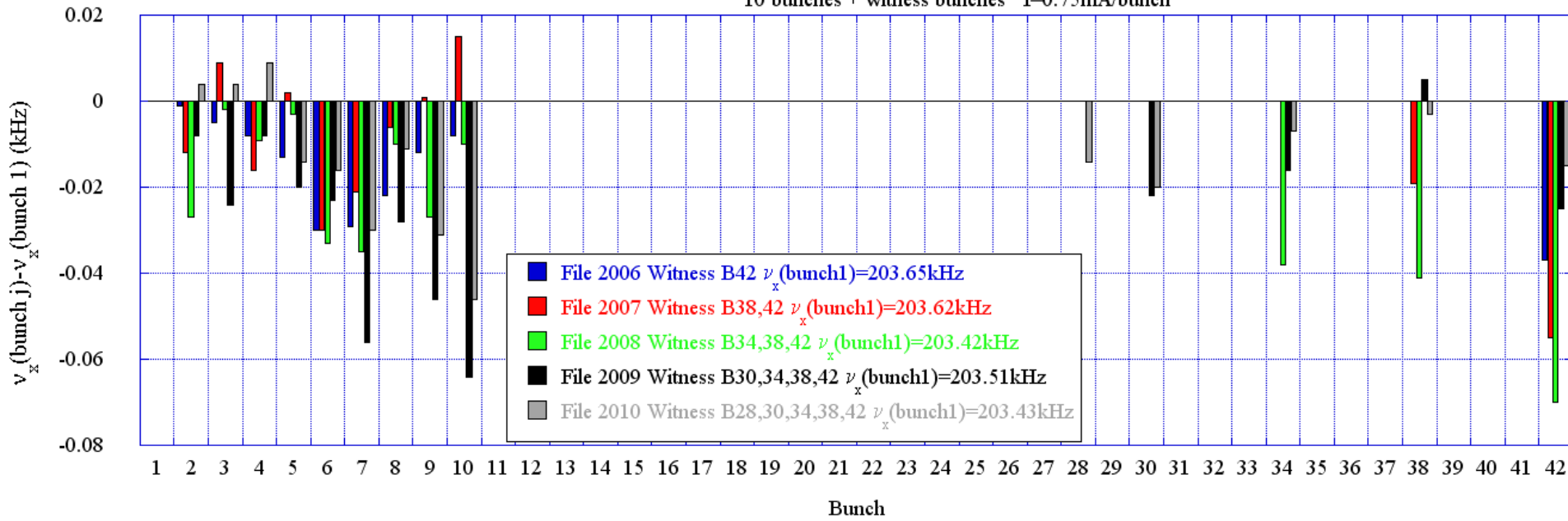


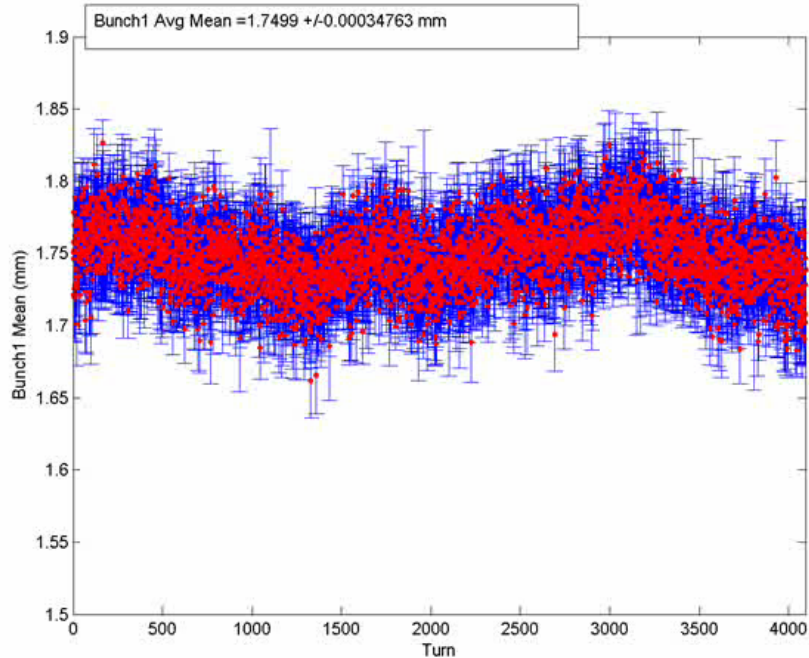
e- Mean Vertical Beam Size
10 bunches + witness bunches I=0.75mA/bunch





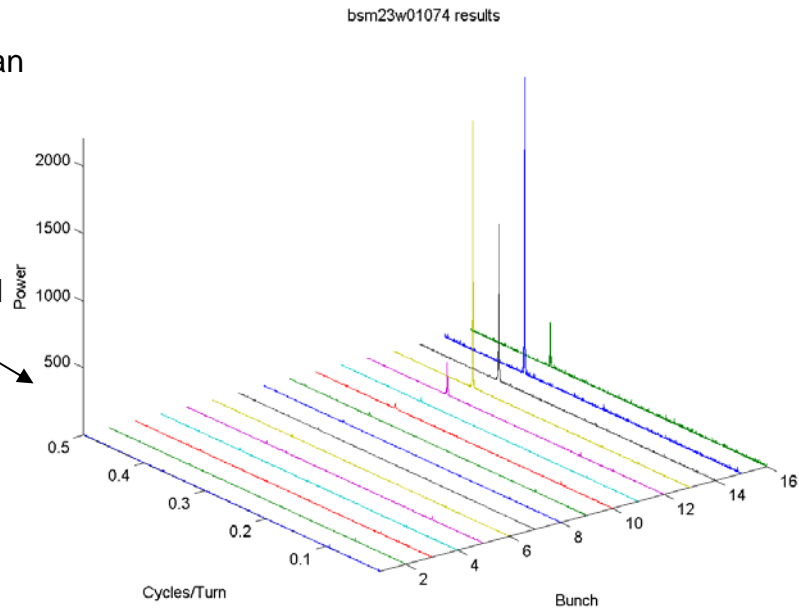
e- Horizontal Tune
10 bunches + witness bunches I=0.75mA/bunch



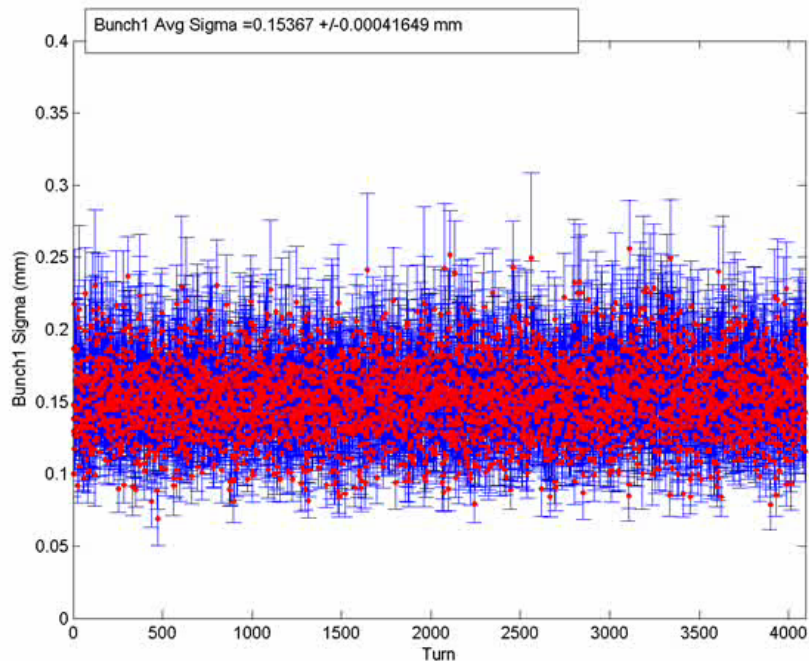


Vertical mean position (movie)

FFT Vertical position

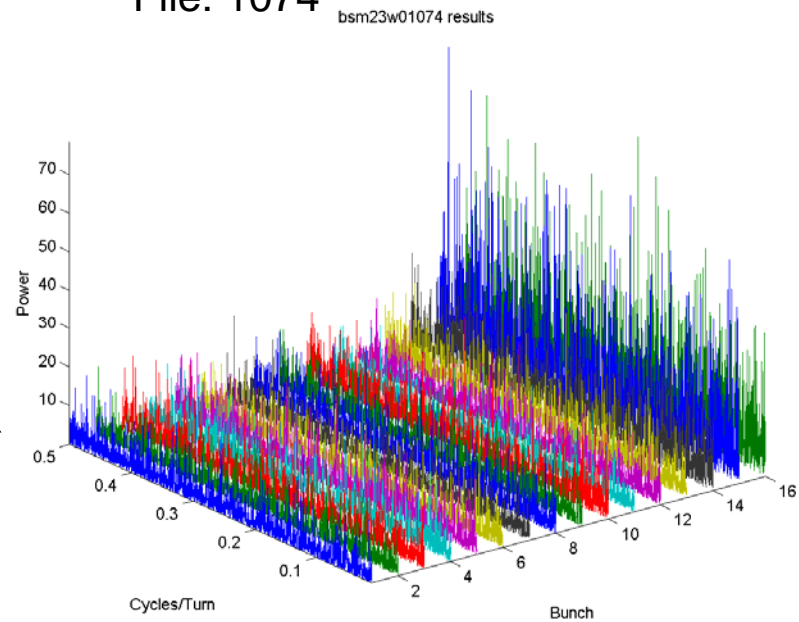


e- vertical dynamics
 Witness bunches 26,28,30,34,38,42
 File: 1074



σ_v (movie)

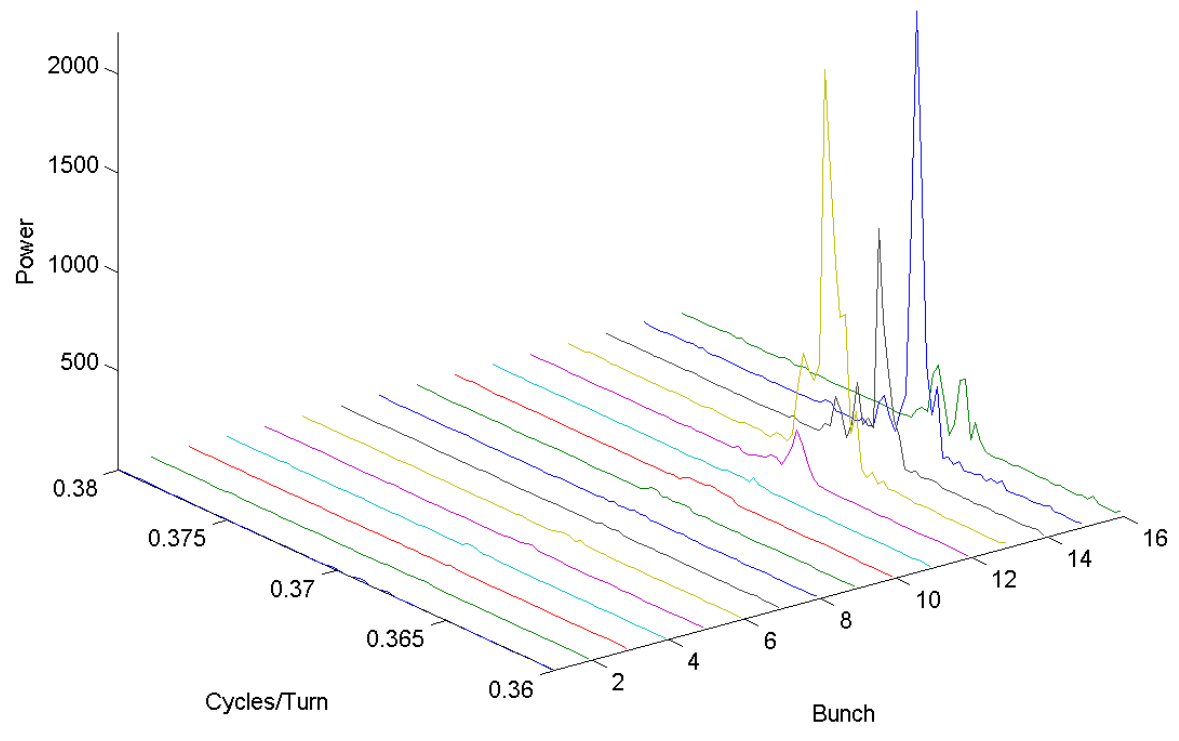
FFT σ_v

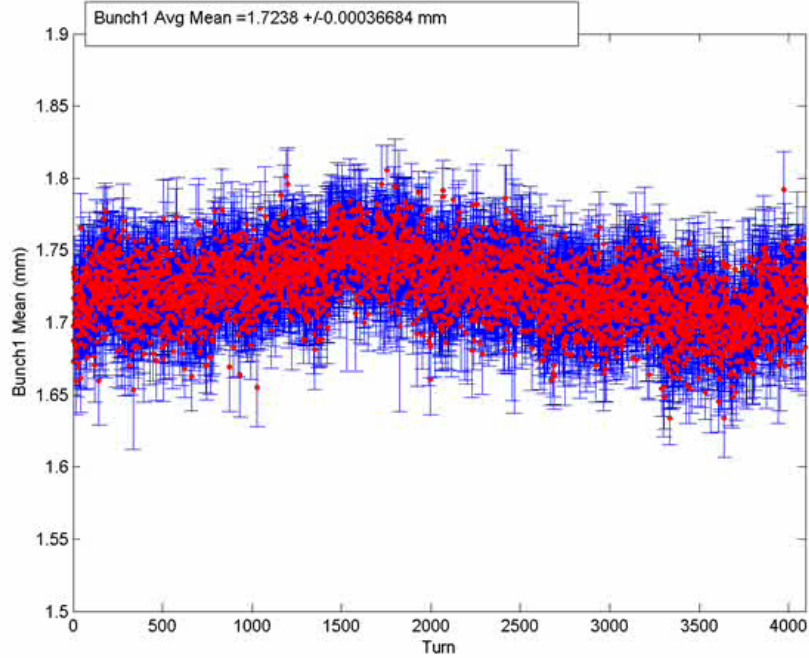


FFT of mean vertical
position from 242.0-249.8 kHz

bsm23w01074 results

e- vertical dynamics
Witness bunches 26,28,30,34,38,42
File: 1074

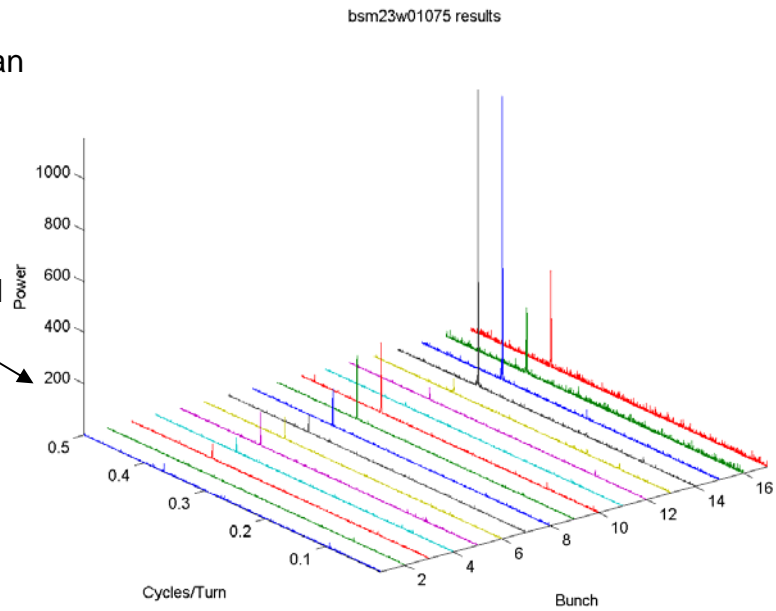




Vertical mean position (movie)



FFT Vertical position

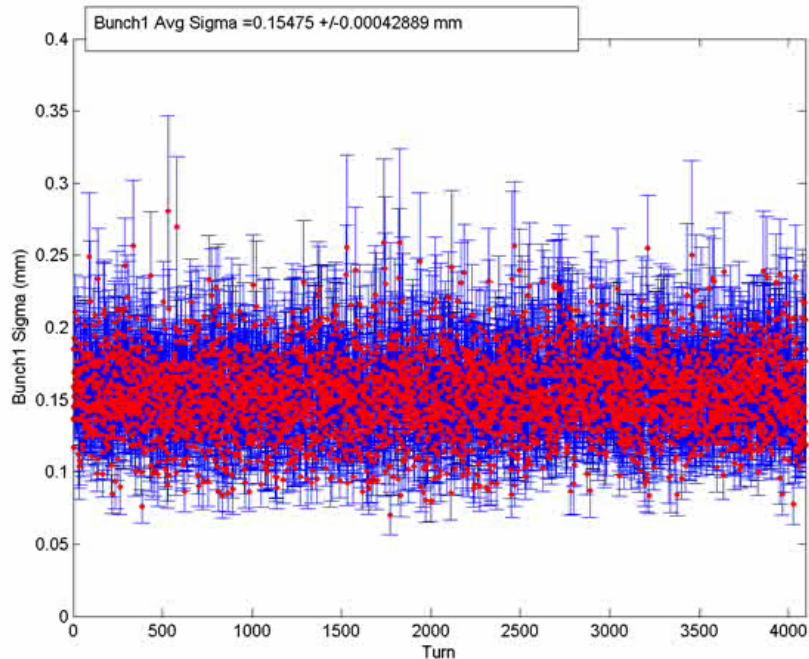


e- vertical dynamics

Witness bunches 24,26,28,30,34,38,42

File: 1075

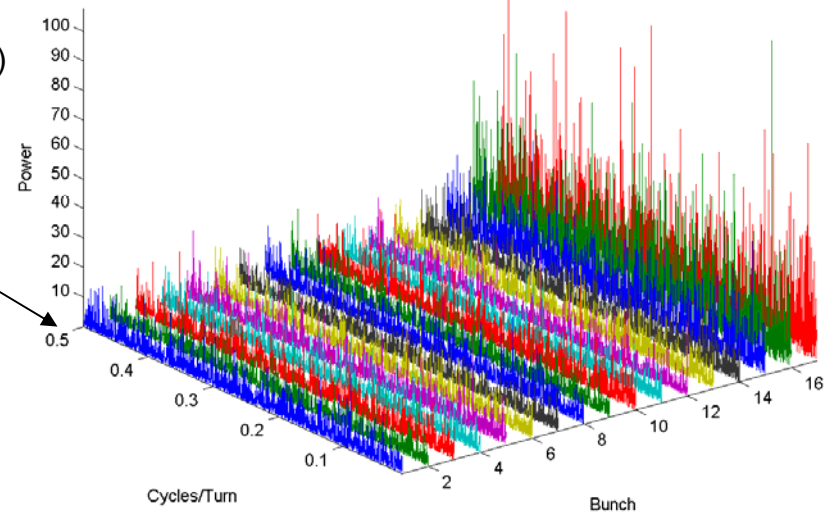
bsm23w01075 results



σ_v (movie)



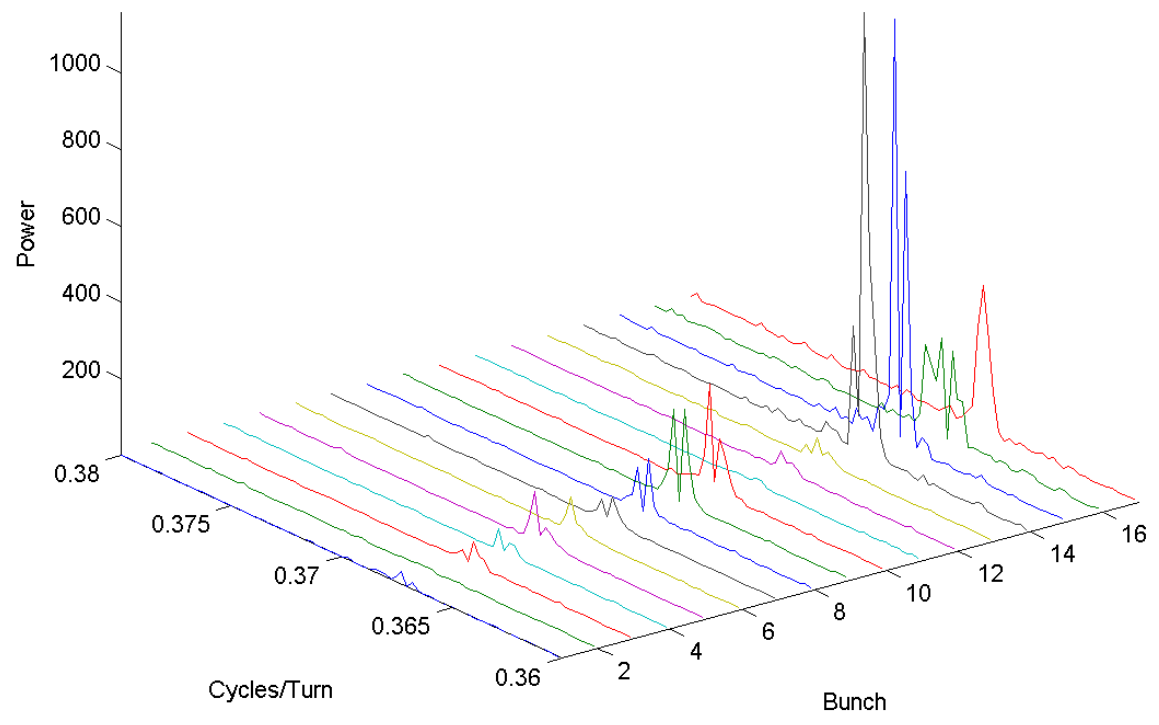
FFT σ_v

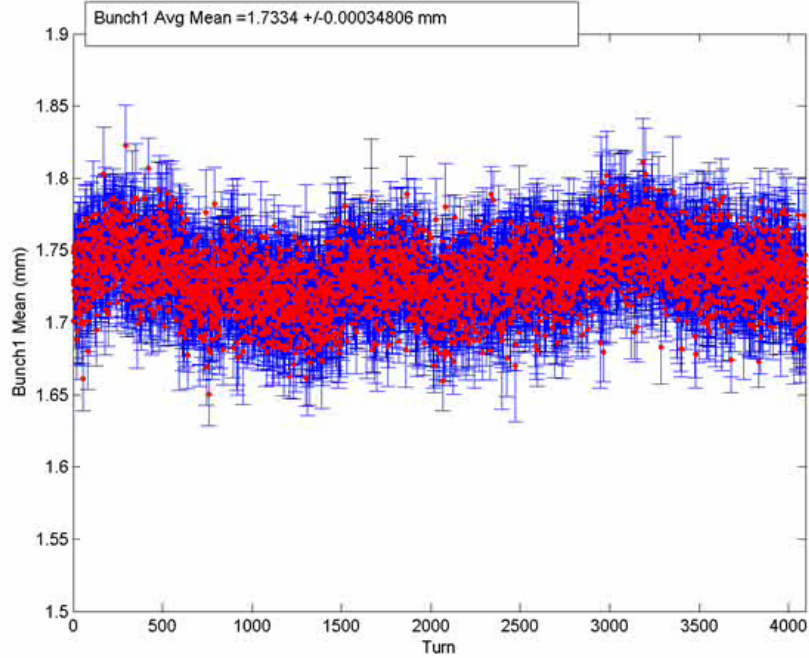


FFT of mean vertical
position from 242.0-249.8 kHz

bsm23w01075 results

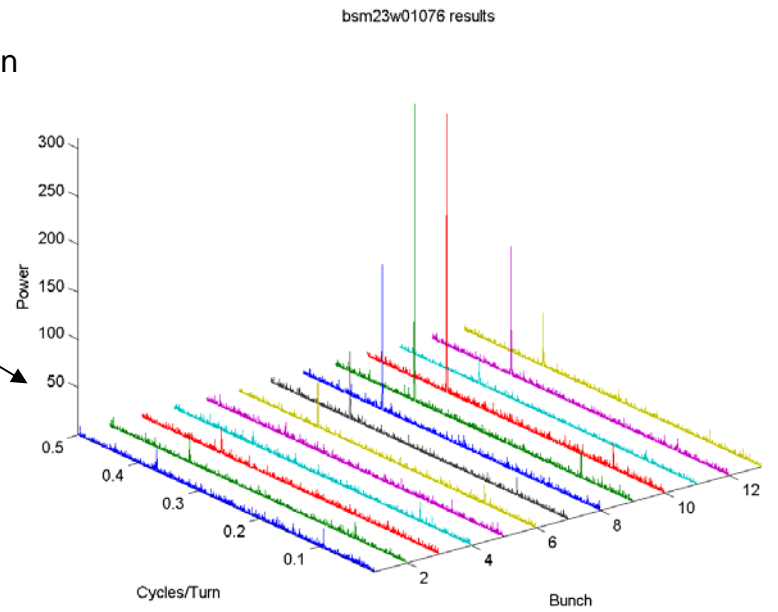
e- vertical dynamics
Witness bunches 24,26,28,30,34,38,42
File: 1075



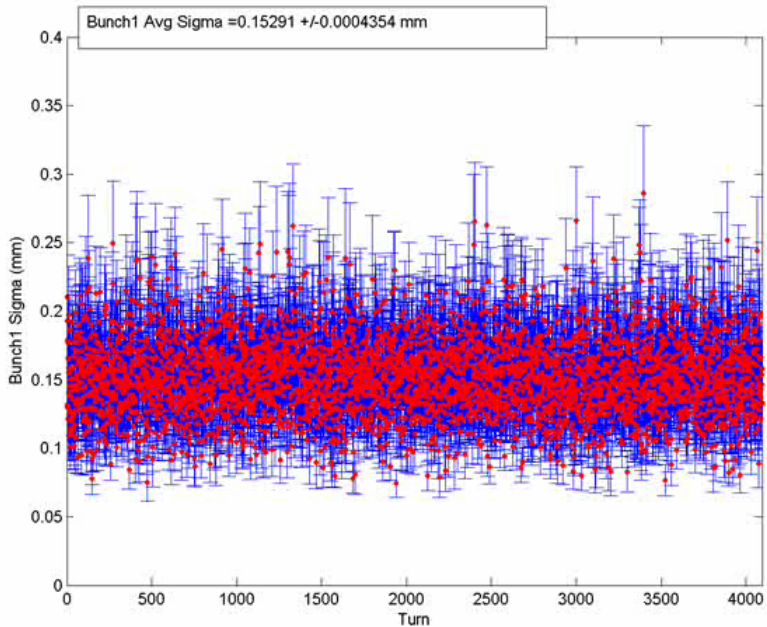


Vertical mean position (movie)

FFT Vertical position

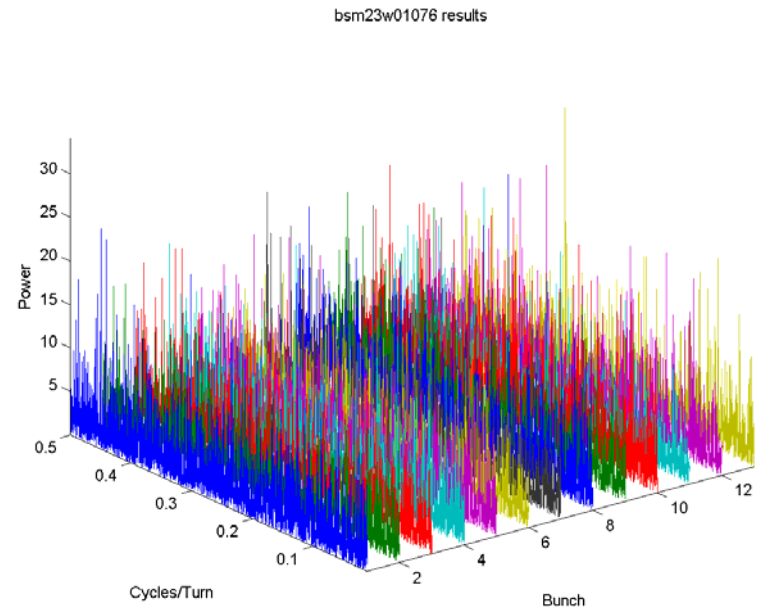


e- vertical dynamics
 Witness bunches 22,24,26
 File: 1076



σ_v (movie)

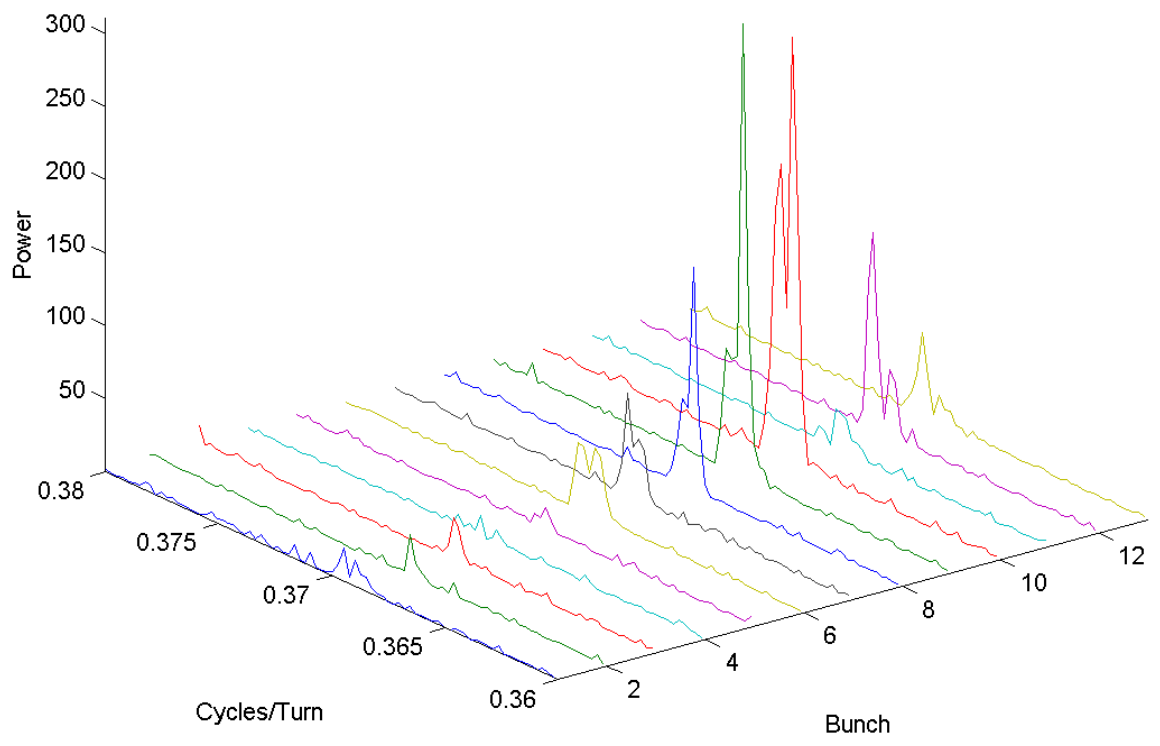
FFT σ_v

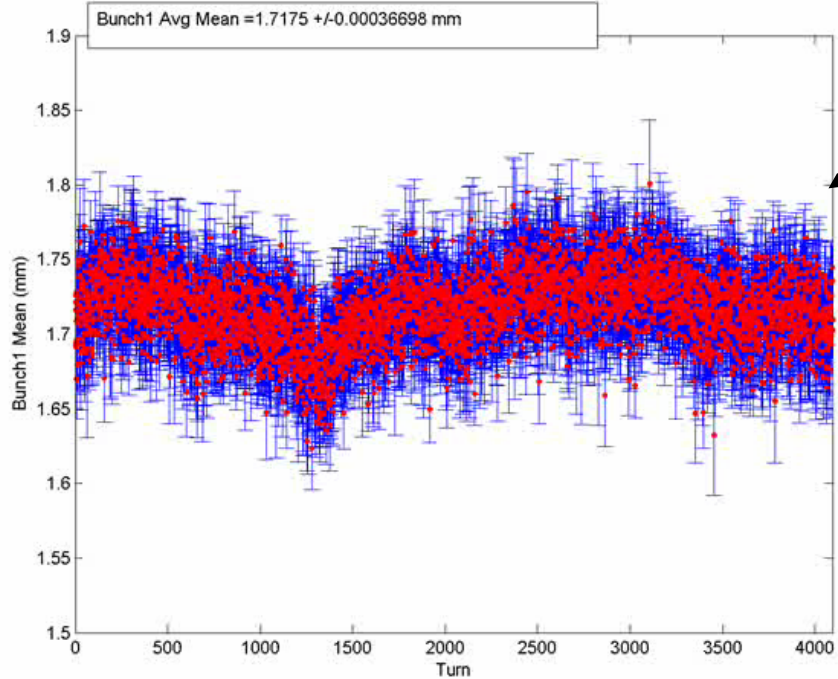


FFT of mean vertical
position from 242.0-249.8 kHz

bsm23w01076 results

e- vertical dynamics
Witness bunches 22,24,26
File: 1076

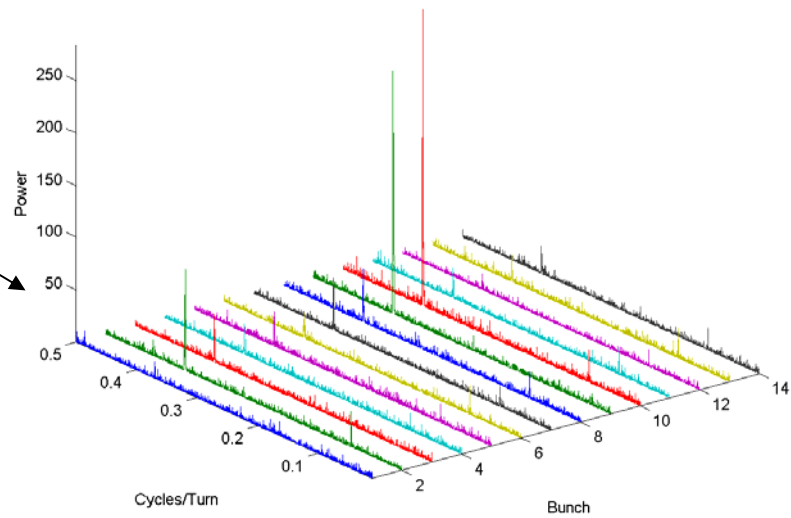




Vertical mean position (movie)

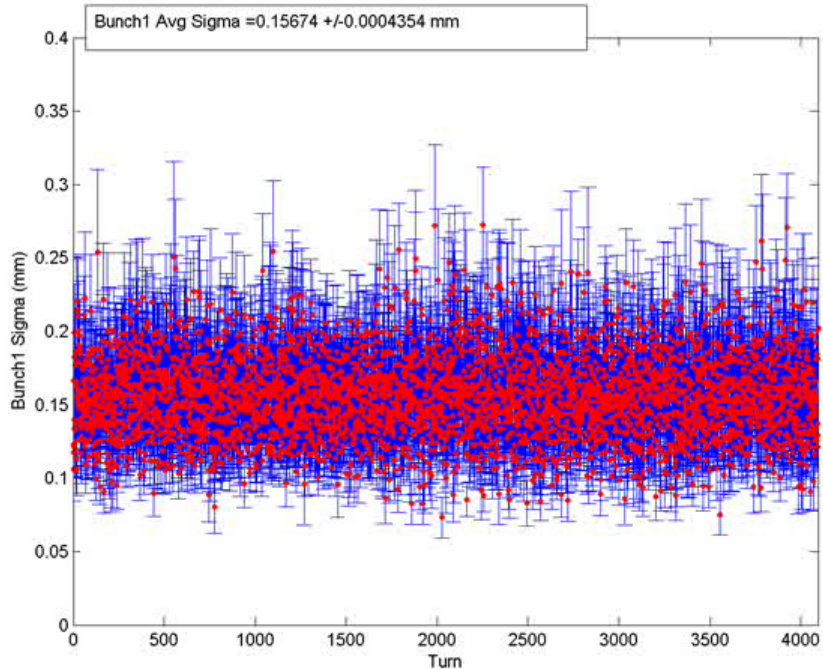
FFT Vertical position

bsm23w01077 results



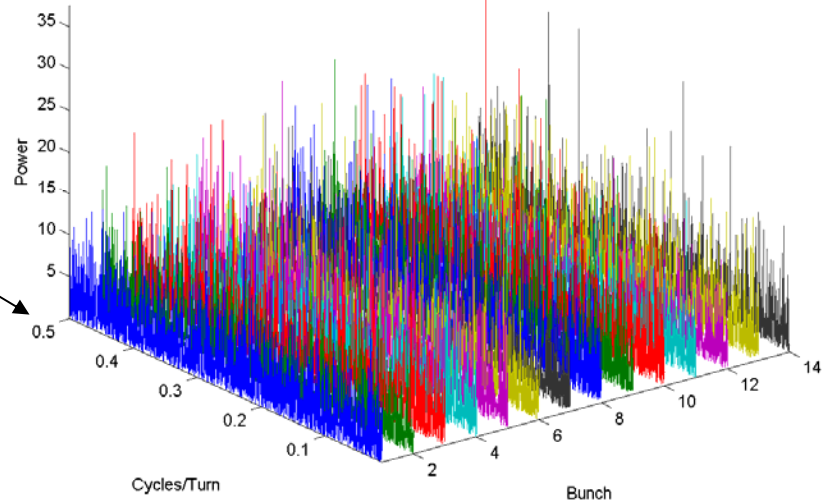
e- vertical dynamics
 Witness bunches 20,22,24,26
 File: 1077

bsm23w01077 results



σ_v (movie)

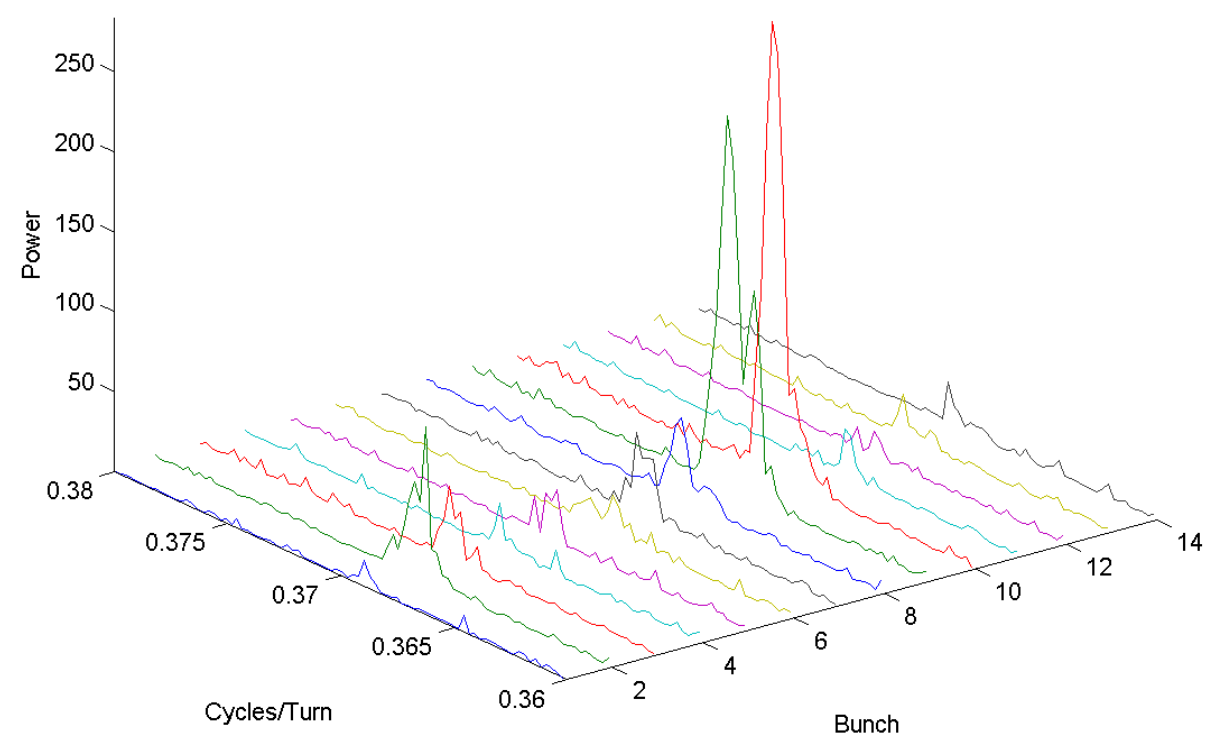
FFT σ_v

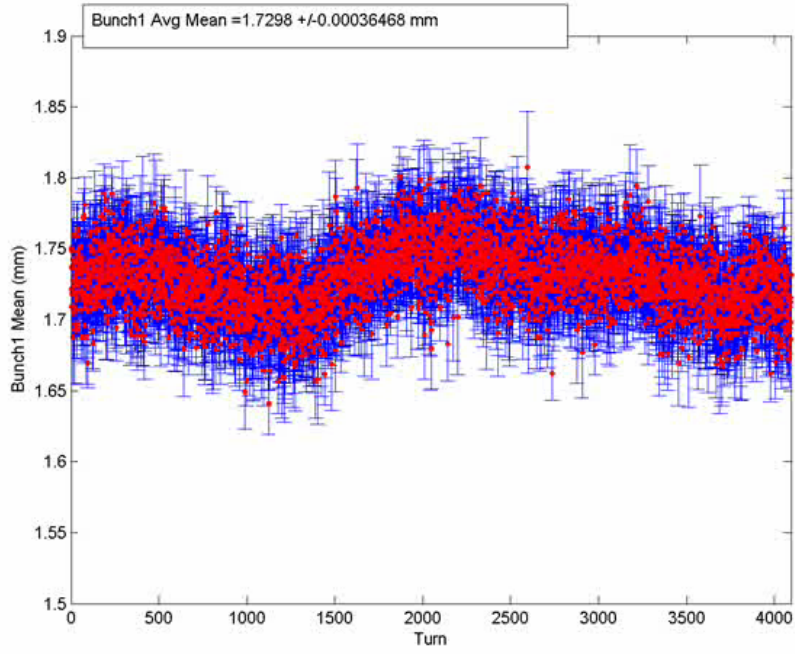


FFT of mean vertical
position from 242.0-249.8 kHz

bsm23w01077 results

e- vertical dynamics
Witness bunches 20,22,24,26
File: 1077

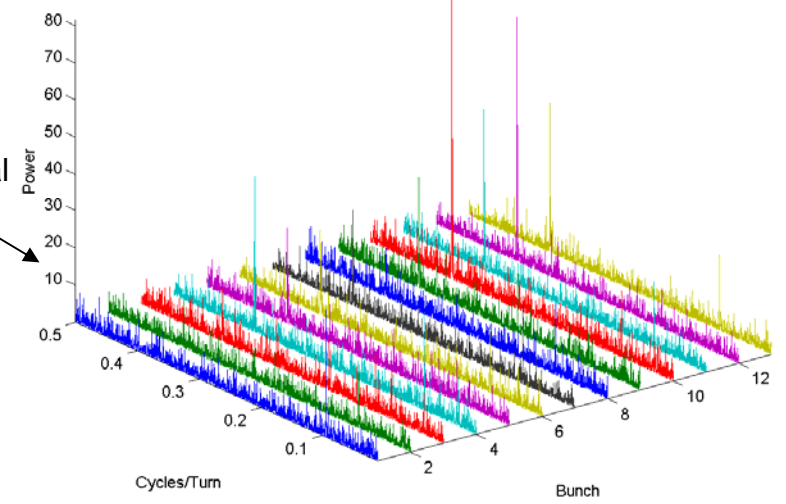




Vertical mean position (movie)

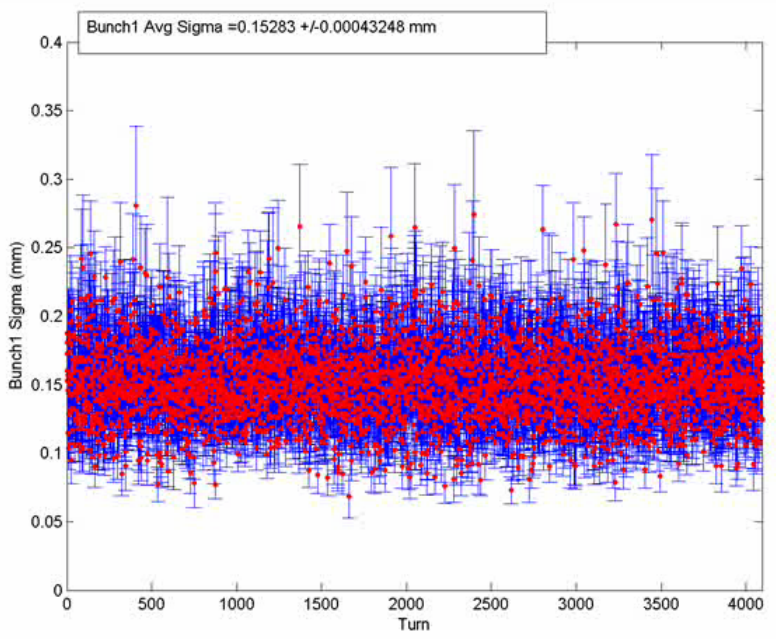
FFT Vertical position

bsm23w01078 results



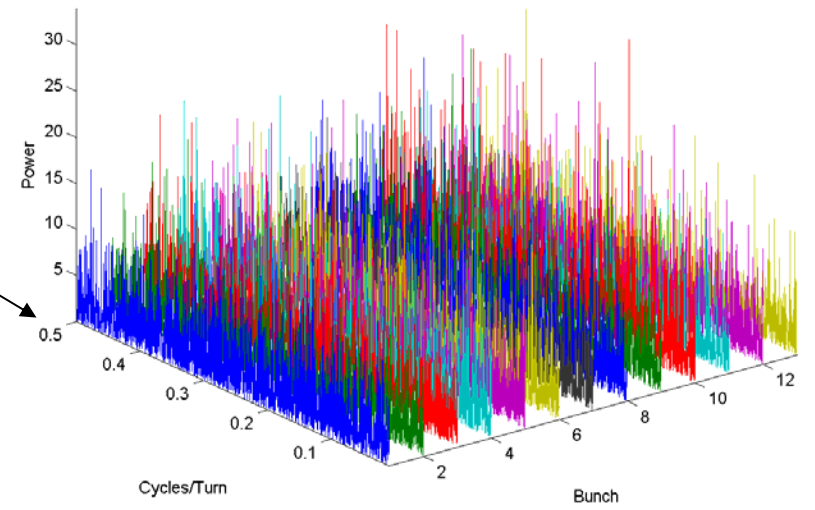
e- vertical dynamics
 Witness bunches 19-20,22
 File: 1078

bsm23w01078 results



σ_v (movie)

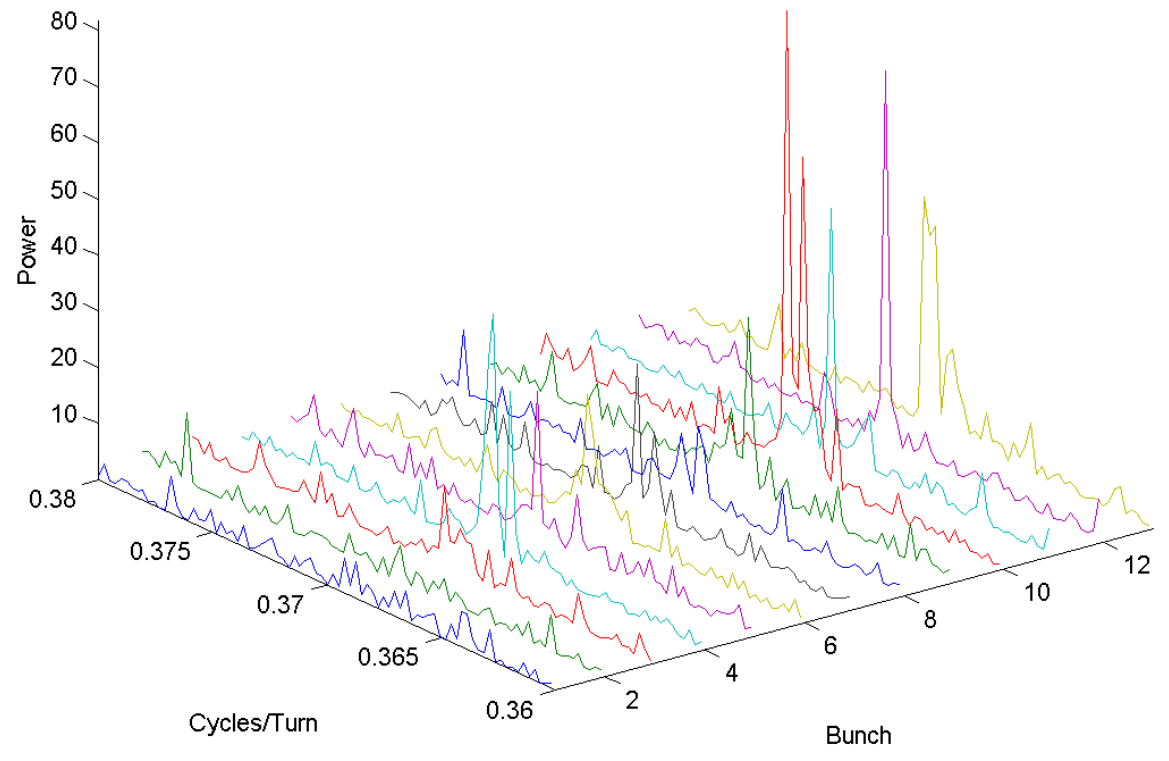
FFT σ_v

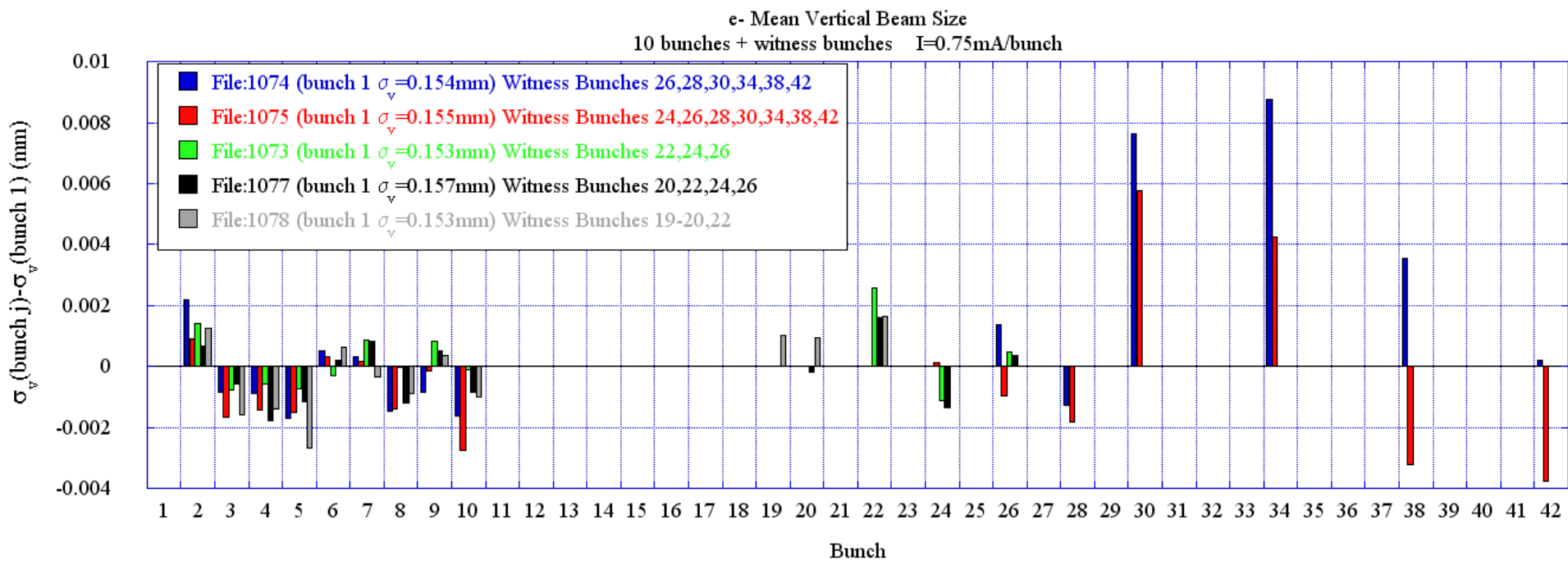
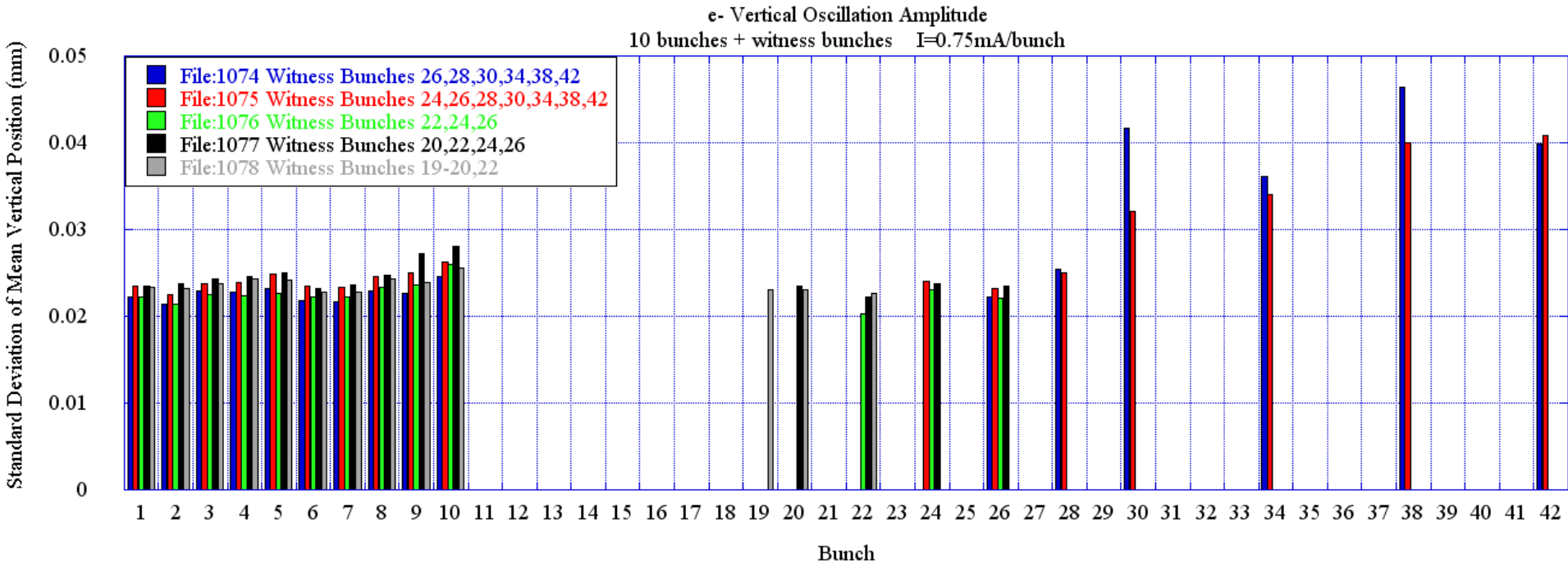


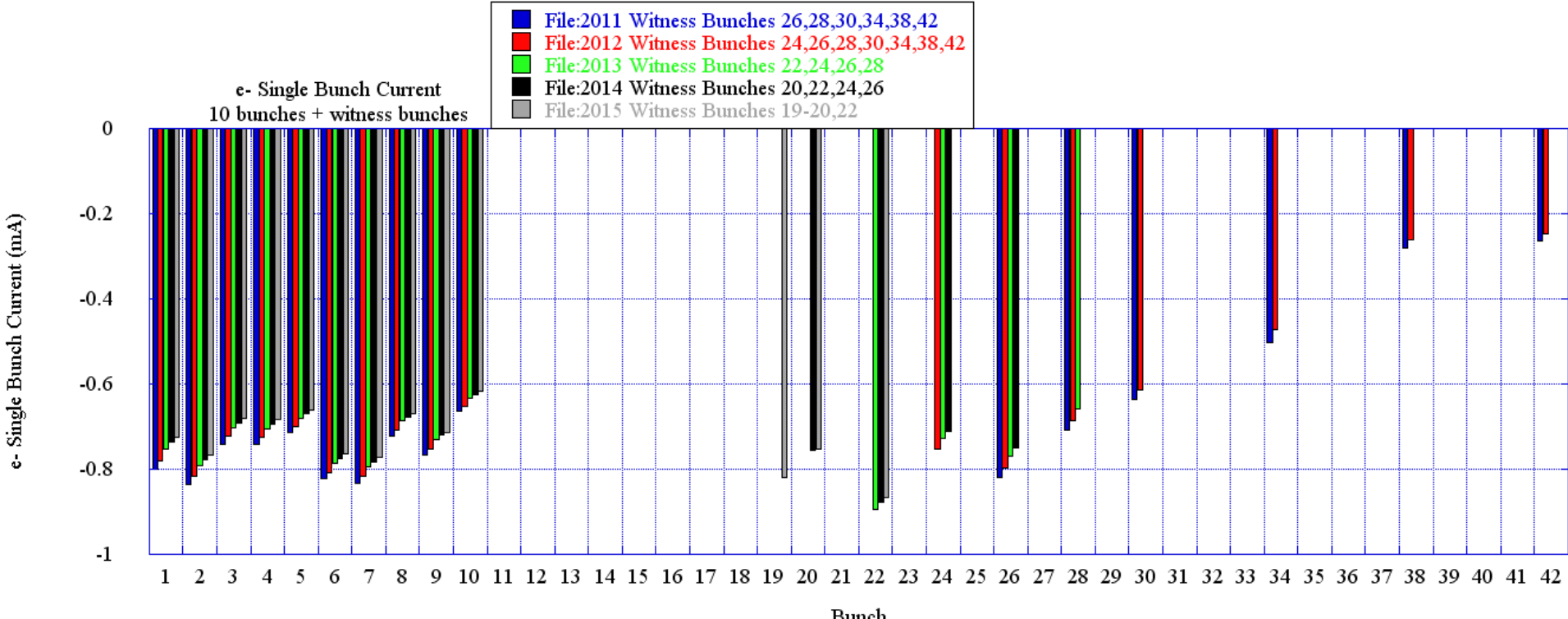
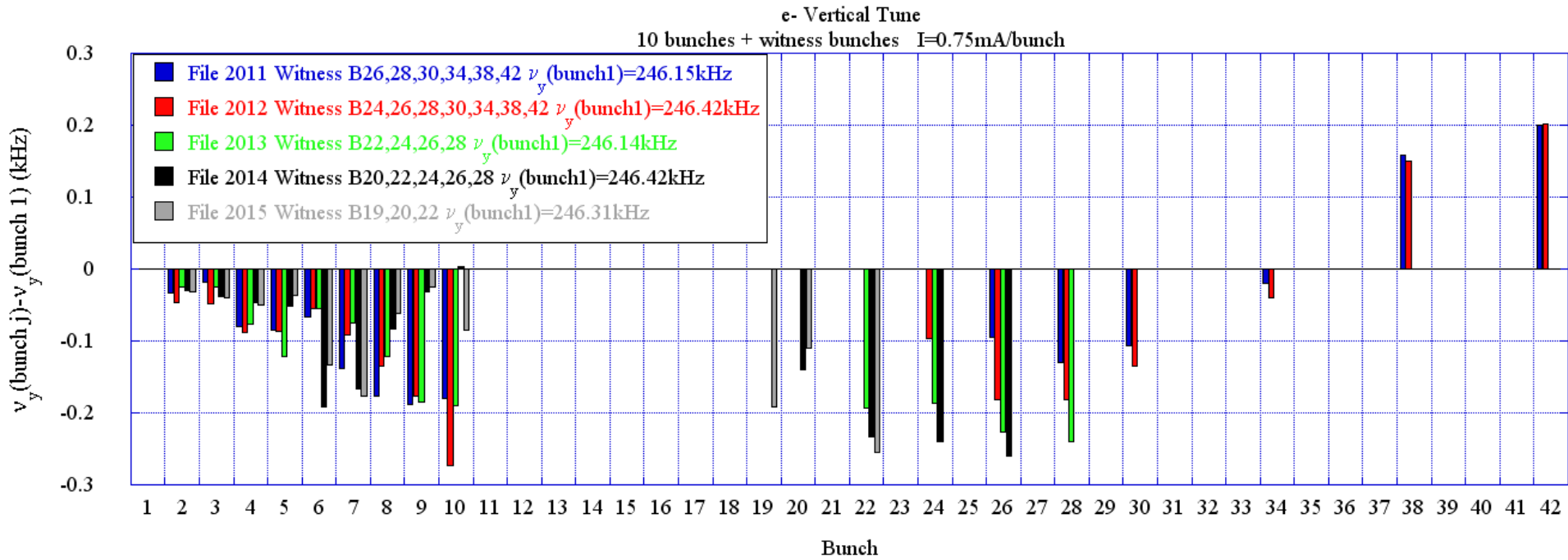
FFT of mean vertical
position from 242.0-249.8 kHz

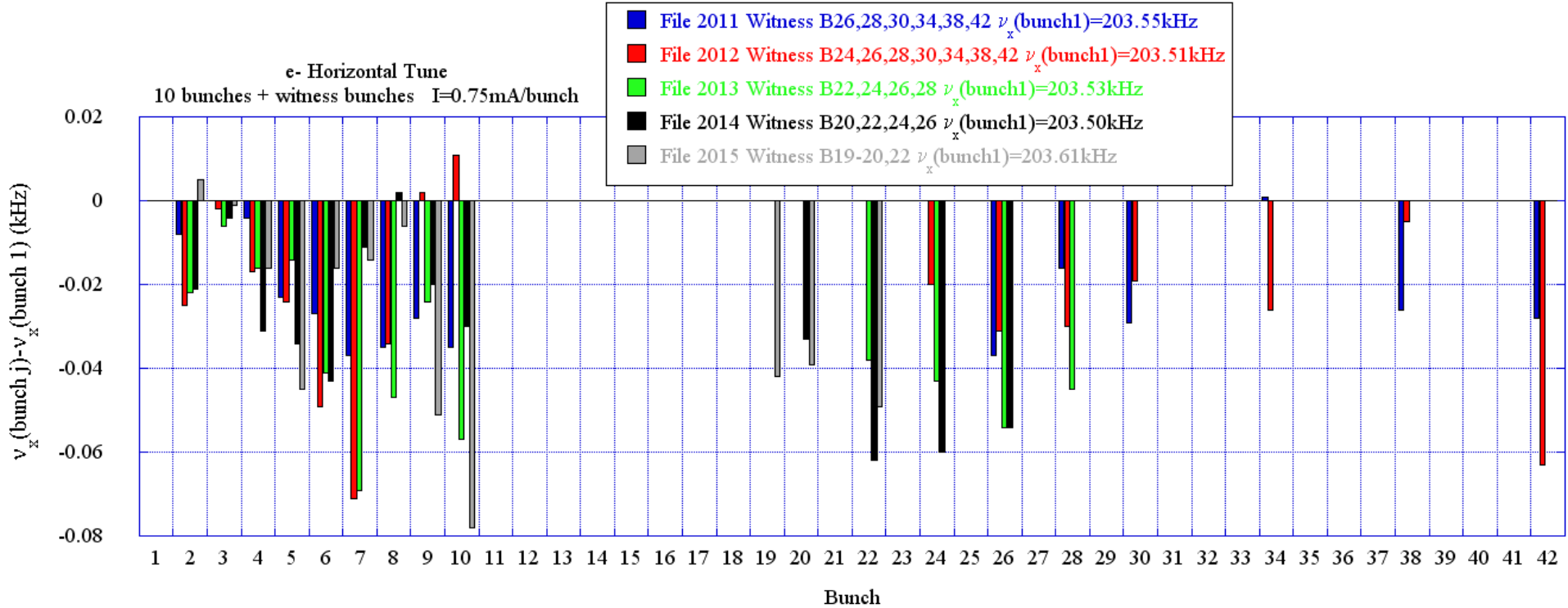
bsm23w01078 results

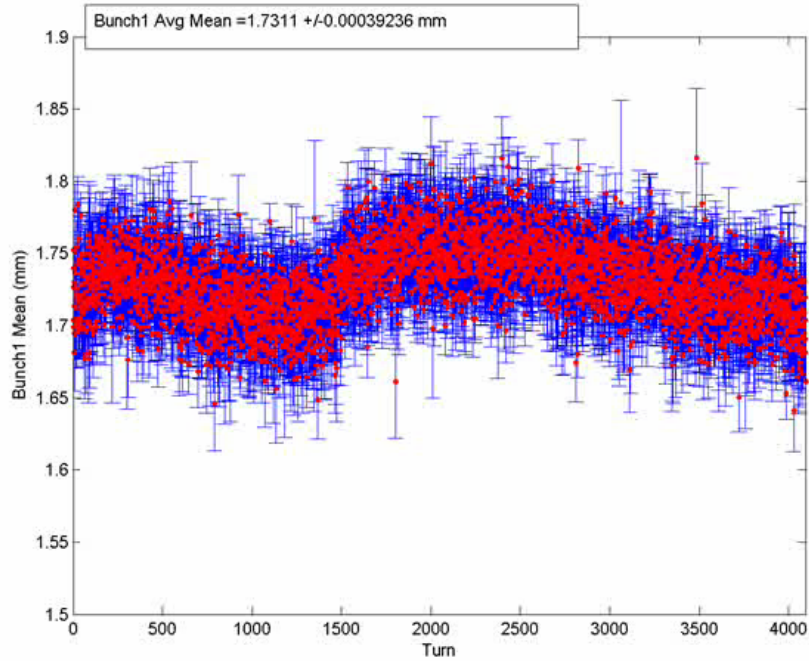
e- vertical dynamics
Witness bunches 19-20,22
File: 1078







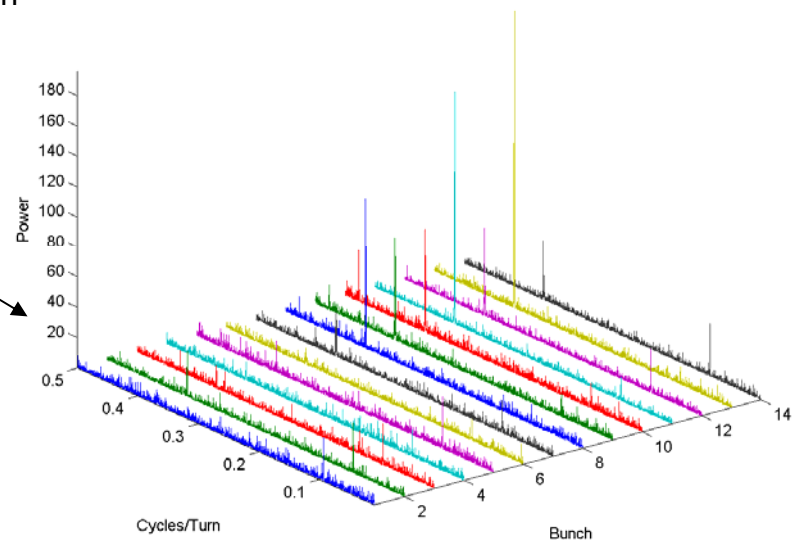




Vertical mean position (movie)

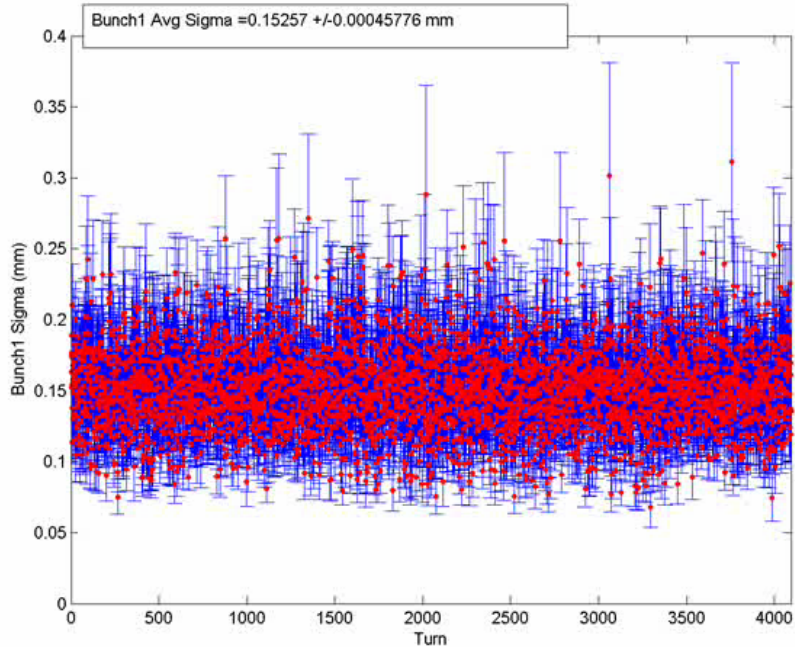
FFT Vertical position

bsm23w01079 results



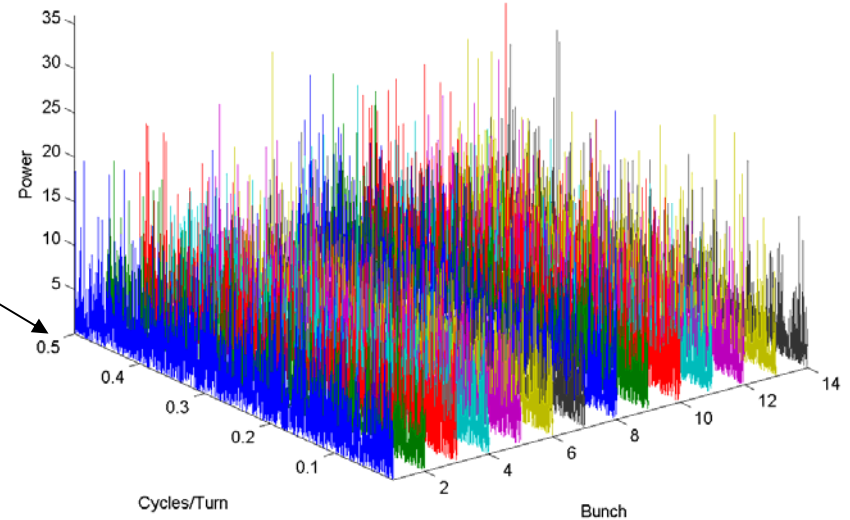
e- vertical dynamics
 Witness bunches 18-20,22
 File: 1079

bsm23w01079 results



σ_v (movie)

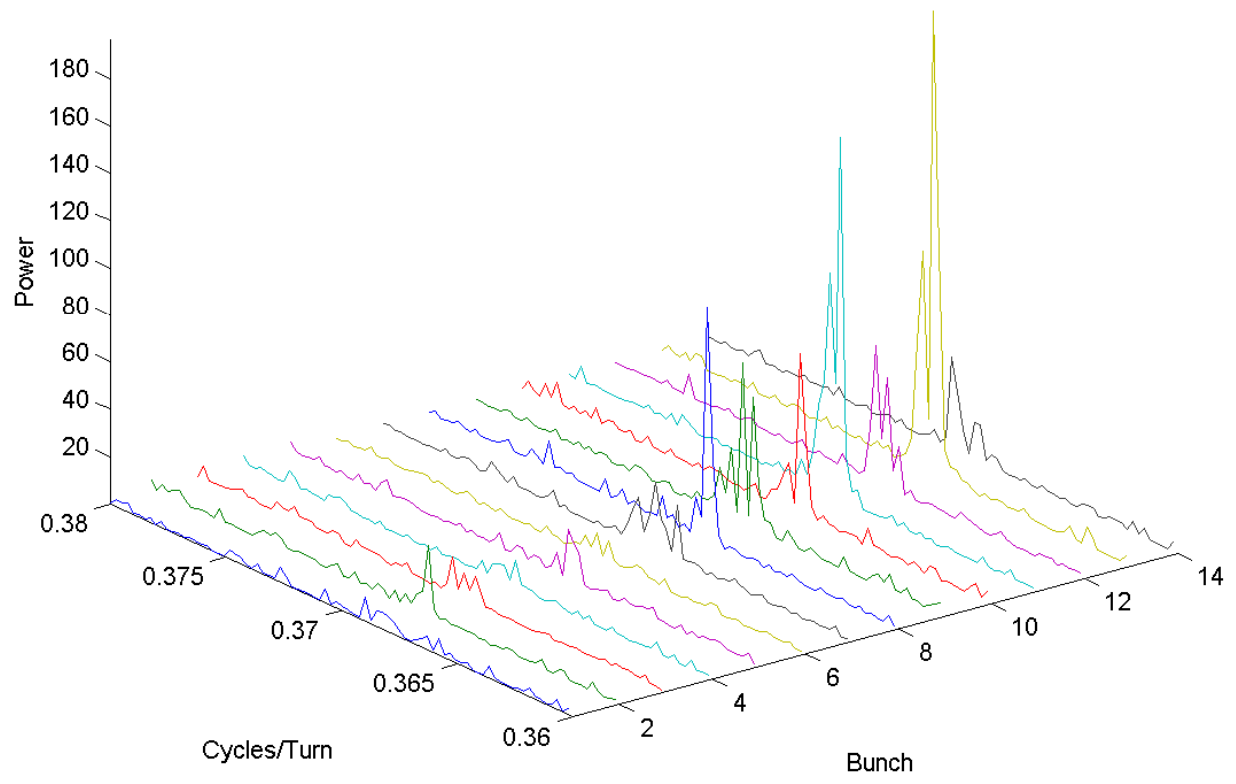
FFT σ_v

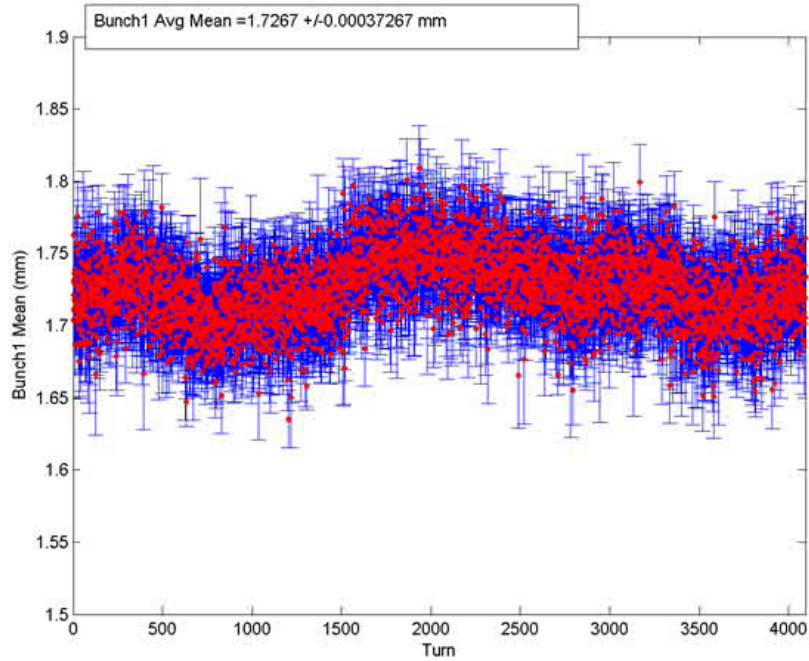


FFT of mean vertical
position from 242.0-249.8 kHz

bsm23w01079 results

e- vertical dynamics
Witness bunches 18-20,22
File: 1079

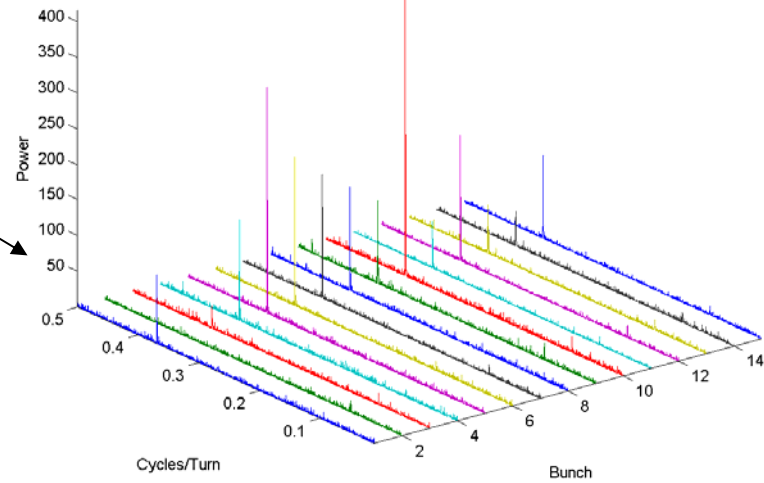




Vertical mean position (movie)

FFT Vertical position

bsm23w01080 results

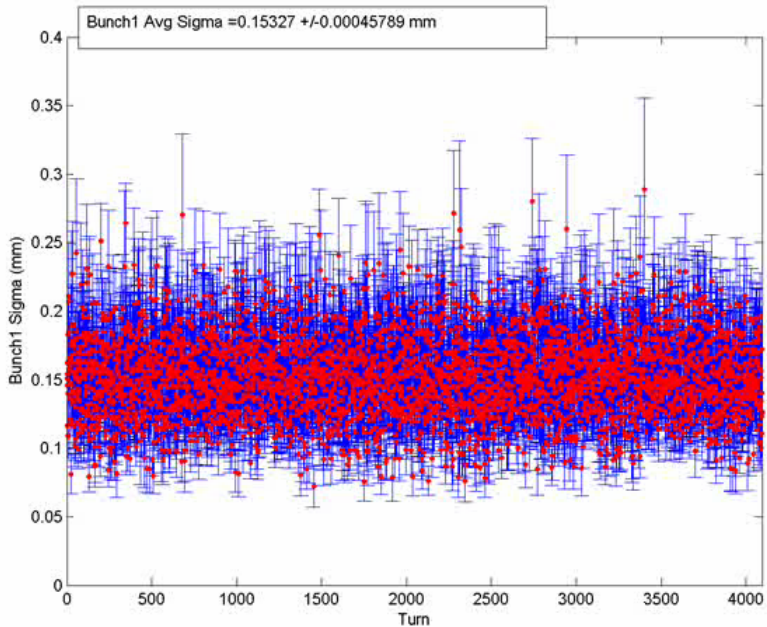


e- vertical dynamics

Witness bunches 17-20,22

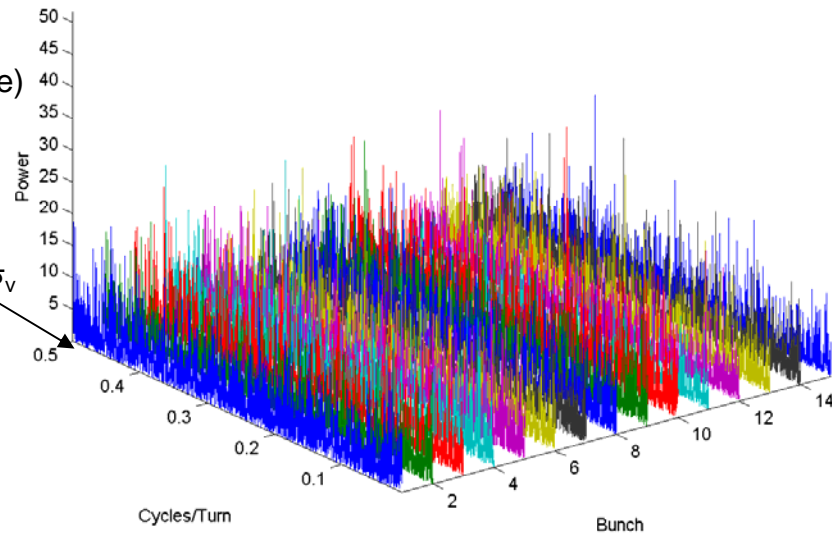
File: 1080

bsm23w01080 results



σ_v (movie)

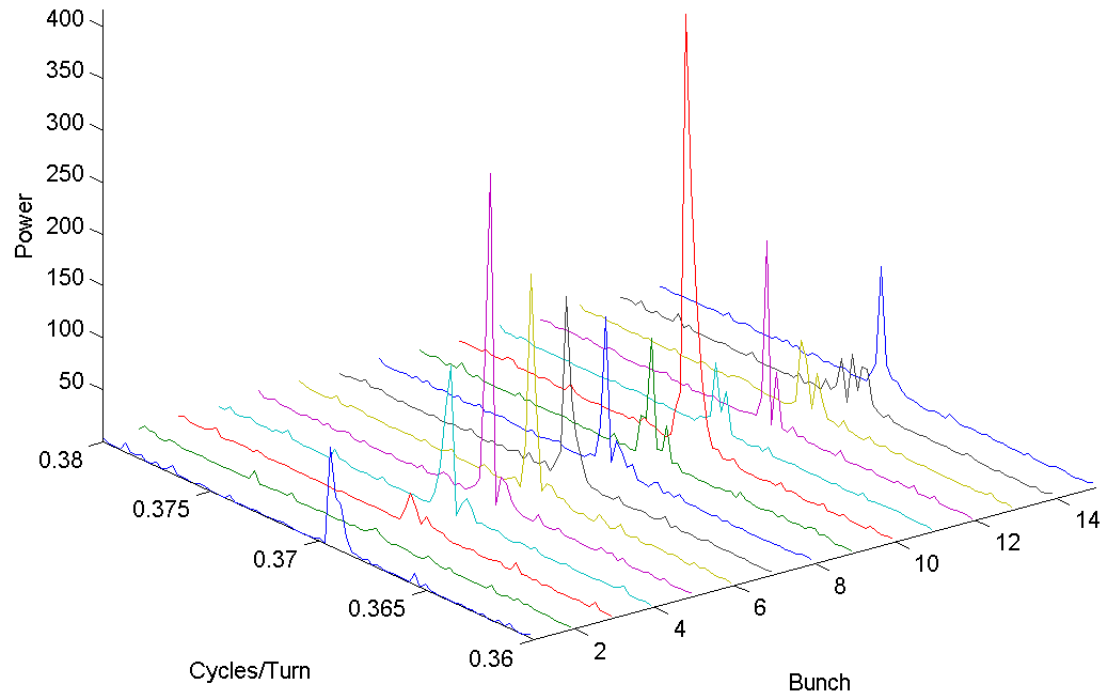
FFT σ_v

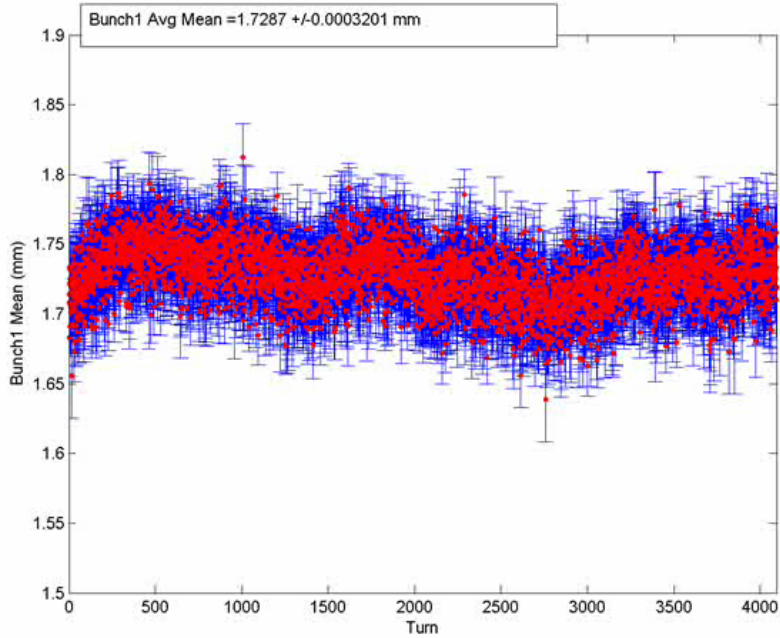


FFT of mean vertical
position from 242.0-249.8 kHz

bsm23w01080 results

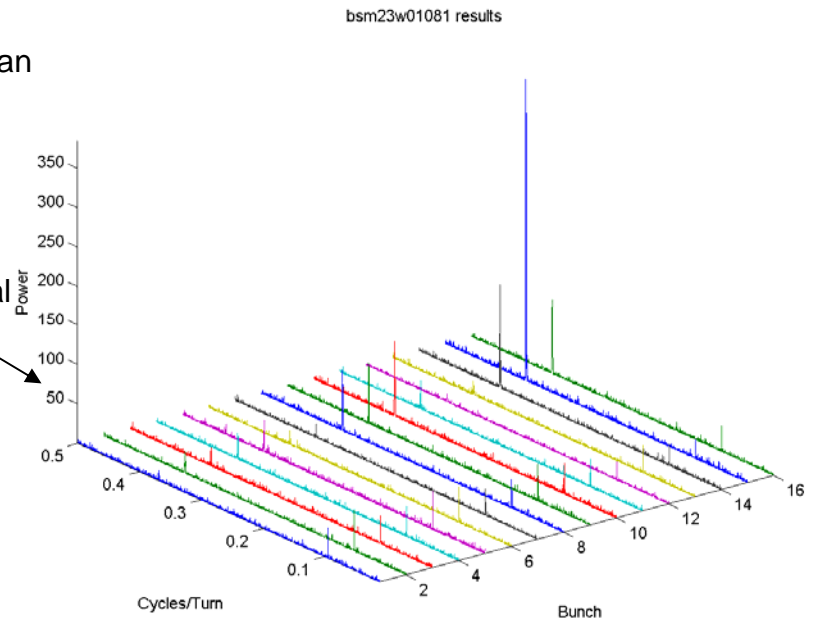
e- vertical dynamics
Witness bunches 17-20,22
File: 1080



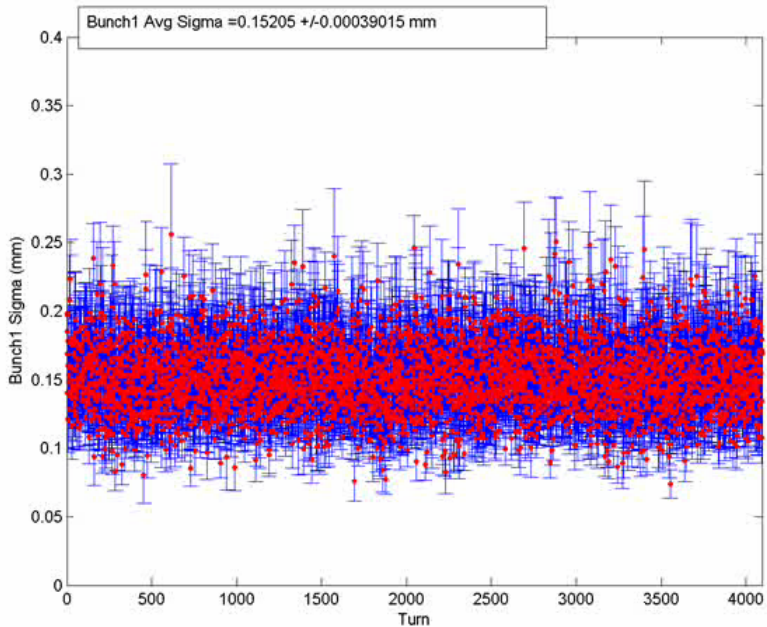


Vertical mean position (movie)

FFT Vertical position

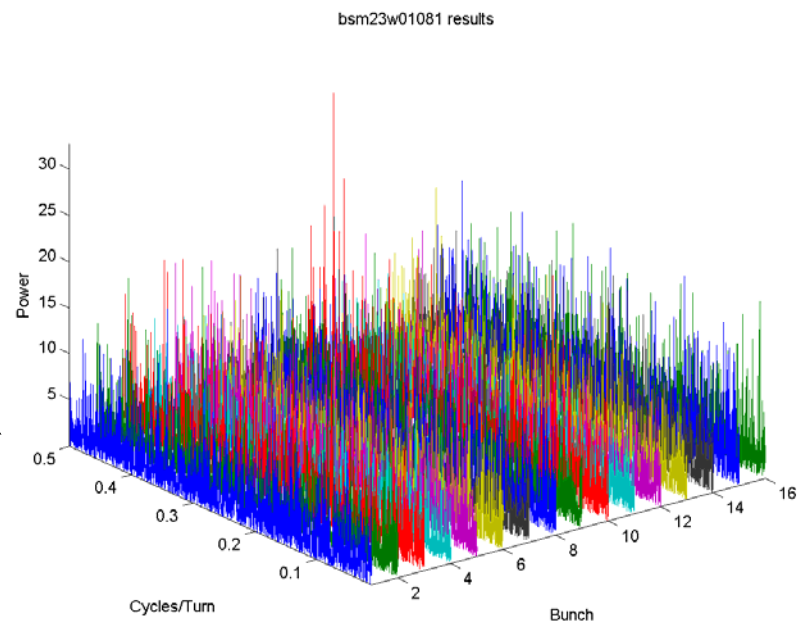


e- vertical dynamics
 Witness bunches 16-20,22
 File: 1081



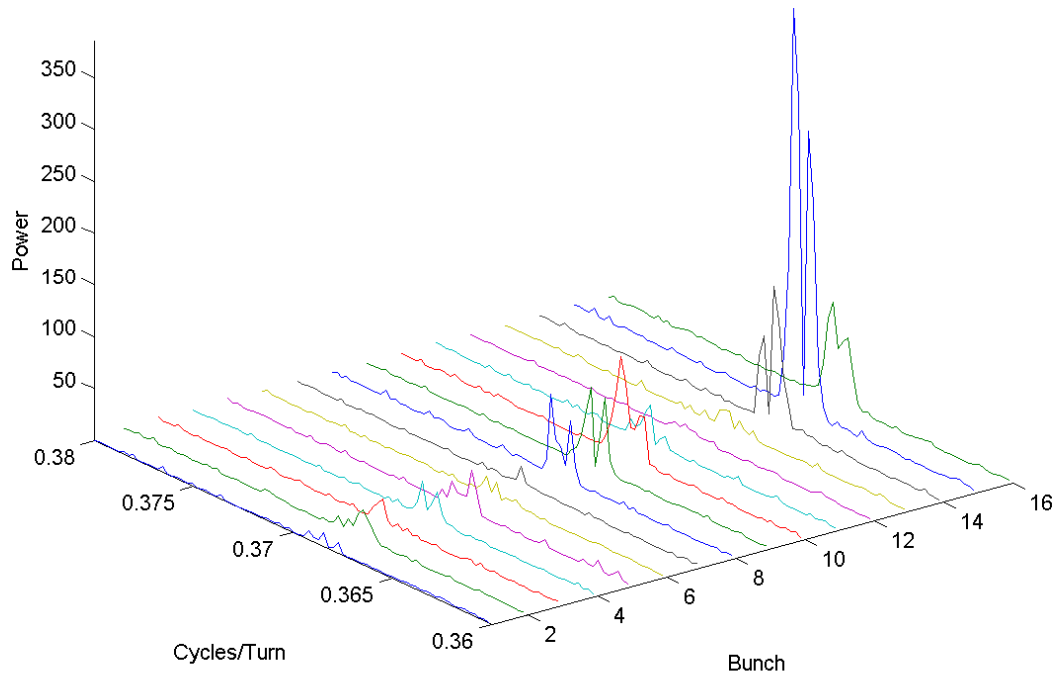
σ_v (movie)

FFT σ_v



FFT of mean vertical
position from 242.0-249.8 kHz

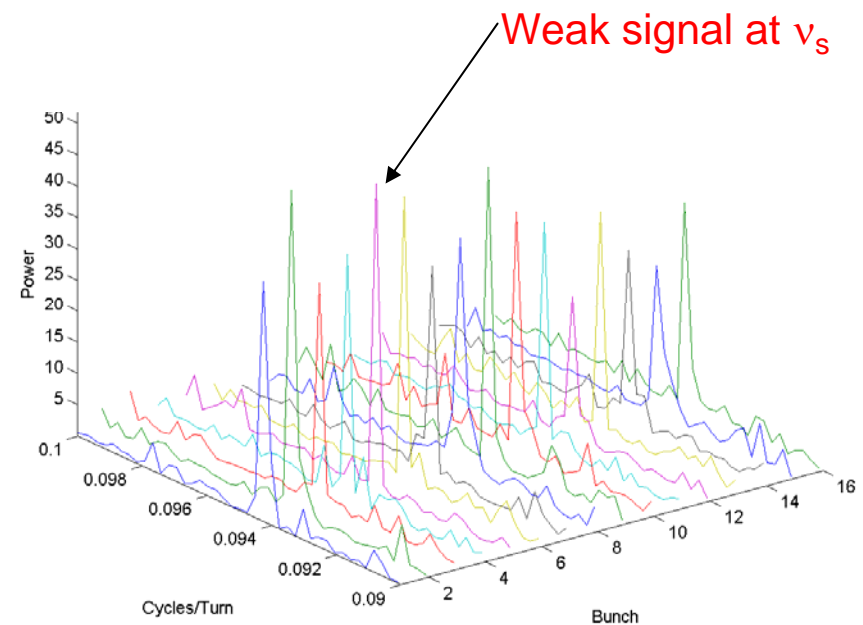
bsm23w01081 results

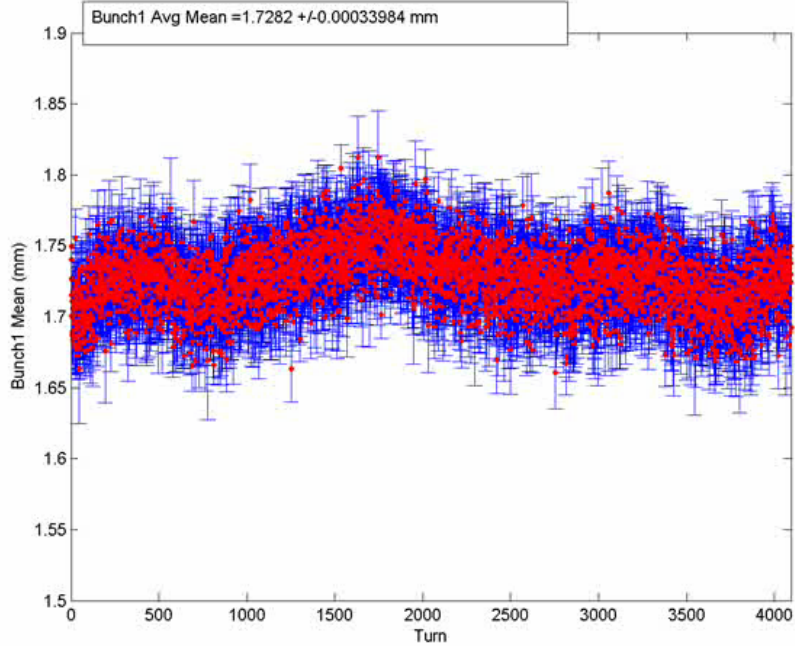


e- vertical dynamics
Witness bunches 16-20,22
File: 1081

FFT of mean vertical
position from 35-39 kHz

bsm23w01081 results

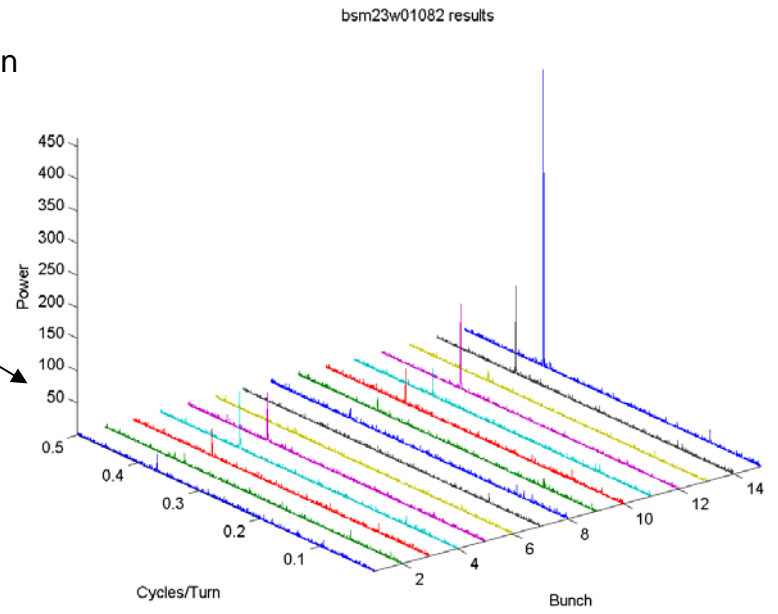
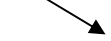




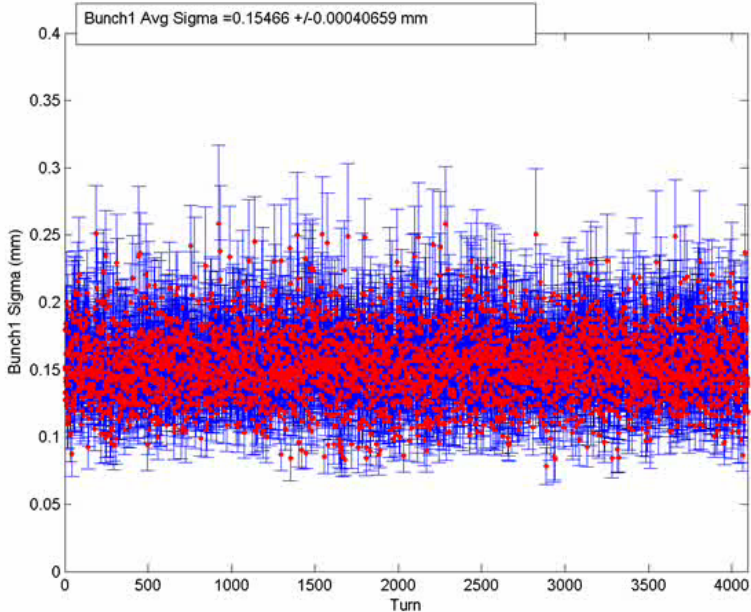
Vertical mean position (movie)



FFT Vertical position



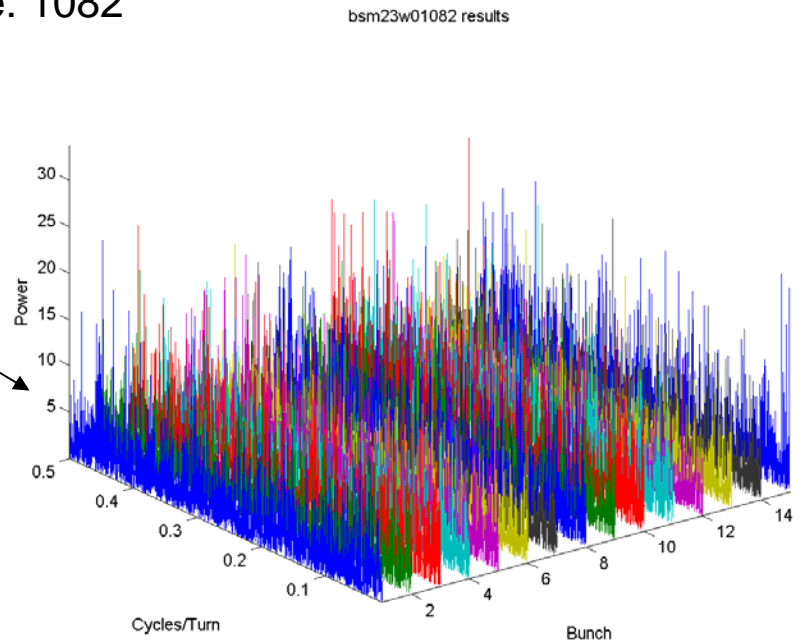
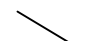
e- vertical dynamics
 Witness bunches 15-19
 File: 1082



σ_v (movie)



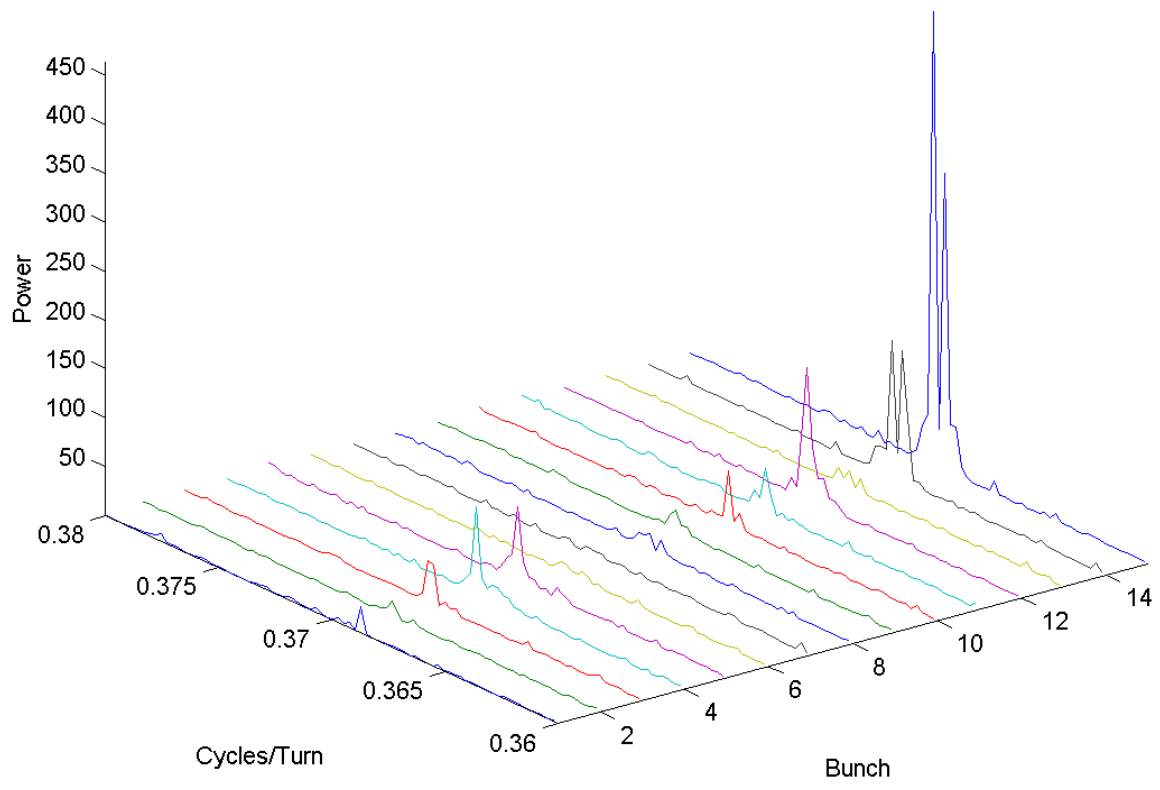
FFT σ_v

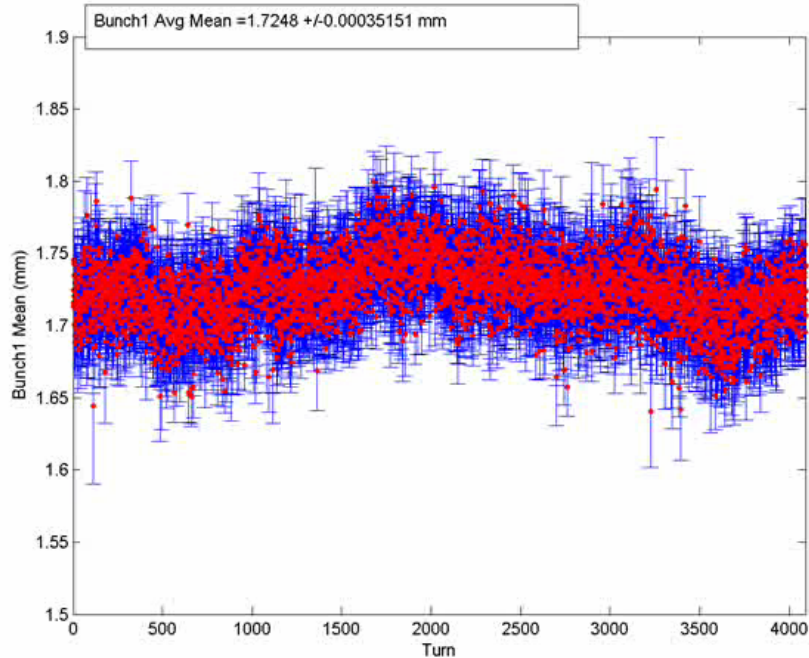


FFT of mean vertical
position from 242.0-249.8 kHz

bsm23w01082 results

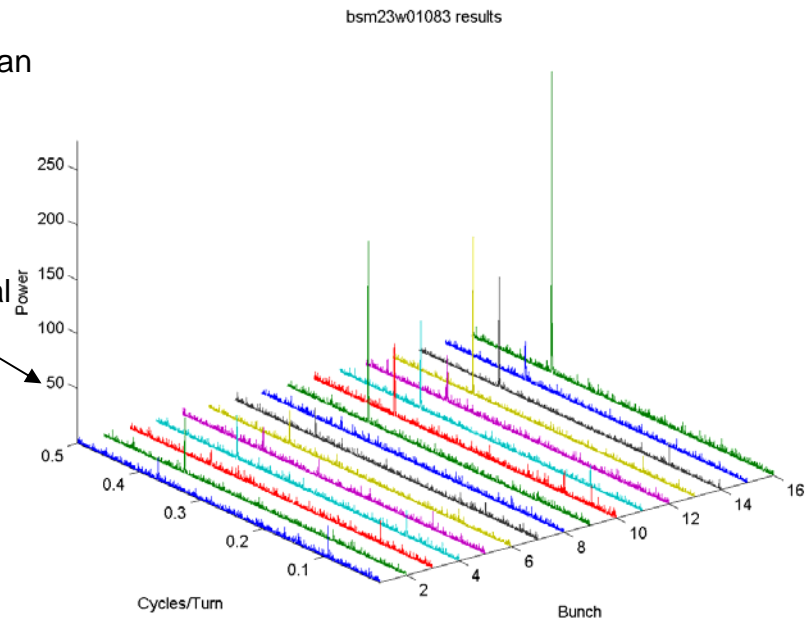
e- vertical dynamics
Witness bunches 15-19
File: 1082





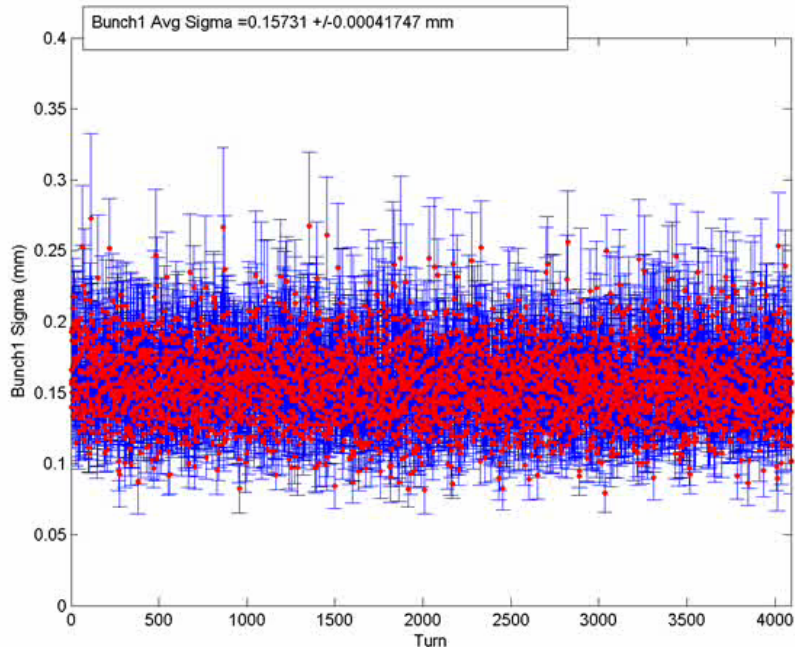
Vertical mean position (movie)

FFT Vertical position



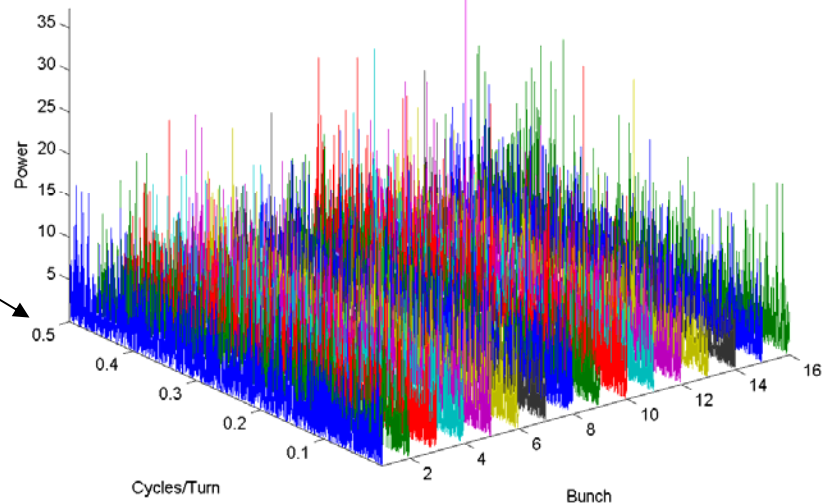
e- vertical dynamics
 Witness bunches 14-19
 File: 1083

bsm23w01083 results



σ_v (movie)

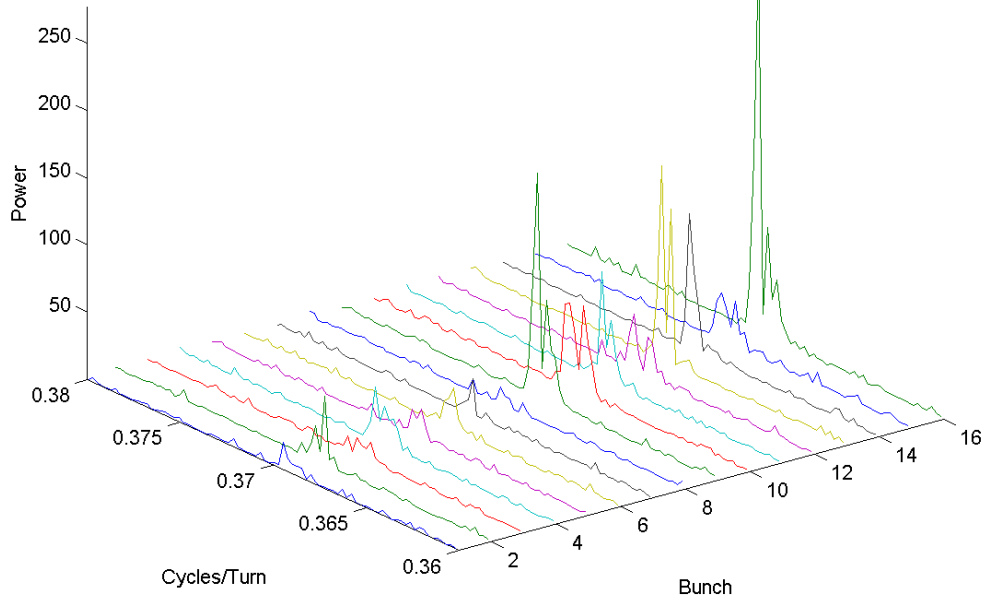
FFT σ_v

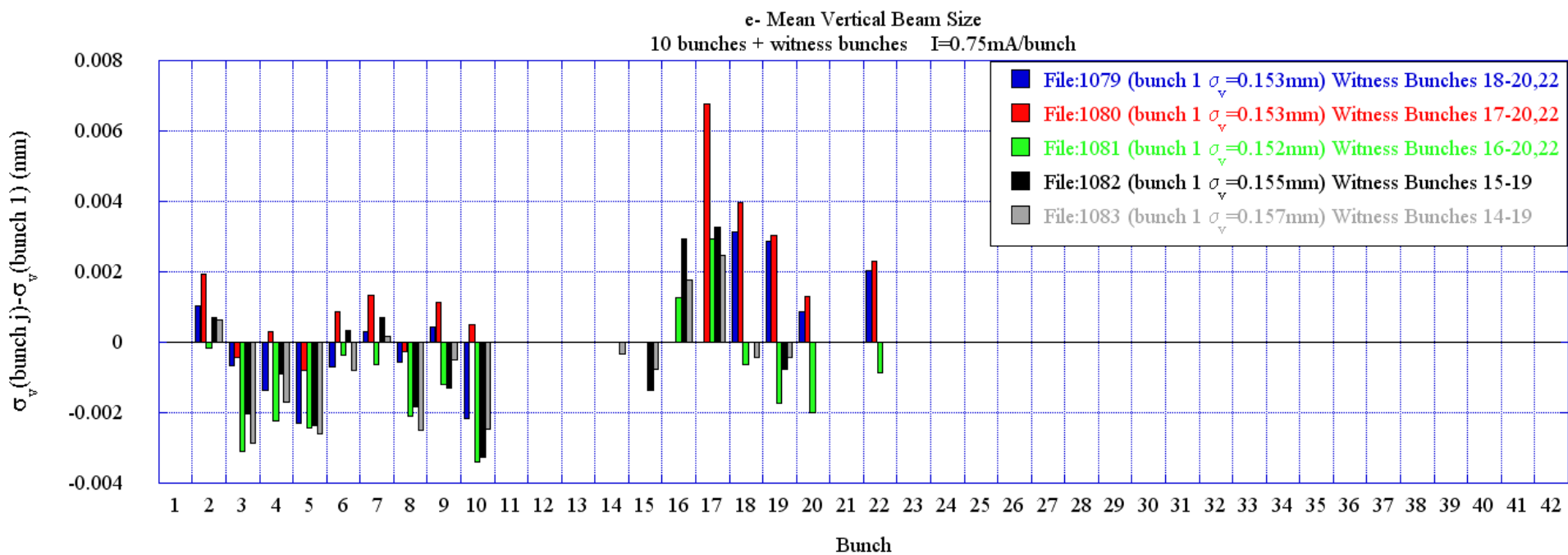
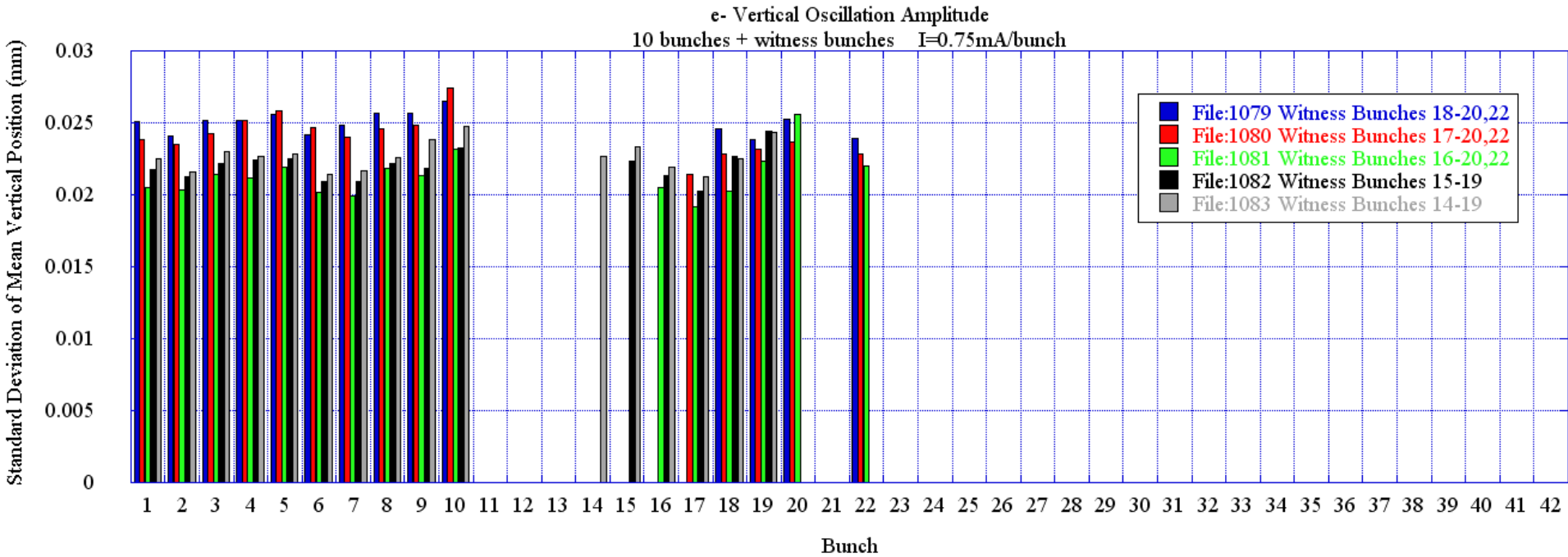


FFT of mean vertical
position from 242.0-249.8 kHz

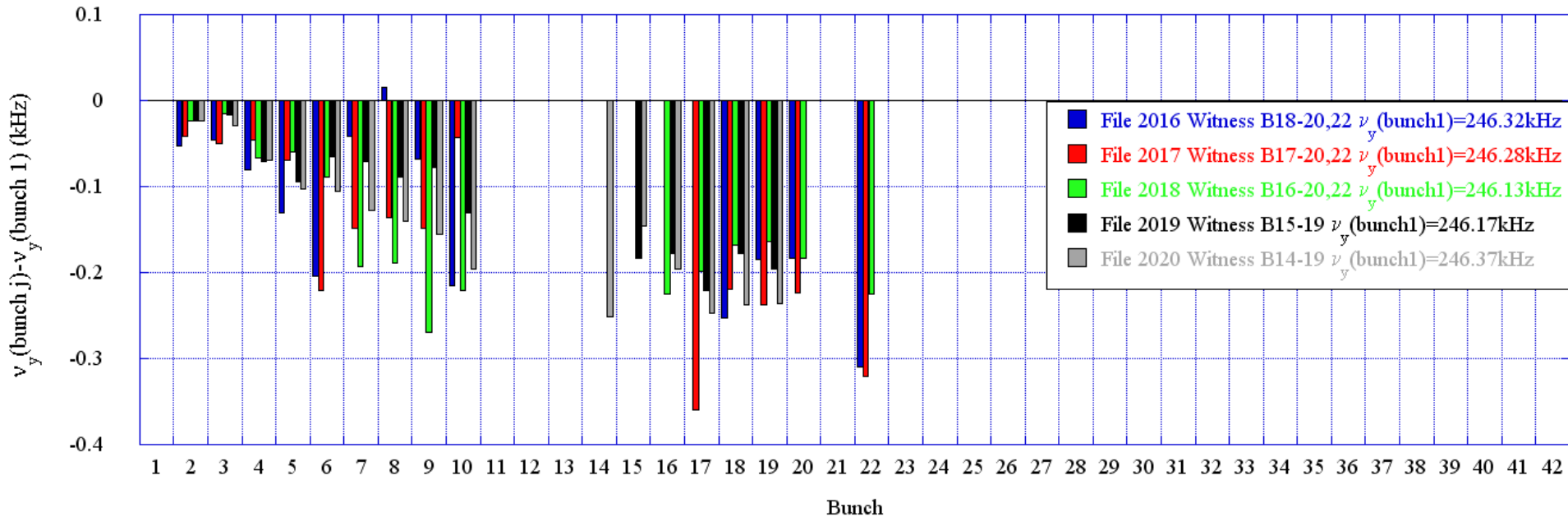
bsm23w01083 results

e- vertical dynamics
Witness bunches 14-19
File: 1083

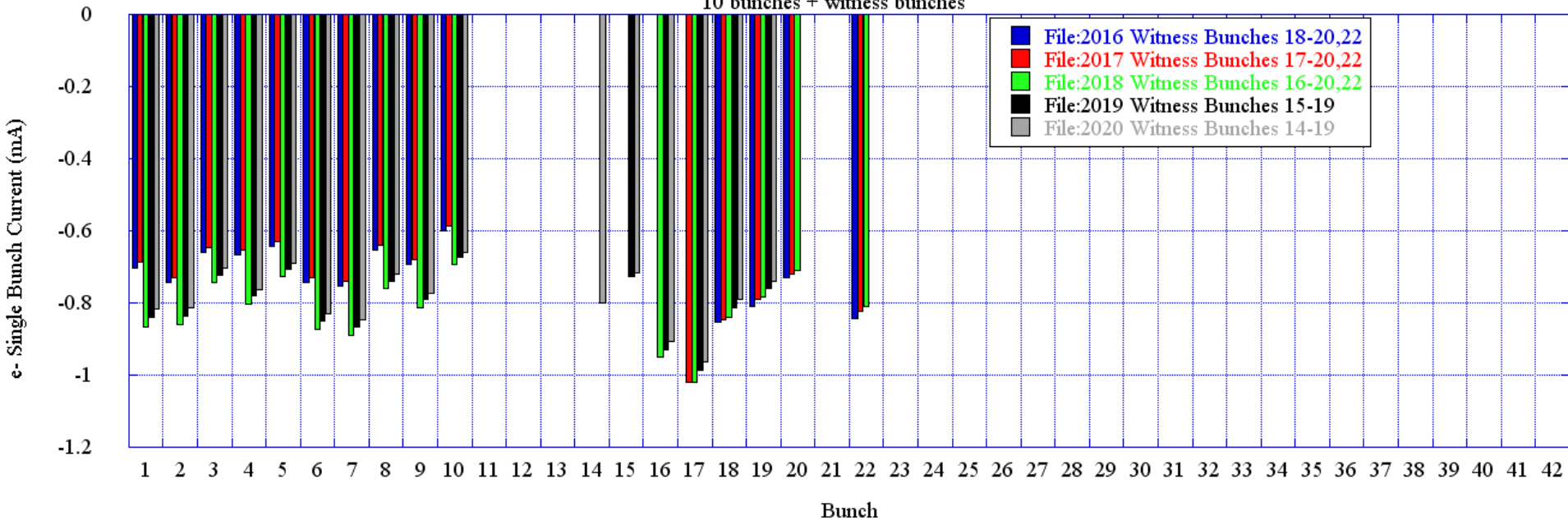




e- Vertical Tune
10 bunches + witness bunches I=0.75mA/bunch

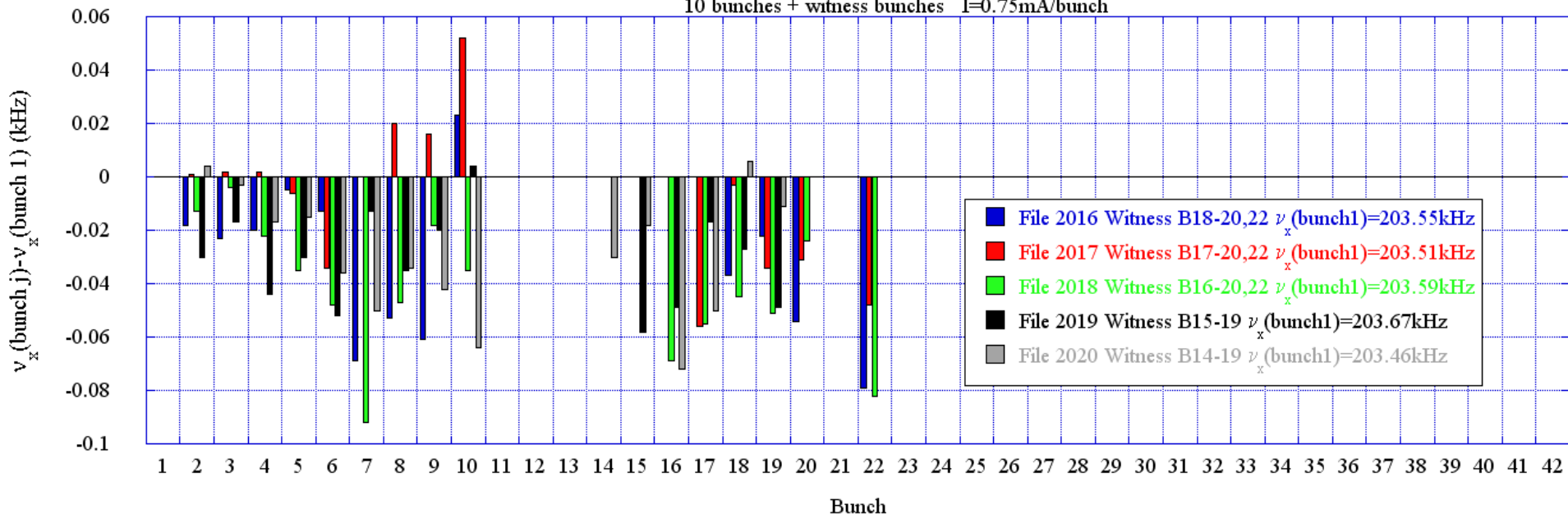


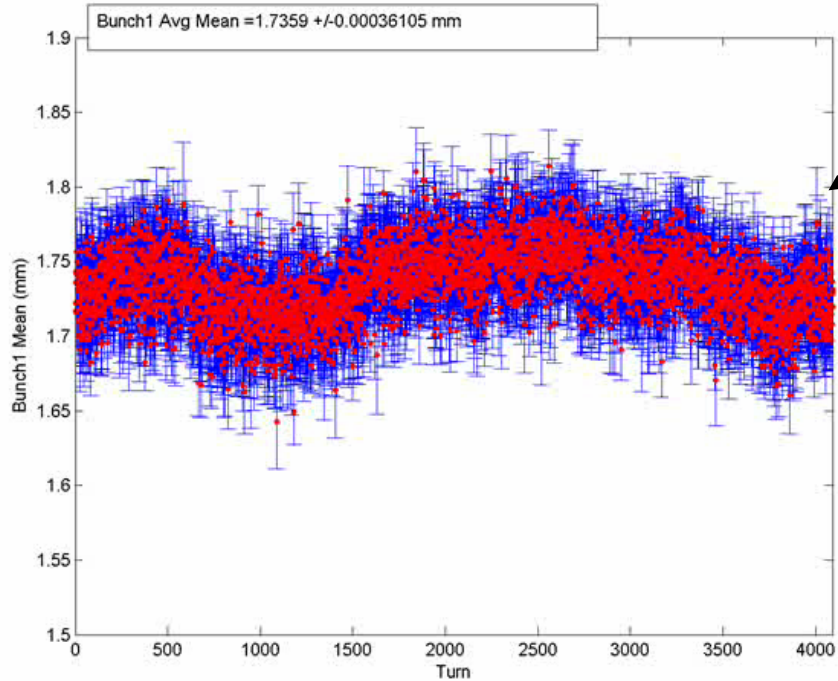
e- Single Bunch Current
10 bunches + witness bunches



e- Horizontal Tune

10 bunches + witness bunches I=0.75mA/bunch

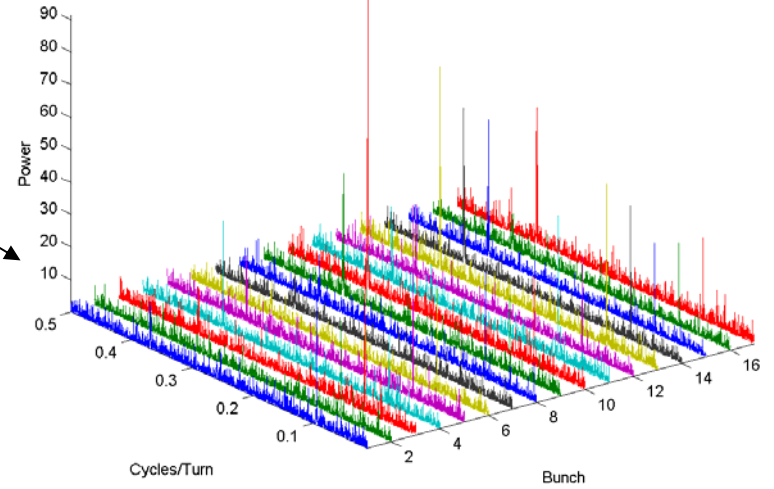




Vertical mean position (movie)

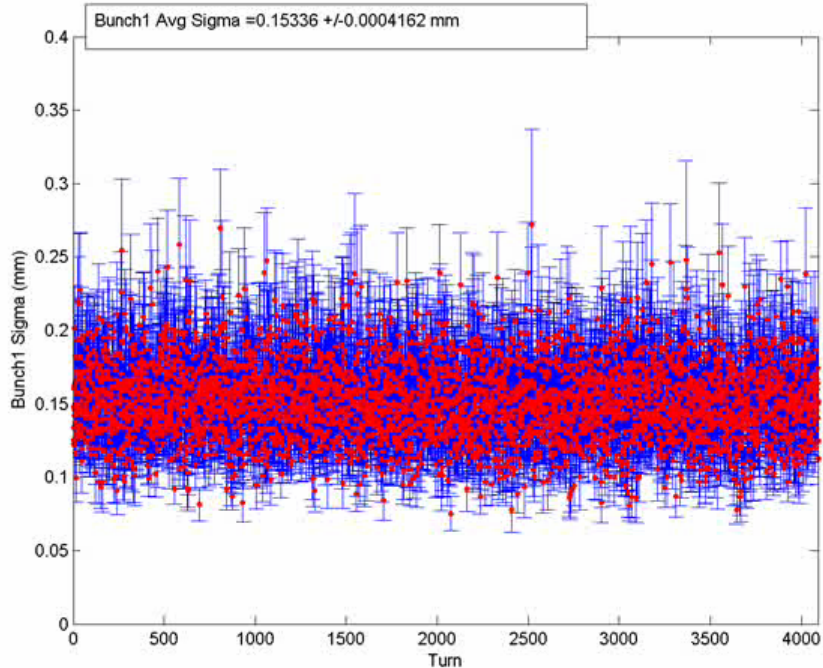
FFT Vertical position

bsm23w01084 results



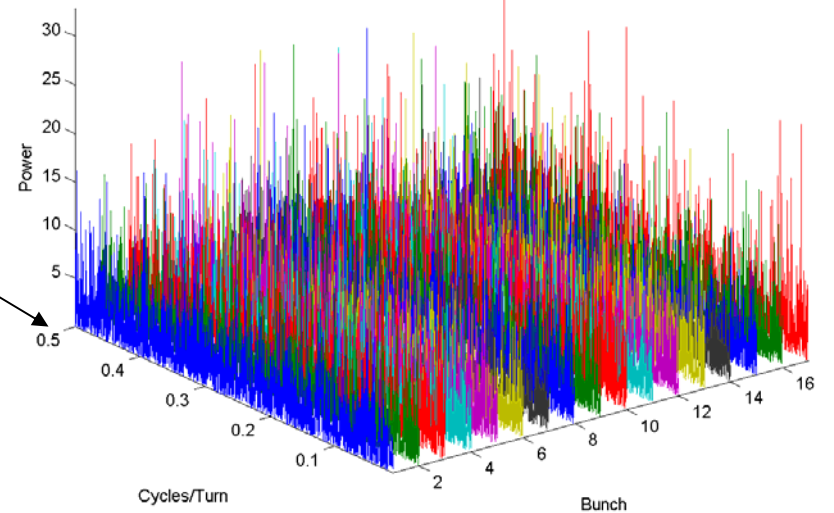
e- vertical dynamics
 Witness bunches 13-19
 File: 1084

bsm23w01084 results



σ_v (movie)

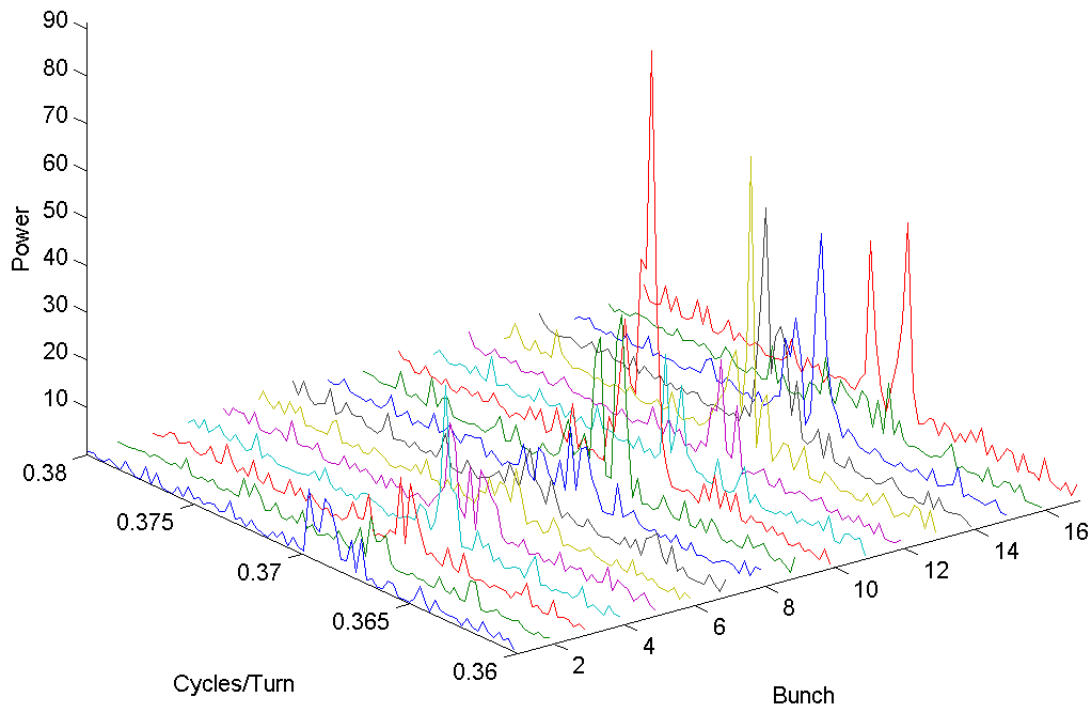
FFT σ_v

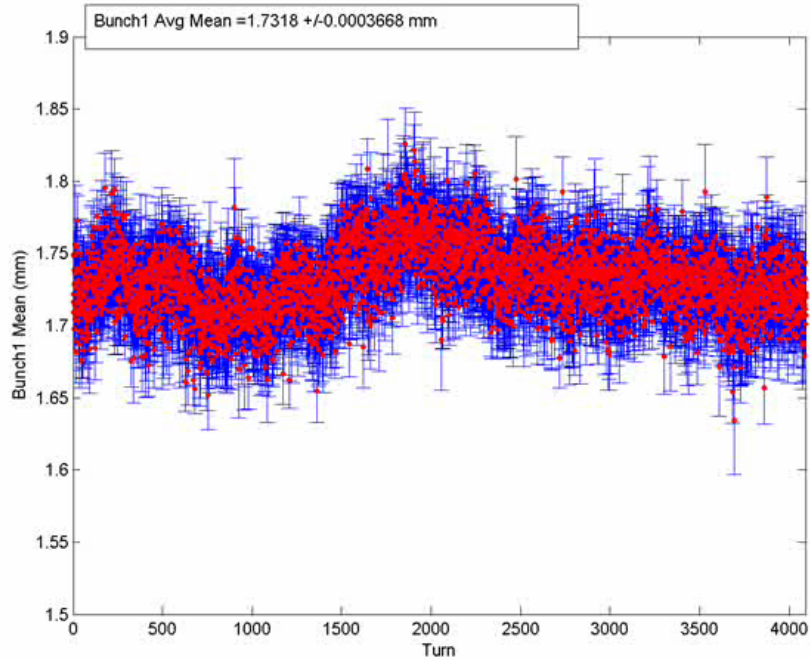


FFT of mean vertical
position from 242.0-249.8 kHz

bsm23w01084 results

e- vertical dynamics
Witness bunches 13-19
File: 1084

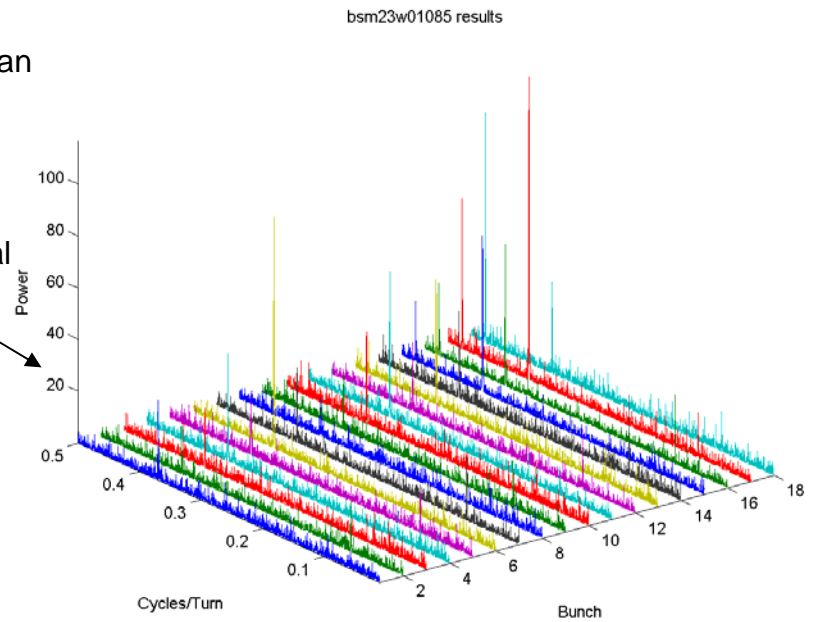




Vertical mean position (movie)

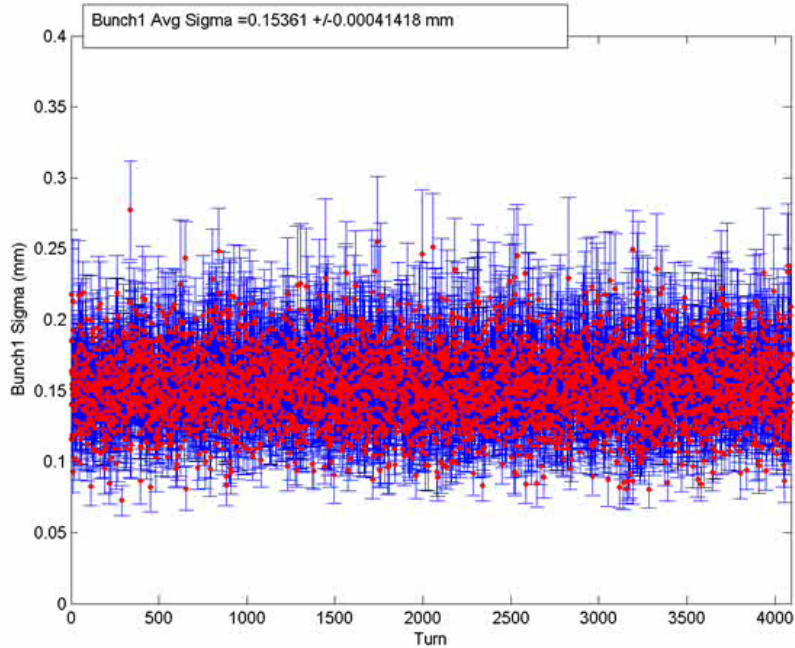


FFT Vertical position



e- vertical dynamics
Witness bunches 12-19
File: 1085

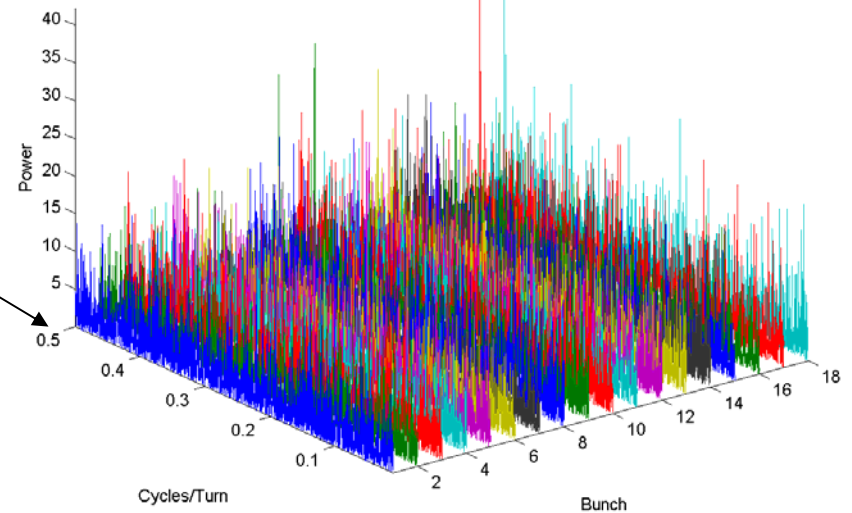
bsm23w01085 results



σ_v (movie)



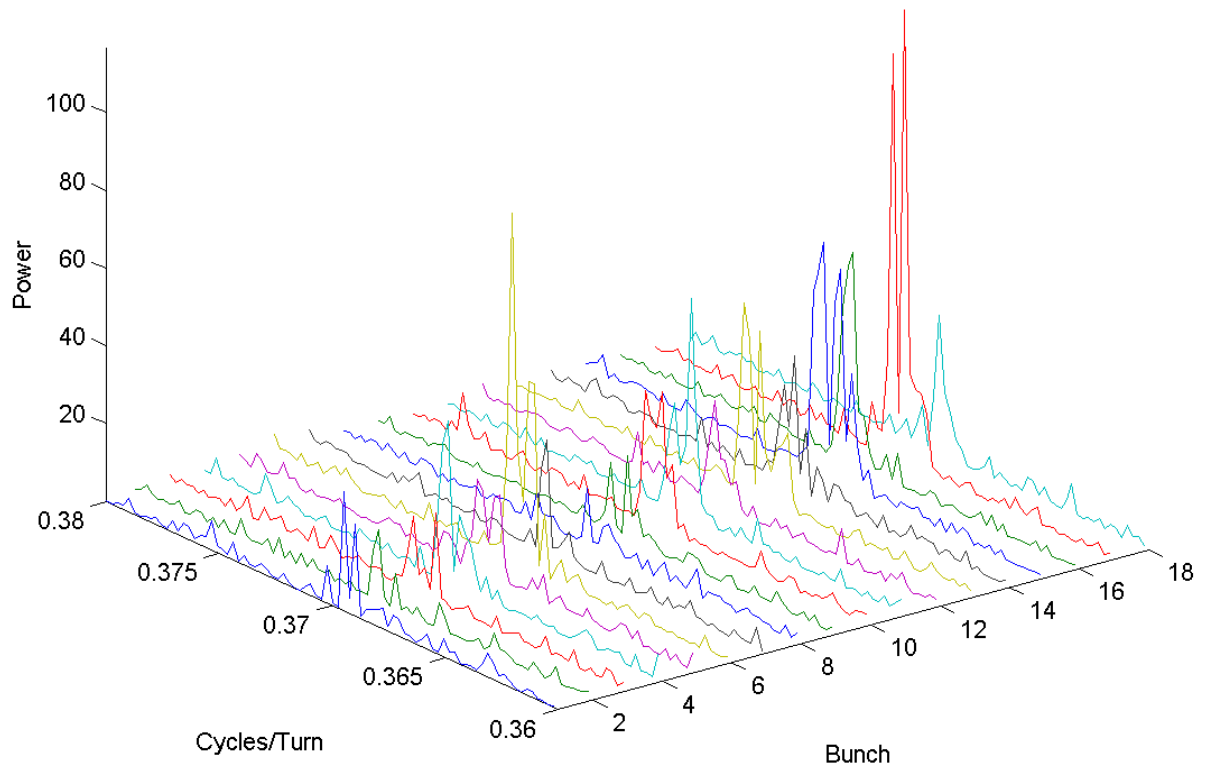
FFT σ_v

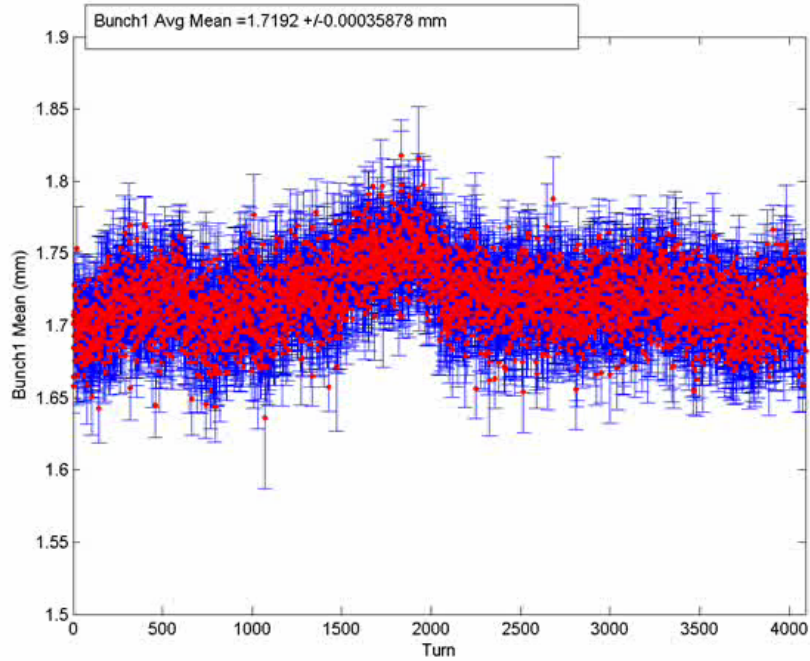


FFT of mean vertical
position from 242.0-249.8 kHz

bsm23w01085 results

e- vertical dynamics
Witness bunches 12-19
File: 1085

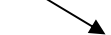




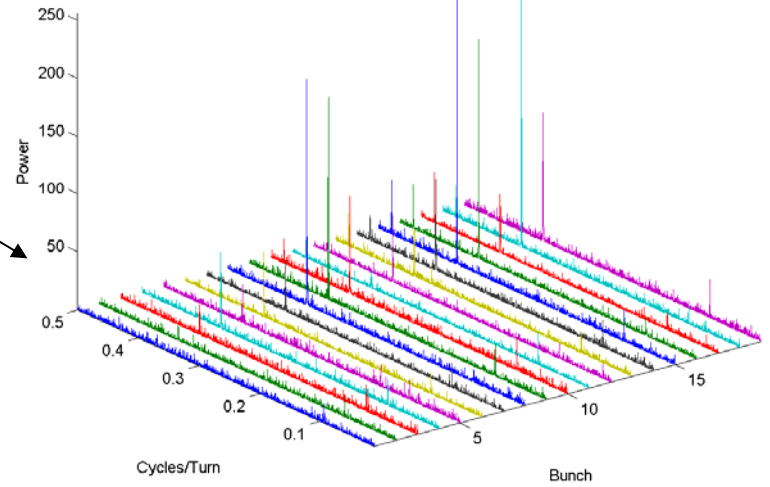
Vertical mean position (movie)



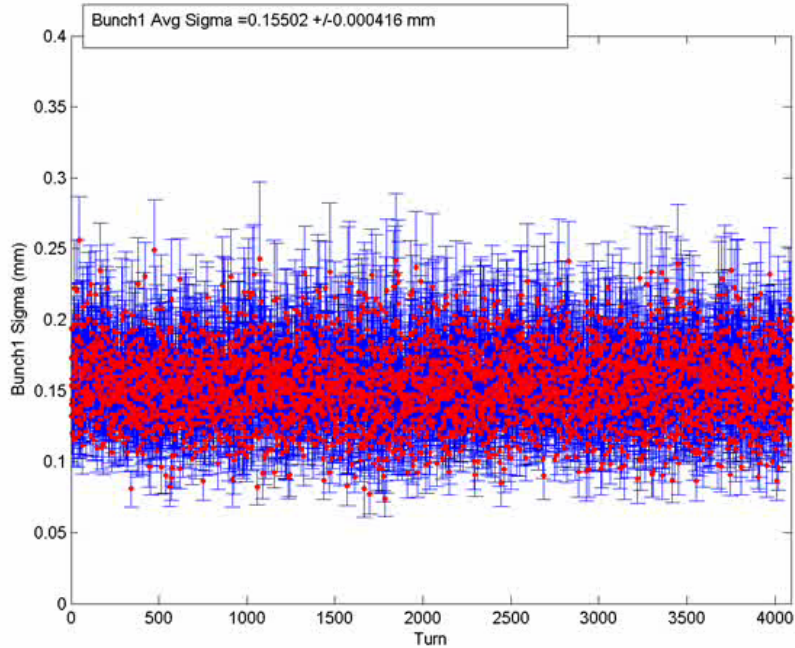
FFT Vertical position



bsm23w01086 results



e- vertical dynamics
Bunches 1-19
File: 1086



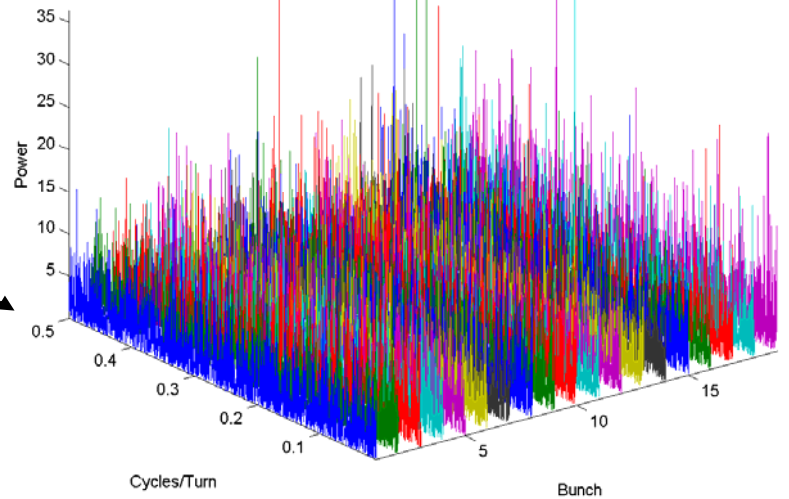
σ_v (movie)



FFT σ_v



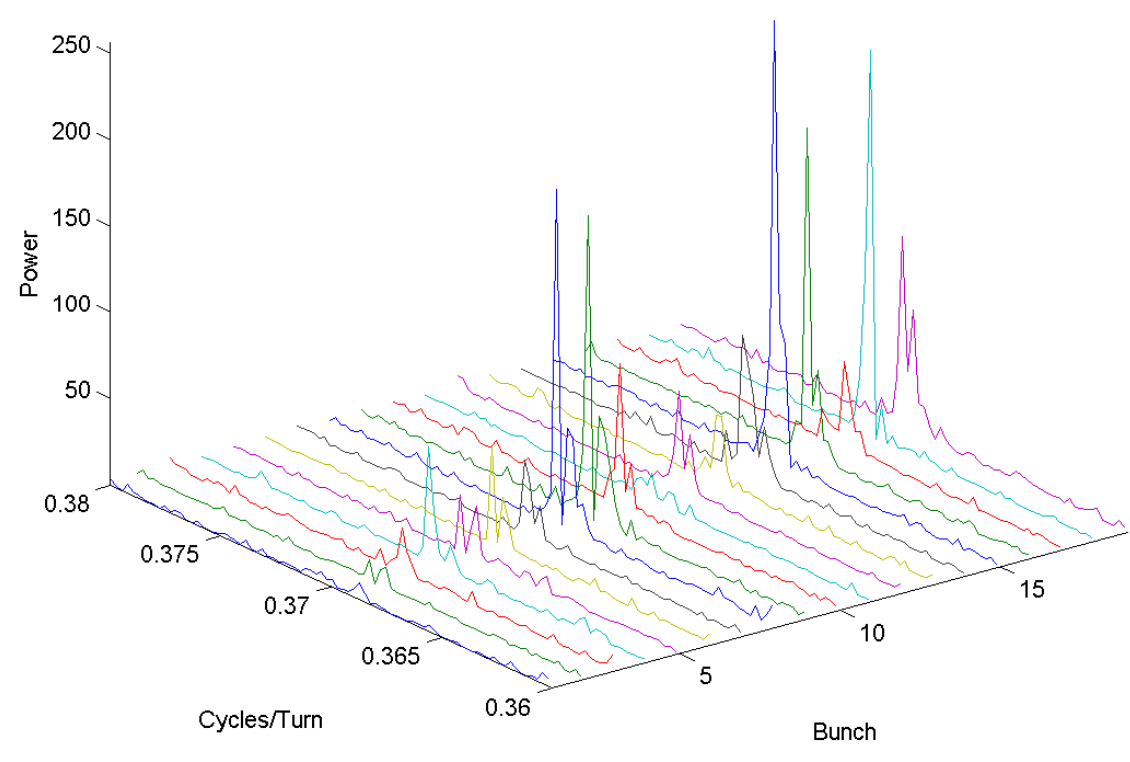
bsm23w01086 results

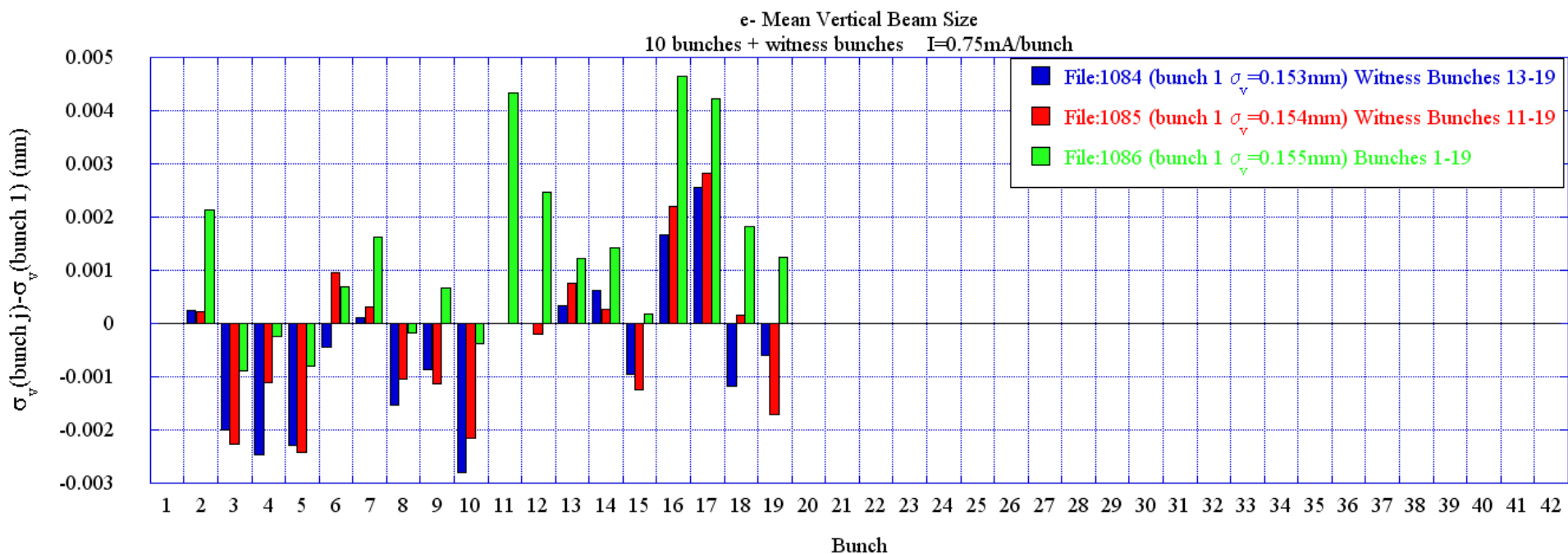
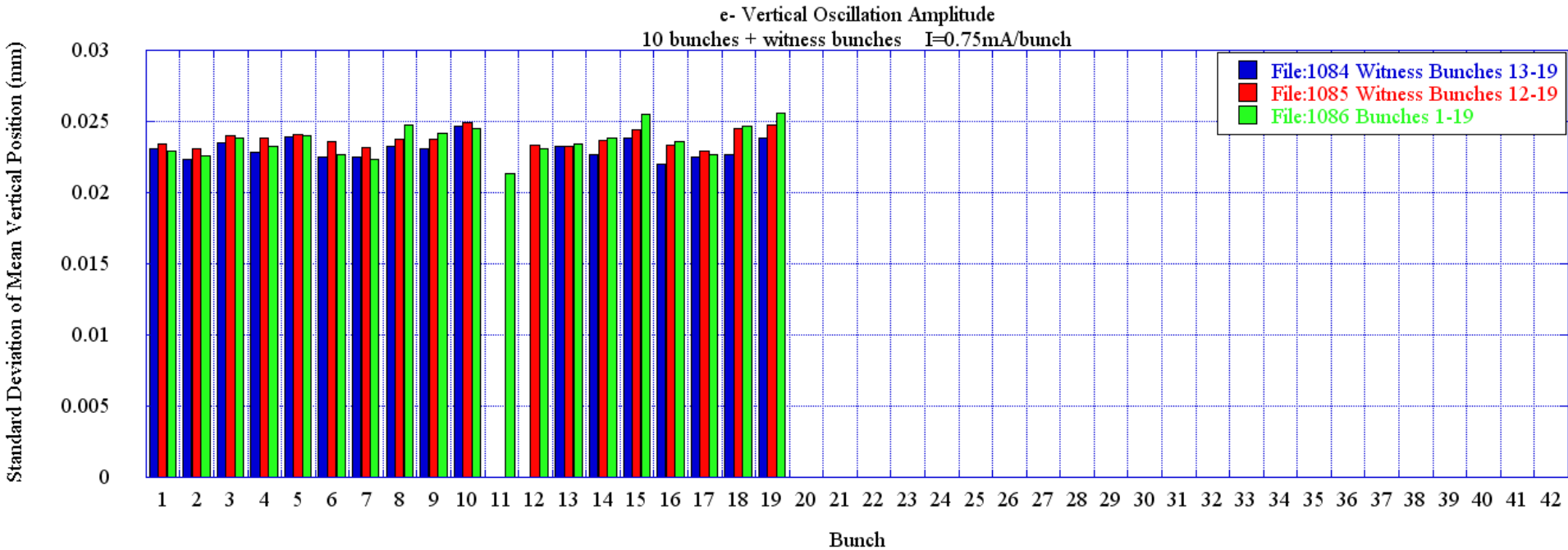


FFT of mean vertical
position from 242.0-249.8 kHz

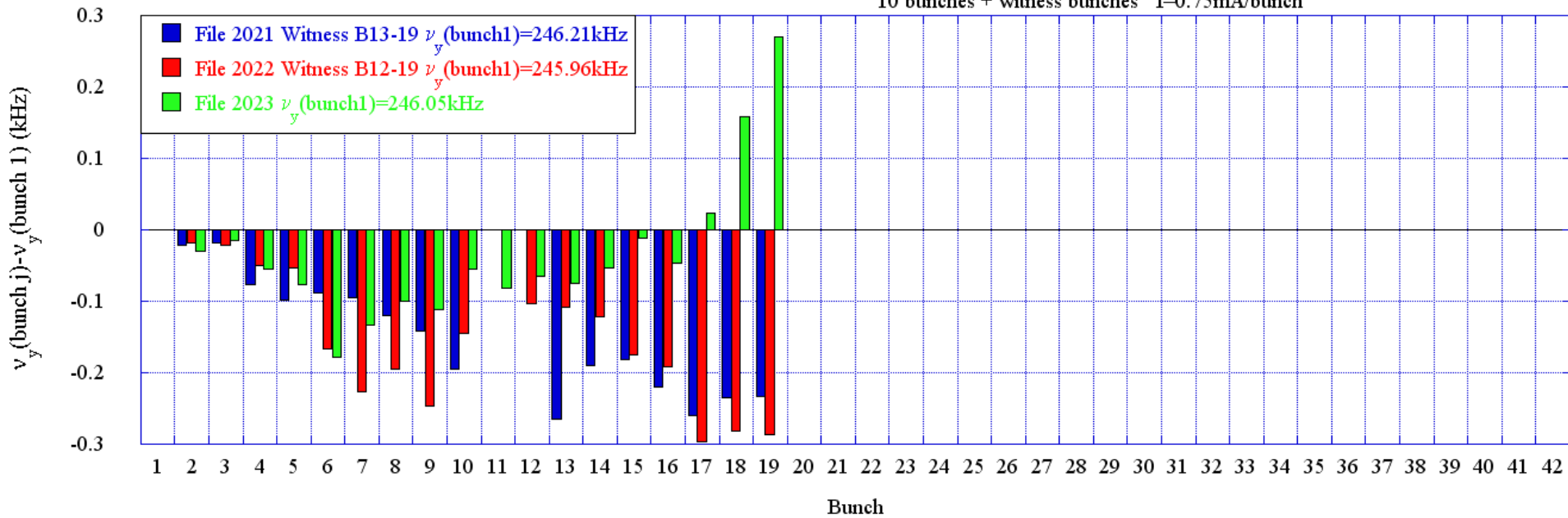
bsm23w01086 results

e- vertical dynamics
Bunches 1-19
File: 1086

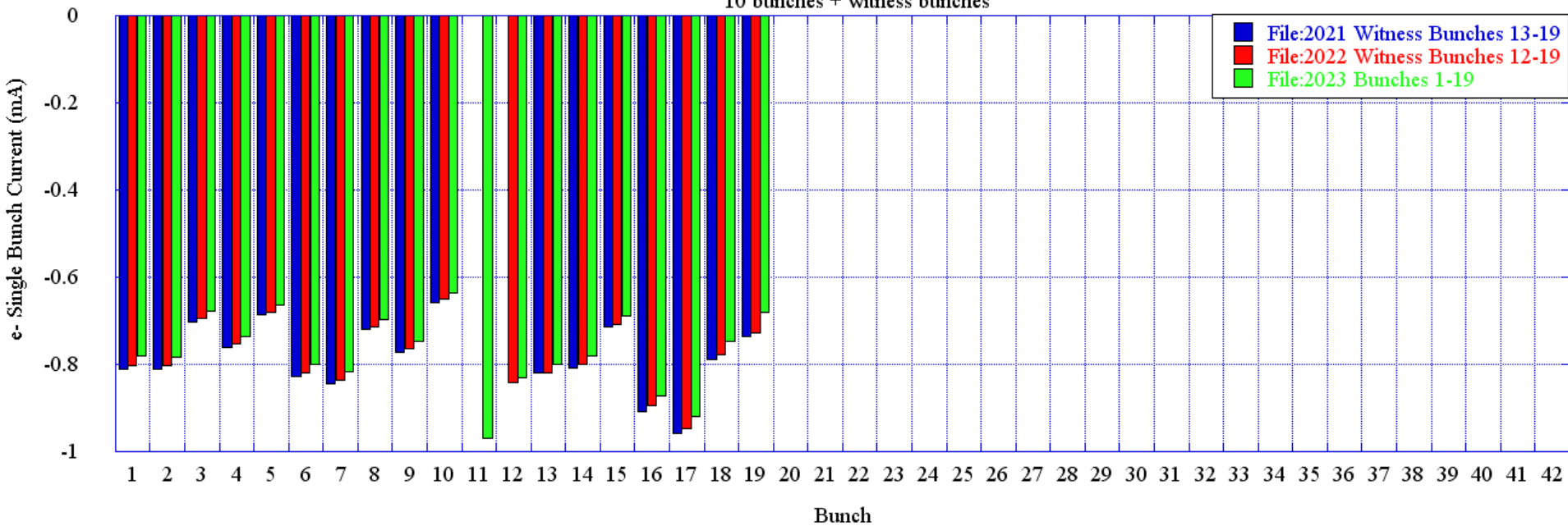




e- Vertical Tune
10 bunches + witness bunches I=0.75mA/bunch



e- Single Bunch Current
10 bunches + witness bunches



e- Horizontal Tune
10 bunches + witness bunches I=0.75mA/bunch

