

Simulation update

Last time:

Yields versus BPM information

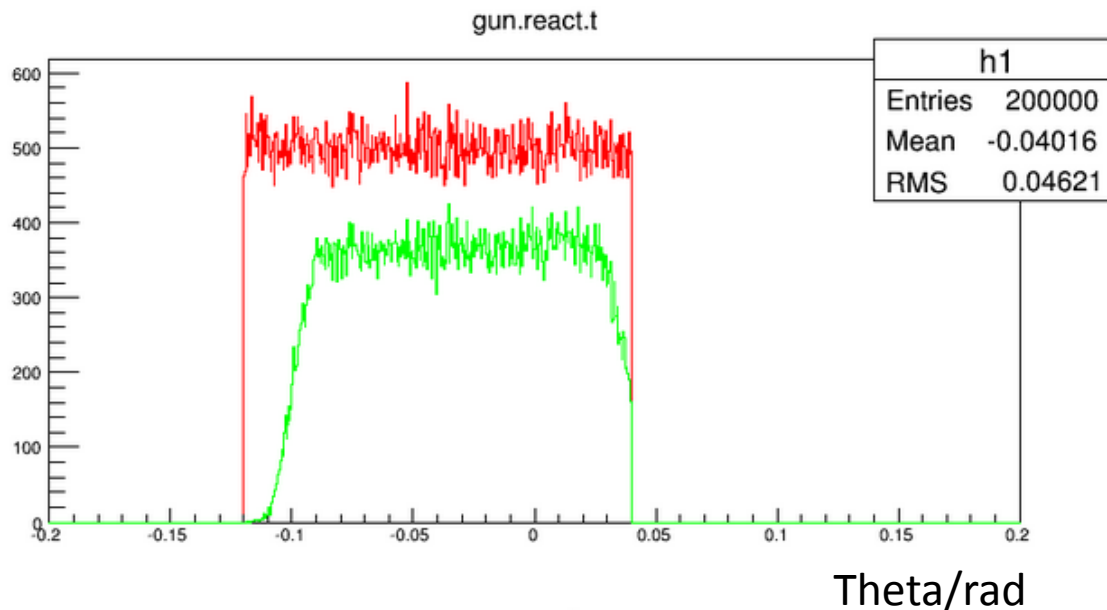
Last Time Simulation Yields Study

(x ,y, theta, phi)	Yields
(0, 0, 0.0636,0.0042)	1
X+2.5mm	1.167
X+5mm	1.333
Y+2.5mm	0.946
Y+5mm	0.896
Theta +1.5mrad	0.995
Theta +3mrad	0.985
Phi + 1.5mrad	1.148
Phi + 3mrad	1.318

Note:

- a. Use Pengjia's Beam coordinates $\tan(\phi) = dx/dz$
- a. "Y+5mm" means only change Y pos to be 5mm
- b. All the yields normalized by the yields for configuration (0, 0, 0.0636,0.0042)
- c. not consider the relationship between phi versus x and theta versus y

Acceptance study

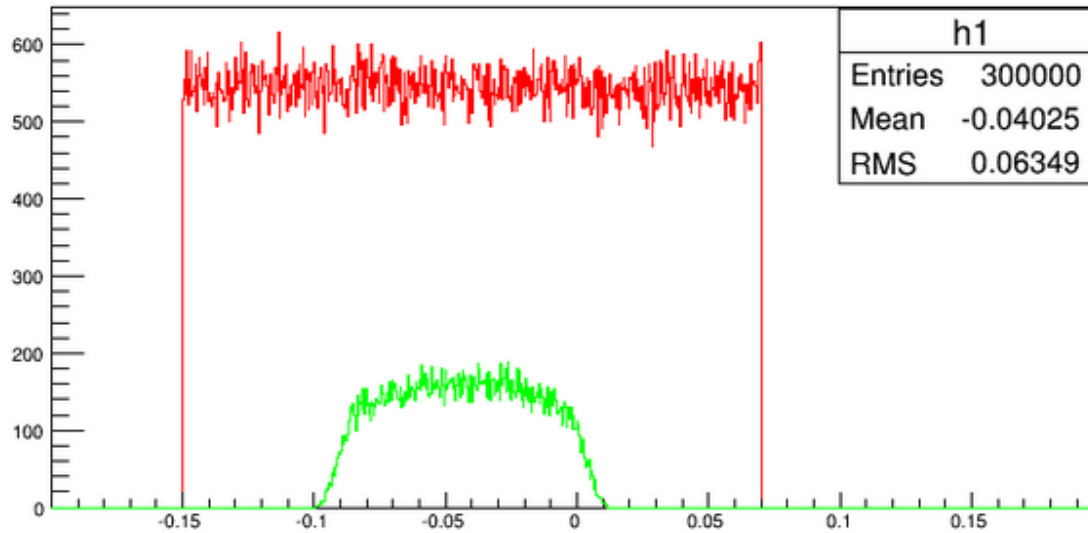


- Without Snake model acceptance
- Red (event generator)
- Green (accepted)



Acceptance study

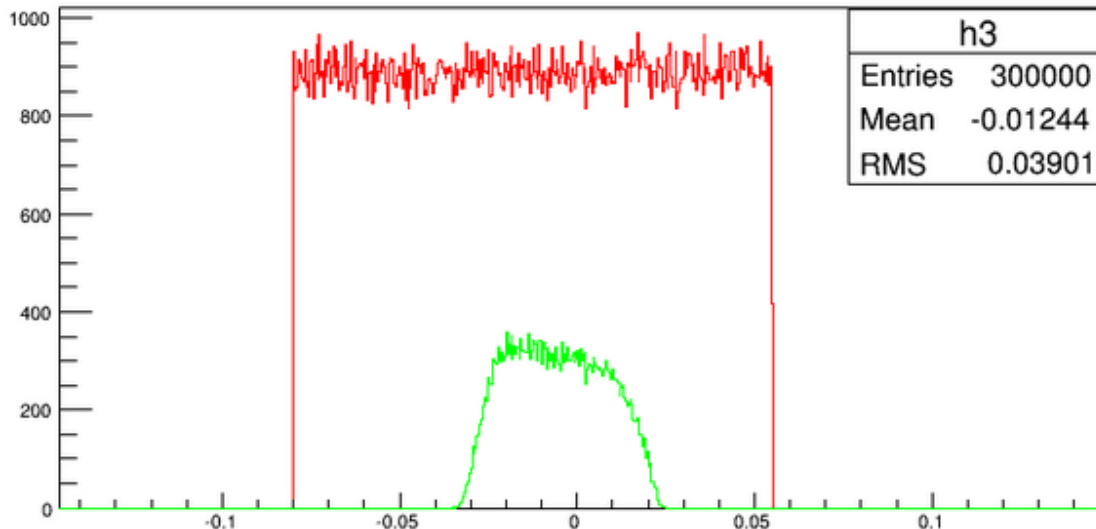
gun.react.t



- Snake model acceptance (need tune)
- Red (event generator)
- Green (accepted)

gun.react.p

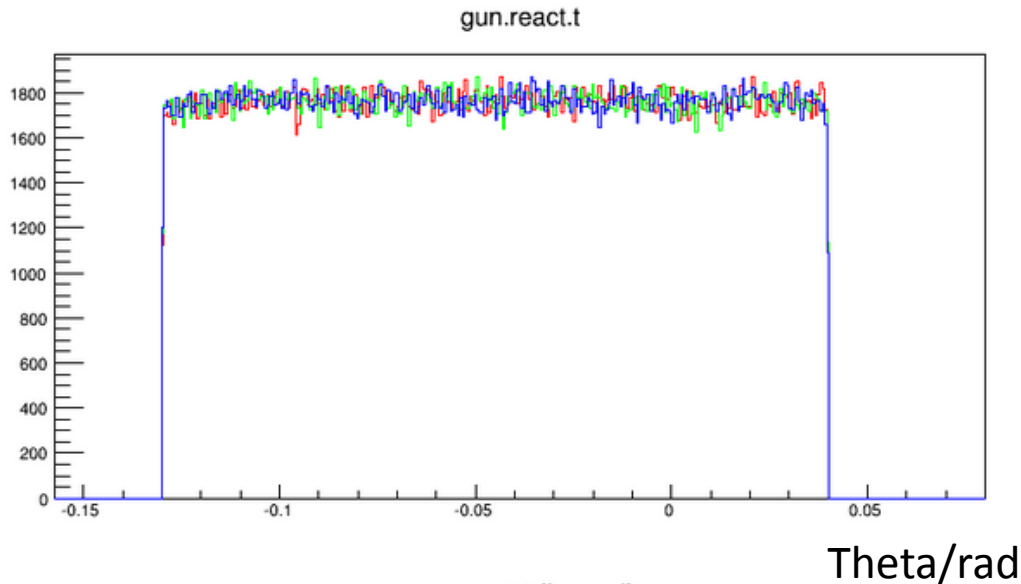
Theta/rad



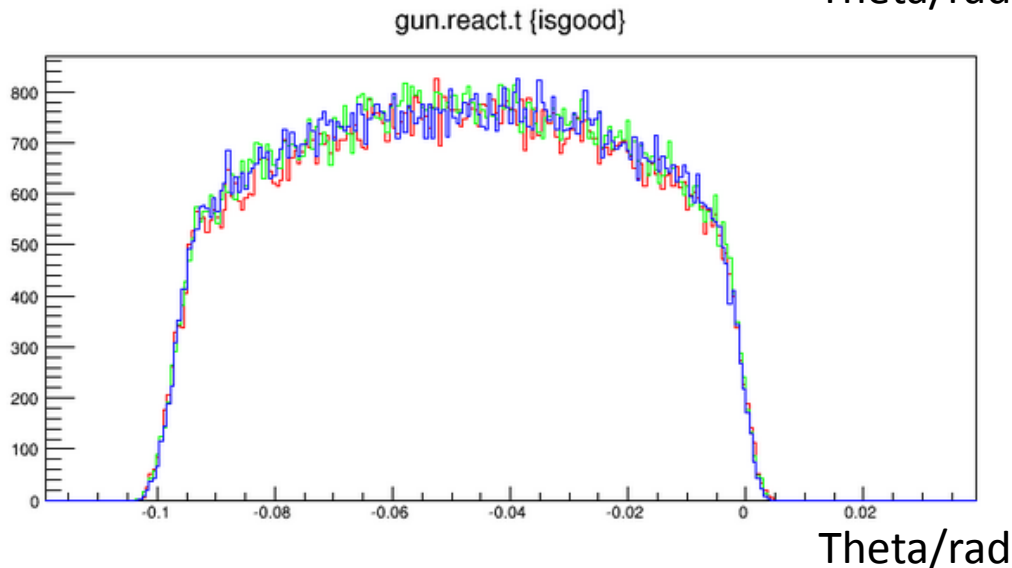
Phi/rad

- Simulation
- Theta:
-0.13~0.04
- Phi:
-0.05~0.05

Beam X dependence study



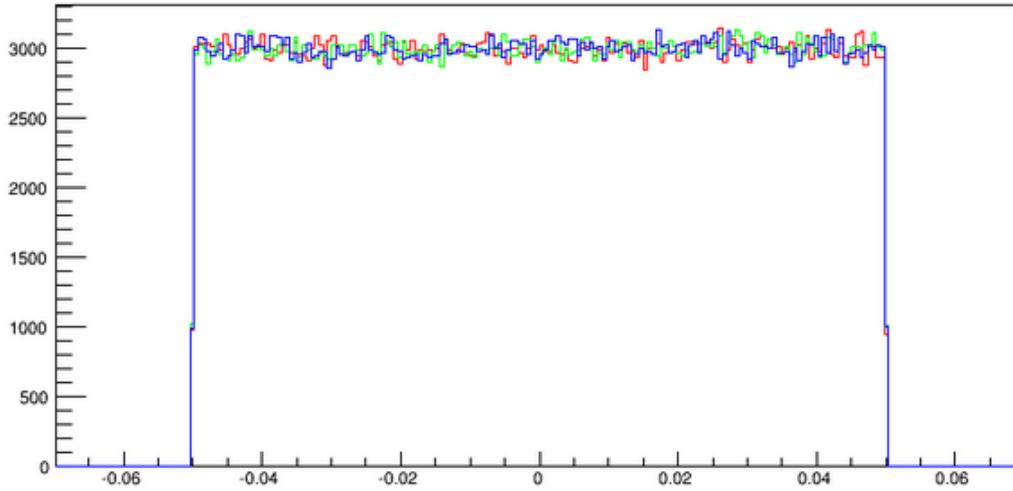
- Target center set at (0,0,0), change x to 2.5mm and 5mm



Red:
x=0mm
Green:
x=2.5mm
Blue:
x=5mm

Beam X dependence study

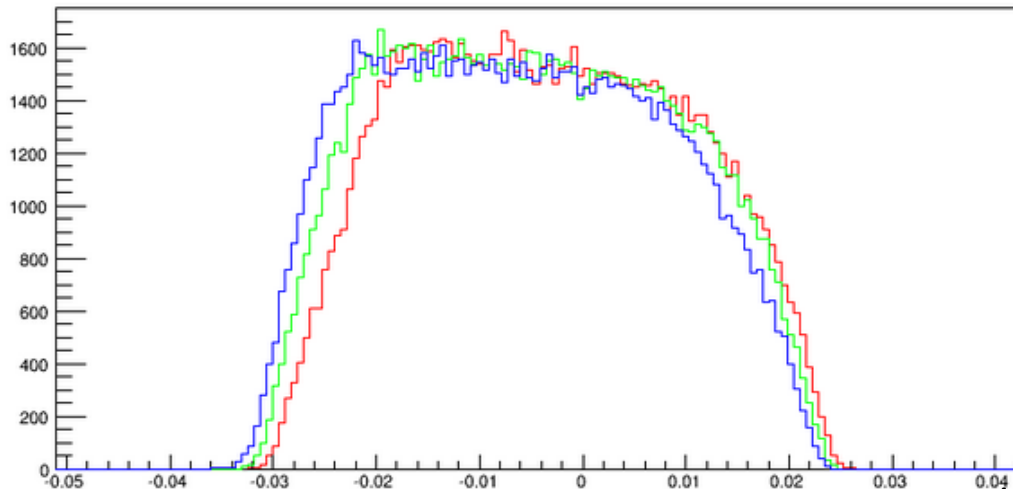
gun.react.p



- Target center set at (0,0,0), change x to 2.5mm and 5mm

gun.react.p {isgood}

phi/rad



Red:

x=0mm

Green:

x=2.5mm

Blue:

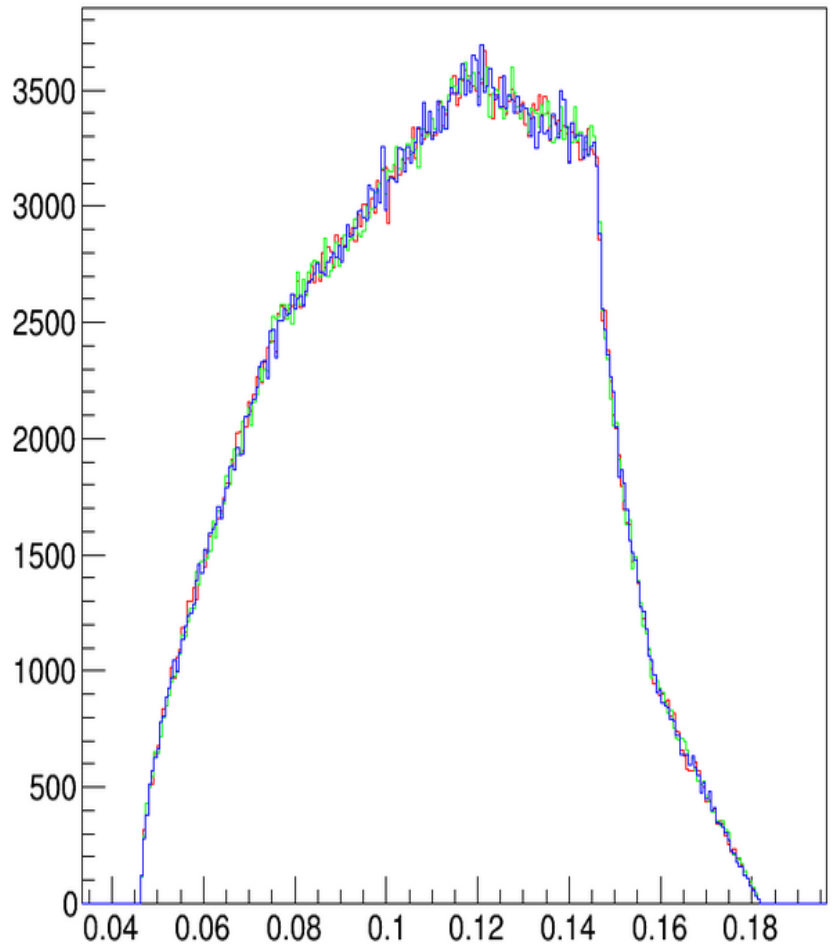
x=5mm

phi/rad

Beam X dependence study

Total distribution for scattering angle

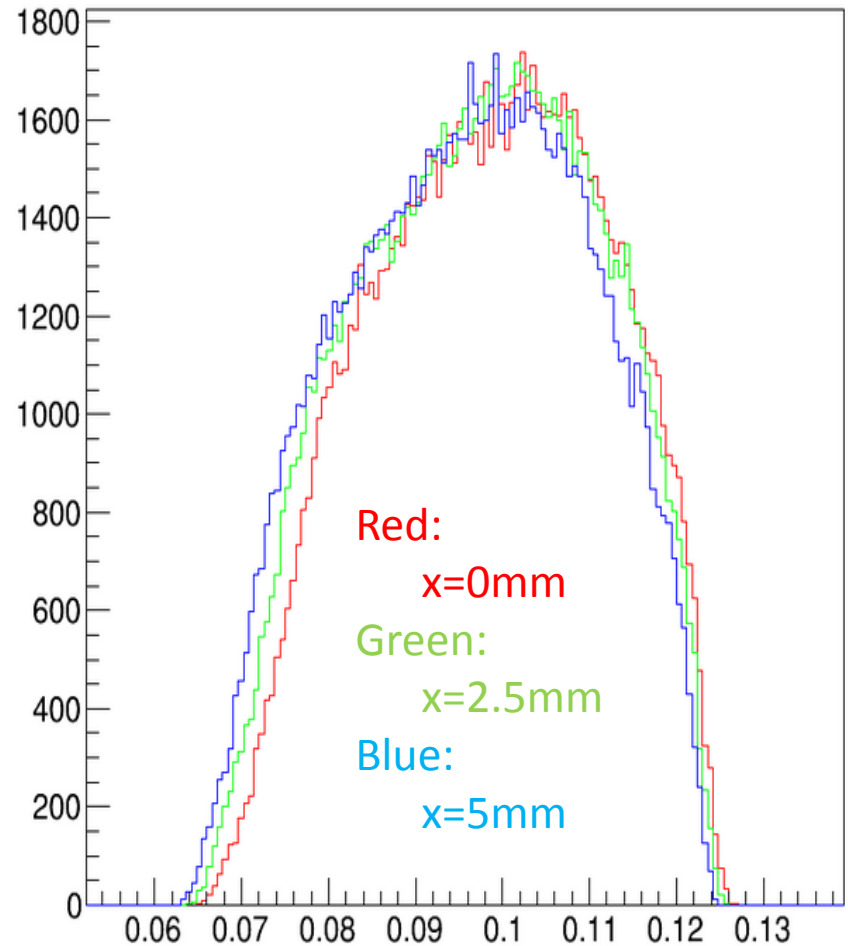
gun.react.angle



angle/rad

Good events distribution for scattering angle

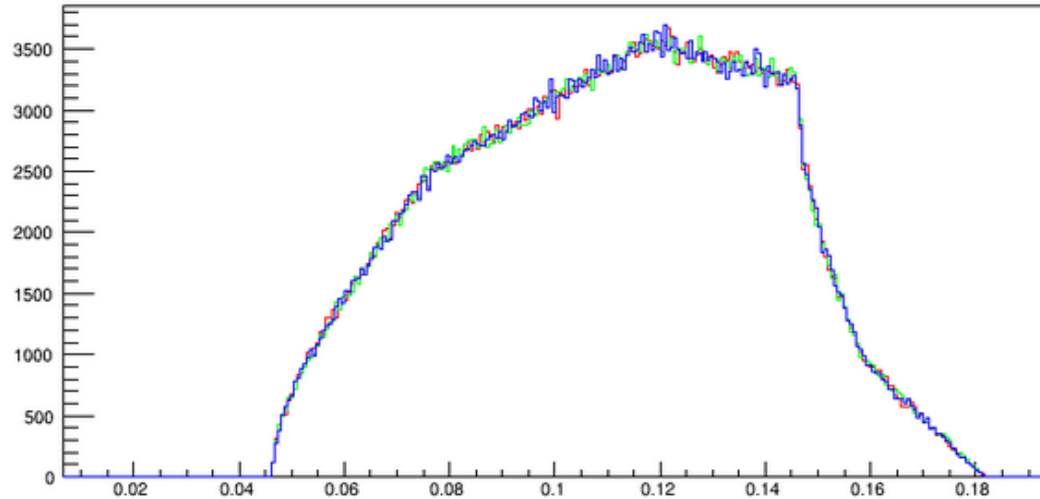
gun.react.angle {isgood}



angle/rad Page 7

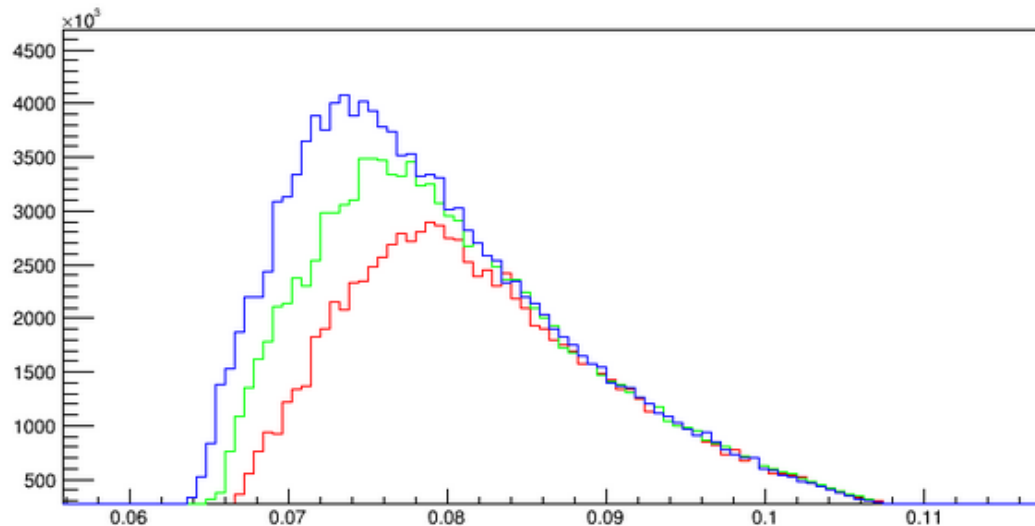
Beam X dependence study

Total distribution for scattering angle



Red:
x=0mm
Green:
x=2.5mm
Blue:
x=5mm

Good events distribution for scattering angle



angle/rad

← Weighted by
Cross section

angle/rad

Simulation Yields Update

(x ,y, theta, phi)	Old Yields	New Yields
(0, 0, 0.0636,0.0042)	1	1
X+2.5mm	1.167	1.202
X+5mm	1.333	1.375
Y+2.5mm	0.946	0.993
Y+5mm	0.896	0.988
Theta +1.5mrad	0.995	0.985
Theta +3mrad	0.985	0.972
Phi + 1.5mrad	1.148	1.135
Phi + 3mrad	1.318	1.309

Note:

- a. Use Pengjia's Beam coordinates $\tan(\phi) = dx/dz$
- a. "Y+5mm" means only change Y pos to be 5mm
- b. All the yields normalized by the yields for configuration (0, 0, 0.0636,0.0042)
- c. not consider the relationship between phi versus x and theta versus y

Next to do

- Check yields?
- Problem exits for run 3448 and 3449.
Experiment yields almost the same (426499 vs 426489), but simulation (beam information input) give 1:1.17
- Other suggestions?