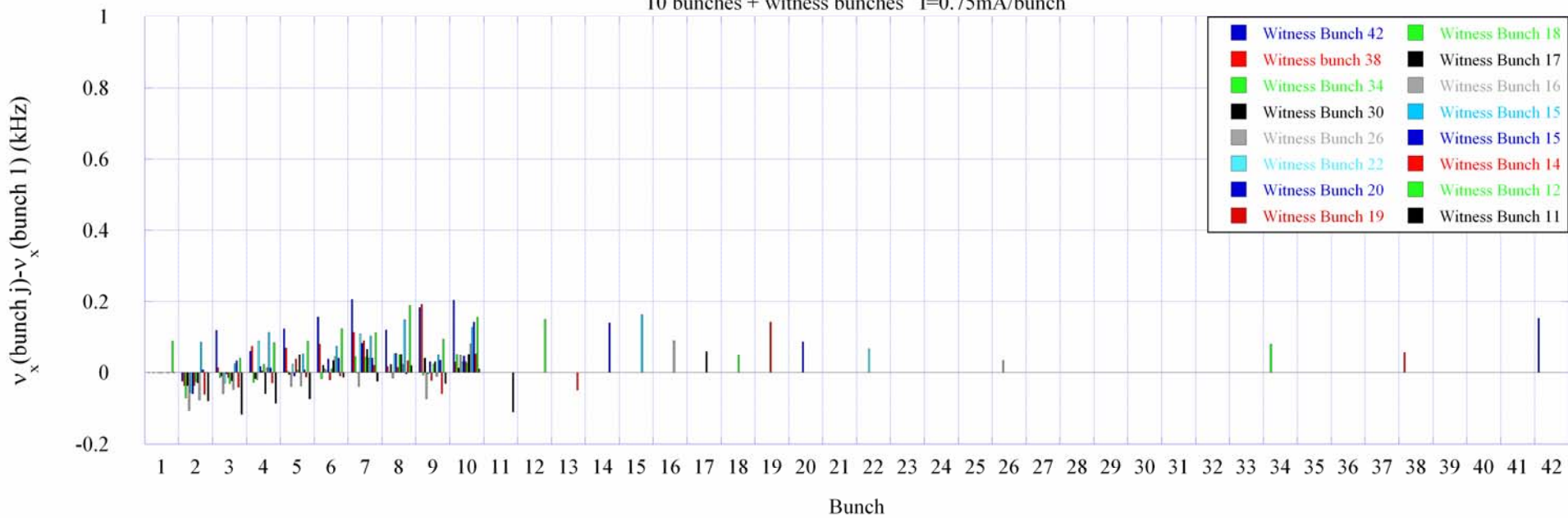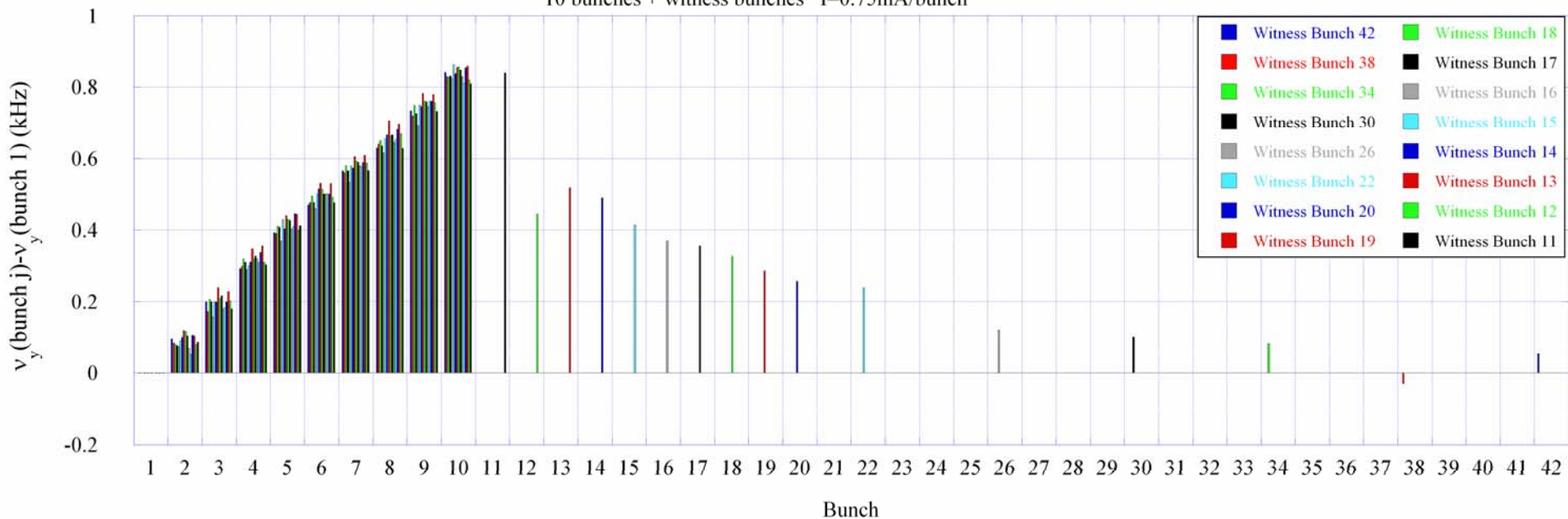CESR-c e- Cloud Machine Studies
e+/e- with witness bunch
4/2/2007

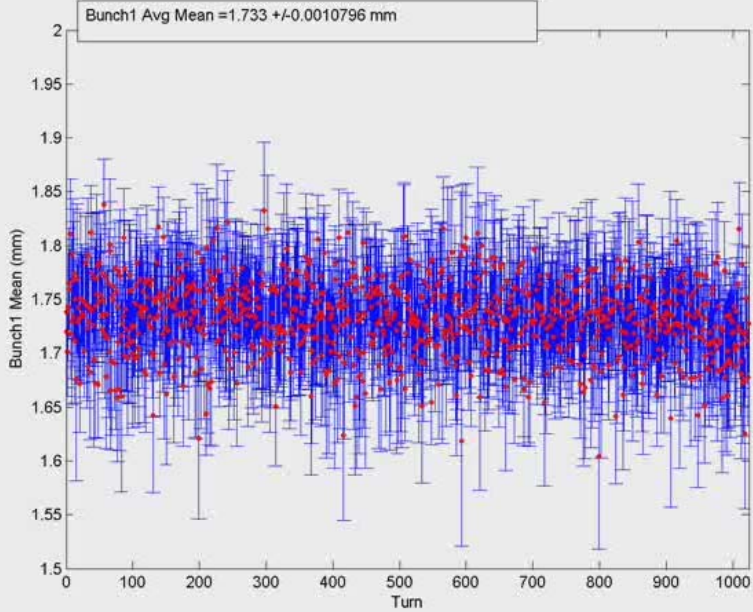R. Holtzapple, J. Codner, J. Kern, M. Palmer, E. Tanke

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

Legend:
Witness Bunch 42, Witness bunch 38, Witness Bunch 34, Witness Bunch 30, Witness Bunch 26, Witness Bunch 22, Witness Bunch 20, Witness Bunch 19, Witness Bunch 18, Witness Bunch 17, Witness Bunch 16, Witness Bunch 15, Witness Bunch 15, Witness Bunch 14, Witness Bunch 12, Witness Bunch 11

y-axis: $\nu_x(\text{bunch } j) - \nu_x(\text{bunch } 1)$ (kHz)
x-axis: Bunch

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

Legend:
Witness Bunch 42, Witness Bunch 38, Witness Bunch 34, Witness Bunch 30, Witness Bunch 26, Witness Bunch 22, Witness Bunch 20, Witness Bunch 19, Witness Bunch 18, Witness Bunch 17, Witness Bunch 16, Witness Bunch 15, Witness Bunch 14, Witness Bunch 13, Witness Bunch 12, Witness Bunch 11

y-axis: $\nu_y(\text{bunch } j) - \nu_y(\text{bunch } 1)$ (kHz)
x-axis: Bunch

e+ mean vertical position for witness bunch
10 bunches + witness bunches   I=0.75mA/bunch

Legend:
- Witness Bunch 42
- Witness Bunch 38
- Witness Bunch 34
- Witness Bunch 30
- Witness Bunch 26
- Witness Bunch 22
- Witness Bunch 20
- Witness Bunch 19
- Witness Bunch 18
- Witness Bunch 17
- Witness Bunch 16
- Witness Bunch 15
- Witness Bunch 14
- Witness Bunch 13
- Witness Bunch 12
- Witness Bunch 12
- 20 Bunches

Y-axis: Mean Vert. Position (bunch j)- Mean Vert. Position (bunch 1) (mm)
X-axis: Bunch

e+ σ_v for witness Bunch
10 bunches + witness bunches   I=0.75mA/bunch

Legend:
- Witness Bunch 42
- Witness Bunch 38
- Witness Bunch 34
- Witness Bunch 30
- Witness Bunch 26
- Witness Bunch 22
- Witness Bunch 20
- Witness Bunch 19
- Witness Bunch 18
- Witness Bunch 17
- Witness Bunch 16
- Witness Bunch 15
- Witness Bunch 14
- Witness Bunch 13
- Witness Bunch 12
- Witness Bunch 12
- 20 Bunches

Y-axis: σ_y(bunch j)-σ_y(bunch 1) (mm)
X-axis: Bunch

Vertical mean position (movie)

FFT Vertical position

e+ vertical dynamics
Witness bunch 42
File: 1100
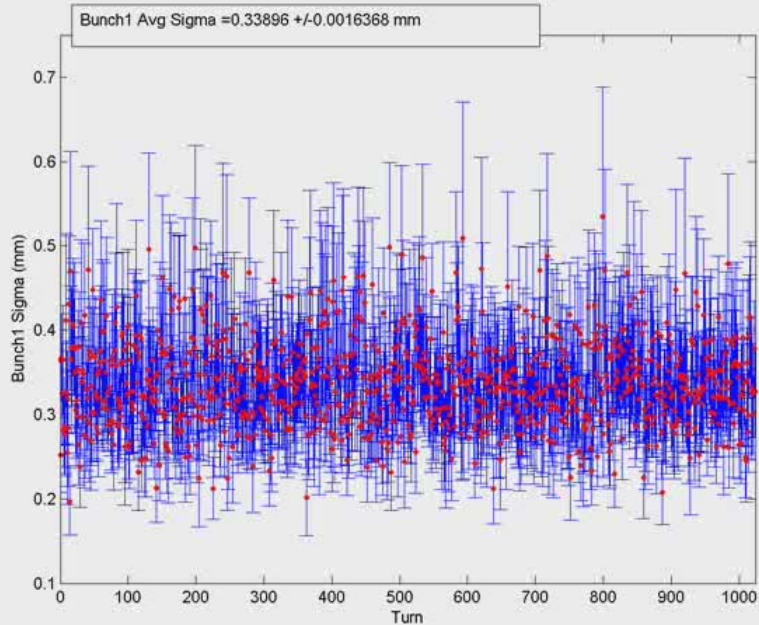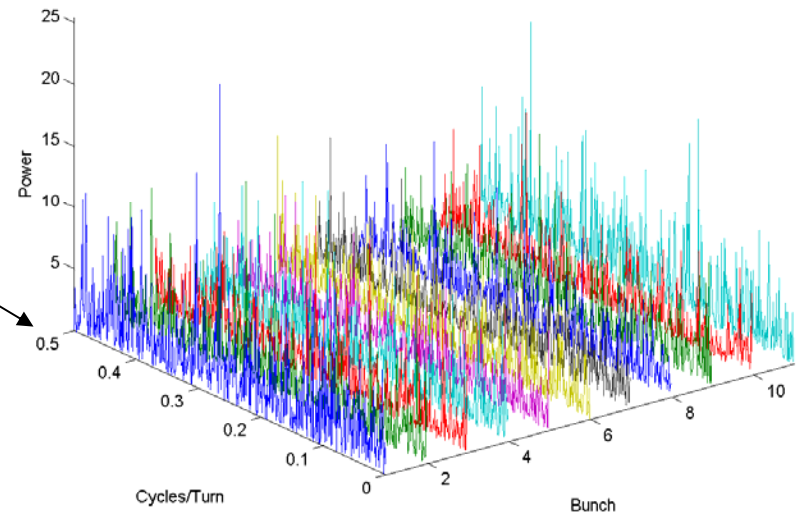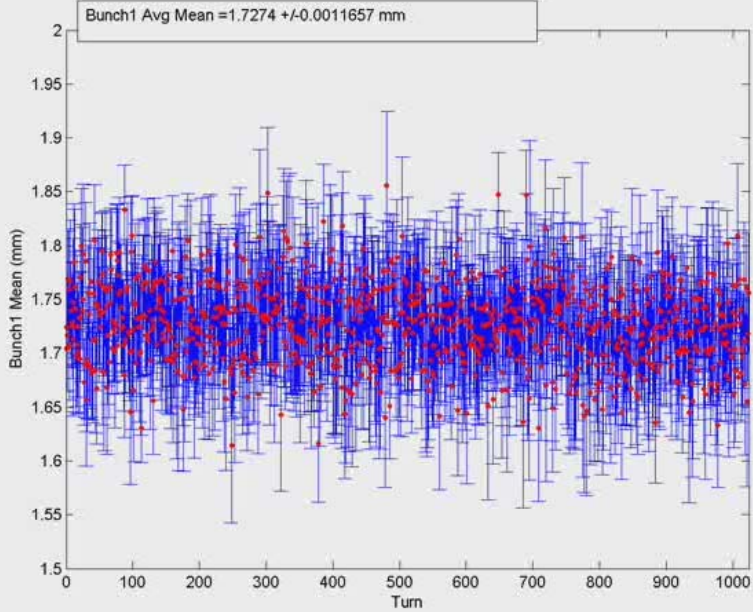
σ_v (movie)

FFT σ_v

Vertical mean position (movie)

FFT Vertical position
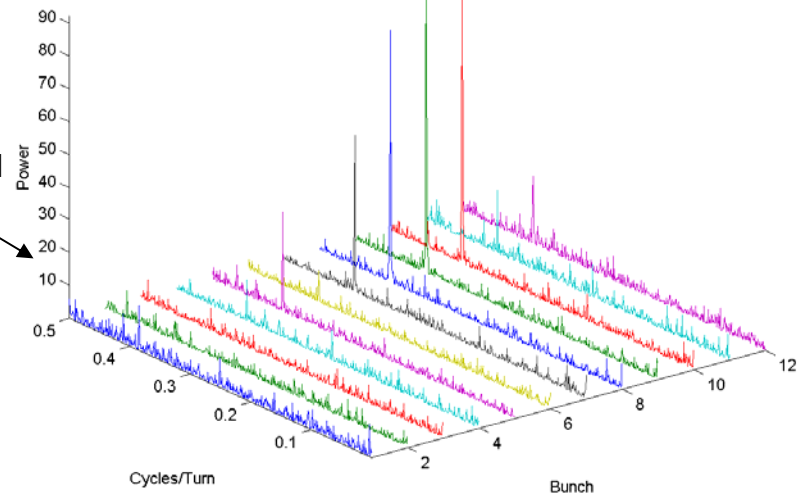
e+ vertical dynamics
Witness bunch 38,42
File: 1101
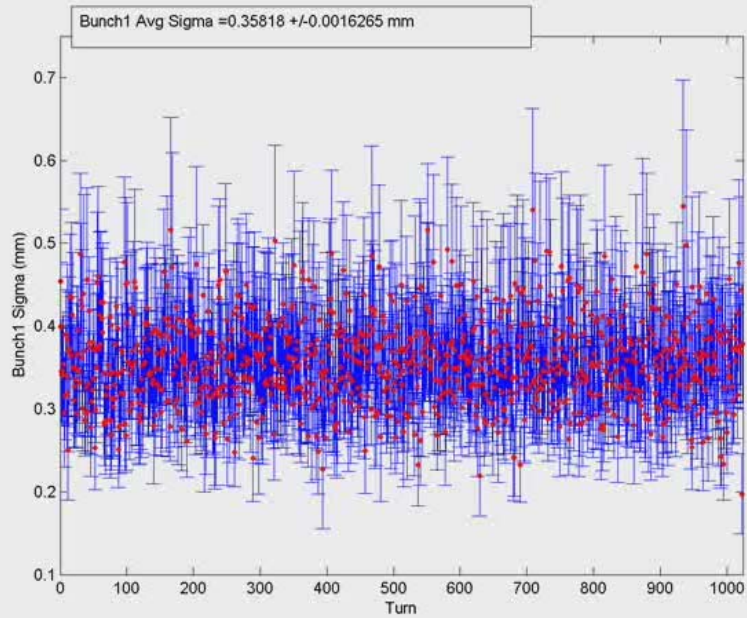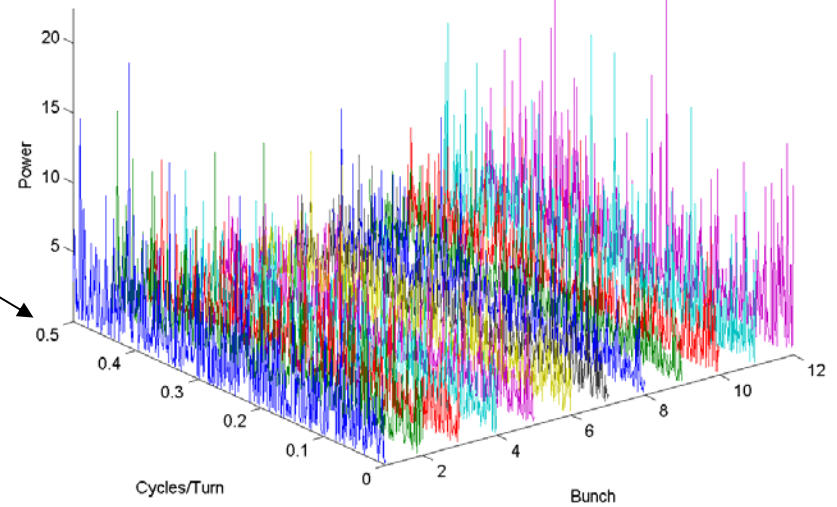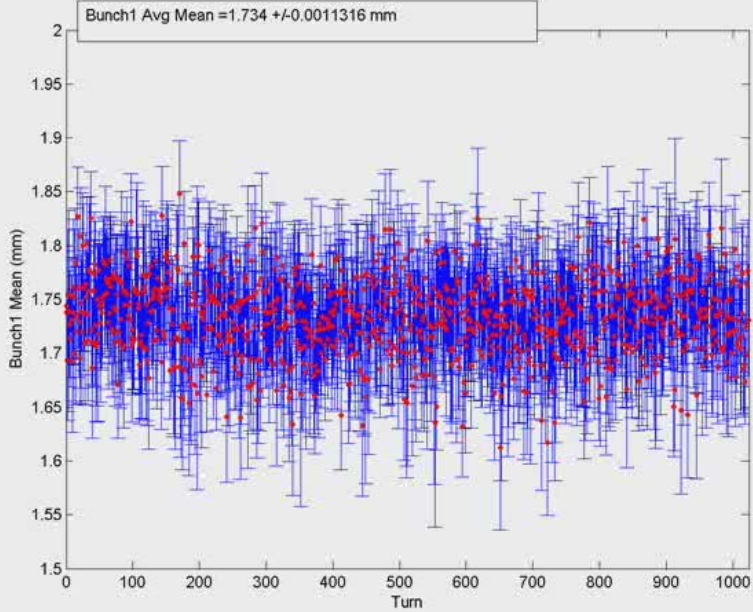
σ_v (movie)

FFT σ_v

Vertical mean position (movie)

FFT Vertical position
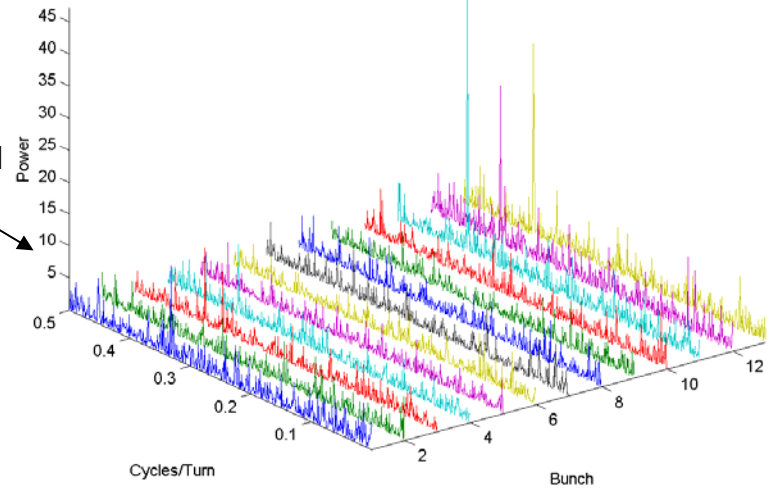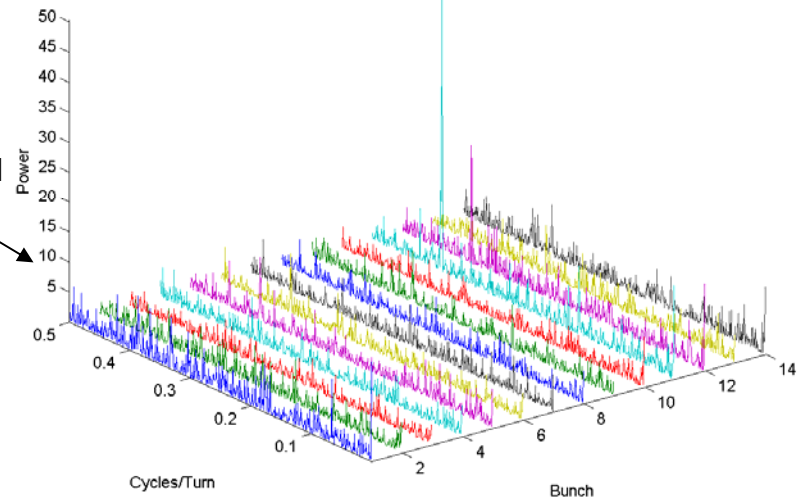
e+ vertical dynamics
Witness bunch 34,38,42
File: 1102
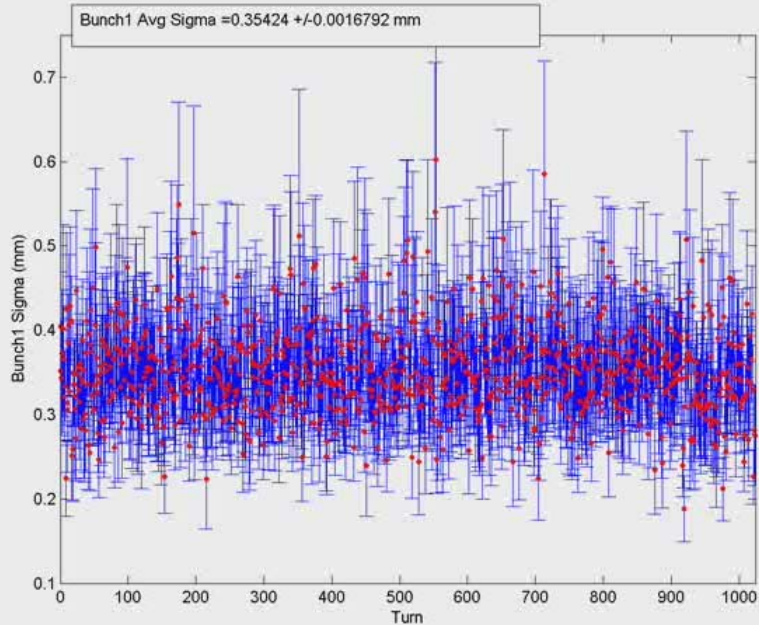
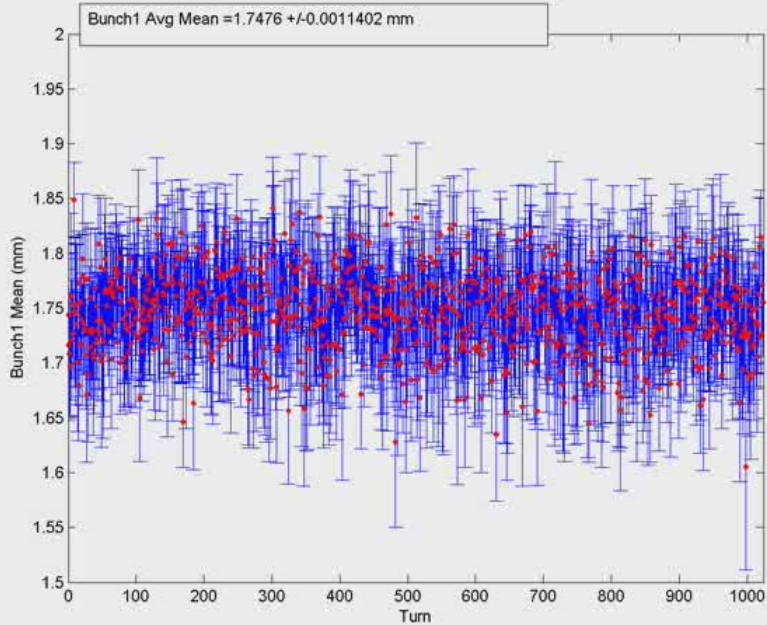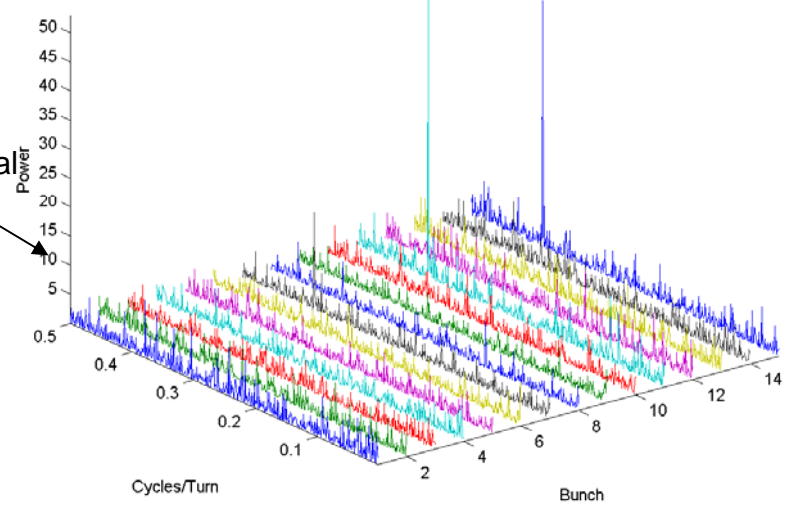σ_v (movie)

FFT σ_v
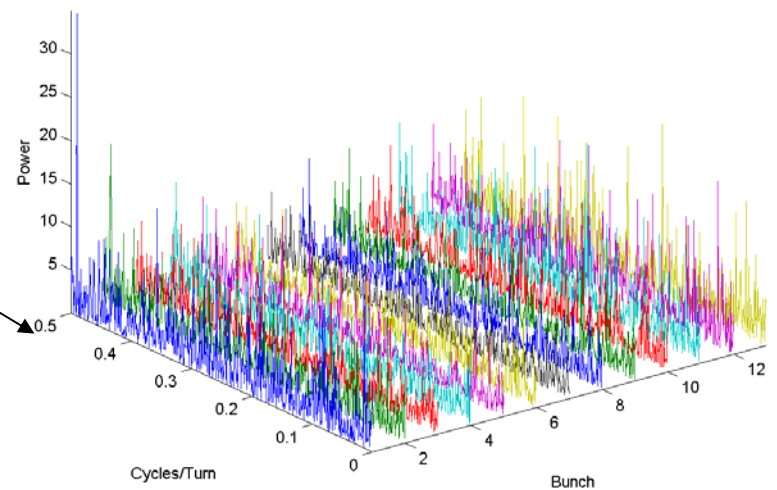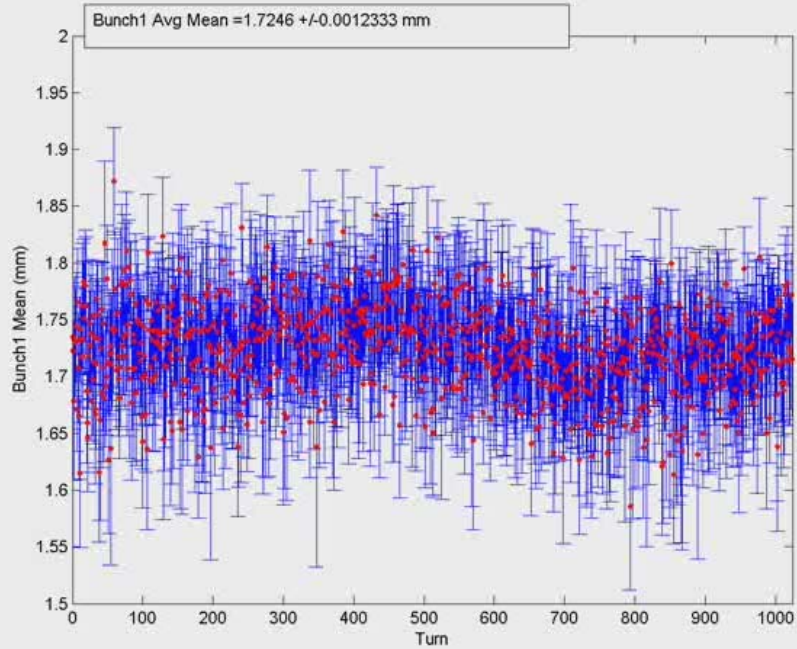
Vertical mean position (movie)

FFT Vertical position

bsm23e01103 results
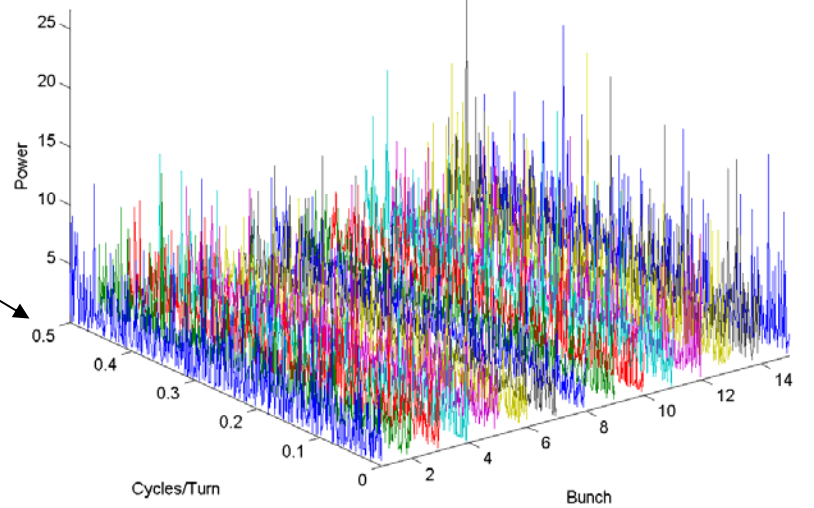
e+ vertical dynamics
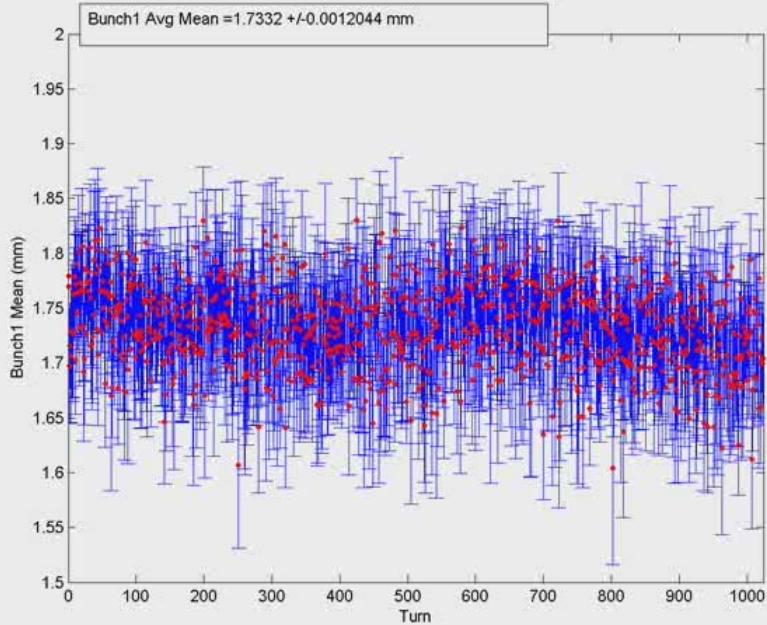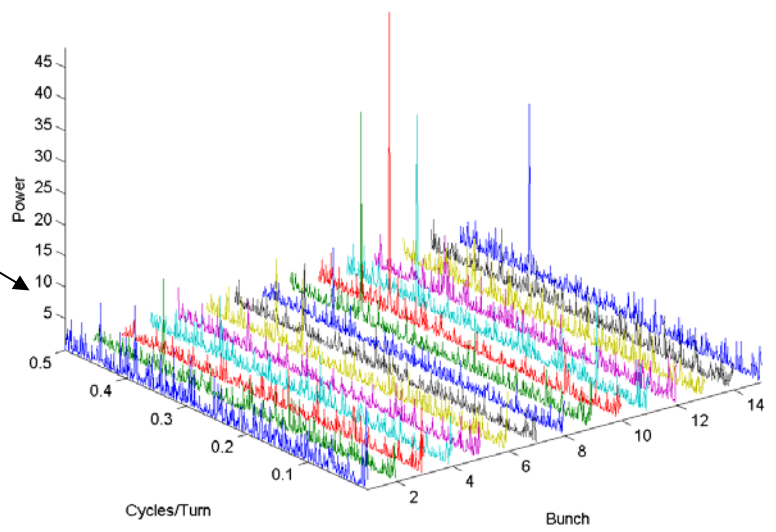Witness bunch 30,34,38,42
File: 1103
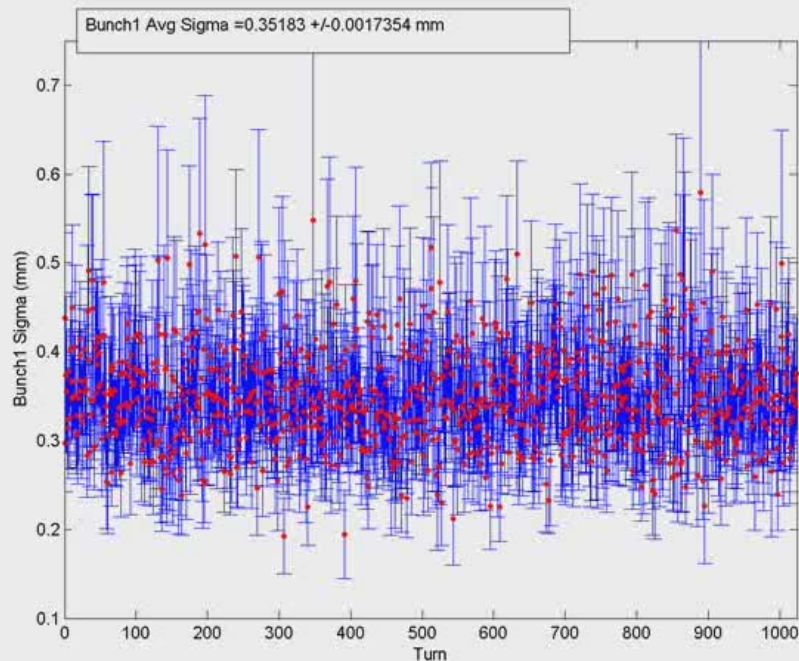
σ_v (movie)

FFT σ_v
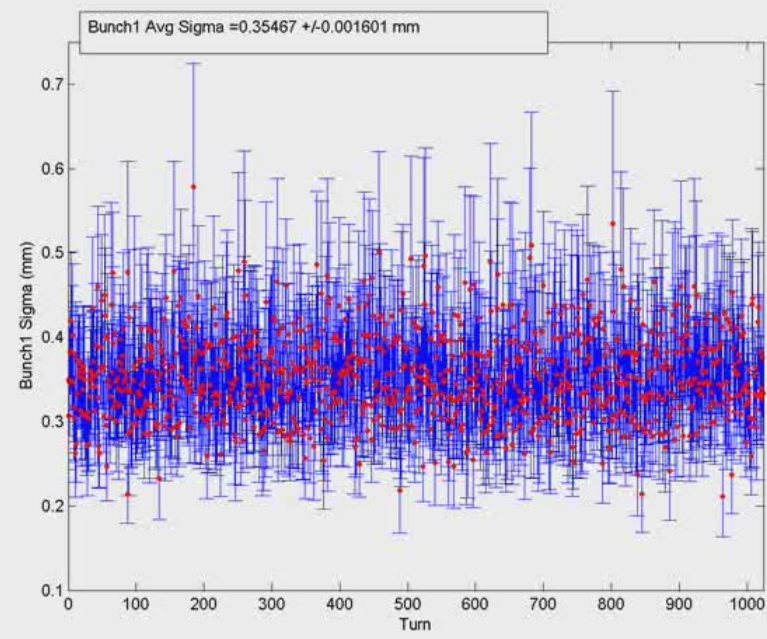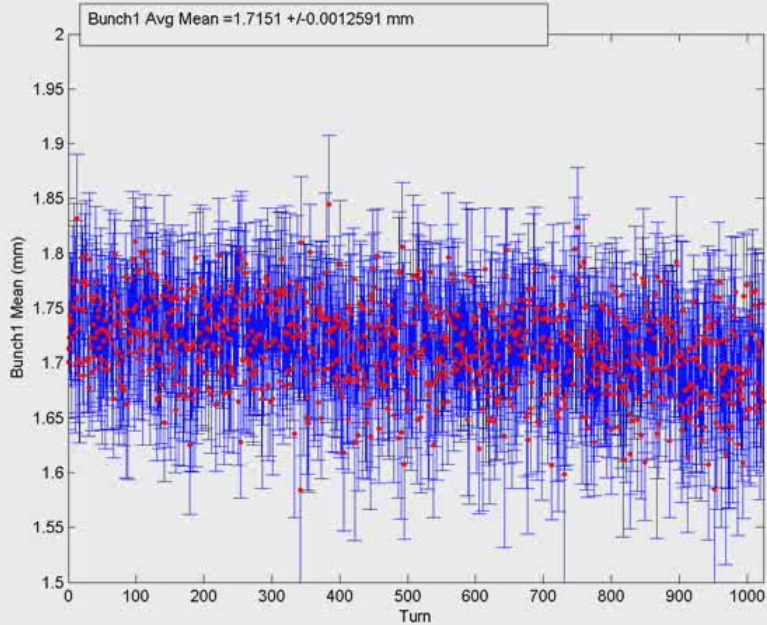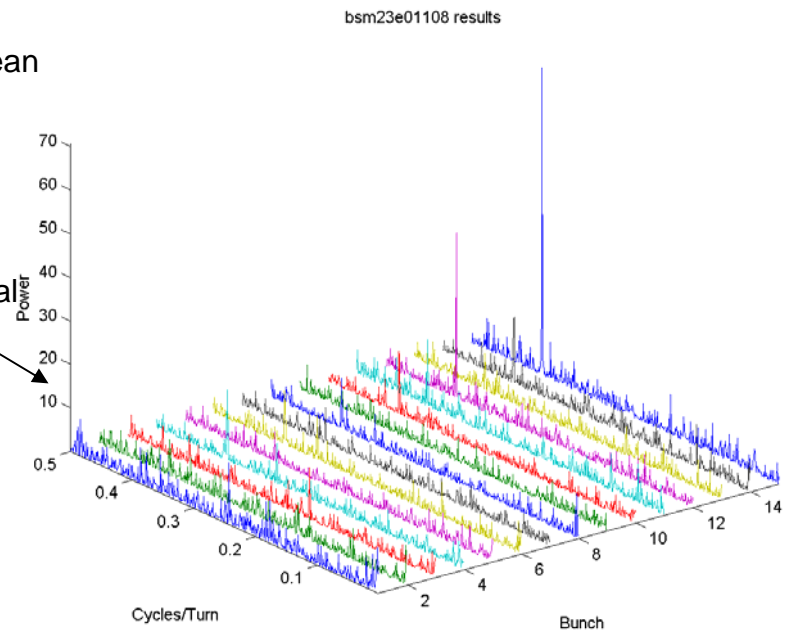
bsm23e01103 results
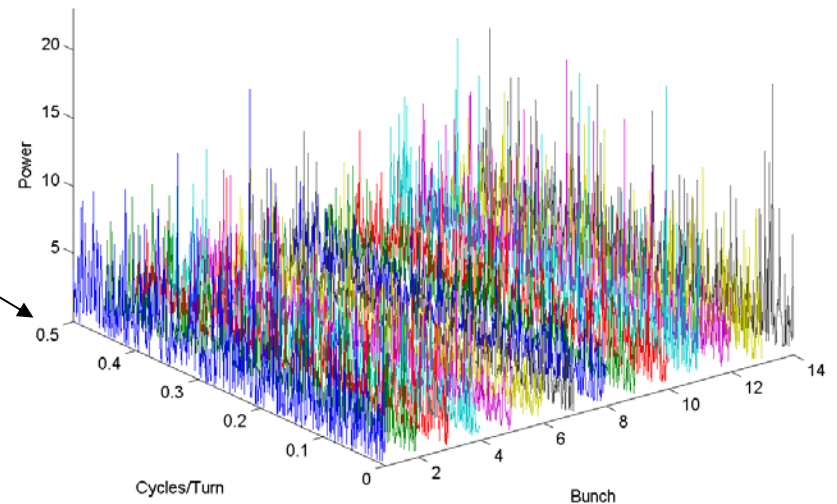
Vertical mean position (movie)

FFT Vertical position

e+ vertical dynamics
Witness bunch 26,30,34,38,42
File: 1104
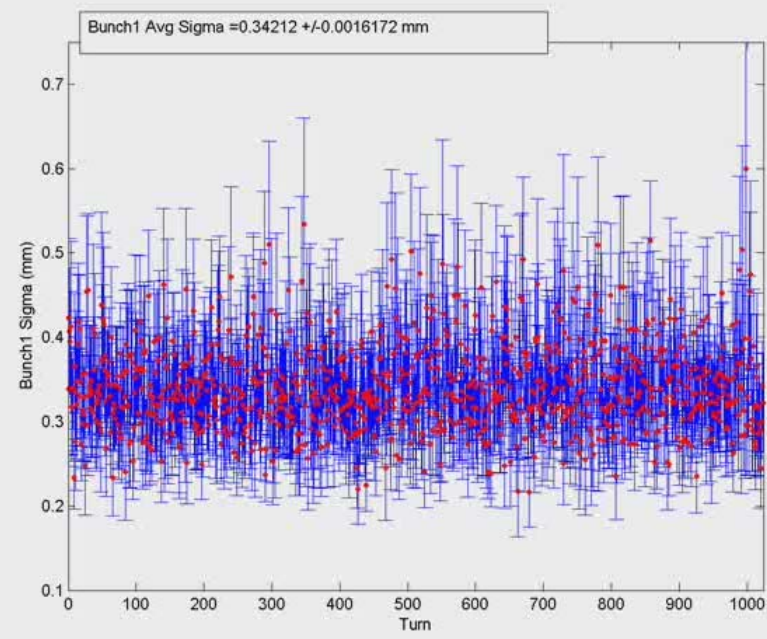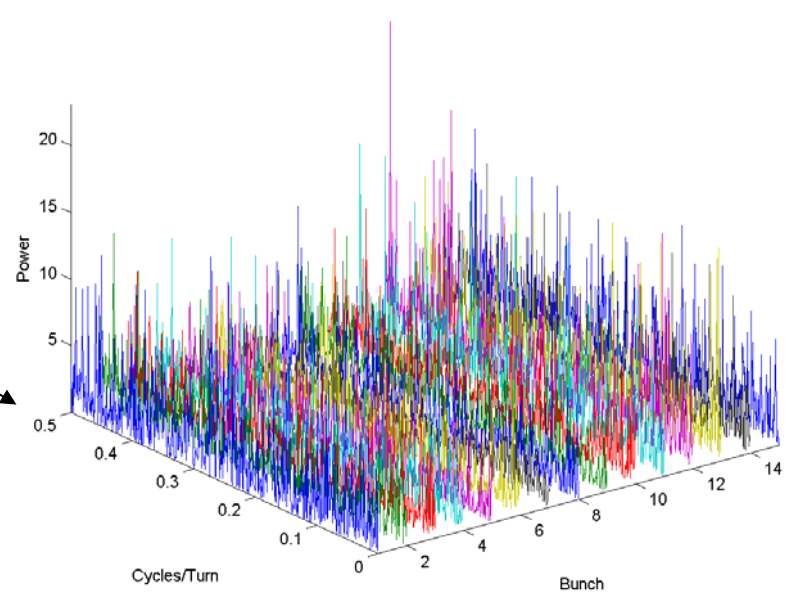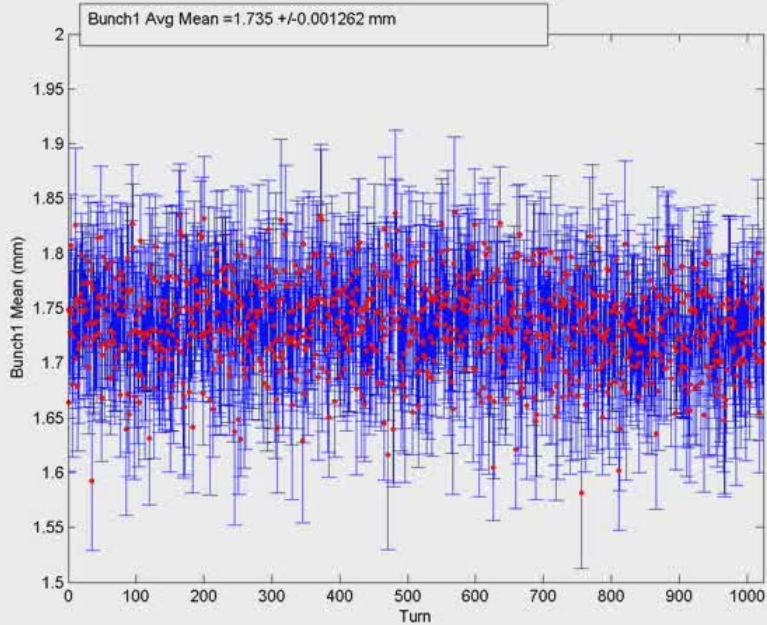
σ_v (movie)

FFT σ_v

Vertical mean position (movie)

FFT Vertical position
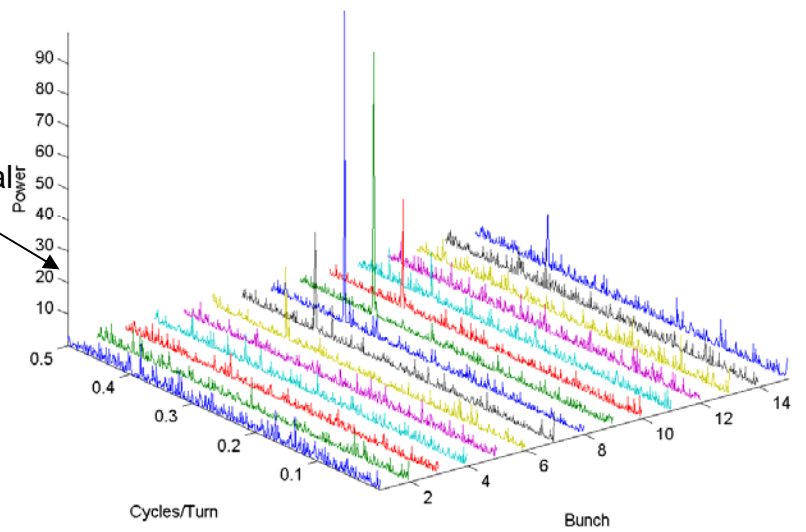
e+ vertical dynamics
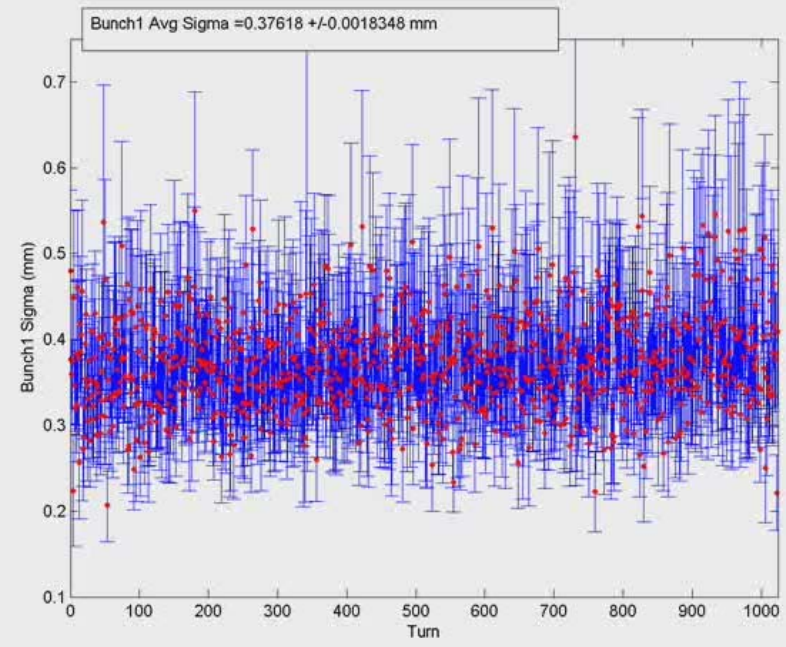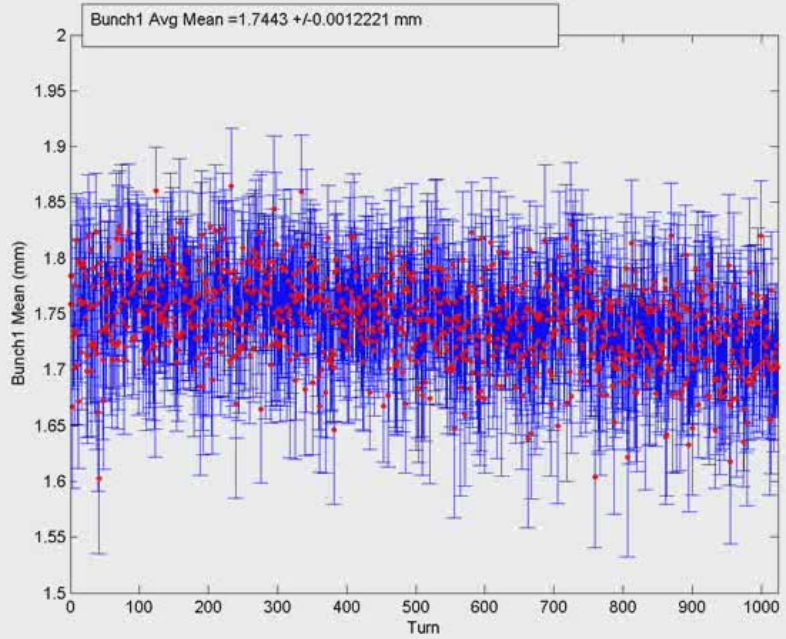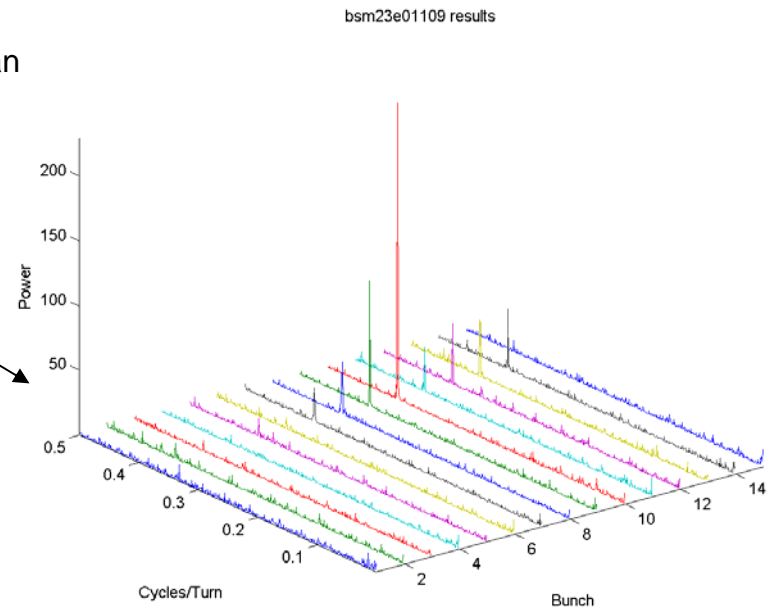Witness bunch 22,26,30,34,38
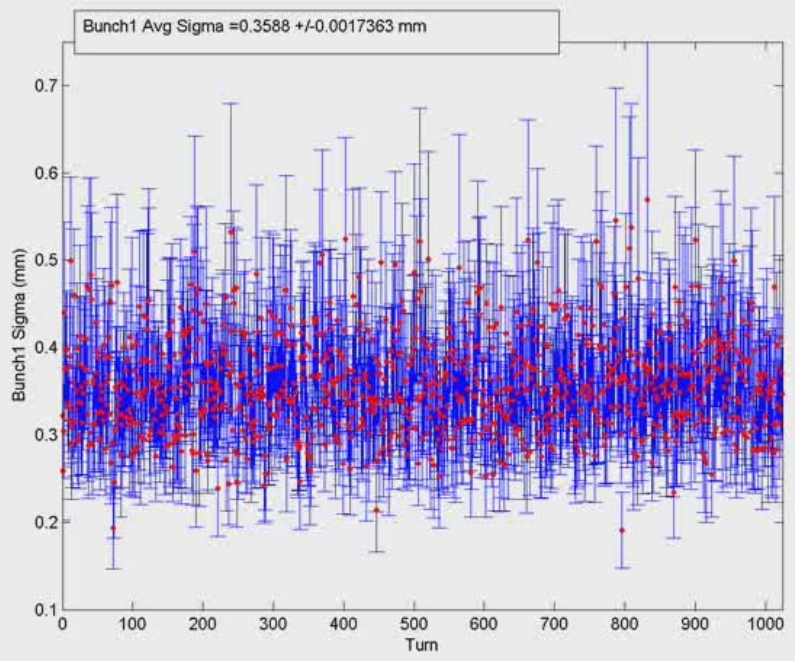File: 1105
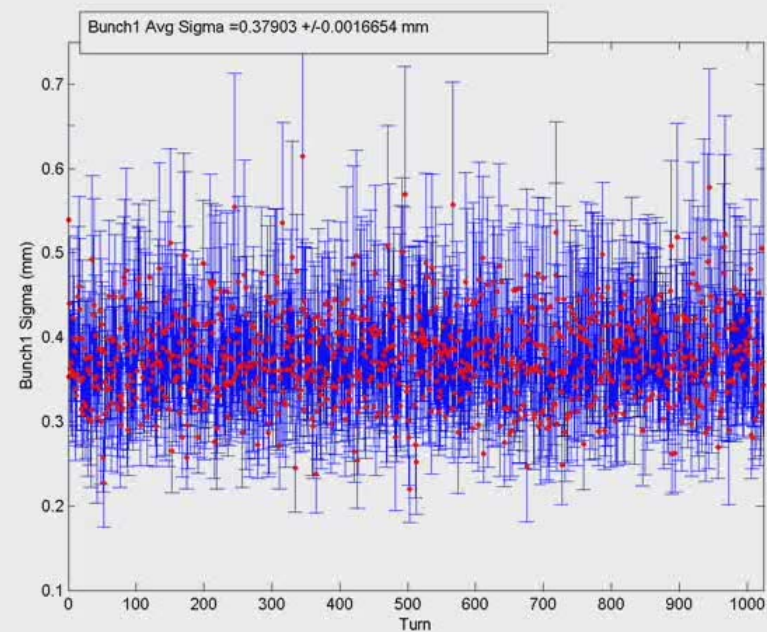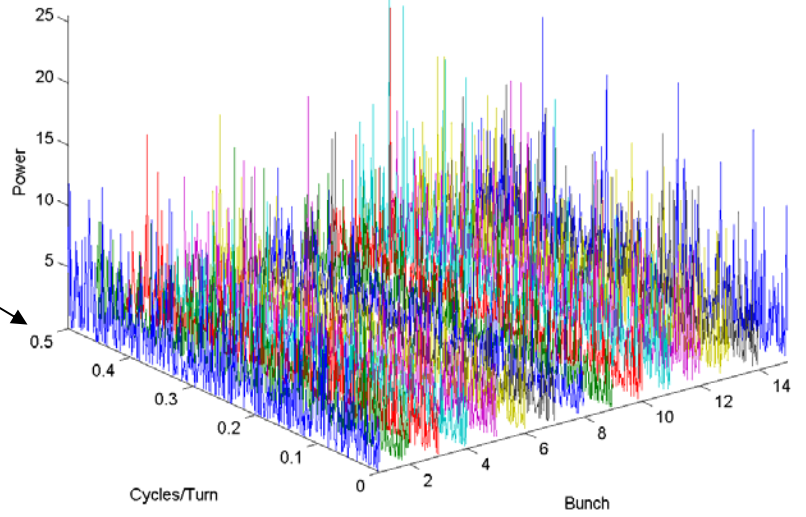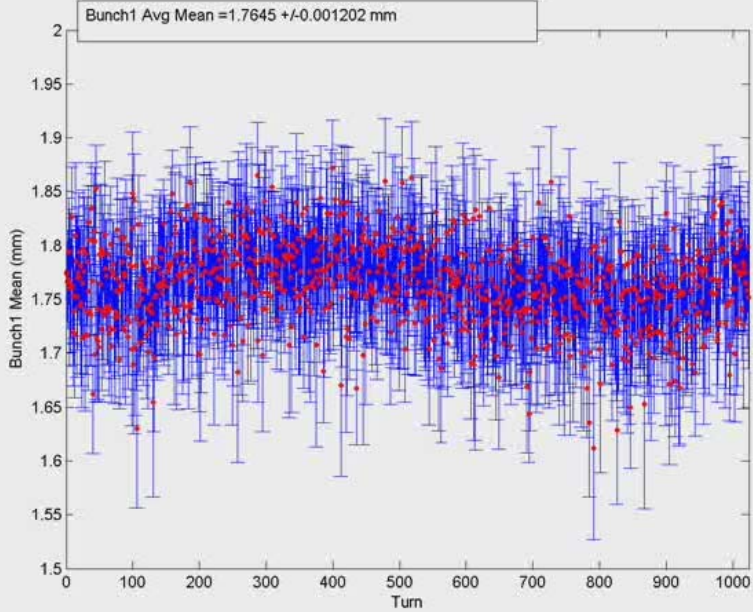
σ_v (movie)

FFT σ_v

Vertical mean position (movie)
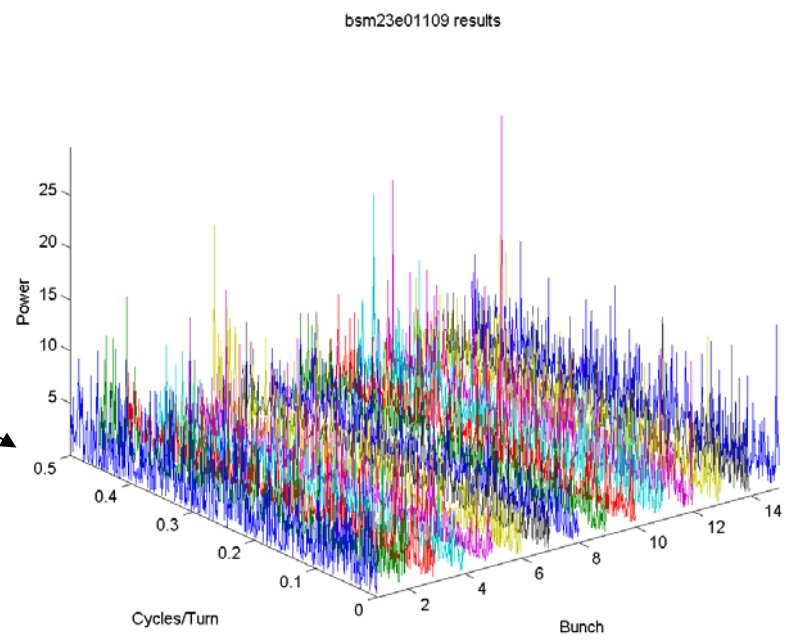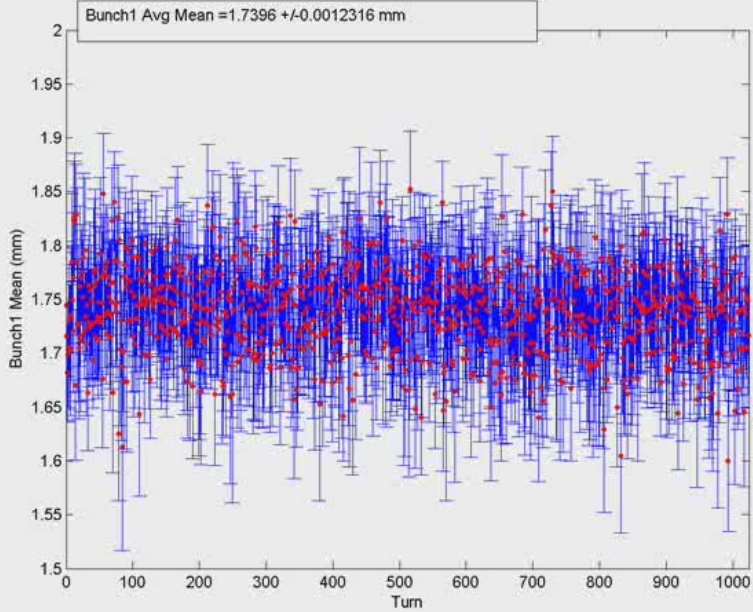
FFT Vertical position
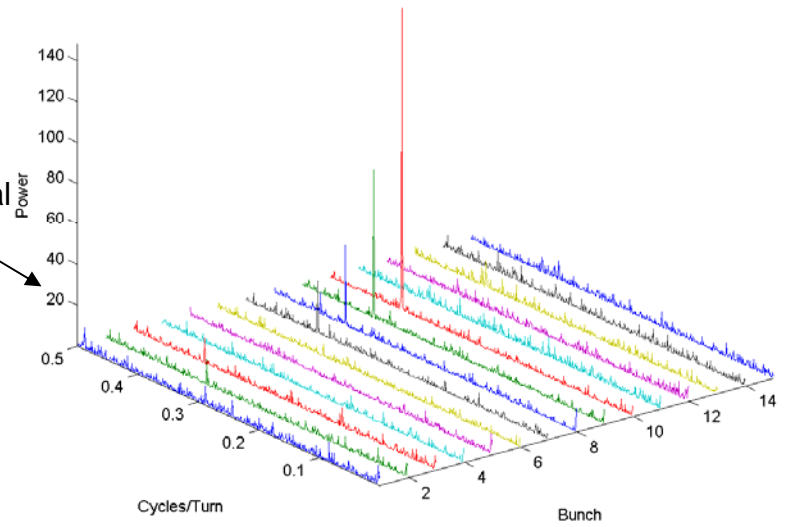
e+ vertical dynamics
Witness bunch 20,22,26,30,34
File: 1106
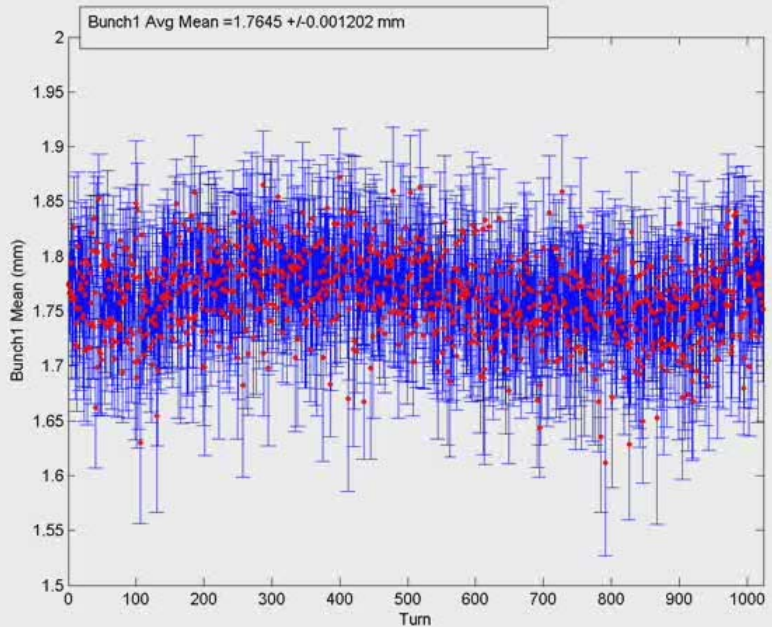
σ$_v$ (movie)

FFT σ$_v$

Vertical mean position (movie)

FFT Vertical position

e+ vertical dynamics
Witness bunch 19,20,22,26,30
File: 1107

σ_v (movie)

FFT σ_v
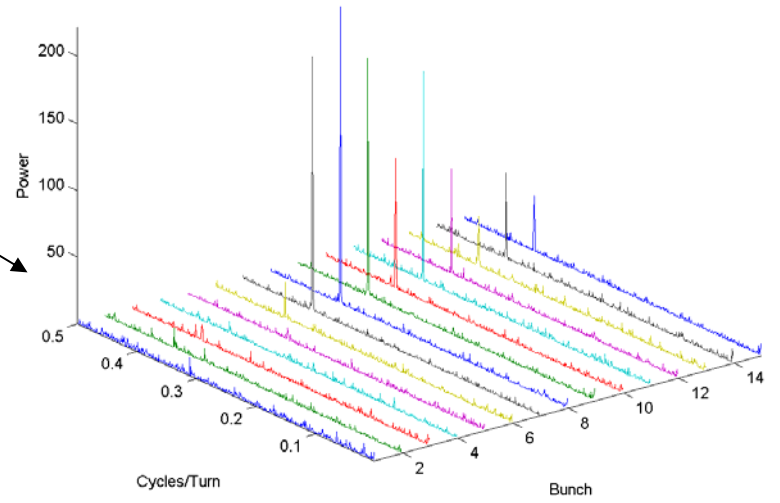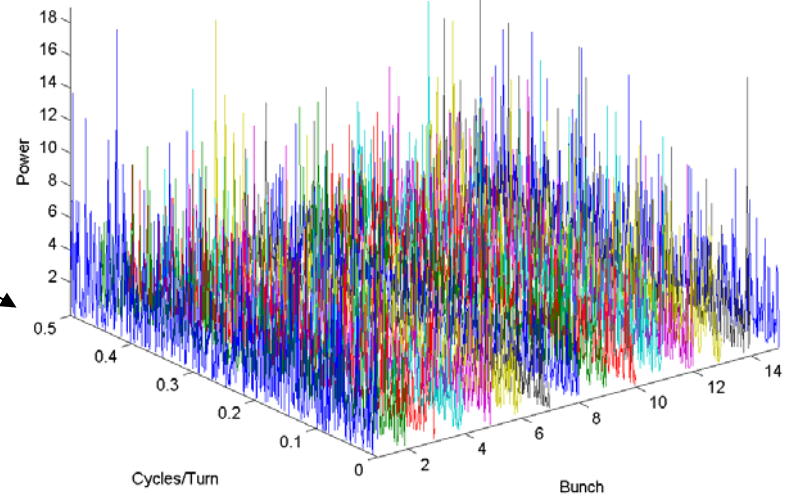
bsm23e01107 results

Bunch1 Avg Mean =1.7332 +/-0.0012044 mm

Bunch1 Avg Sigma =0.35467 +/-0.001601 mm
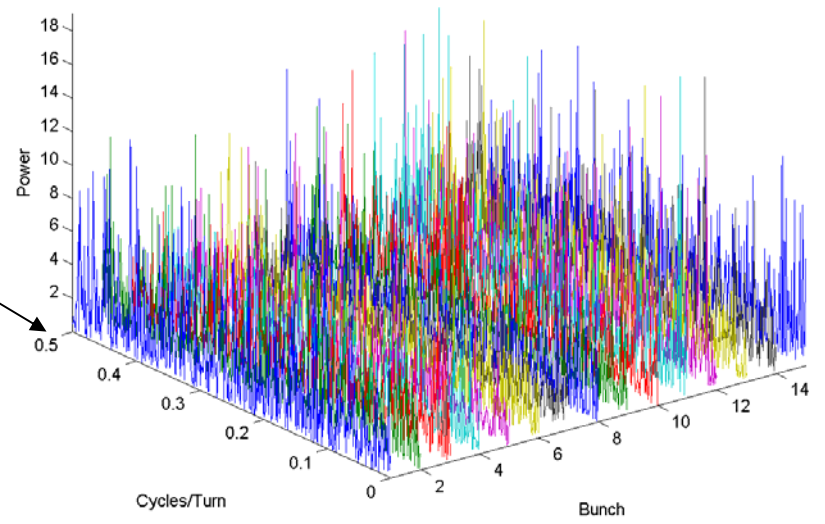
Vertical mean position (movie)

FFT Vertical position

e+ vertical dynamics
Witness bunch 18,19,20,22,26
File: 1108

σ_v (movie)

FFT σ_v

Vertical mean position (movie)

FFT Vertical position

σ_v (movie)

FFT σ_v
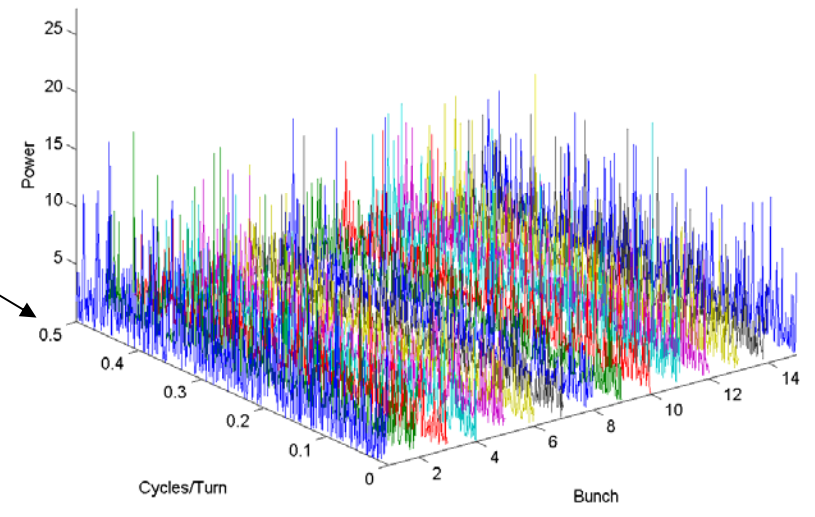
e+ vertical dynamics
Witness bunch 17,18,19,20,22
File: 1109

Vertical mean position (movie)

FFT Vertical position

e+ vertical dynamics
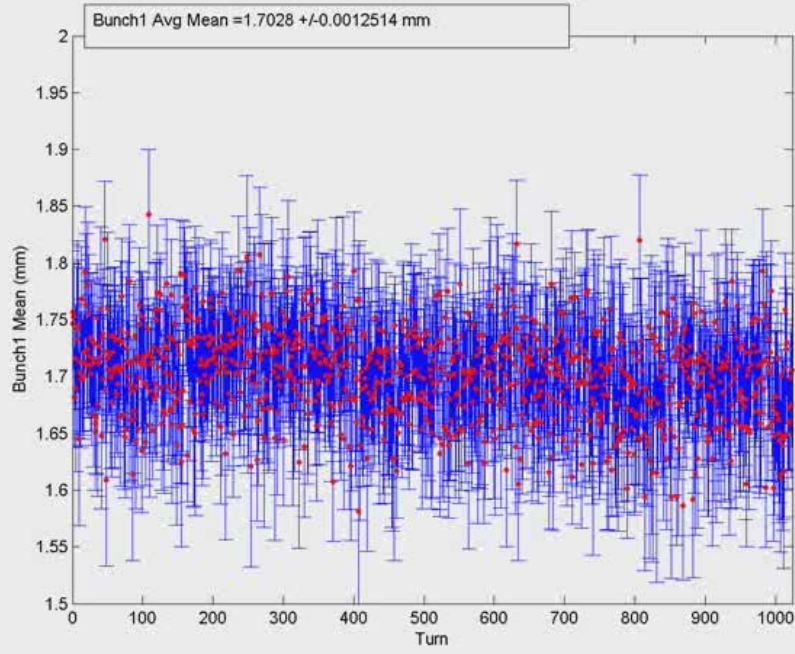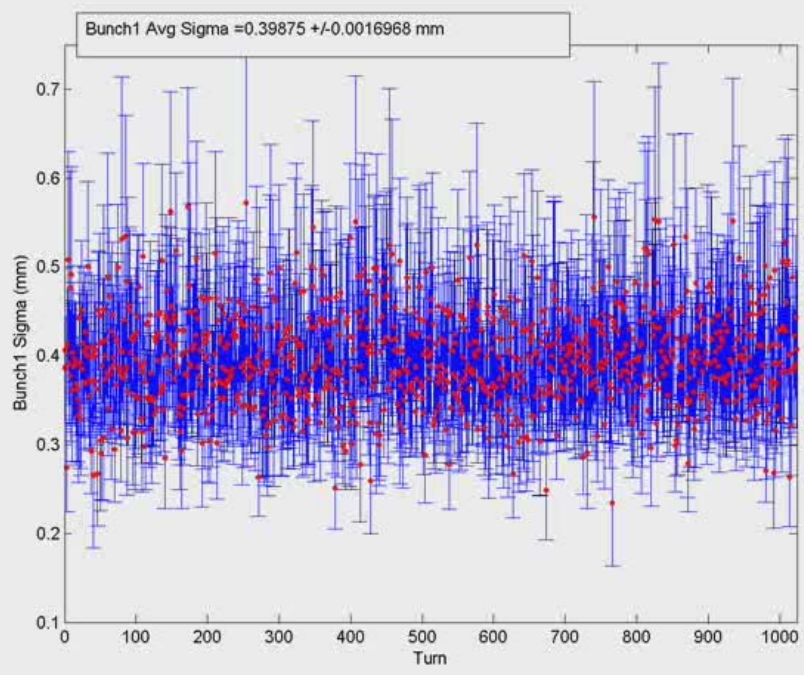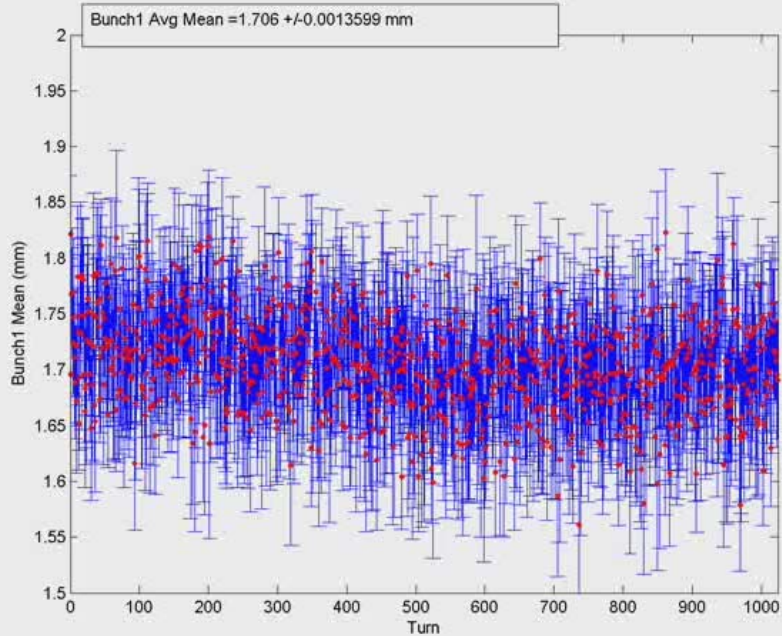Witness bunch 16,17,18,19,20
File: 1110
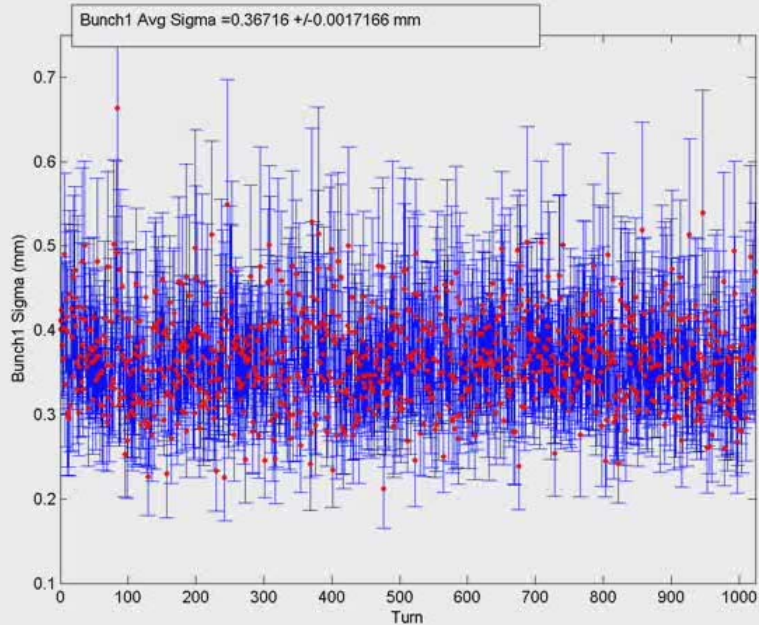
σ_v (movie)

FFT σ_v

Vertical mean position (movie)

FFT Vertical position
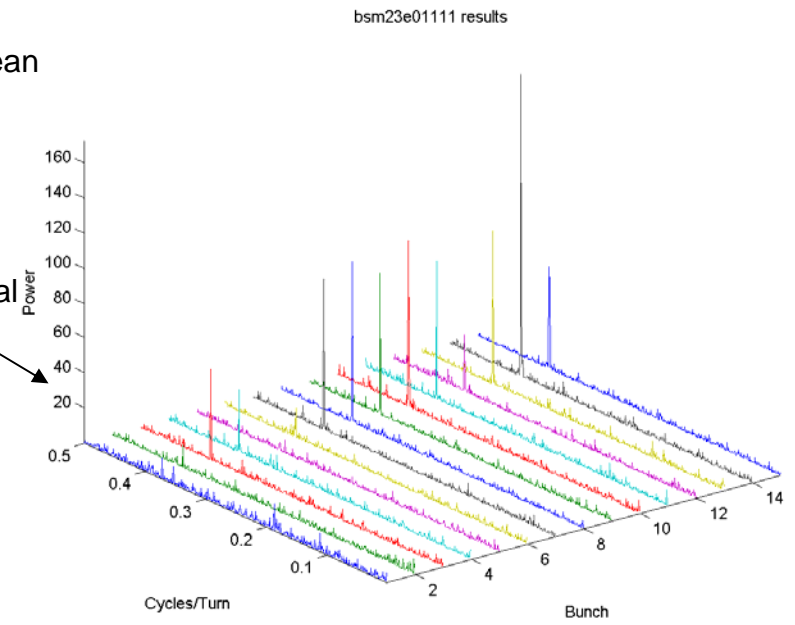
e+ vertical dynamics
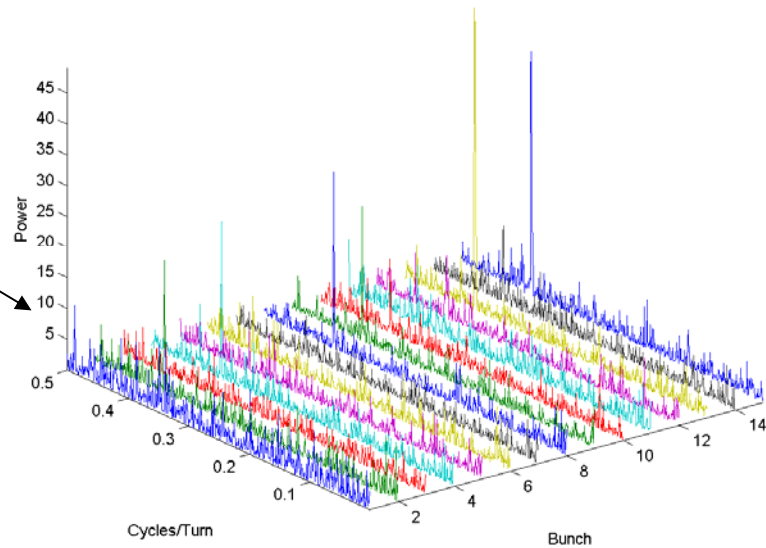Witness bunch 15,16,17,18,19
File: 1111

σ_v (movie)

FFT σ_v
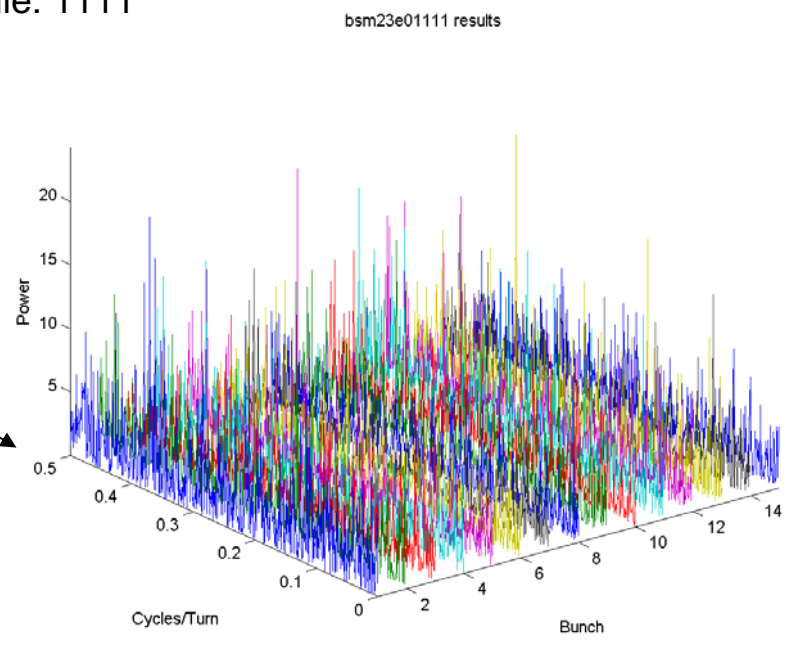
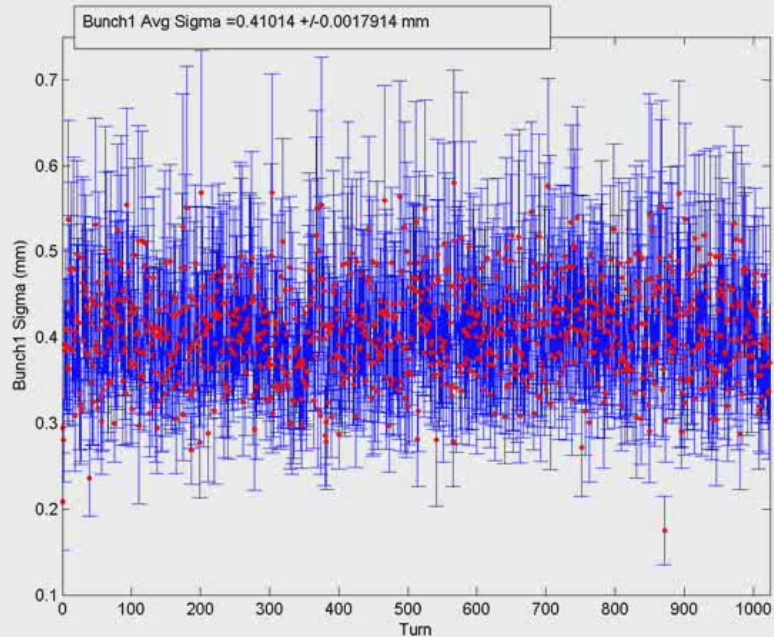Vertical mean position (movie)

FFT Vertical position

bsm23e01112 results

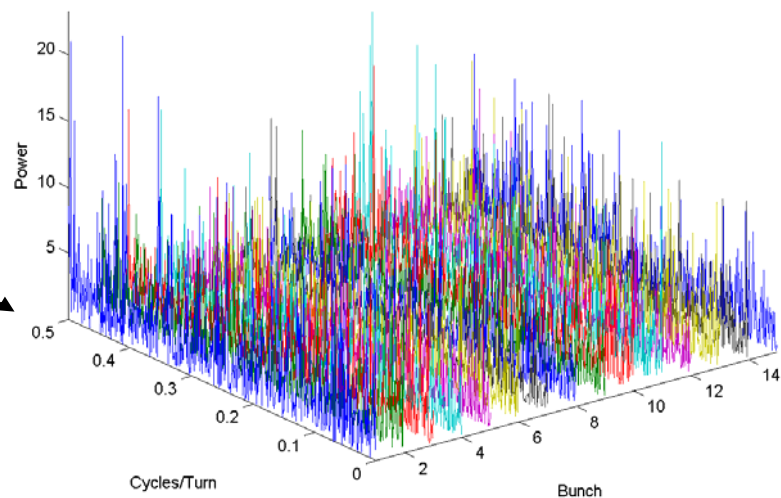e+ vertical dynamics
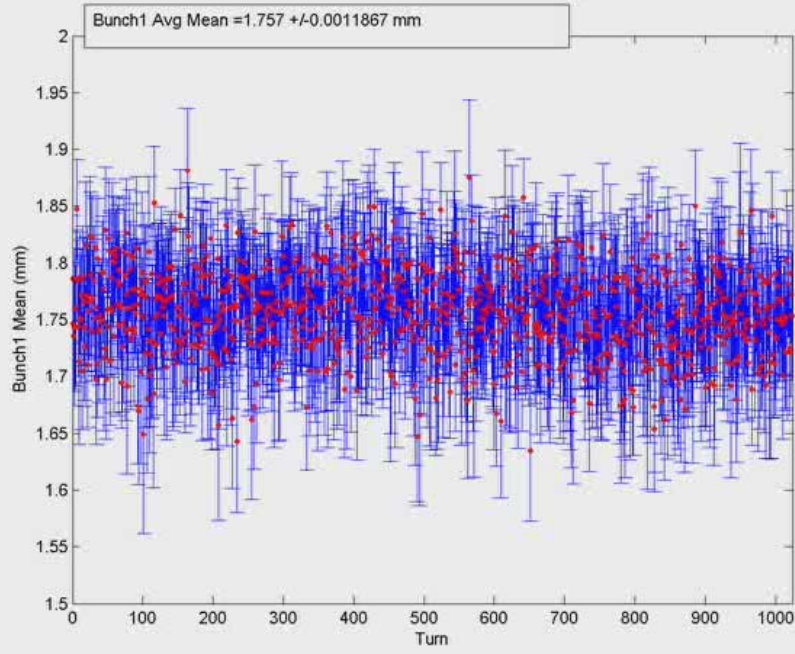Witness bunch 14,15,16,17,18
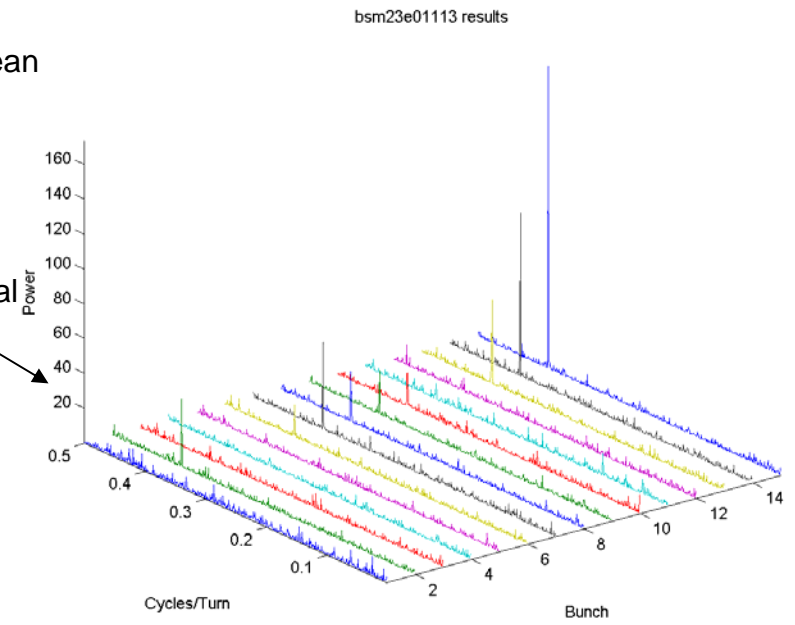File: 1112

σ_v (movie)

FFT σ_v
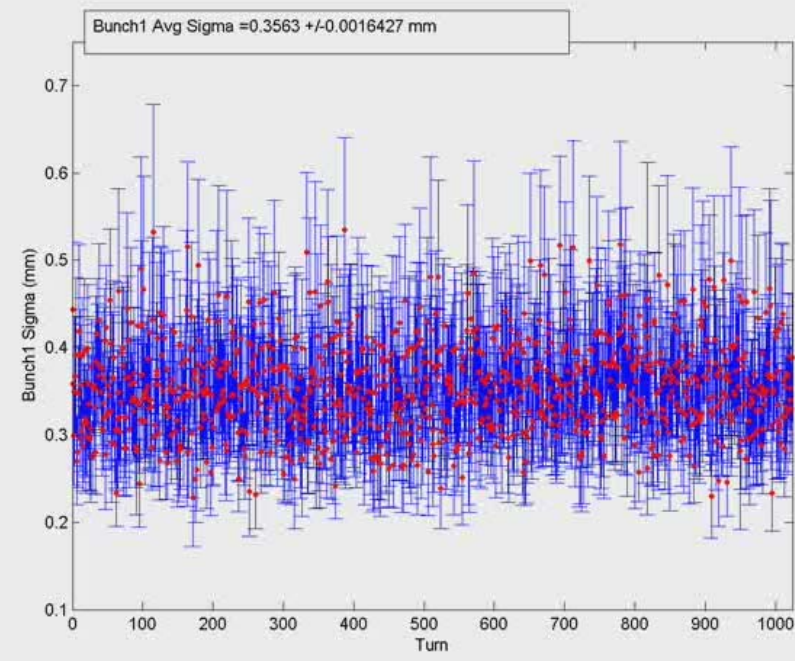
bsm23e01112 results

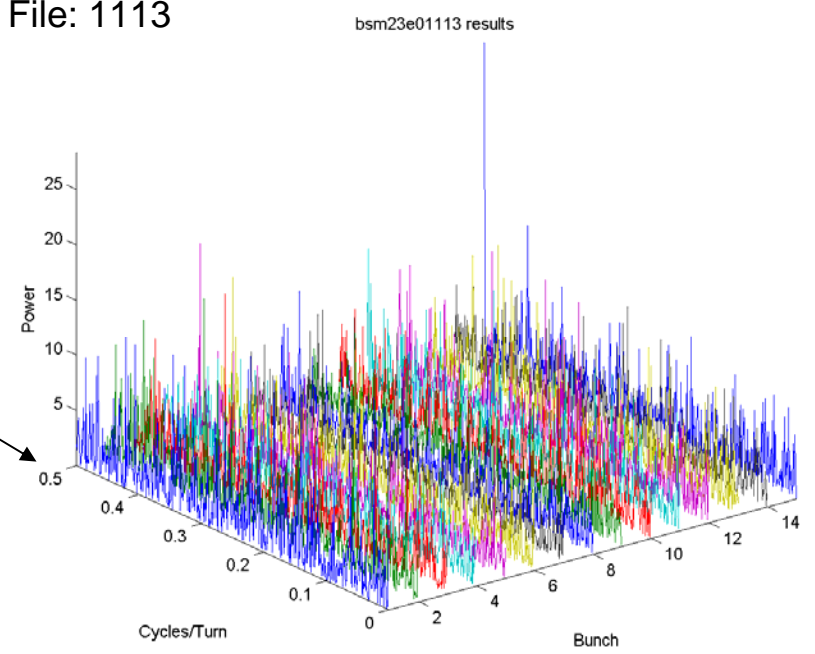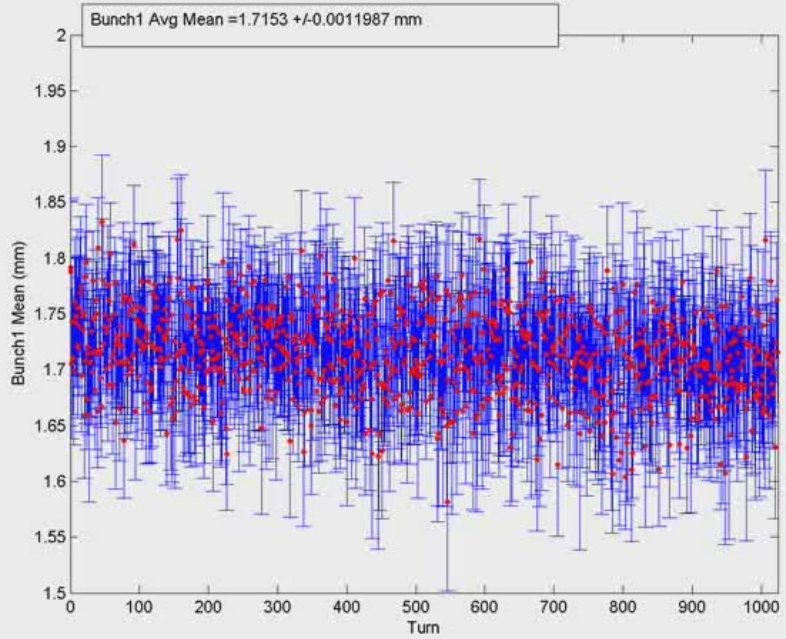Vertical mean position (movie)

FFT Vertical position

e+ vertical dynamics
Witness bunch 13,14,15,16,17
File: 1113

σ_v (movie)

FFT σ_v

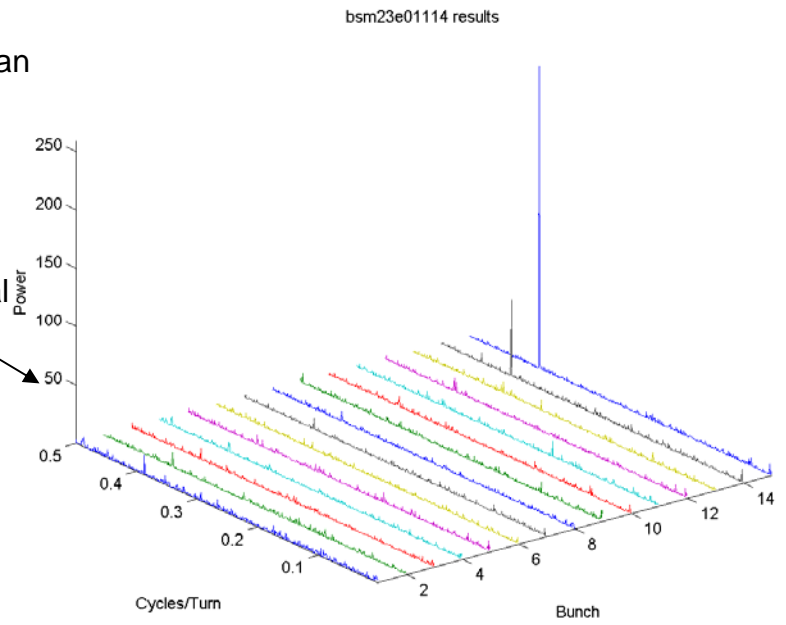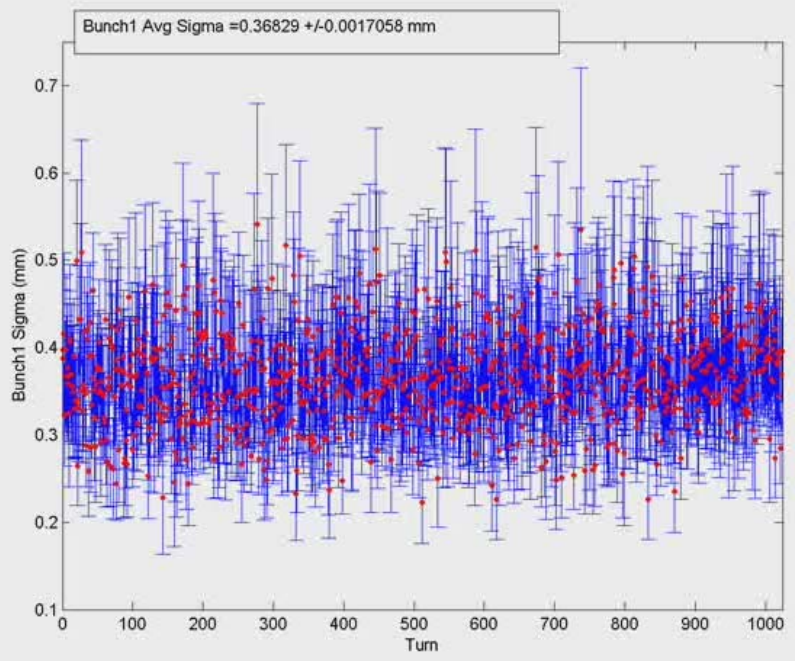Vertical mean position (movie)

FFT Vertical position

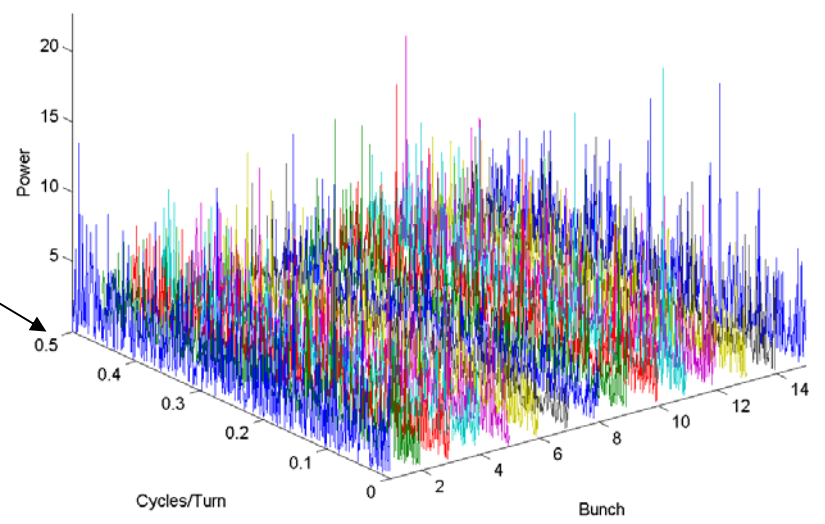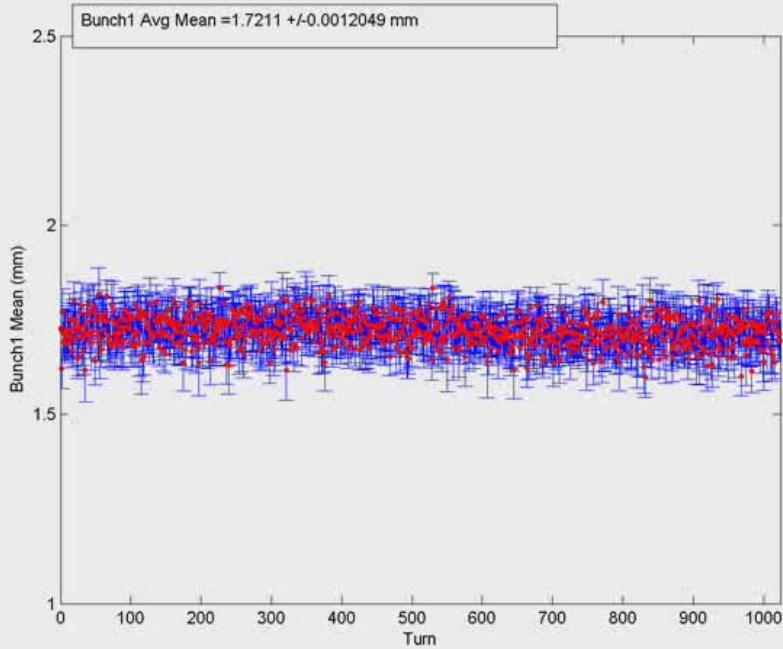e+ vertical dynamics
Witness bunch 12,13,14,15,16
File: 1114

σ_v (movie)

FFT σ_v
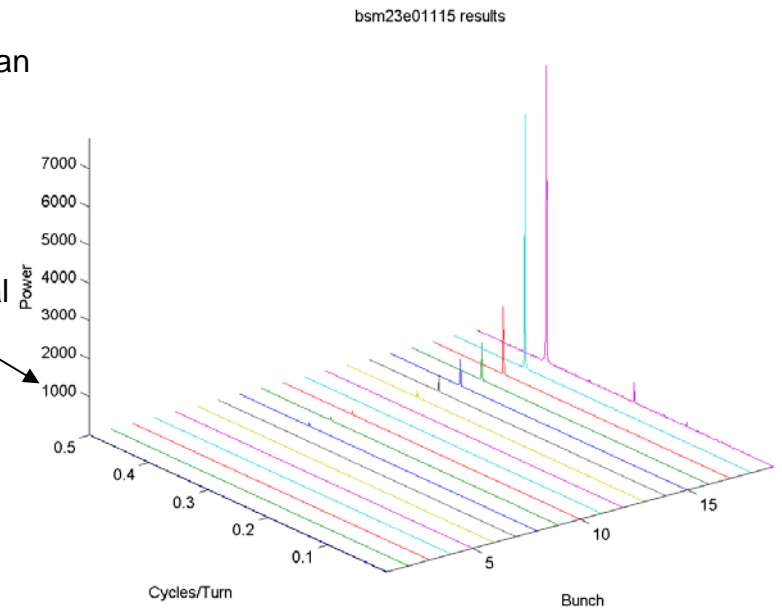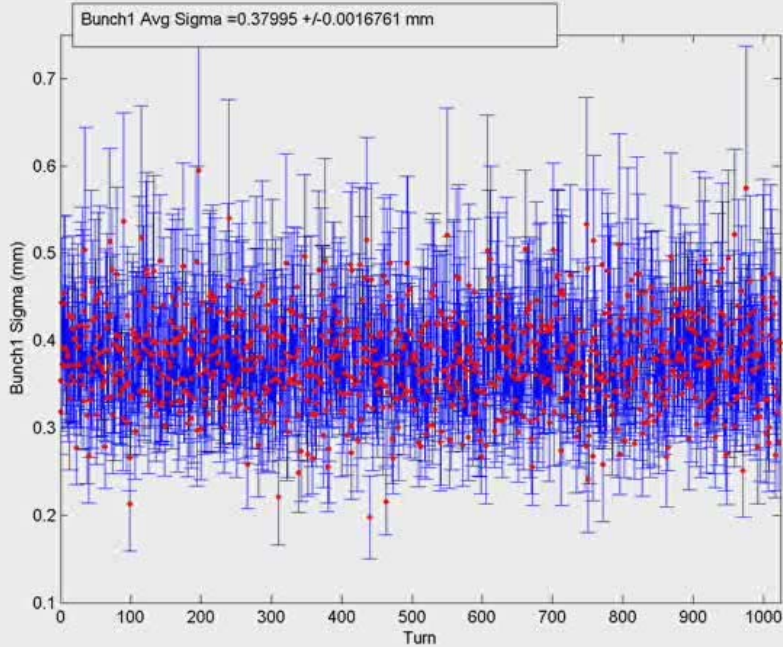
Vertical mean position (movie)

FFT Vertical position
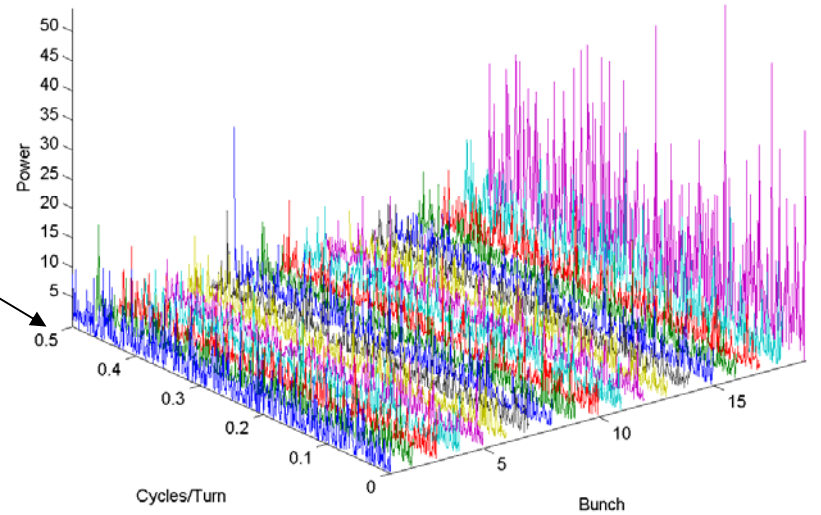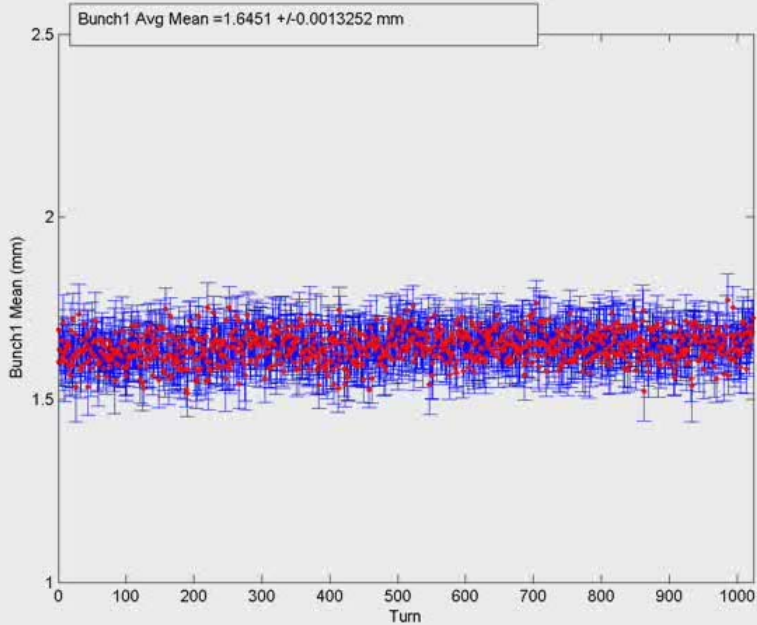
e+ vertical dynamics
Witness bunch 12-20
File: 1115

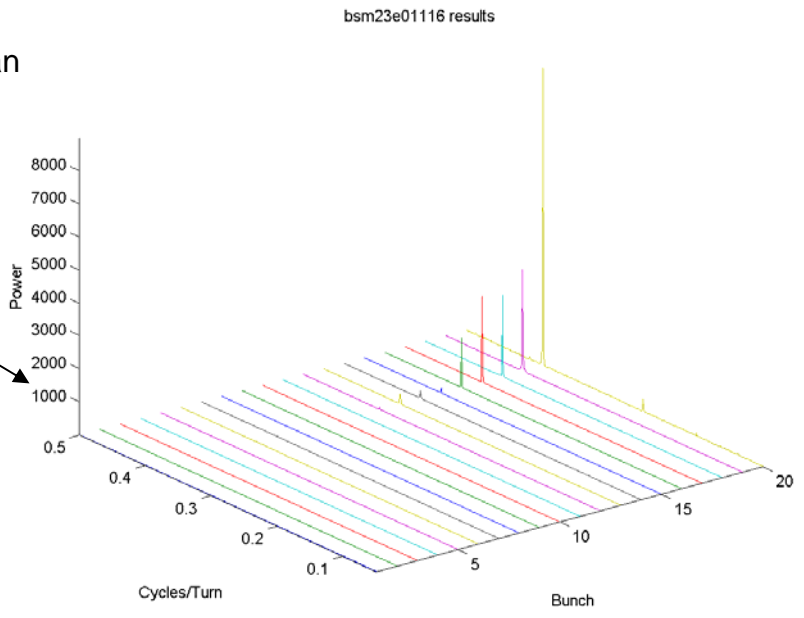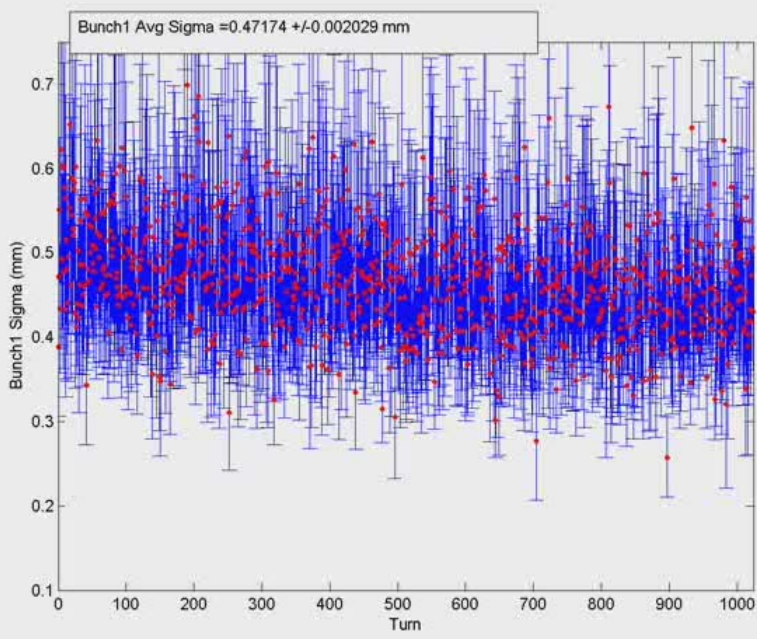σ_v (movie)

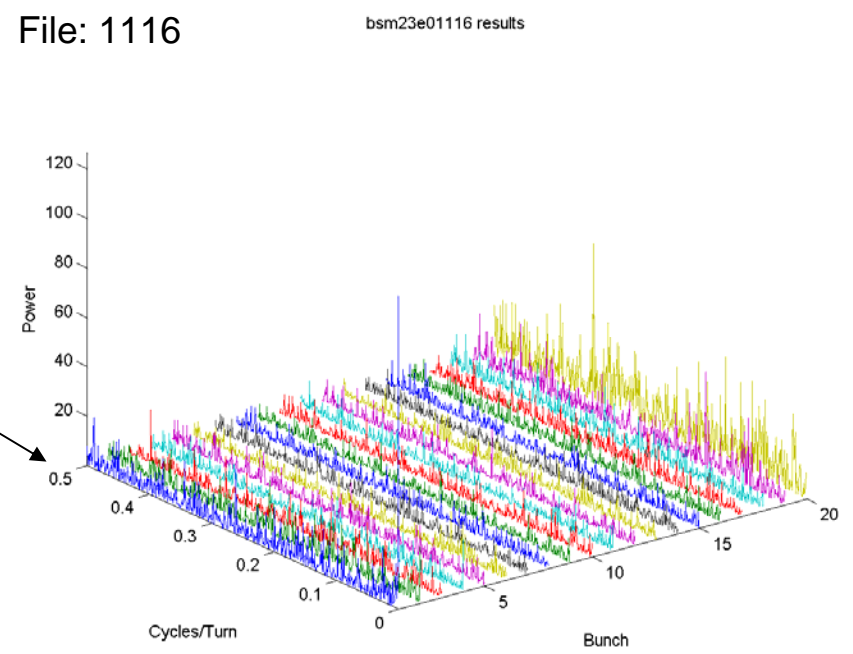FFT σ_v

Vertical mean position (movie)

FFT Vertical position

e+ vertical dynamics
20 Bunches
File: 1116

σ_v (movie)

FFT σ_v

Bunch1 Avg Mean =1.6451 +/-0.0013252 mm
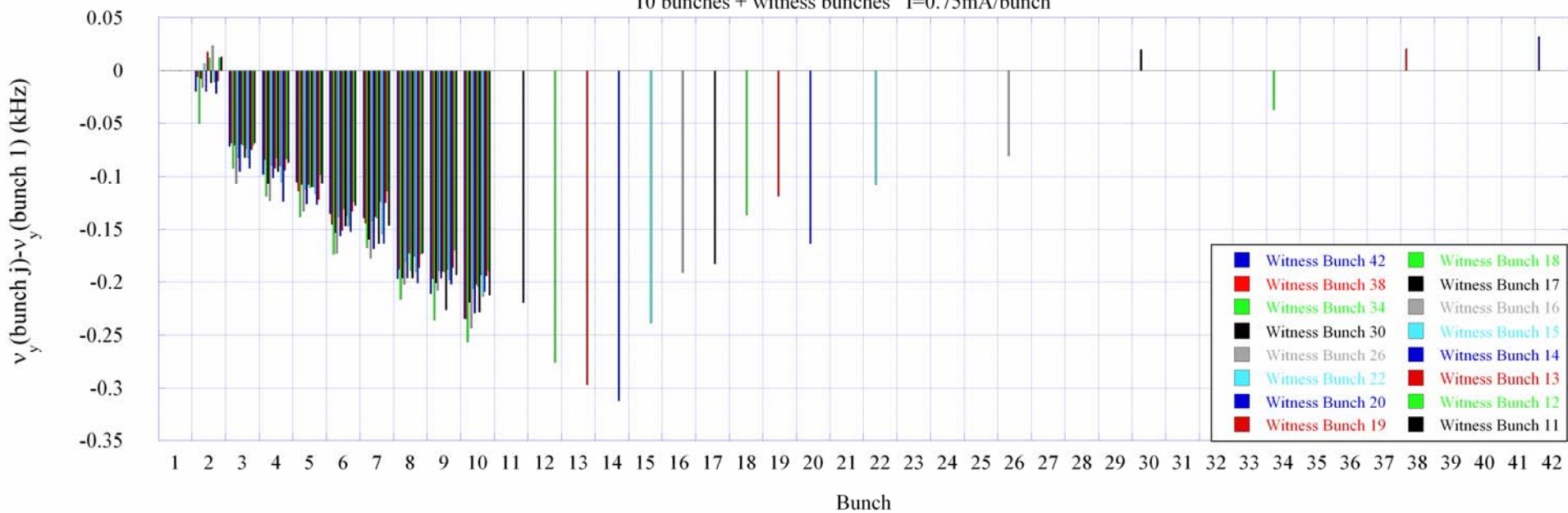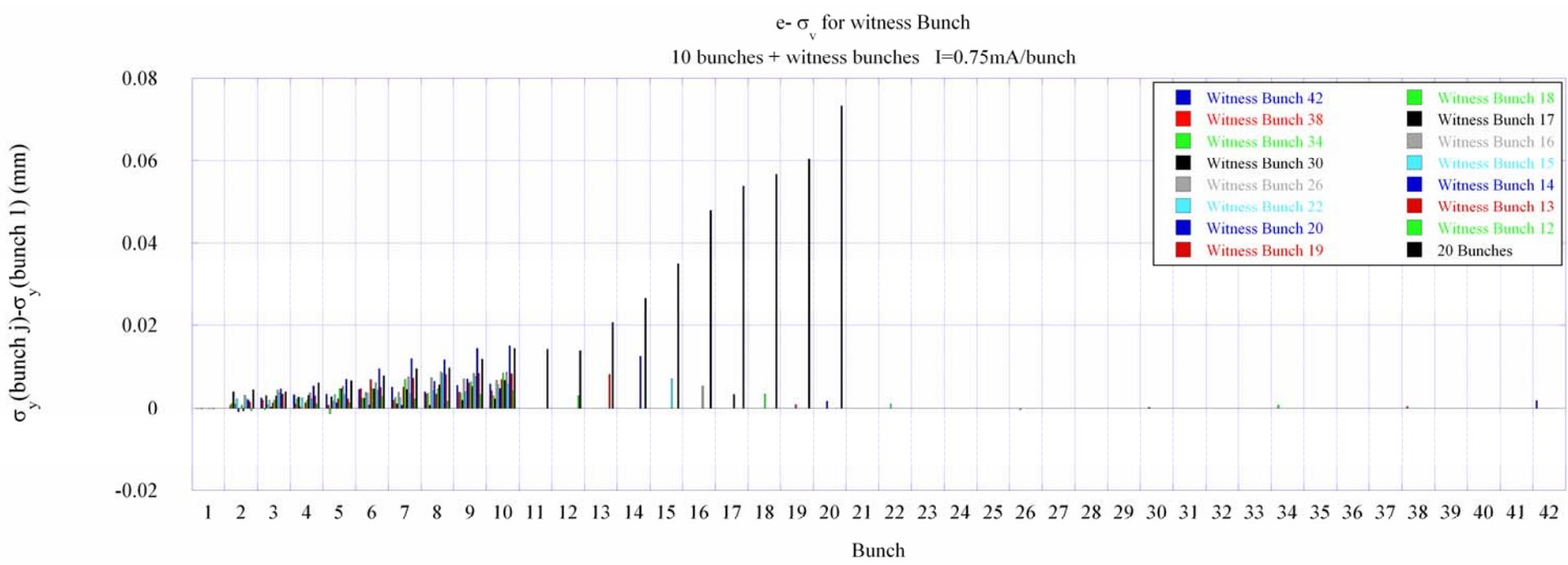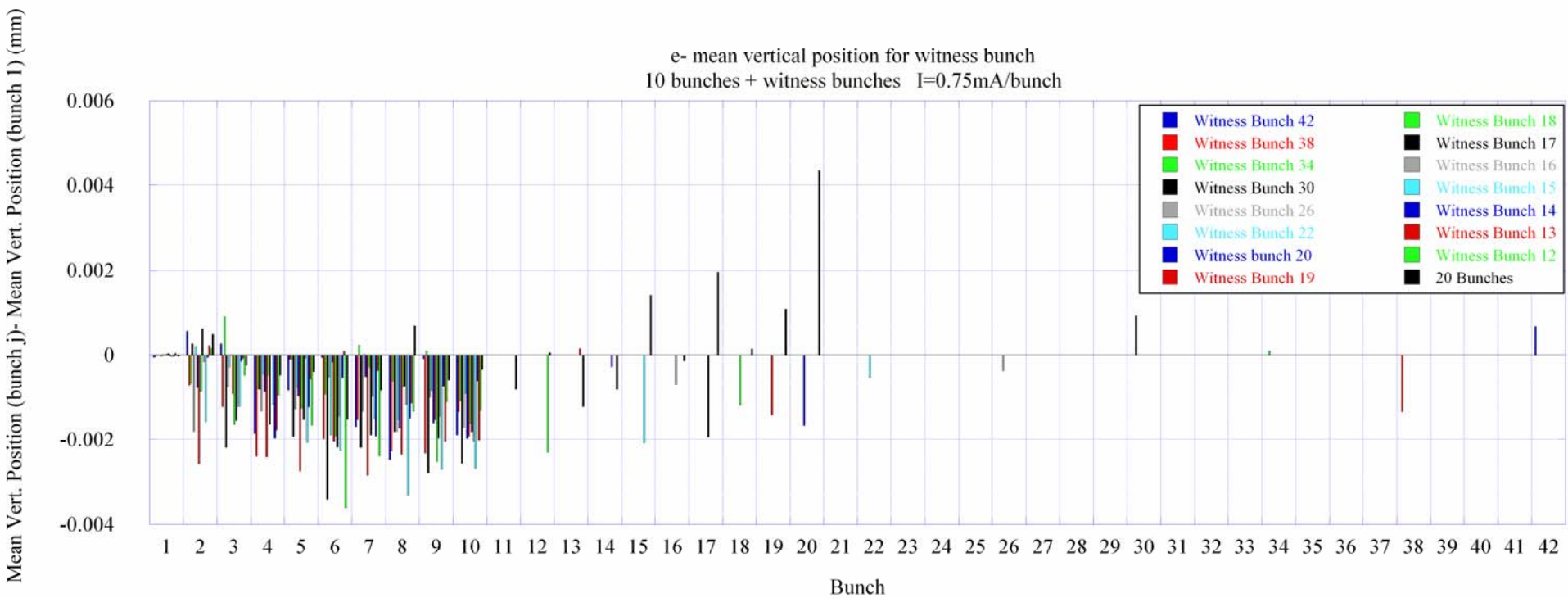
Bunch1 Avg Sigma =0.47174 +/-0.002029 mm

bsm23e01116 results

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

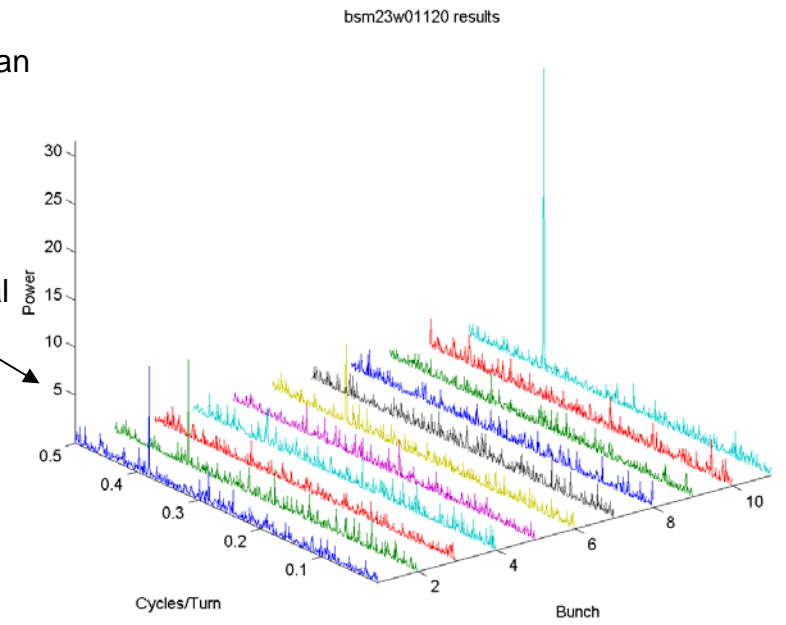|	
■ Witness Bunch 42	■ Witness Bunch 18
■ Witness Bunch 38	■ Witness Bunch 17
■ Witness Bunch 34	■ Witness Bunch 16
■ Witness Bunch 30	■ Witness Bunch 15
■ Witness Bunch 26	■ Witness Bunch 14
■ Witness Bunch 22	■ Witness Bunch 13
■ Witness Bunch 20	■ Witness Bunch 12
■ Witness Bunch 19	■ Witness Bunch 11

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

■ Witness Bunch 42	■ Witness Bunch 18
■ Witness Bunch 38	■ Witness Bunch 17
■ Witness Bunch 34	■ Witness Bunch 16
■ Witness Bunch 30	■ Witness Bunch 15
■ Witness Bunch 26	■ Witness Bunch 14
■ Witness Bunch 22	■ Witness Bunch 13
■ Witness Bunch 20	■ Witness Bunch 12
■ Witness Bunch 19	■ Witness Bunch 11

e- mean vertical position for witness bunch
10 bunches + witness bunches   I=0.75mA/bunch

Legend:
- Witness Bunch 42
- Witness Bunch 38
- Witness Bunch 34
- Witness Bunch 30
- Witness Bunch 26
- Witness Bunch 22
- Witness bunch 20
- Witness Bunch 19
- Witness Bunch 18
- Witness Bunch 17
- Witness Bunch 16
- Witness Bunch 15
- Witness Bunch 14
- Witness Bunch 13
- Witness Bunch 12
- 20 Bunches

e- σ_y for witness Bunch
10 bunches + witness bunches   I=0.75mA/bunch

Legend:
- Witness Bunch 42
- Witness Bunch 38
- Witness Bunch 34
- Witness Bunch 30
- Witness Bunch 26
- Witness Bunch 22
- Witness Bunch 20
- Witness Bunch 19
- Witness Bunch 18
- Witness Bunch 17
- Witness Bunch 16
- Witness Bunch 15
- Witness Bunch 14
- Witness Bunch 13
- Witness Bunch 12
- 20 Bunches

Vertical mean position (movie)

FFT Vertical position

e- vertical dynamics
Witness bunches 42
File: 1120
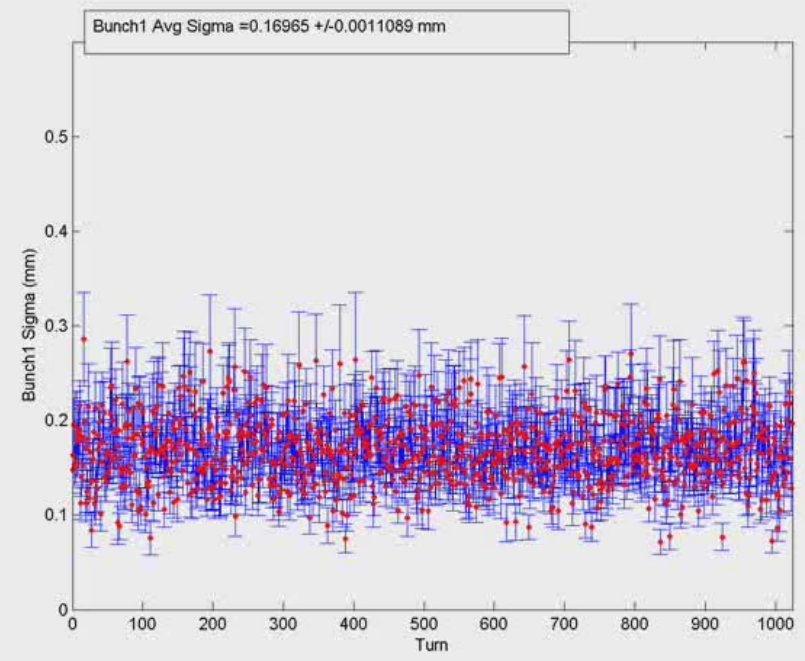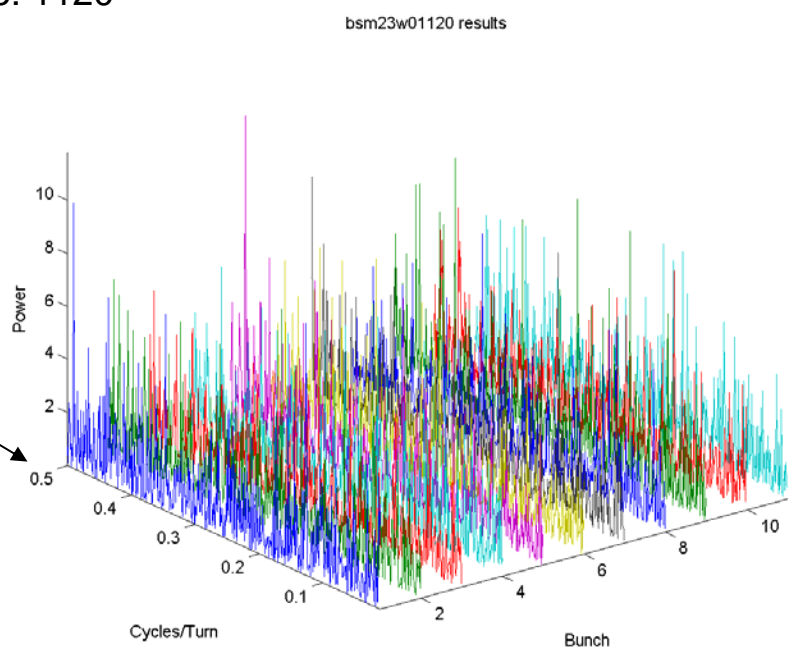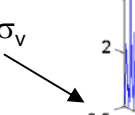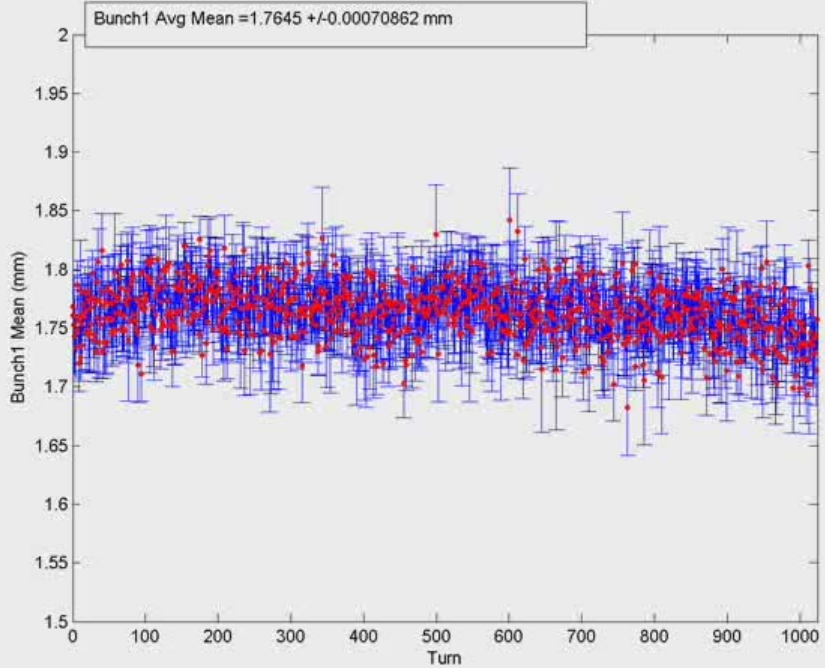
σ_v (movie)

FFT σ_v

Vertical mean position (movie)

FFT Vertical position
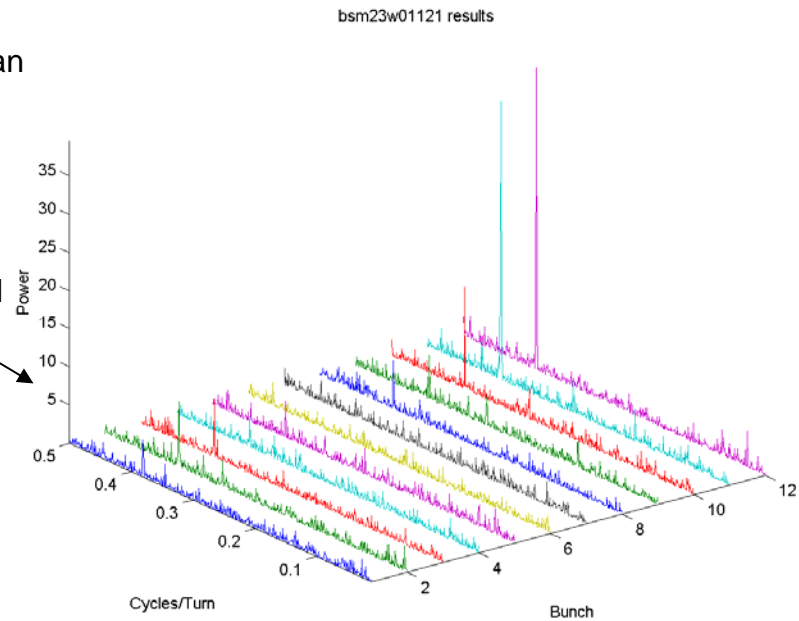
e- vertical dynamics
Witness bunches 38,42
File: 1121
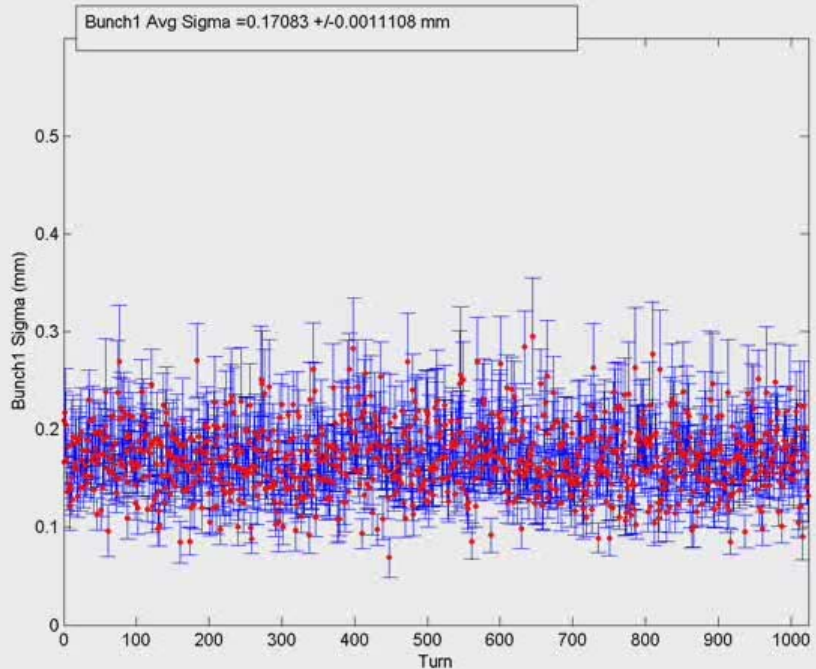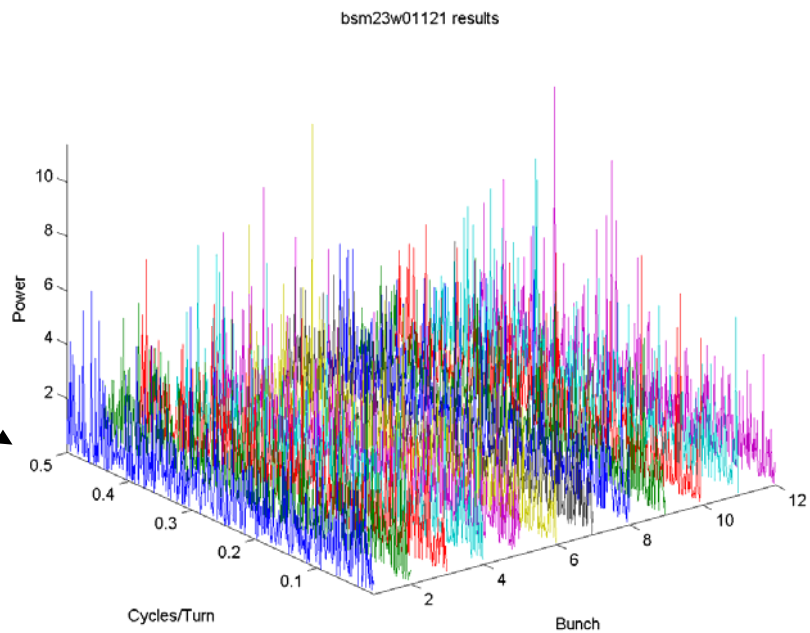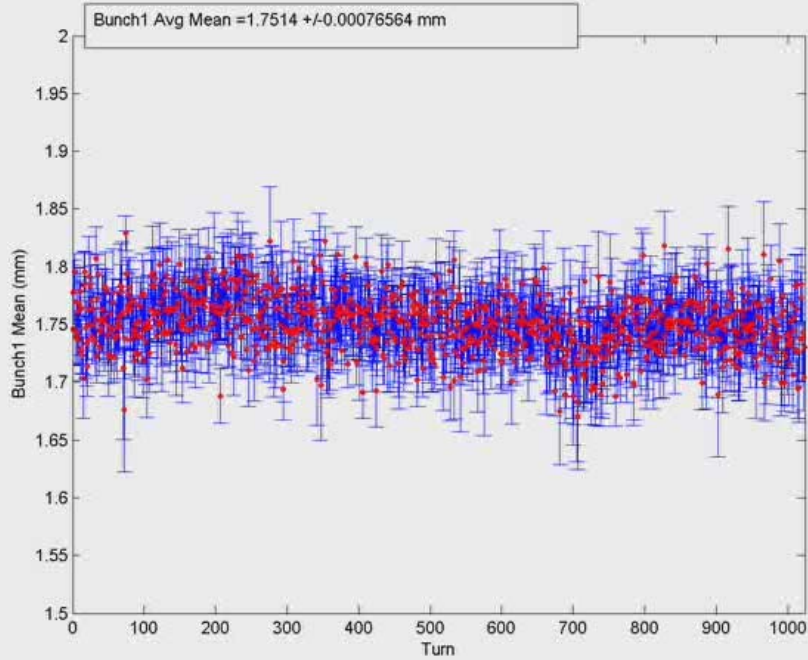
σ_v (movie)

FFT σ_v
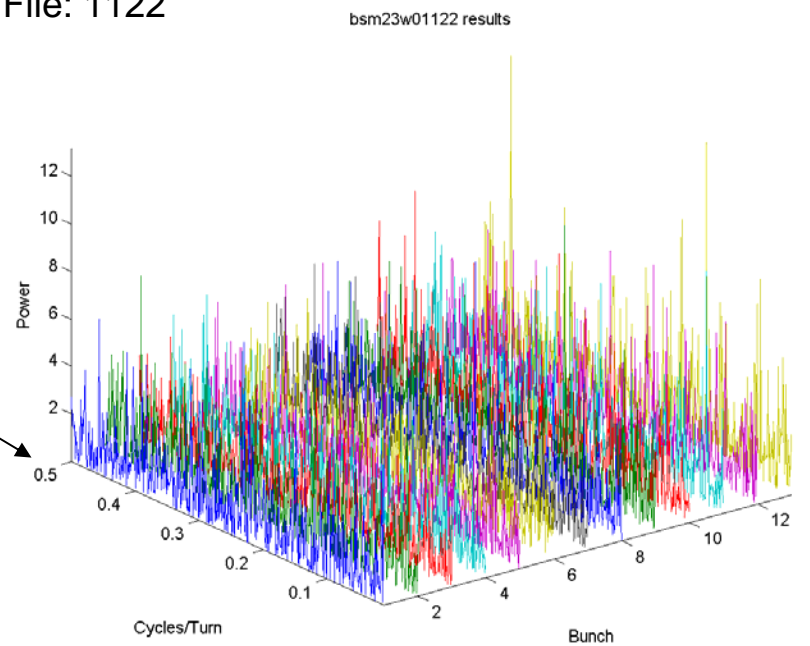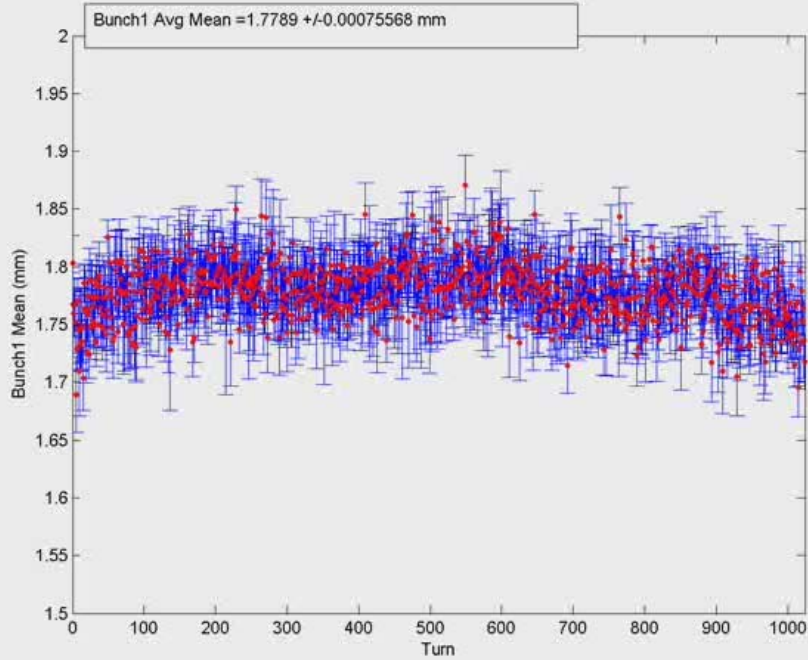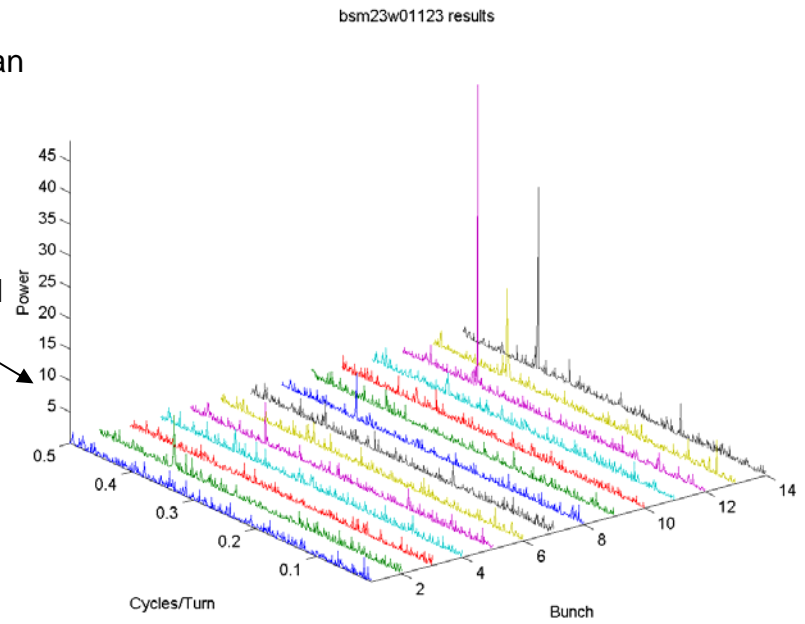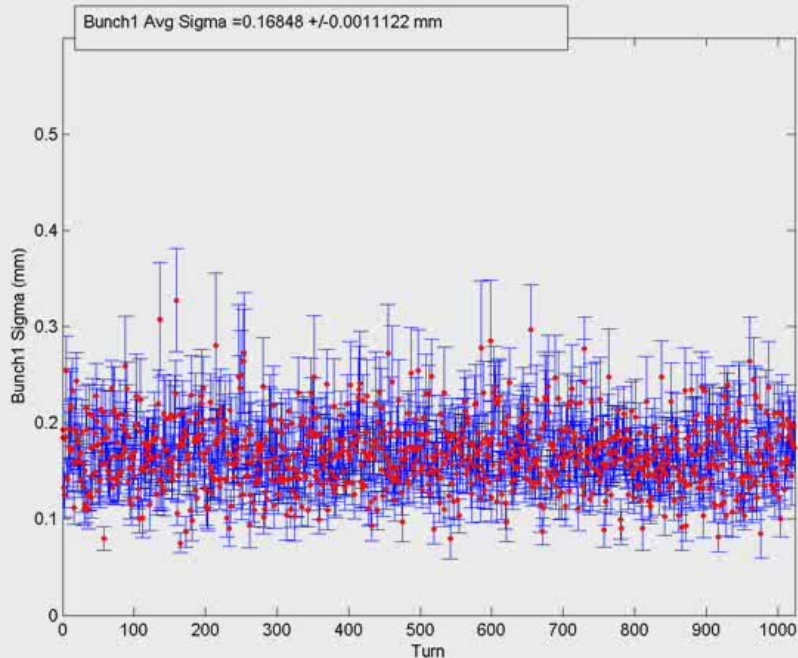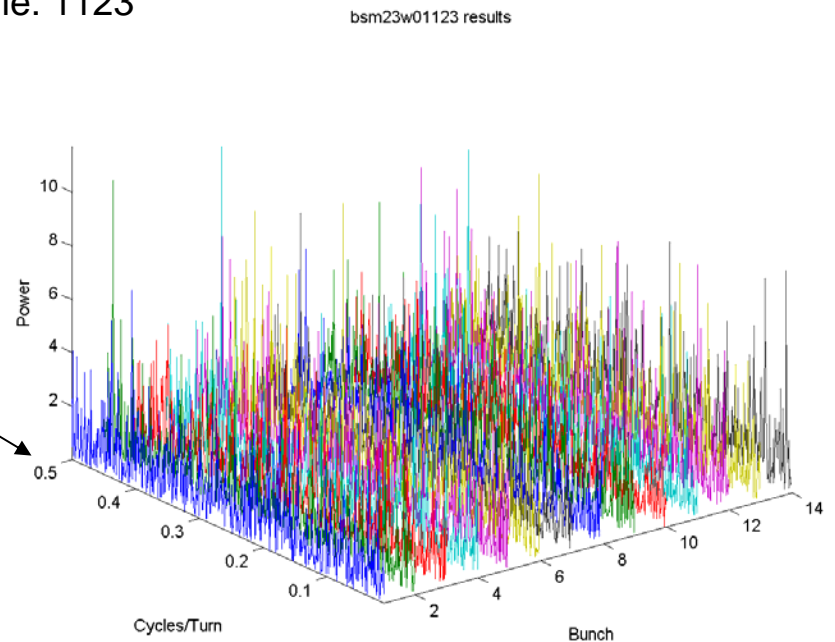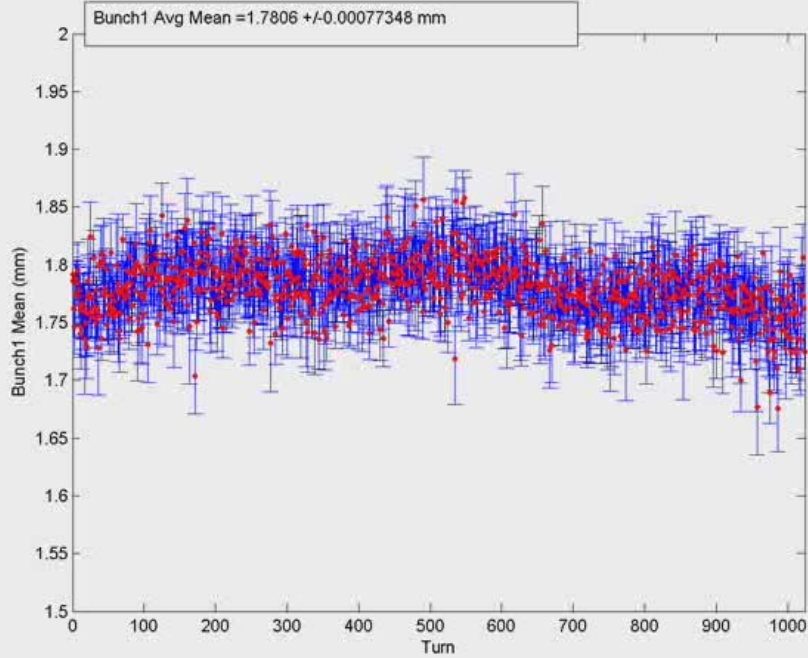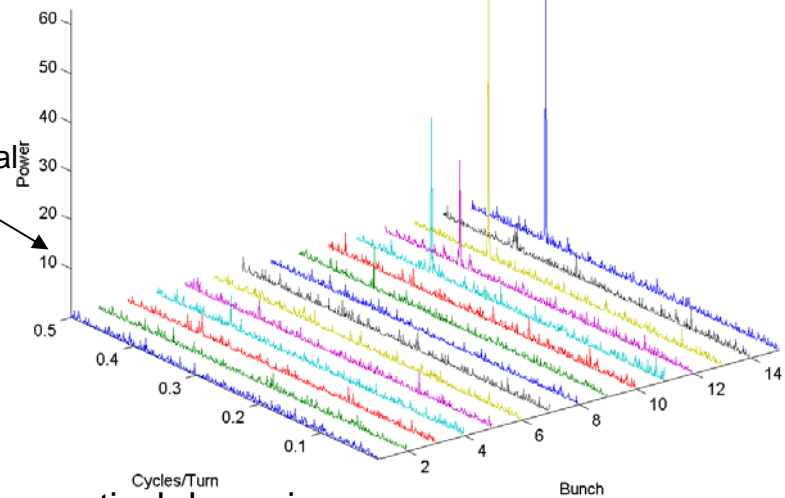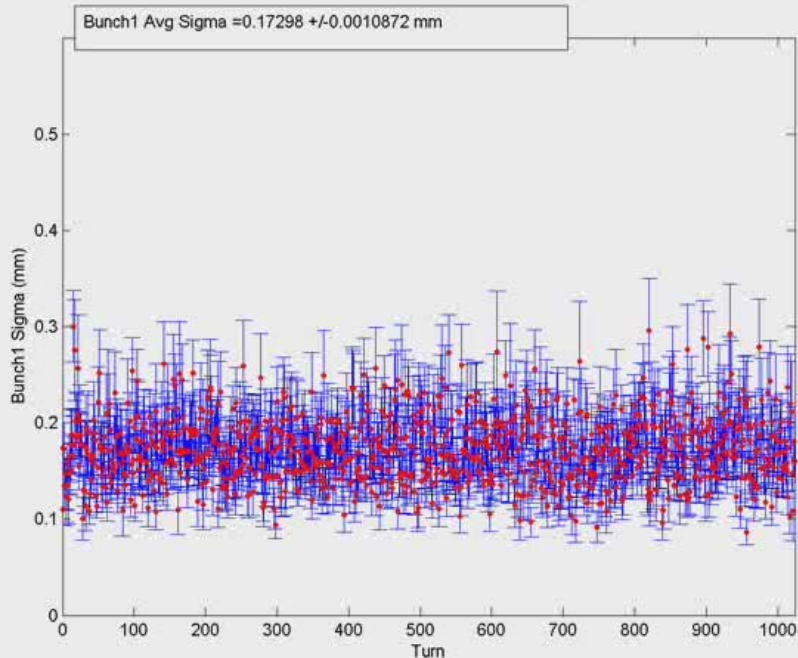
Vertical mean position (movie)

FFT Vertical position

bsm23w01122 results
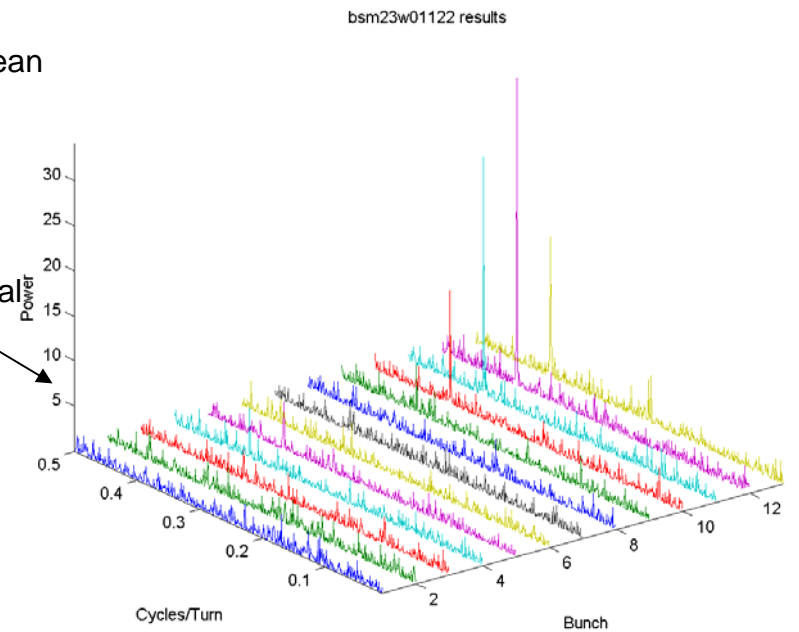
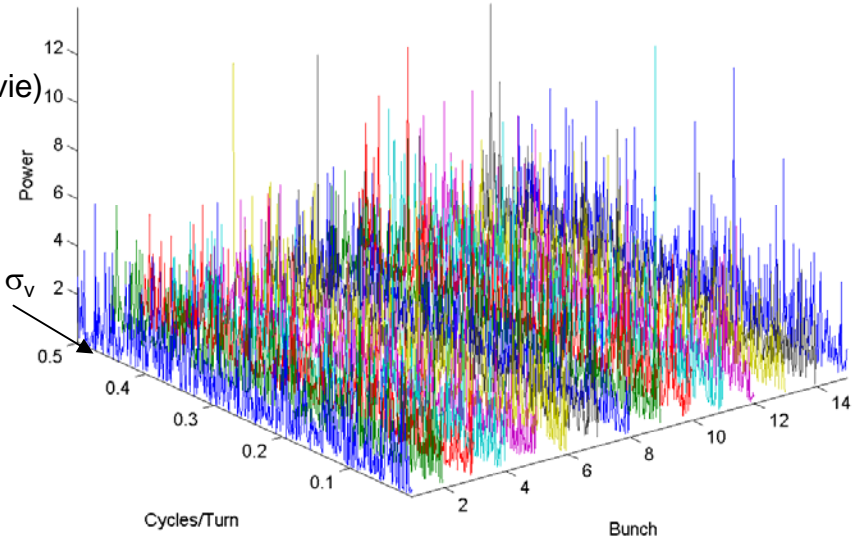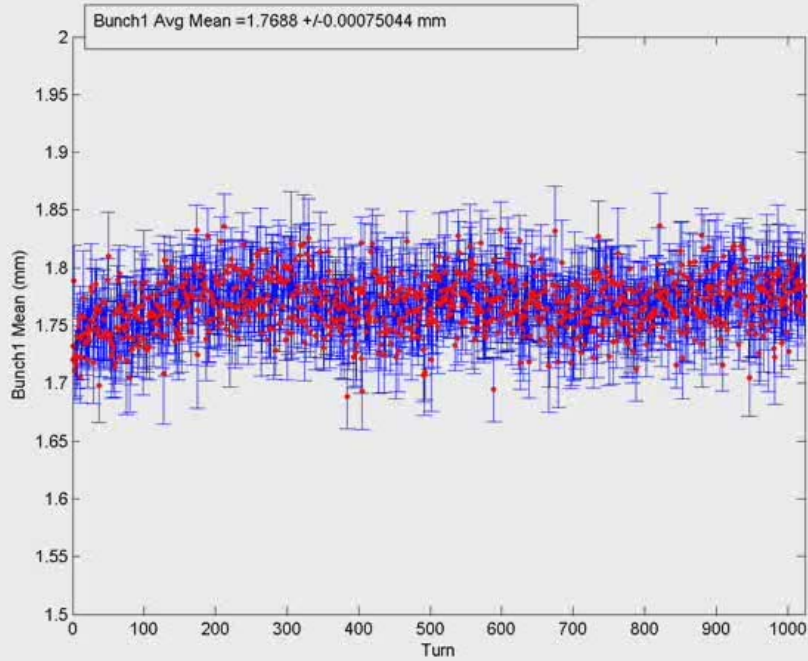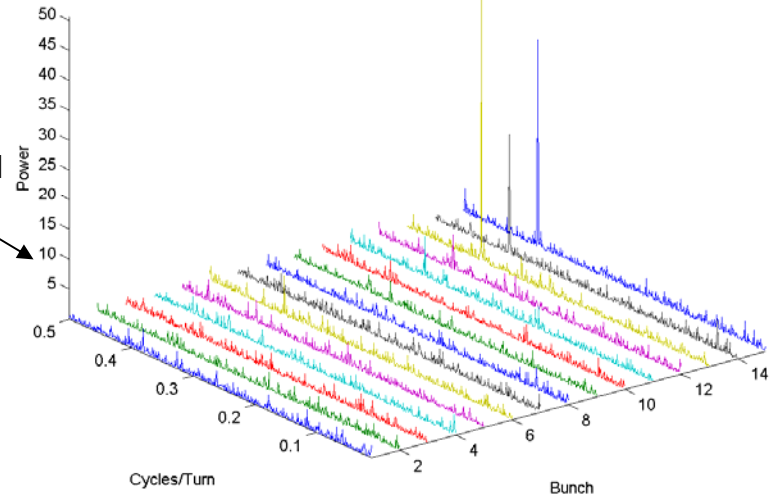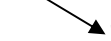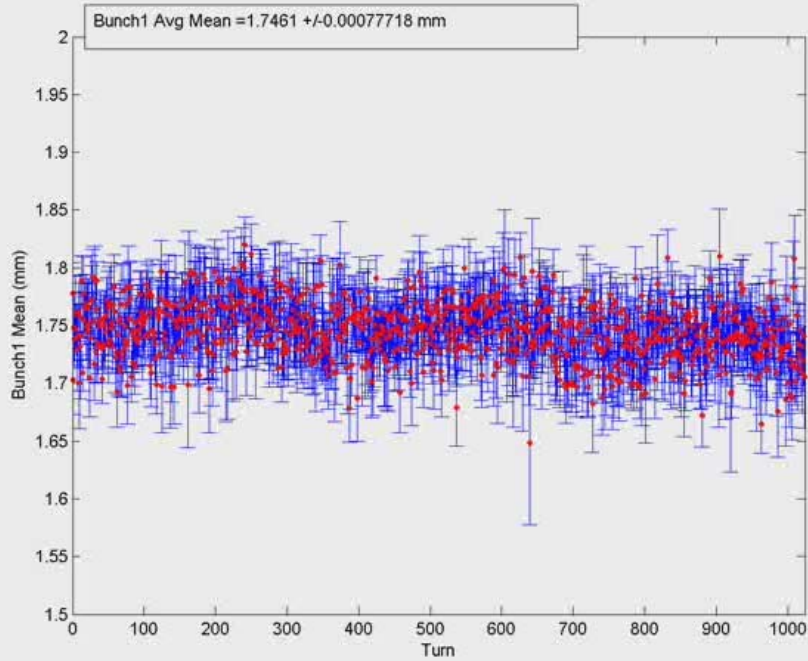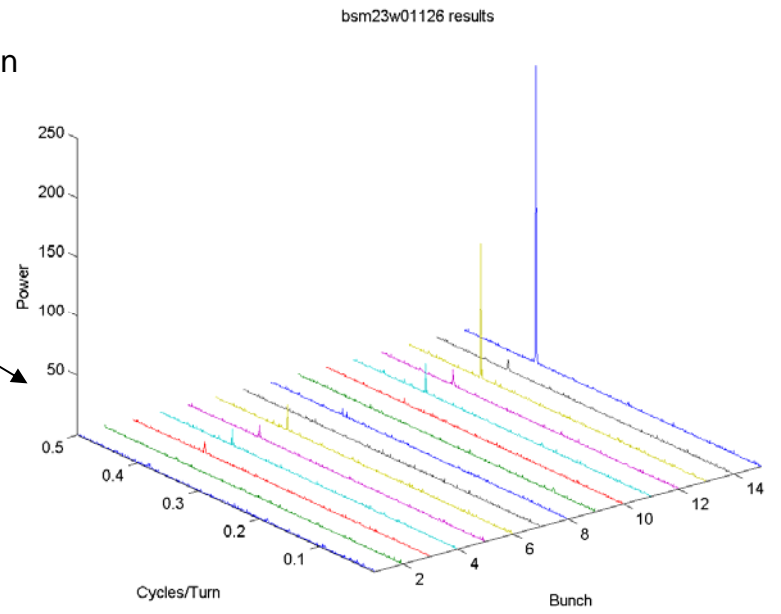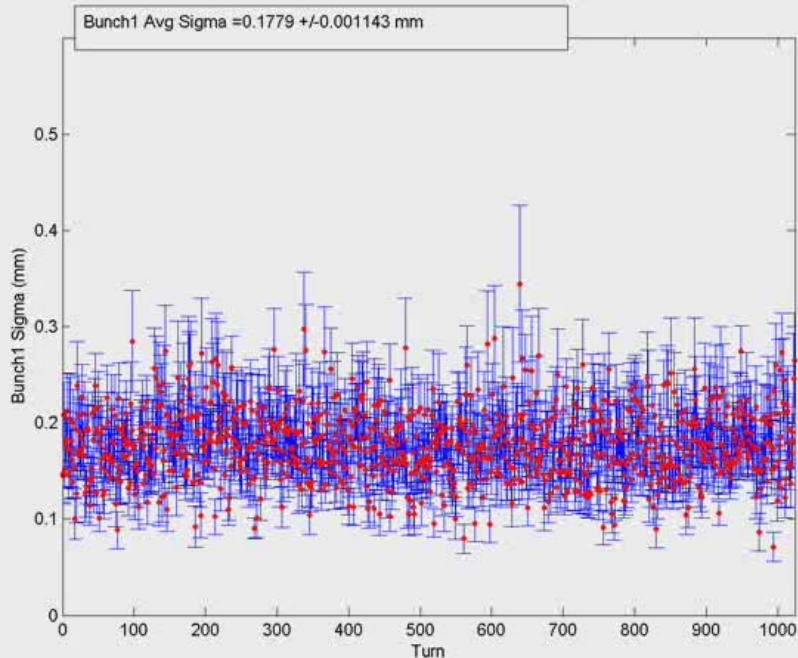e- vertical dynamics
Witness bunches 34,38,42
File: 1122
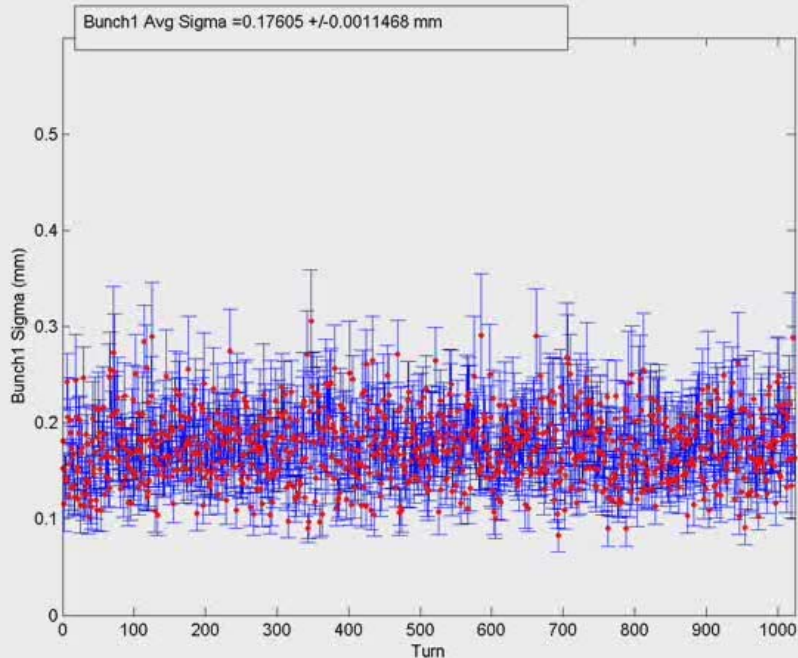
σ_v (movie)

FFT σ_v

bsm23w01122 results

Vertical mean position (movie)

FFT Vertical position

bsm23w01123 results

e- vertical dynamics
Witness bunches 30,34,38,42
File: 1123

σ_v (movie)

FFT σ_v

bsm23w01123 results

Vertical mean position (movie)

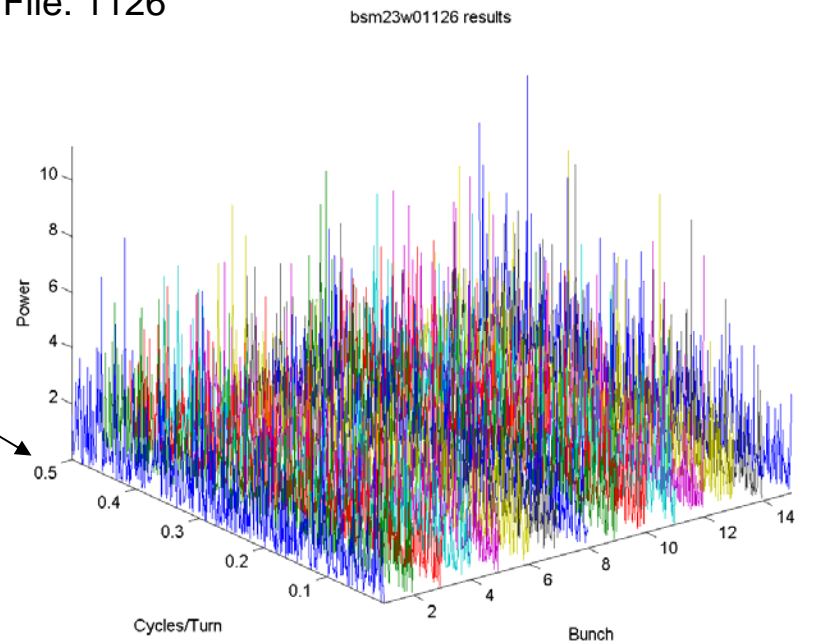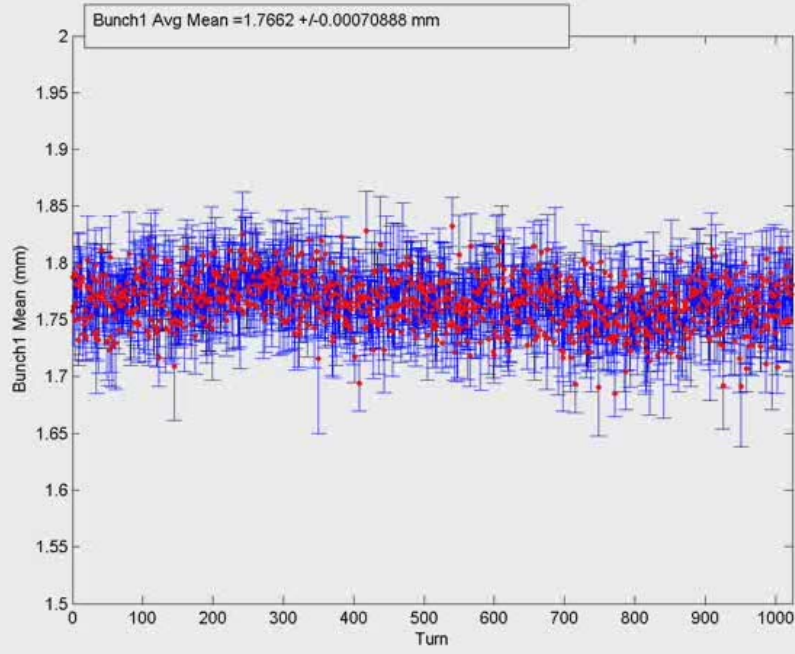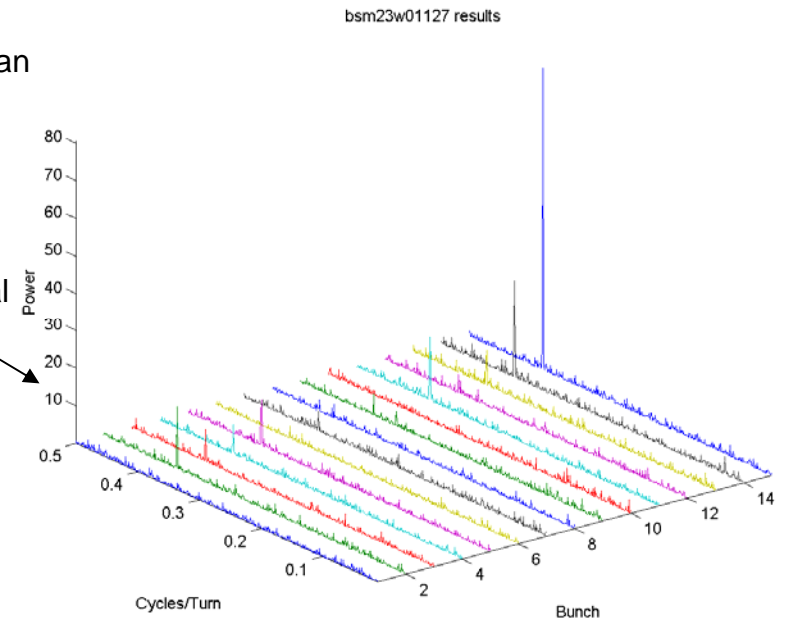FFT Vertical position

bsm23w01124 results

e- vertical dynamics
Witness bunches 26,30,34,38,42
File: 1124

σ_v (movie)

FFT σ_v

bsm23w01124 results
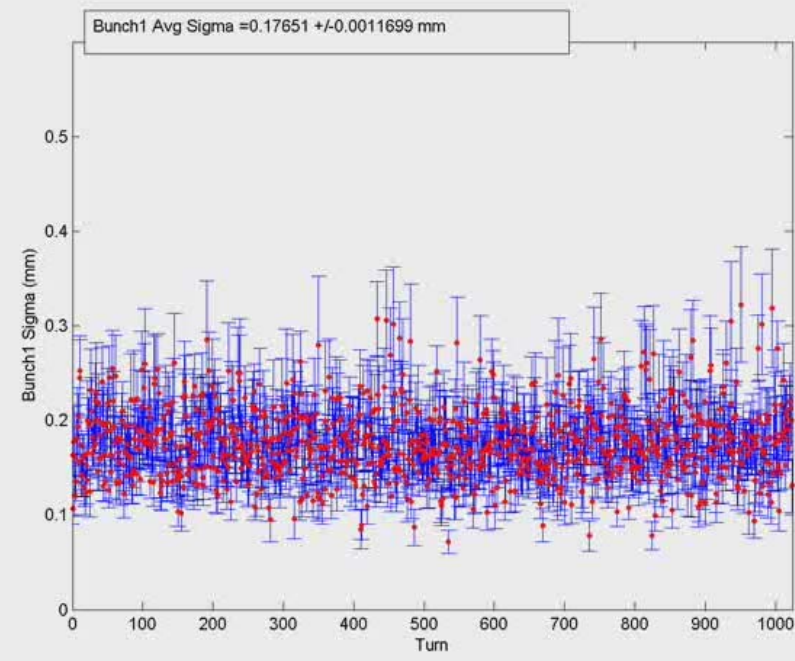
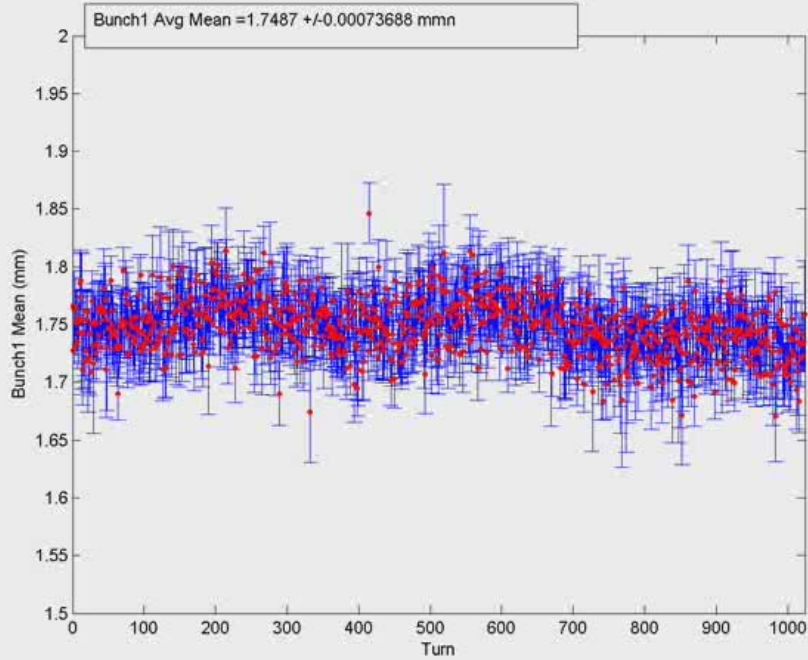Vertical mean position (movie)

FFT Vertical position

e- vertical dynamics
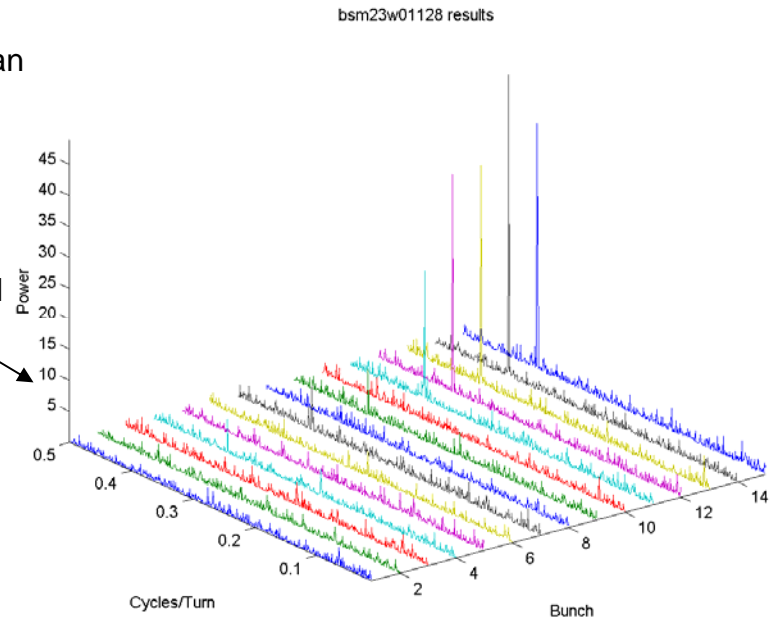Witness bunches 22,26,30,34,38
File: 1125
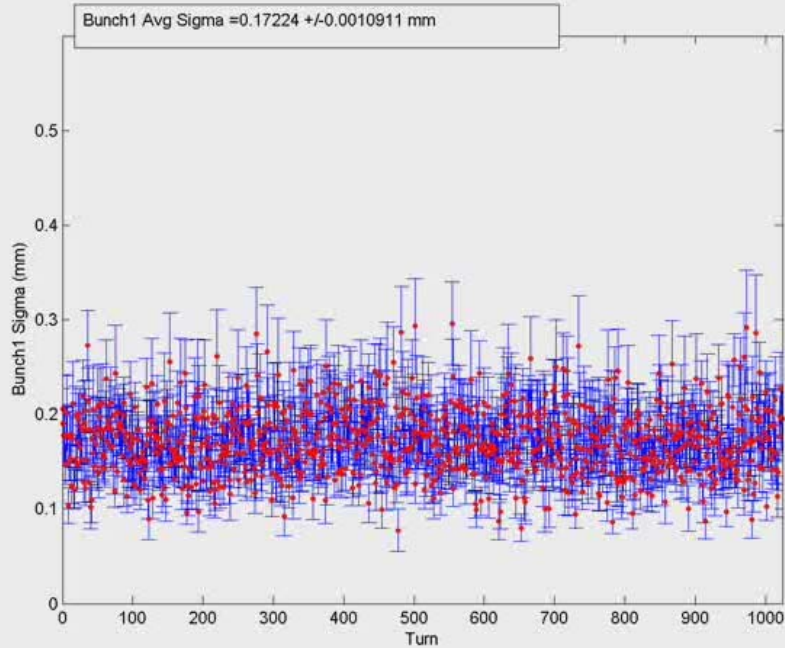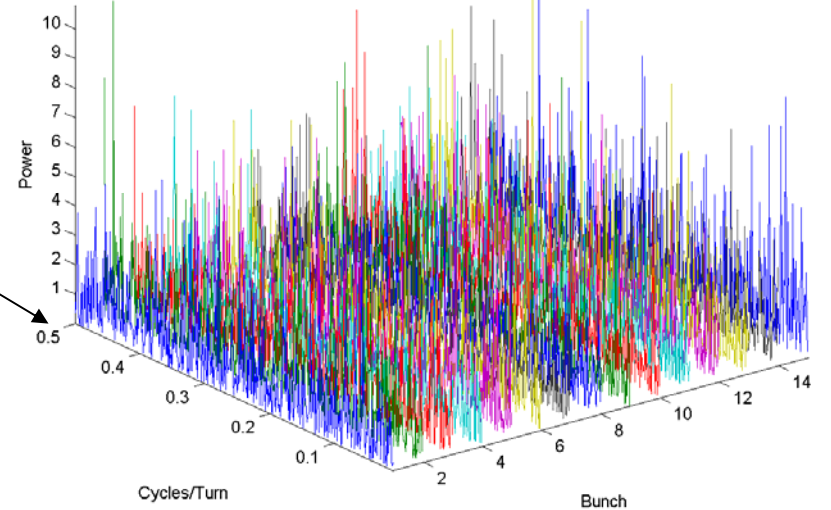
σ_v (movie)
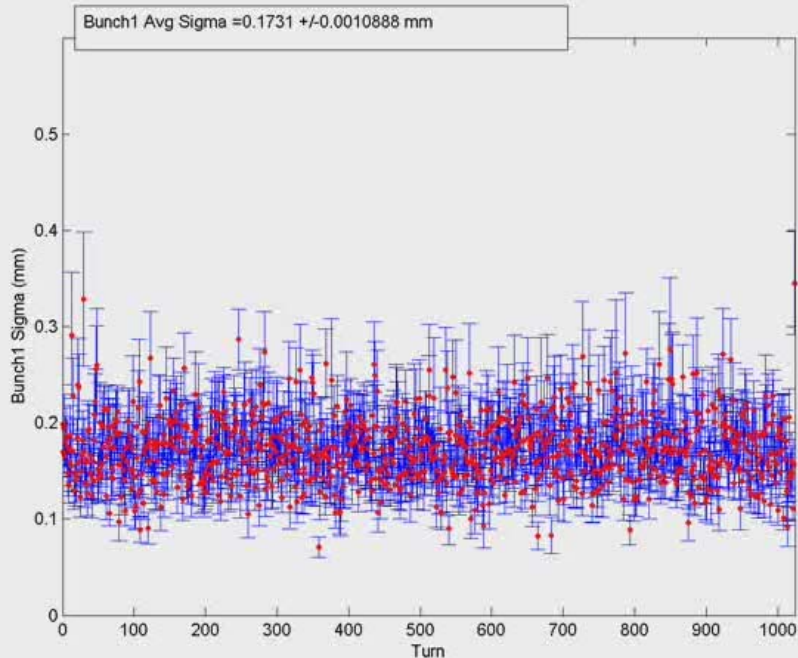
FFT σ_v

Vertical mean position (movie)

FFT Vertical position

e- vertical dynamics
Witness bunches 20,22,26,30,34
File: 1126

σ_v (movie)

FFT σ_v

Vertical mean position (movie)

FFT Vertical position

bsm23w01127 results
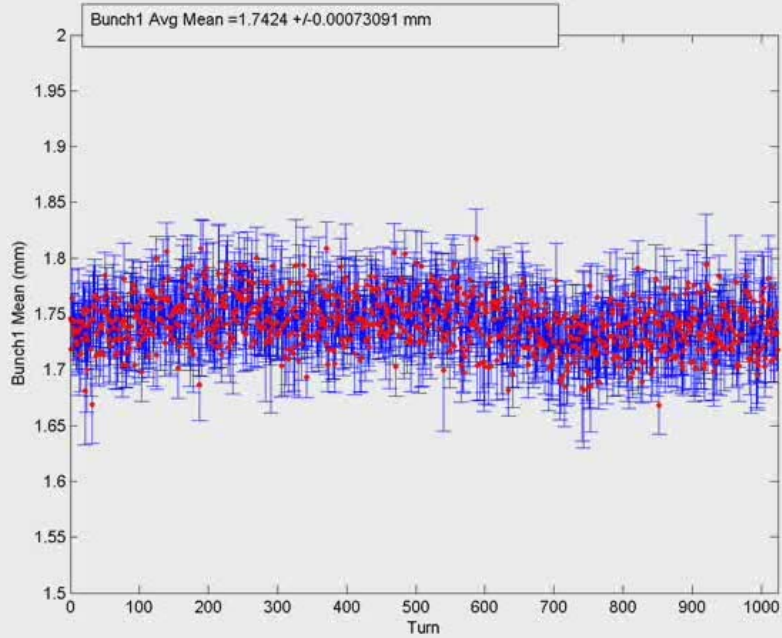
e- vertical dynamics
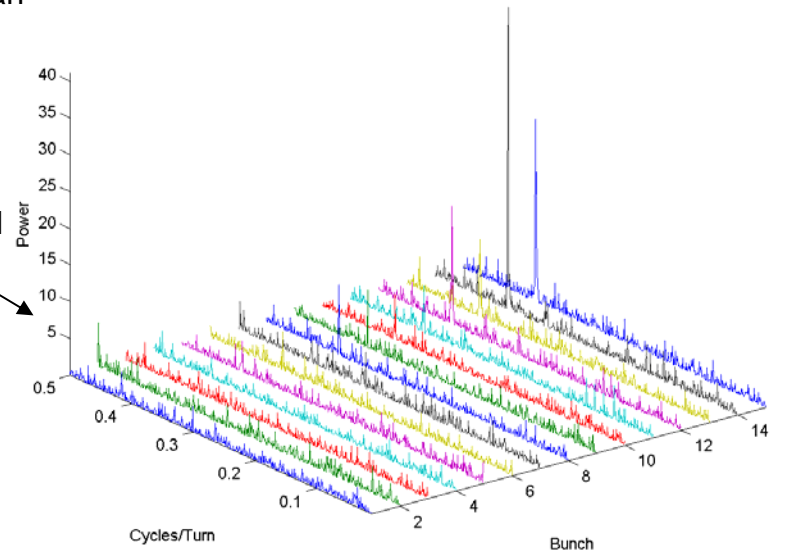Witness bunches 19,20,22,26,30
File: 1127
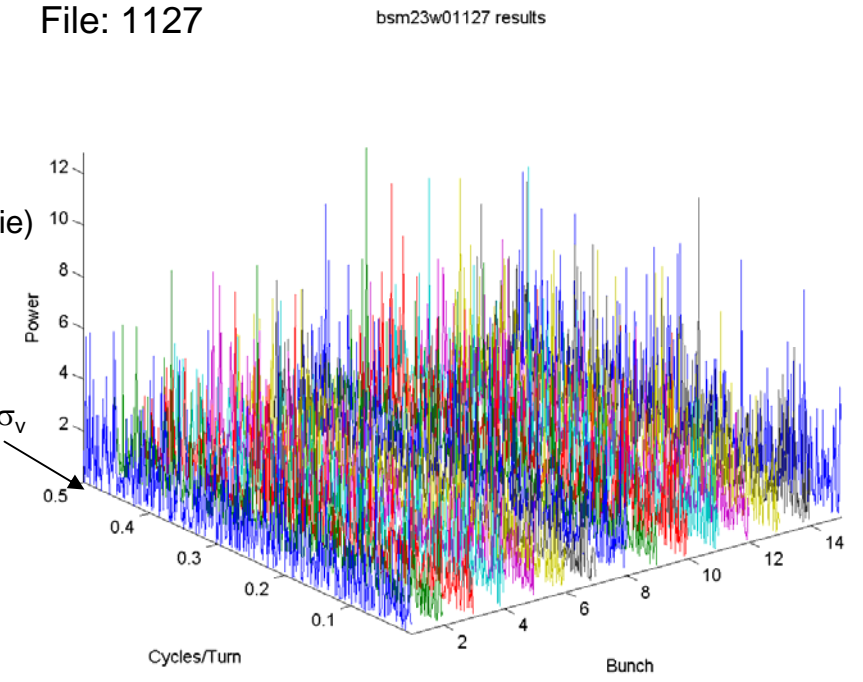
σ_v (movie)

FFT σ_v

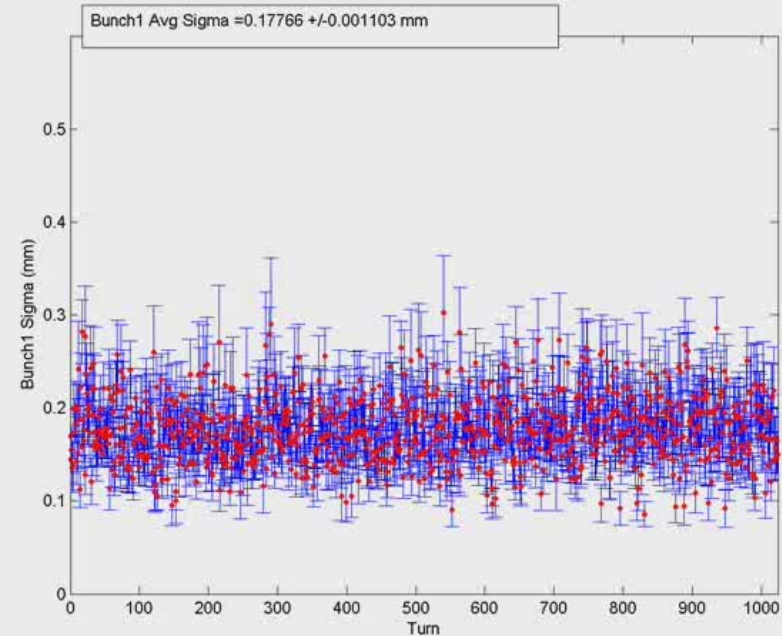Vertical mean position (movie)

FFT Vertical position
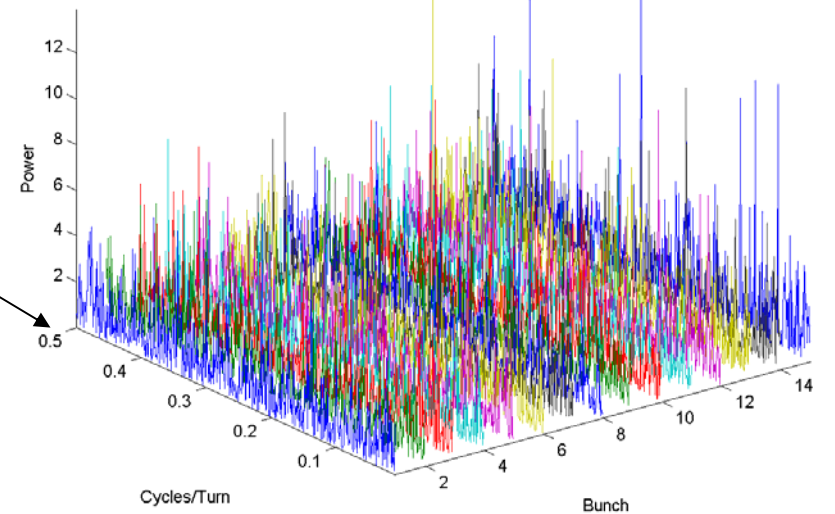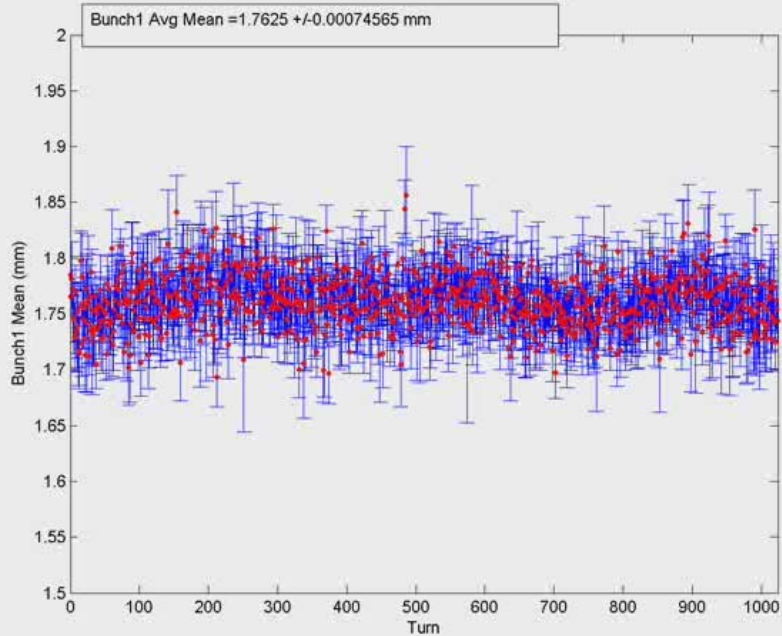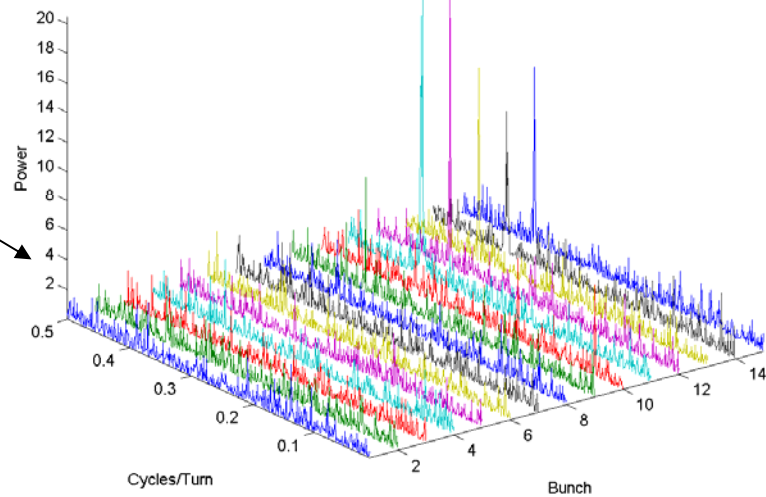
e- vertical dynamics
Witness bunches 18,19,20,22,26
File: 1128
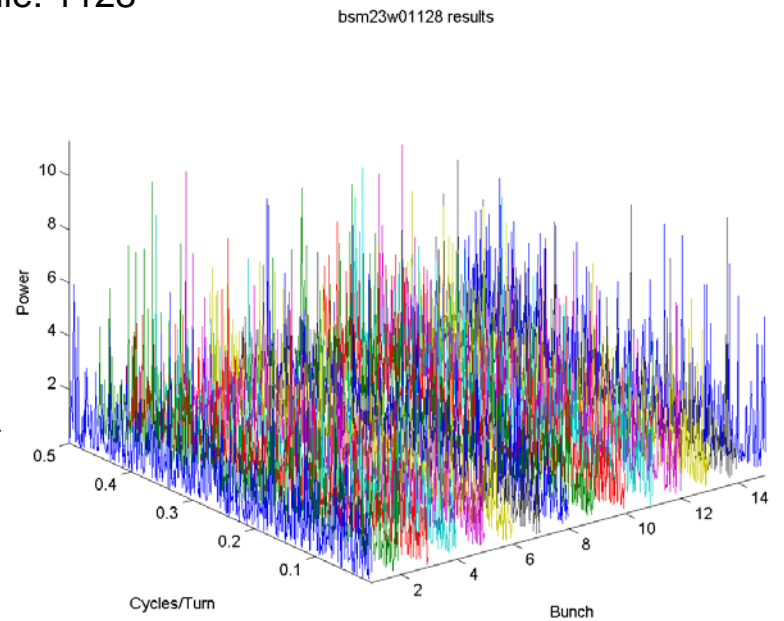
σ_v (movie)
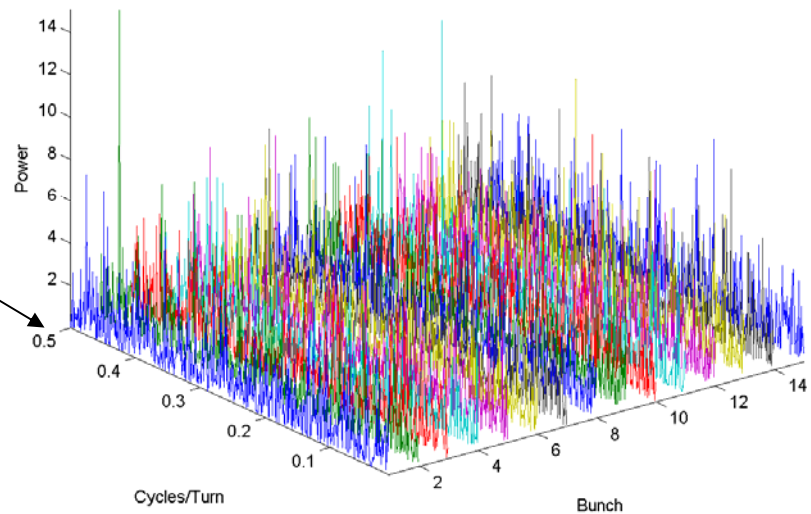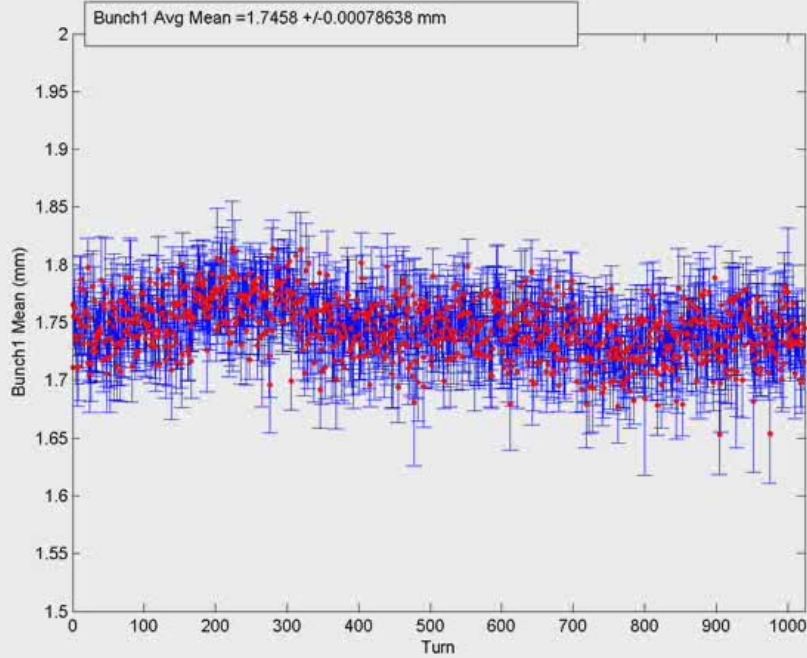
FFT σ_v

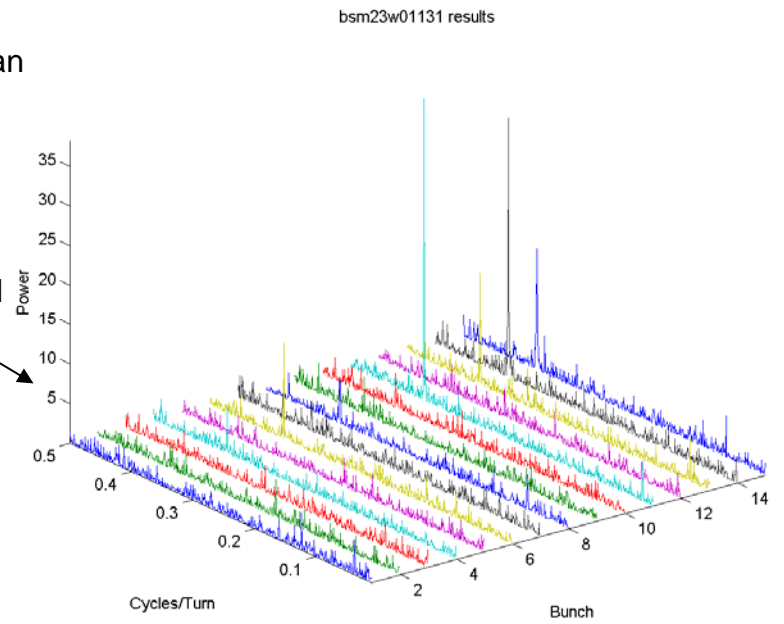Bunch1 Avg Mean =1.7424 +/-0.00073091 mm

bsm23w01129 results

Vertical mean position (movie)

FFT Vertical position

e- vertical dynamics
Witness bunches 17,18,19,20,22
File: 1129

Bunch1 Avg Sigma =0.17766 +/-0.001103 mm

σ_v (movie)

FFT σ_v

bsm23w01129 results

Vertical mean position (movie)

FFT Vertical position

e- vertical dynamics
Witness bunches 16,17,18,19,20
File: 1130
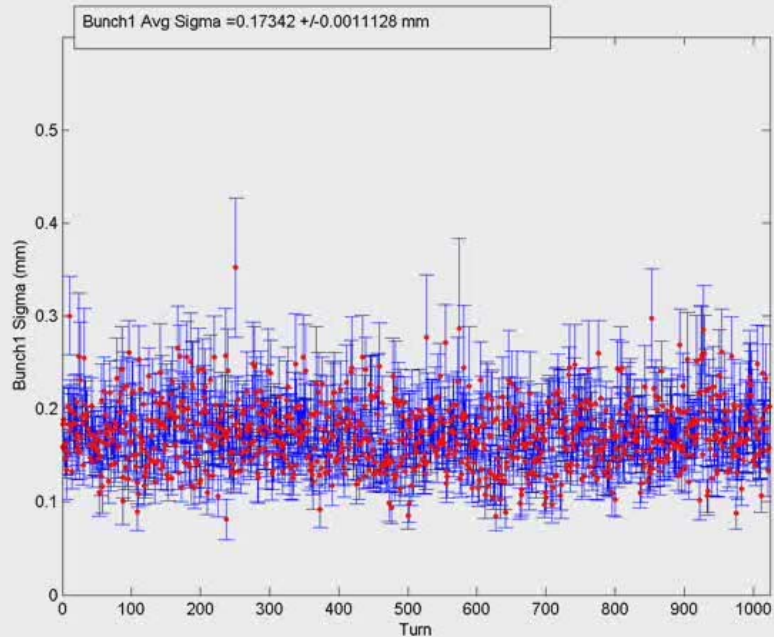
σ_v (movie)

FFT σ_v

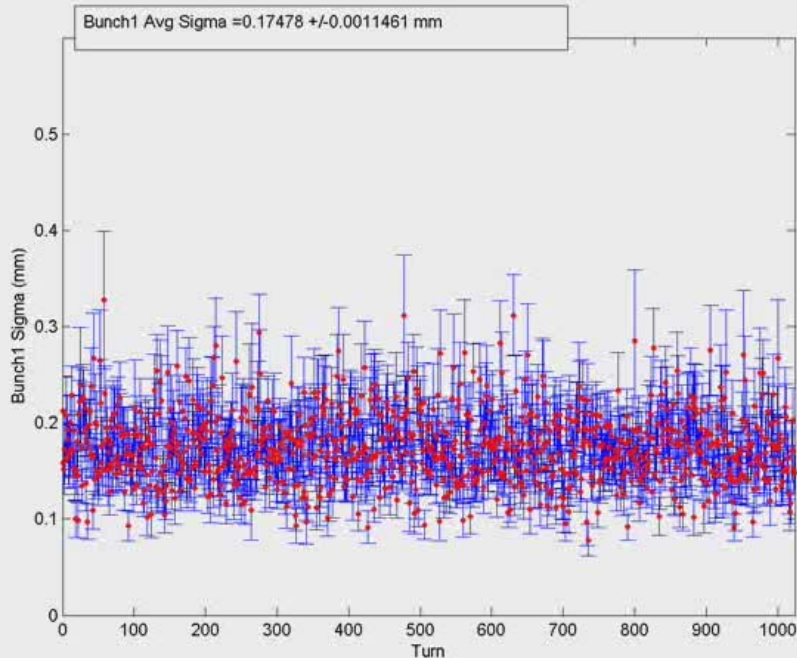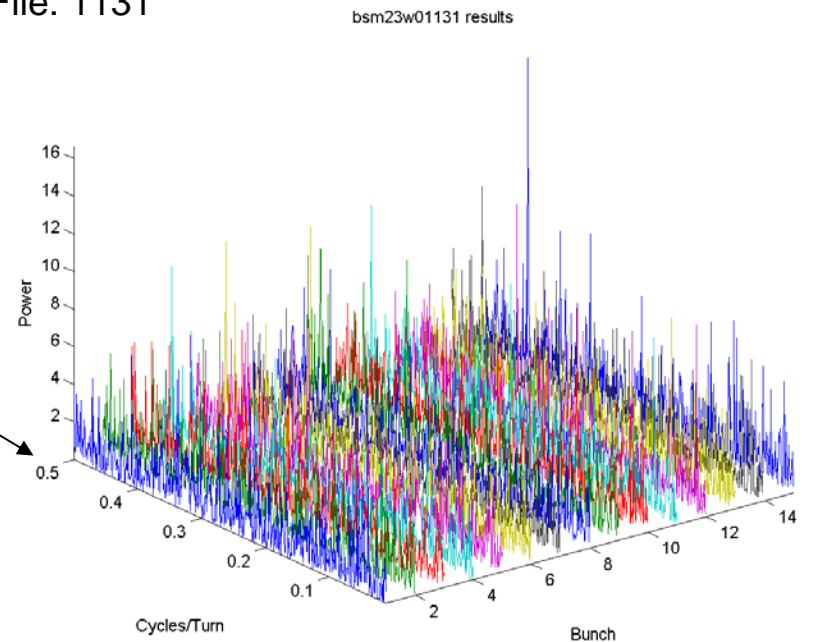Vertical mean position (movie)

FFT Vertical position

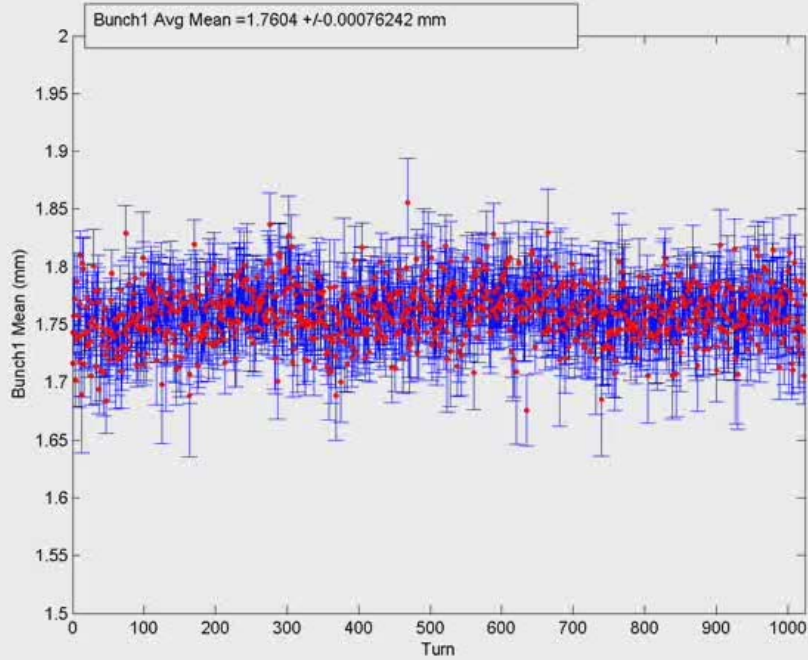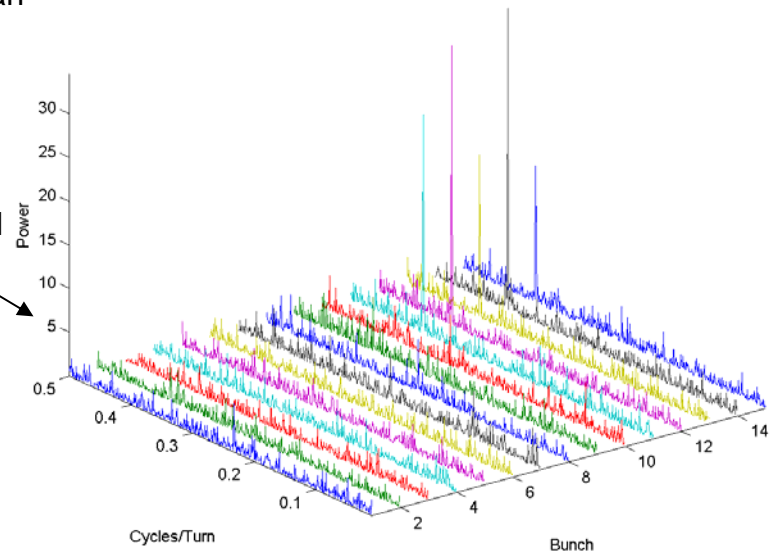e- vertical dynamics
Witness bunches 15,16,17,18,19
File: 1131

σ_v (movie)

FFT σ_v

Vertical mean position (movie)

FFT Vertical position

e- vertical dynamics
Witness bunches 14,15,16,17,18
File: 1132
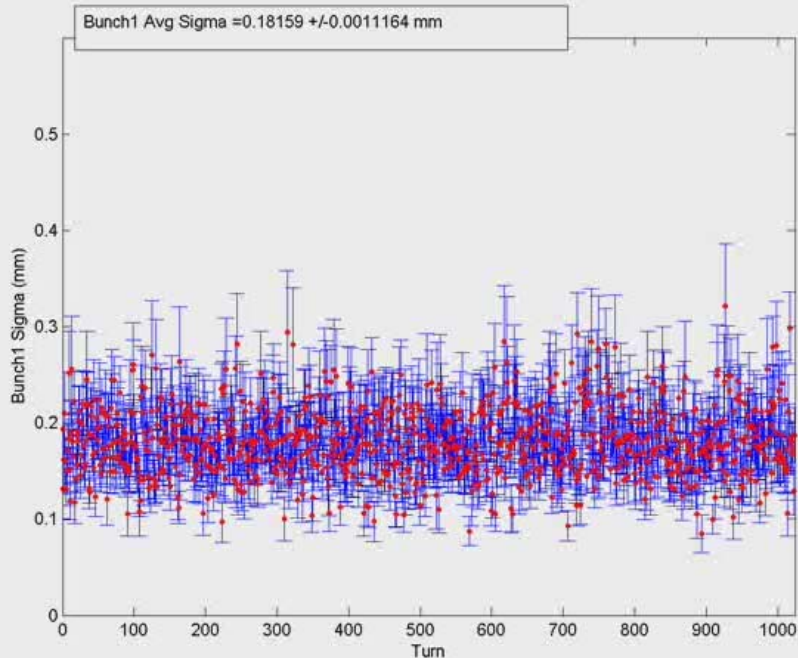
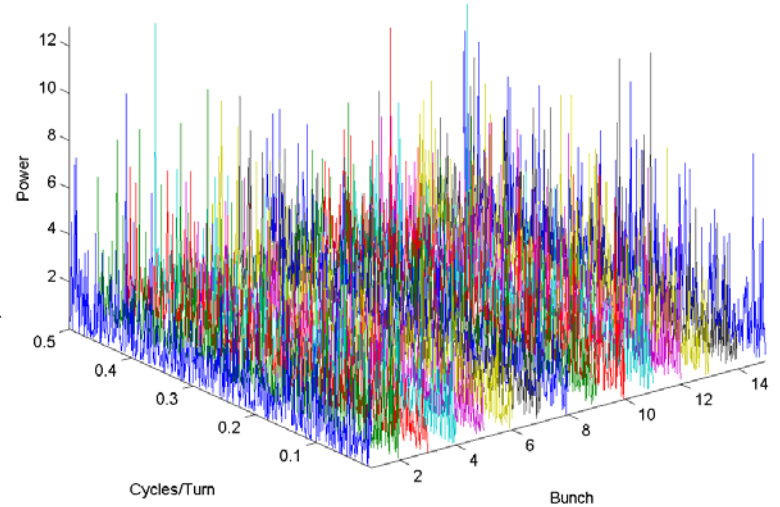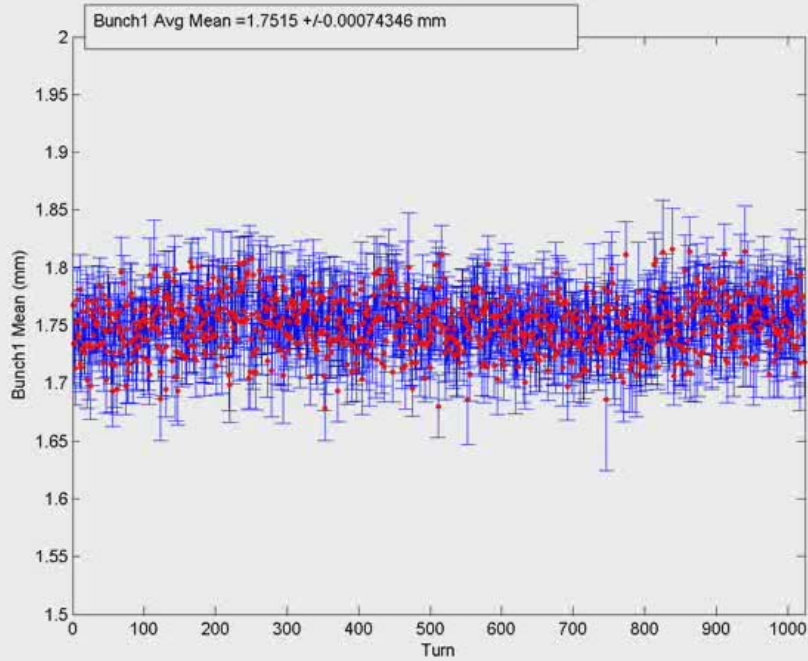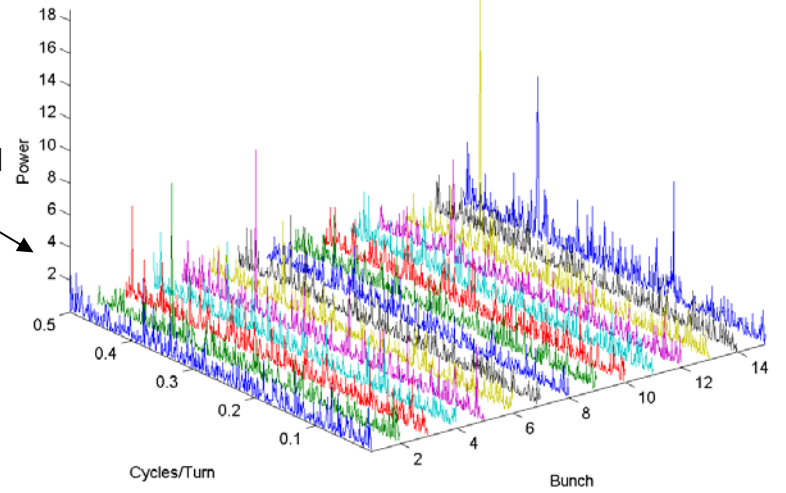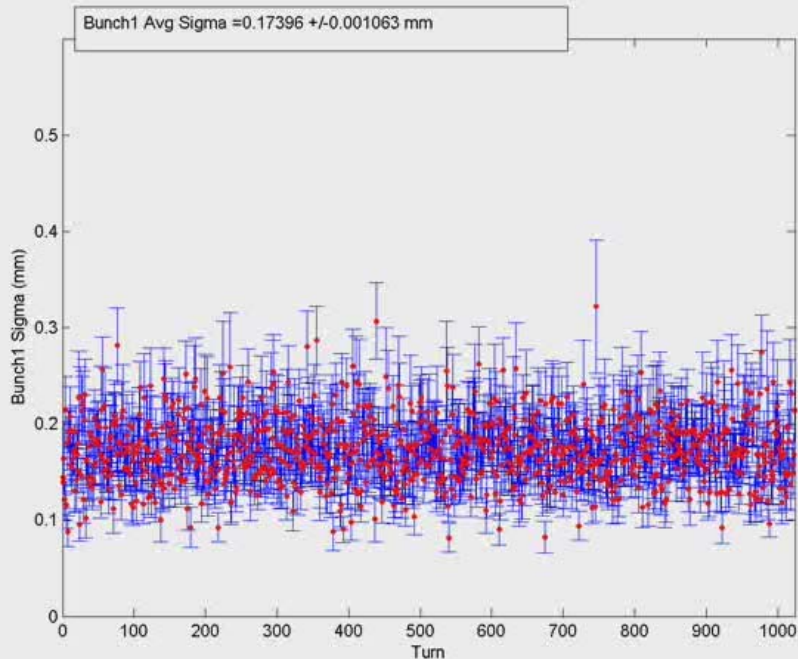σ_v (movie)

FFT σ_v

Vertical mean position (movie)
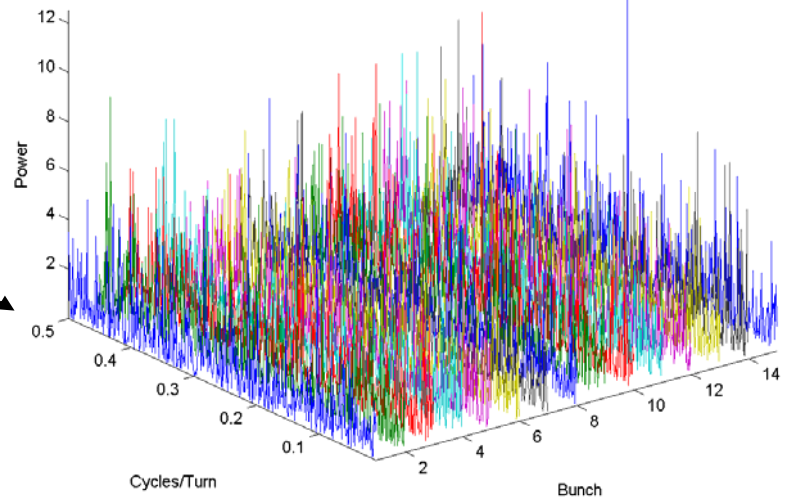
FFT Vertical position

e- vertical dynamics
Witness bunches 13,14,15,16,17
File: 1133

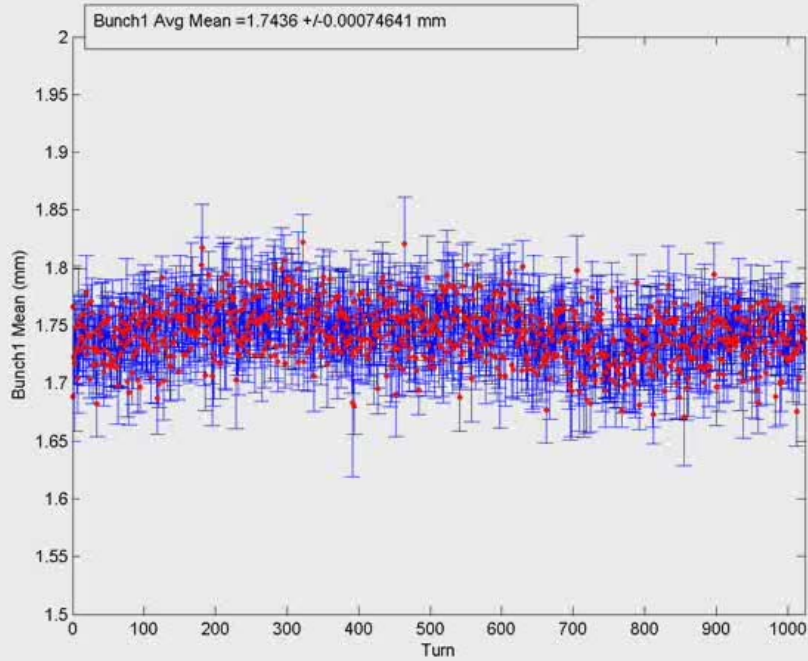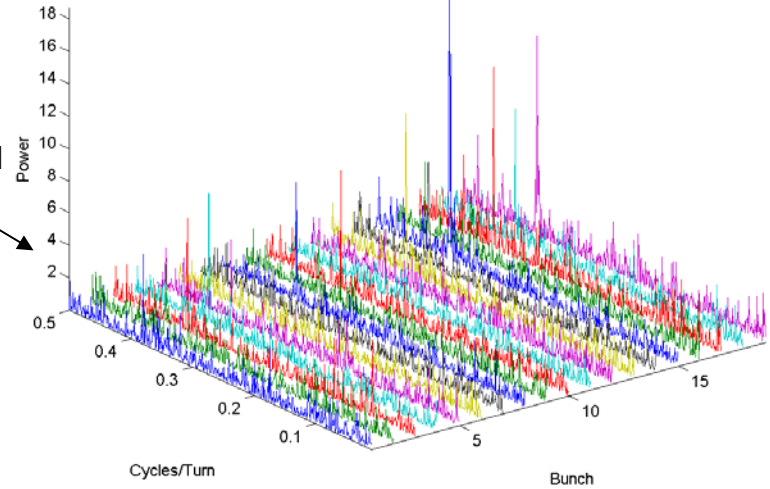σ_v (movie)

FFT σ_v

Vertical mean position (movie)

FFT Vertical position
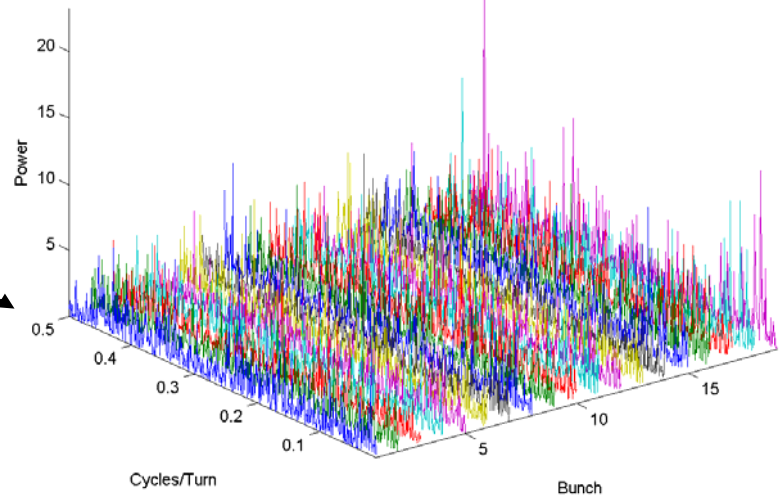
e- vertical dynamics
Witness bunches 12-20
File: 1134

σ_v (movie)

FFT σ_v

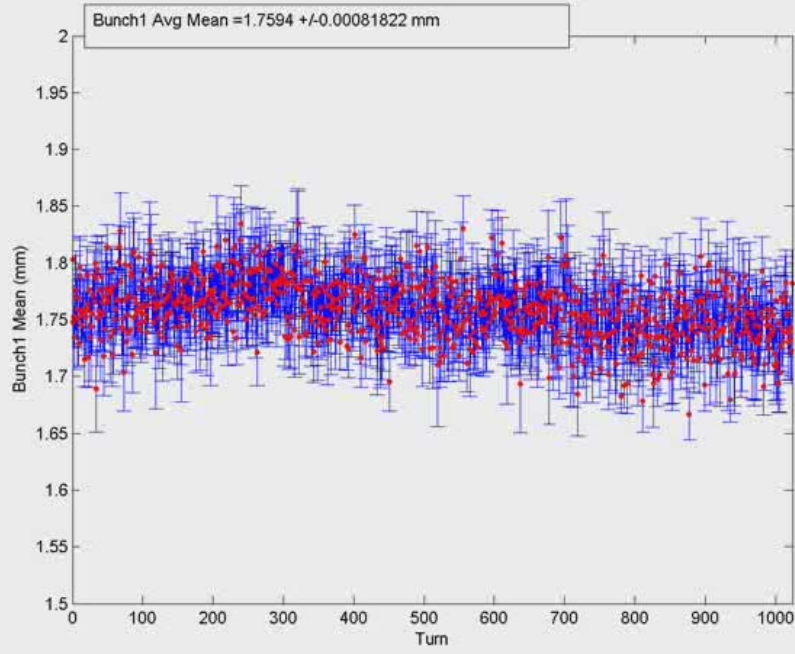Vertical mean position (movie)

FFT Vertical position

e- vertical dynamics
20 Bunches
File: 1135

σ_v (movie)

FFT σ_v