

Deuteron Beam Profile from Polarimeter

Team: Anatoli, Boris, Gerry, Haixin, Makdisi,
Mike, Roger, Ron, Seth, Steve

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Horizontal Beam Profile (1)

BLUE

Start Stop Status E-Target control error

Automatic Manual

Time To Run 300 Number Events 1500000

Horizontal Vertical

Y-Rotary Target Position

Select Target Target5 Step Size 600

Target Position RotateOut Max Steps 24

Center Position 76500 Offset 7200

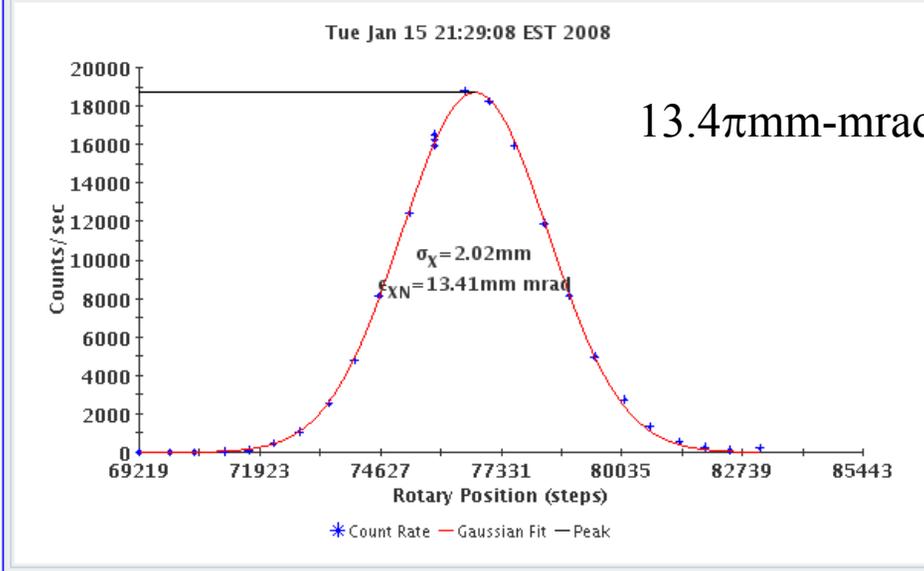
Position 50000 [49923] Time 1.0

Count Rate

Current Value 111

Peak Count Position 76745

Clear



YELLOW

Start Stop Status OK

Automatic Manual

Time To Run 10 Number Events 10000000

Horizontal Vertical

Y-Rotary Target Position

Select Target <Select> Step Size 5

Target Position Target5 Max Steps 10

Center Position 1050 Offset 25

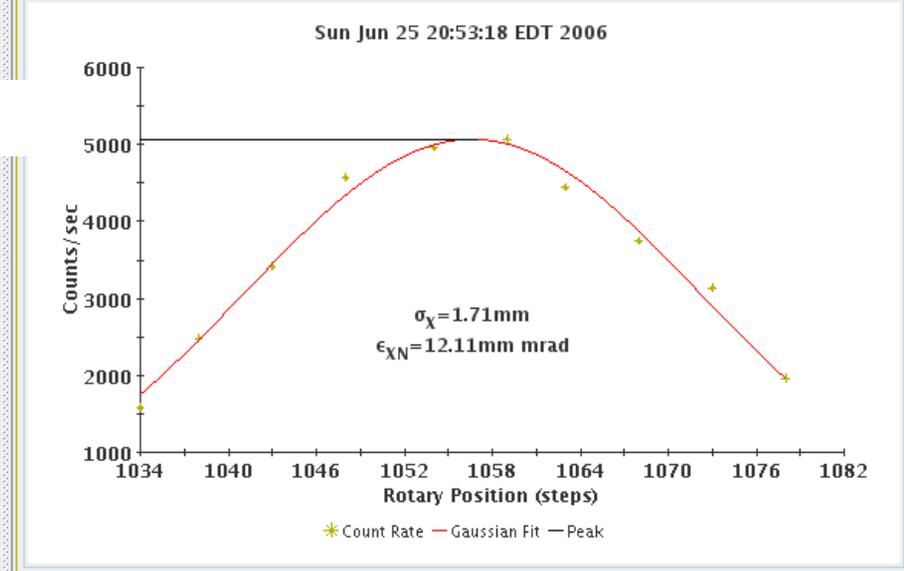
Position 0 [0] Time 1.0

Count Rate

Current Value 0

Peak Count Position 1057

Clear



Horizontal Beam Profile (2)

BLUE

Start Stop Status EADO ETarg

Automatic Manual

Time To Run 300 Number Events 1500000

Horizontal Vertical

Y-Rotary Target Position

Select Target Target1 Step Size 600

Target Position RotateOut Max Steps 24

Center Position 76745 Offset 7200

Position 50000 [49923] Time 1.0

Count Rate

Current Value 1

Peak Count Position 76768

Clear

YELLOW

Start Stop Status OK

Automatic Manual

Time To Run 10 Number Events 10000000

Horizontal Vertical

Y-Rotary Target Position

Select Target <Select> Step Size 5

Target Position Target5 Max Steps 10

Center Position 1050 Offset 25

Position 0 [0] Time 1.0

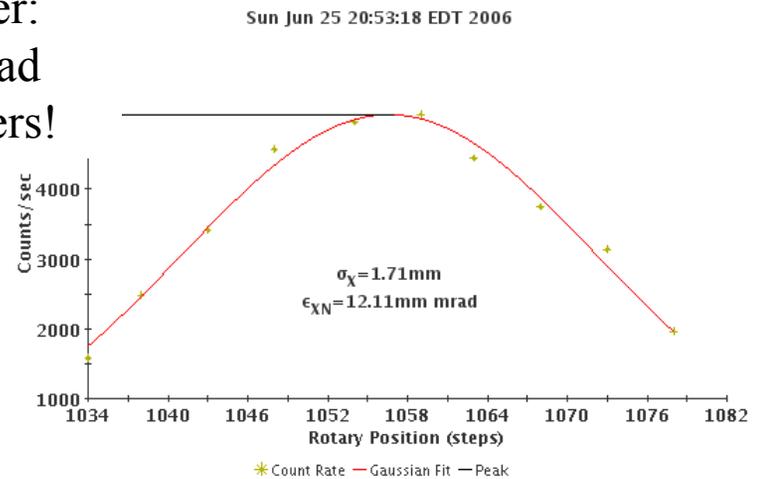
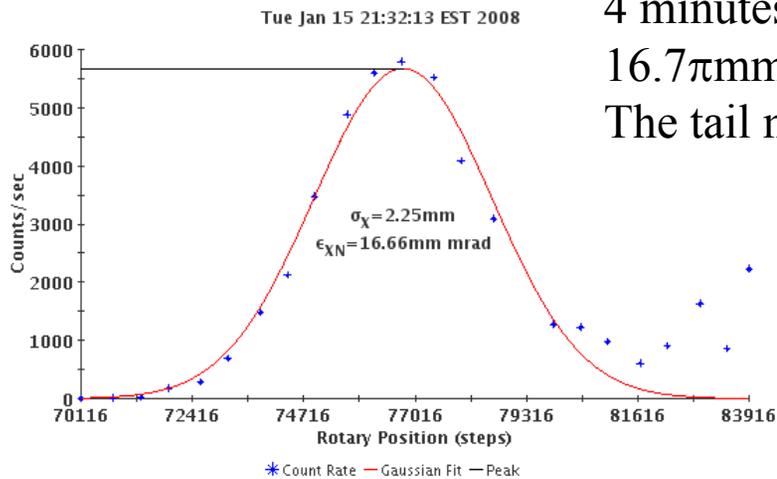
Count Rate

Current Value 0

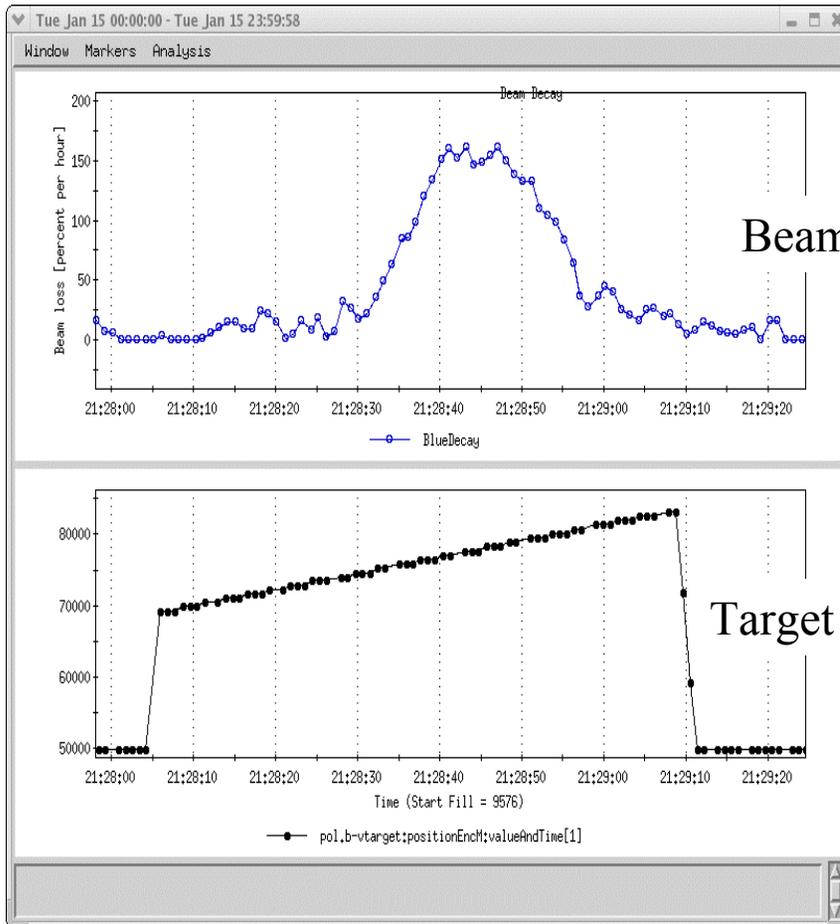
Peak Count Position 1057

Clear

4 minutes later:
 16.7π mm-mrad
The tail matters!

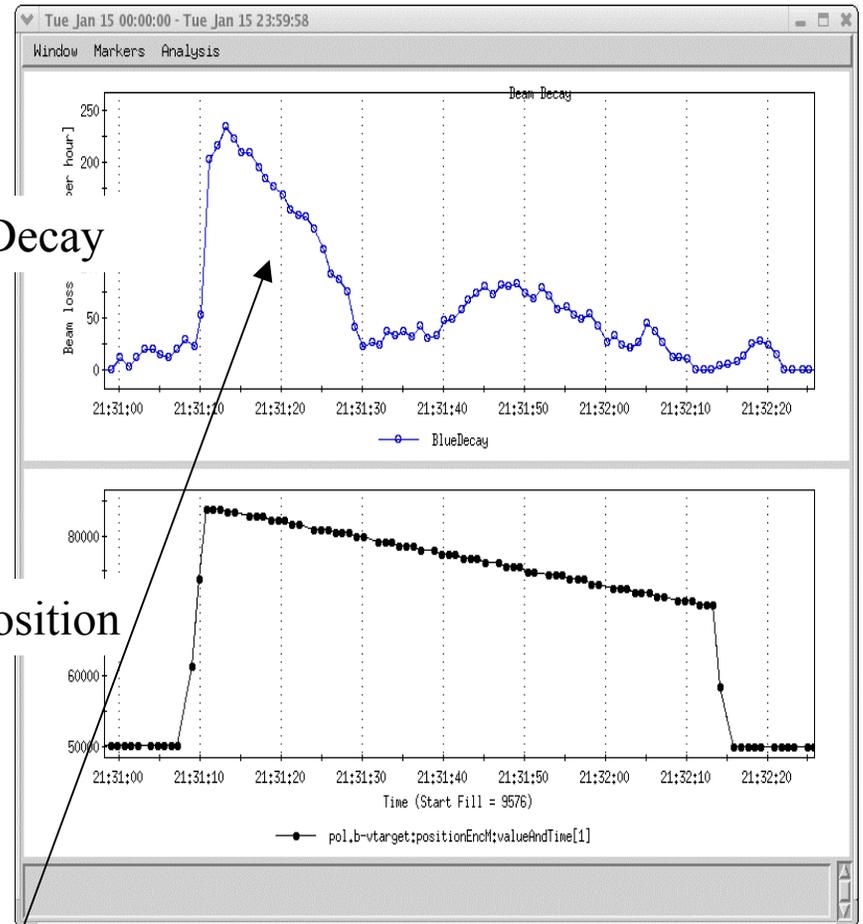


Beam Decay with Two Targets



Beam Decay

Target Position



Even though larger beam decay, not much carbon events

Vertical Beam Profile

BLUE

Start Stop Status E-Target control error

Automatic Manual

Time To Run 300 Number Events 1500000

Horizontal Vertical

Y-Rotary Target Position

Select Target Target1 Step Size 600

Target Position RotateOut Max Steps 24

Center Position 108000 Offset 7200

Position 80000 [79988] Time 1.0

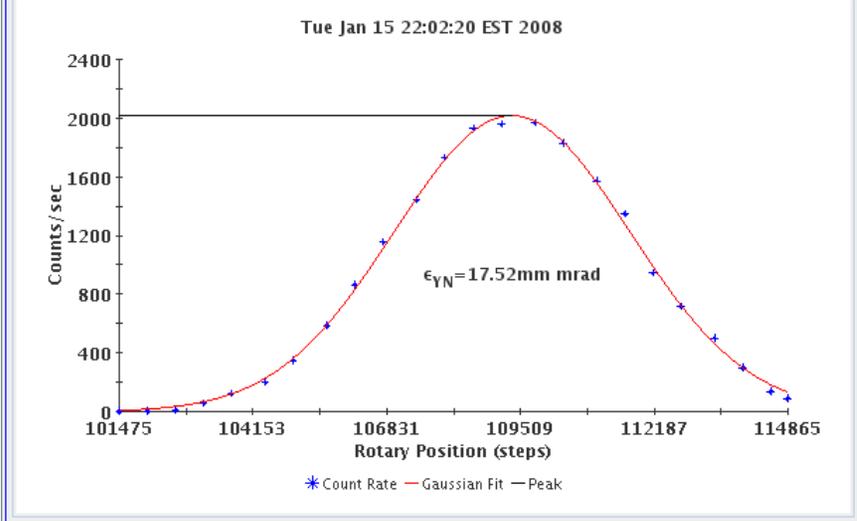
Automated Target Scan Complete

Count Rate

Current Value 0

Peak Count Position 109334

Clear



YELLOW

Start Stop Status OK

Automatic Manual

Time To Run 10 Number Events 1000000

Horizontal Vertical

Y-Rotary Target Position

Select Target <Select> Step Size 5

Target Position Target5 Max Steps 10

Center Position 1050 Offset 25

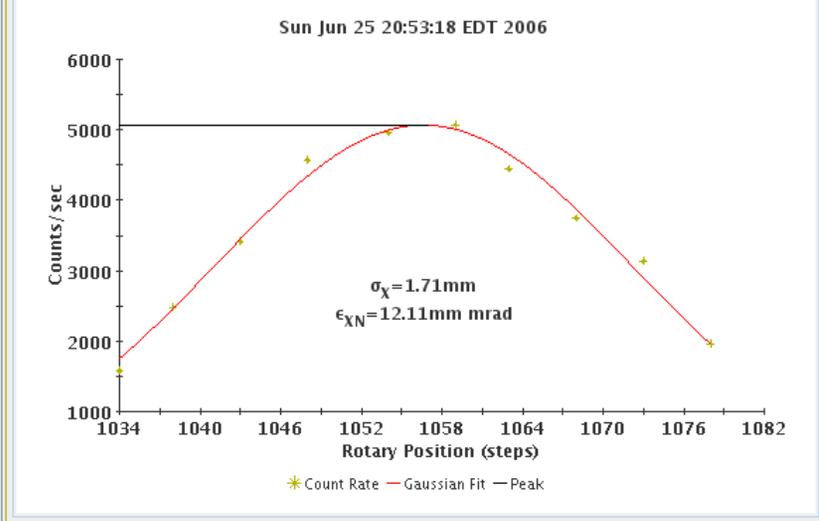
Position 0 [0] Time 1.0

Count Rate

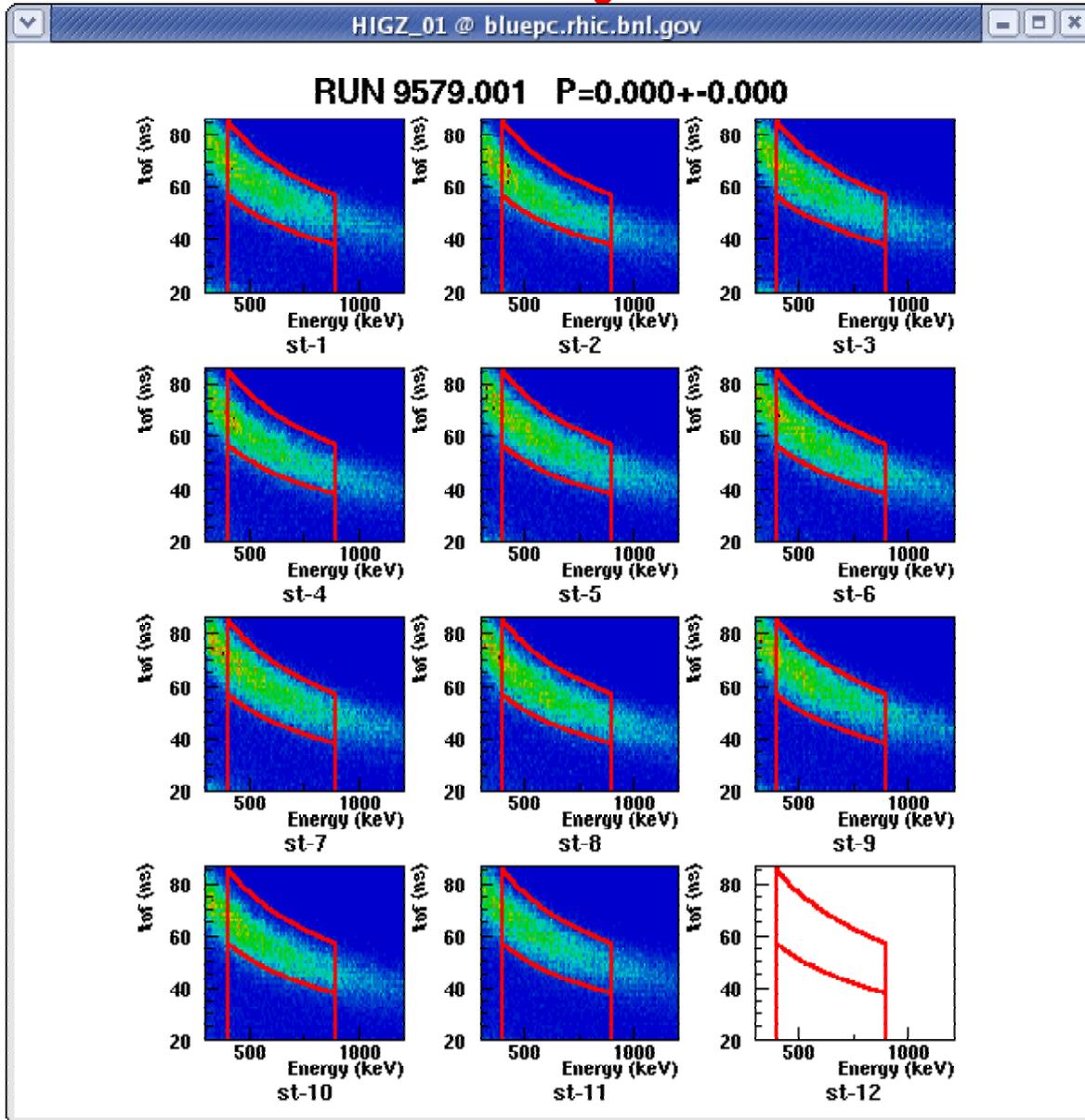
Current Value 0

Peak Count Position 1057

Clear



Offline Analysis Done



Offline analysis (shift timing by 30 nsec.) has put carbon events into the kinematics cuts. We use this configuration for future measurements.

Progress and Request

- Deuteron beam profiles (h & v) were taken with one bunch.
- Target scan was done and eight of them were found.
- In general, the vertical emittance is bigger than horizontal.
- We did not get chance to adjust the event selection to select only Carbon events, although it probably doesn't matter. Offline analysis has shown that it is just one parameter change. We will change it next time.
- Emittance measurement code did not work last time.
- No chance to compare with IPM (Booster RF problem, delayed schedule).
- Ask for one hour next time:
 - Take one bunch measurement to confirm the timing adjustment
 - 12-20 bunches to compare with IPM
 - Change rf freq. (+-) and measure profile again to get D_x (suggested by Thomas)