

# Acceptance Update

-- 3<sup>rd</sup> septum

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# Acceptance

-- 3<sup>rd</sup> septum

Septum	Ebeam	Target Field	Date
484816	2.3	0T	3/14
		2.5T Trans.	3/8
400016	2.3	5T Long.	5/3
	1.7	2.5T Trans.	4/12
	1.2	2.5T Trans.	4/21
	2.3	5T Trans.	5/10

## Center position uncertainty (BPM)

Date range	Gain type	Run type	Position uncert(mm)	Angle uncert(mrad)	comment
3.3-3.6	Autogain fastbus	optics	1.2	1.4	Best situation
3.6-3.17	autogain	optics	1.8	2.3	Use div=3 calib constant for optics(div=4)
3.28-3.29	autogain	optics	1.8	1.8	
3.29-3.31	Fixed gain	Optics production	2	2.2	Large pedestal uncertainty
3.31-4.10	Fixed gain	production	1.1	1.2	
4.11-4.26	Fixed gain	production	1.1	1.2	
4.26-4.30	Fixed gain	production	2	2	BPM B calibrated by A and harp
5.3-5.7	Fixed gain	Production optics	1	1.1	Best situation
5.7-5.17	Fixed gain	production	1.2	1.3	

# Uncertainty of Focal Plane Measurement

- 400016, 5T long, 2.254GeV
- Optics first order matrix (fp = tg)
  - $x = -2.5x_0 - 0.05\theta_0 + 13.3\delta$
  - $\theta = -0.2x_0 - 0.4\theta_0 + 2.3\delta$
  - $y = -0.11y_0 - 1.97\phi_0$
  - $\phi = 0.45y_0 - 1.06\phi_0$

Source	Uncertainty ( $10^{-3}$ )
Beamy $\sim x_0$	1
$\delta$	0.2
Survey of sieve hole position	0.15
Target field map	0.85%*8.4 ( $\theta_0$ )
VDC resolution	$x, y \sim 0.5$ $\theta, \phi \sim 0.6$
Sum	$x \sim 3.7, \theta \sim 0.8, y \sim 2.4, \phi \sim 0.9$

# Center Hole at Focal Plane

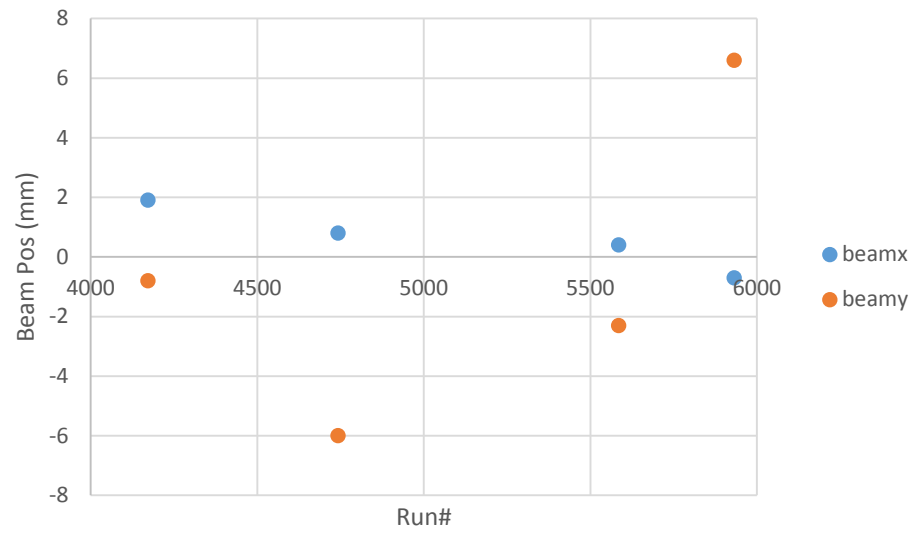
Use same Snake config, dp=0% optics runs

	Sieve center hole		Config	Beam Pos(mm)
Focal Plane	Y(mm)	$\phi$ (mrad)		
Data	-12.4	-5.7	2.3GeV, 5T L	0.4,-2.3
Snake	-7.5	-7.2		
Data	-11.3	-4.7	1.7GeV, 2.5T T	1.9,-0.8
Snake	-4.0	-4.4		
Data	-17.3	-8.8	1.2GeV, 2.5T T	0.8,-6.0
Snake	-8.9	-8.0		
Data	-15.5	-8.0	2.3GeV, 5T T	-0.7,6.6
Snake	-11.4	-9.1		

# Next

- Plot other holes on focal plane
- Plot other (dp scan) optics runs
- Suggestions?

# Backup





# Center Hole at Focal Plane

Beam position  
(-0.7,2.2)mm

#3185, 2.3 GeV, OT, good septum, delta=0% optics run

	Sieve center hole				comment	Config ID
Fp:	X(mm)	$\theta$ (mrad)	Y(mm)	$\phi$ (mrad)		
data	2.3	0.5	-16.0	-8.3		
SNAKE	6.8	-1.0	-11.7	-9.8		0
	6.7	-1.1	-13.1	-11.4	Extend septum field to 12cm from Q1 entrance, Q1 field starts at 9cm from Q1 entrance	1
	6.9	-1.1	-13.7	-12.1	Extend septum field to 2.7 cm from Q1 entrance, Q1 field starts at 1cm from Q1 entrance	2

Extending septum field moving y and phi to the same direction, while we need them to move to opposite directions to match data.

However, if adjusting septum again, they can match within uncertainties.

	7.0	-1.0	-11.4	-10.0	Adjust septum again to match data within uncertainties	3
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# Center Hole at Focal Plane

#2928, 2.3GeV, 2.5T trans, good septum, delta=0% optics run  
Apply config 0 and 3 to 2928 to compare

Beam position  
(-3.7, -0.8)mm

	Sieve center hole				Config ID
Fp:	X(mm)	$\theta$ (mrad)	Y(mm)	$\phi$ (mrad)	
data	-1.4	1.2	-12.6	-5.3	
SNAKE	3.3	-1.0	-18.6	-14.9	0
	3.2	-1.2	-18.2	-14.8	3

Show similar offsets comparing with data

Extending septum field seems not helping solve this issue.