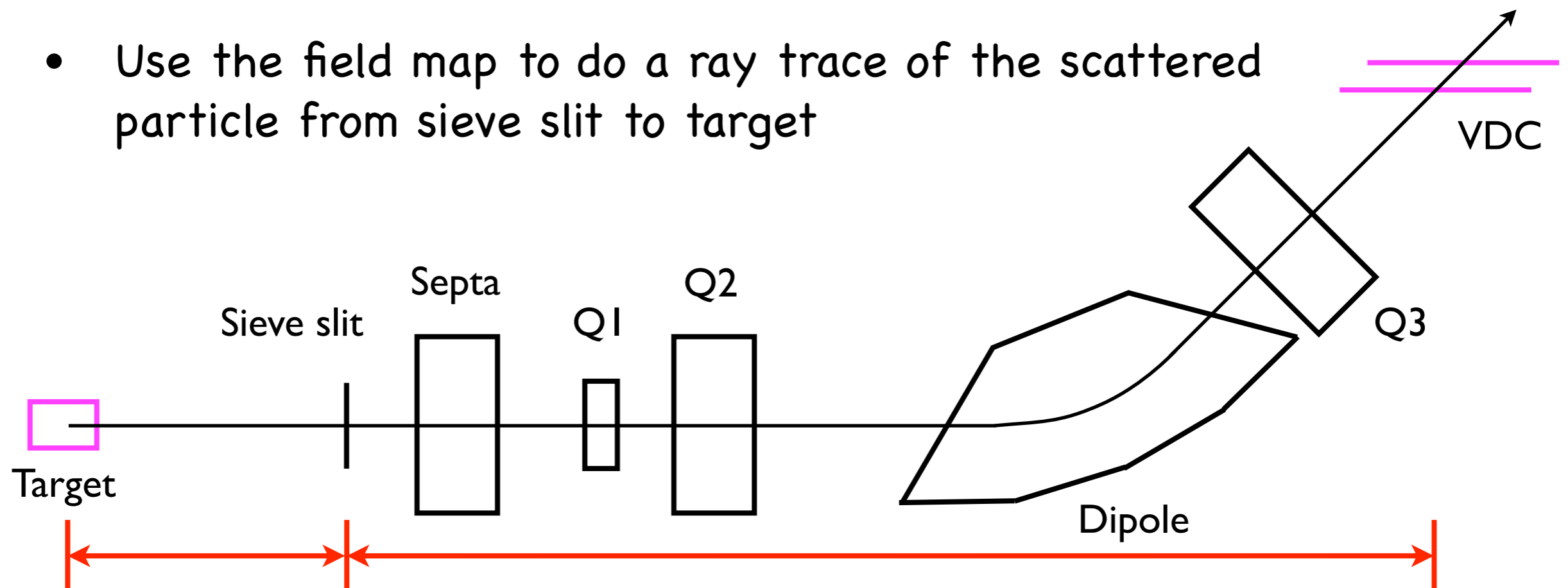


Optics Status Update

Chao Gu

Optics with Target Field

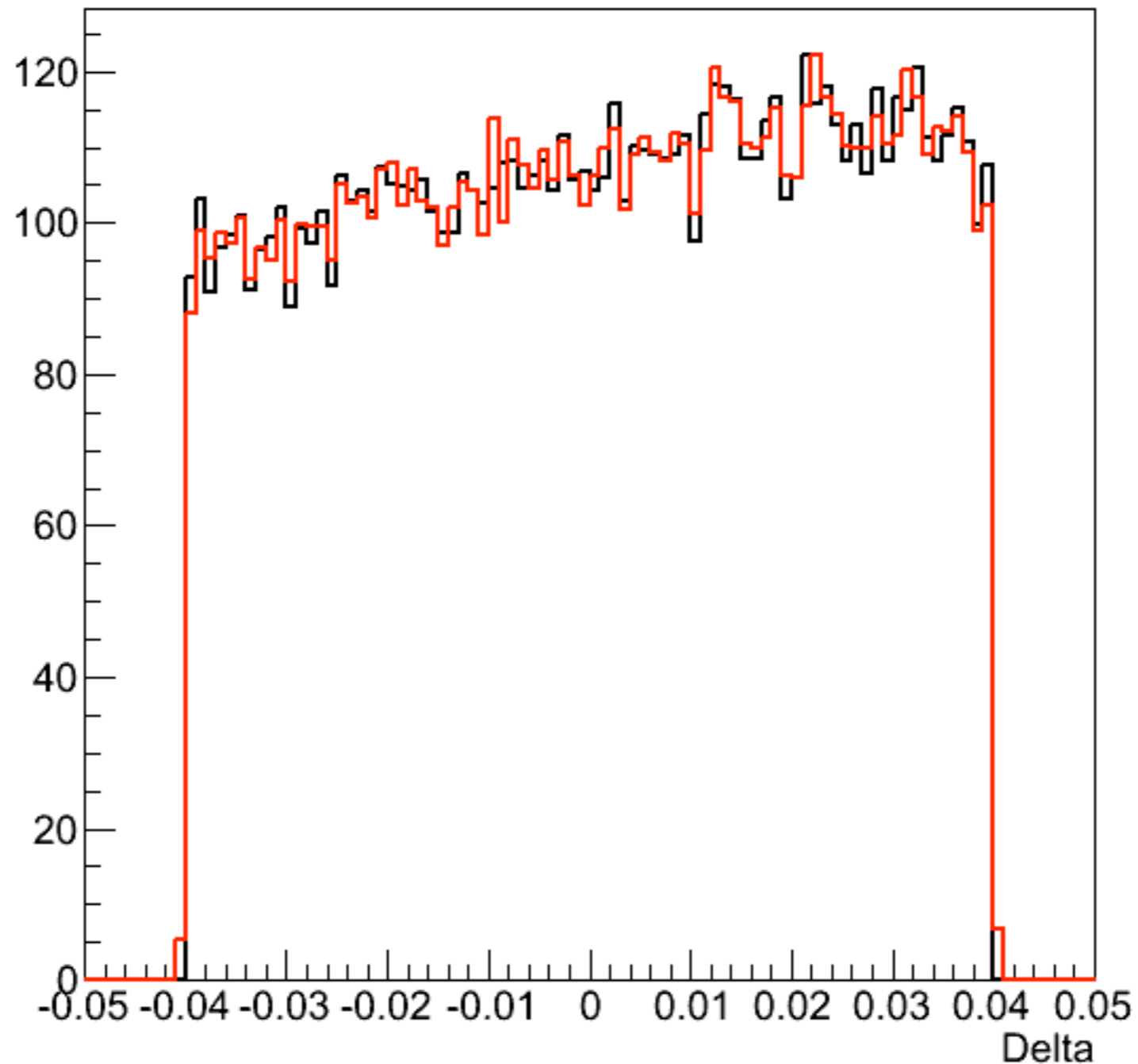
- To include target field
 - Sieve slit method is not useful
- Idea: separate reconstruction process to 2 parts:
 - Use the no target field result to deal with the reconstruction from VDC to sieve slit
 - Use the field map to do a ray trace of the scattered particle from sieve slit to target



Distribution weighted by XS

Delta (weight by XS)

Red : reconstructed
Black : original



$$|\langle \delta_{\text{rec}} \rangle - \langle \delta_{\text{real}} \rangle| = 1.3e-4$$

B = 2.5T

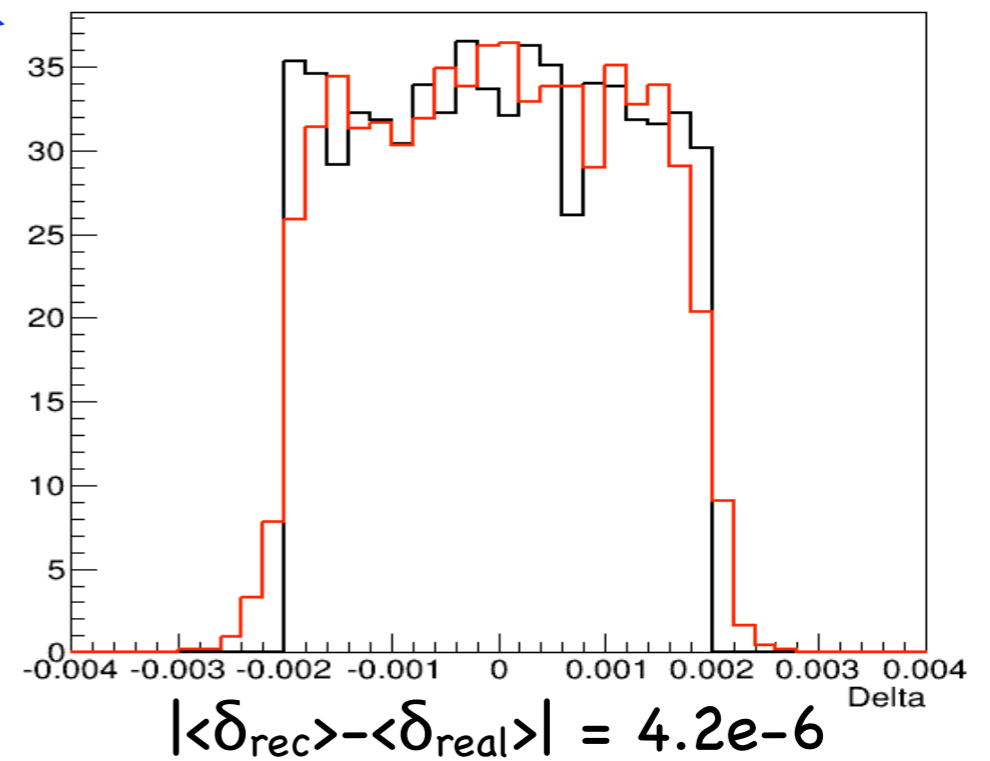
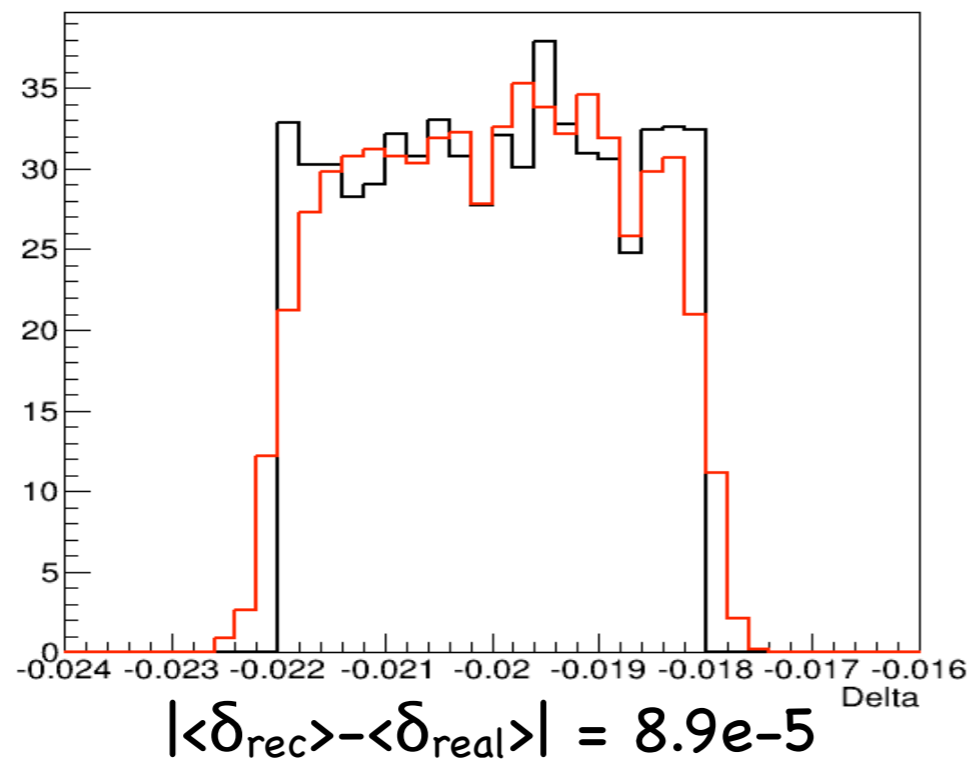
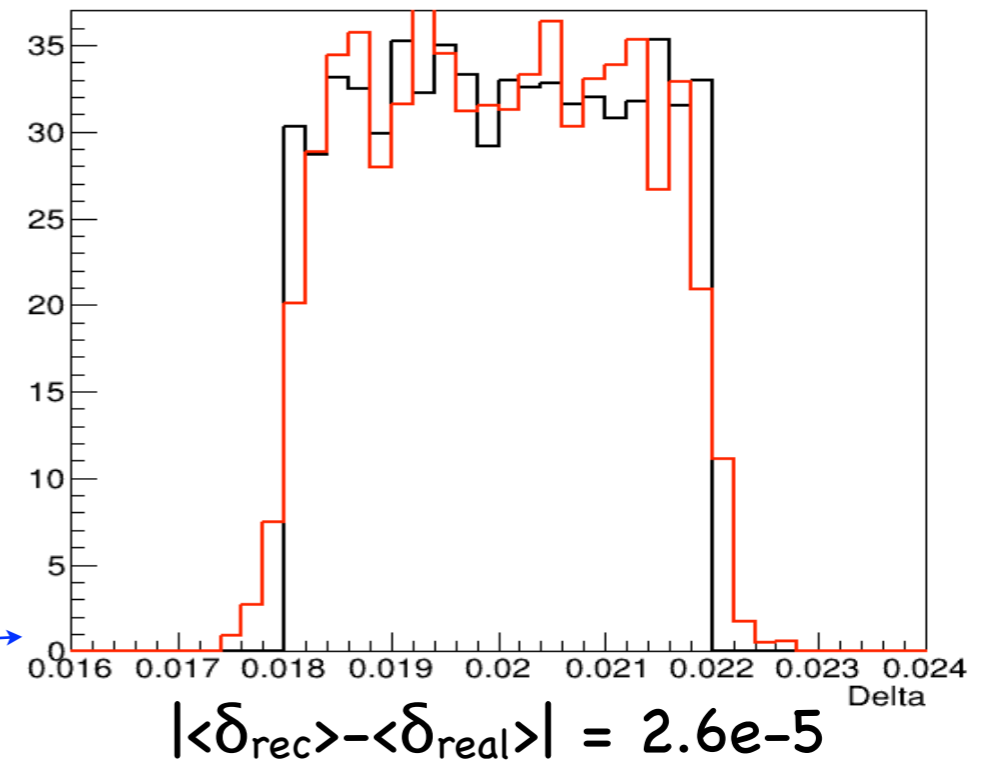
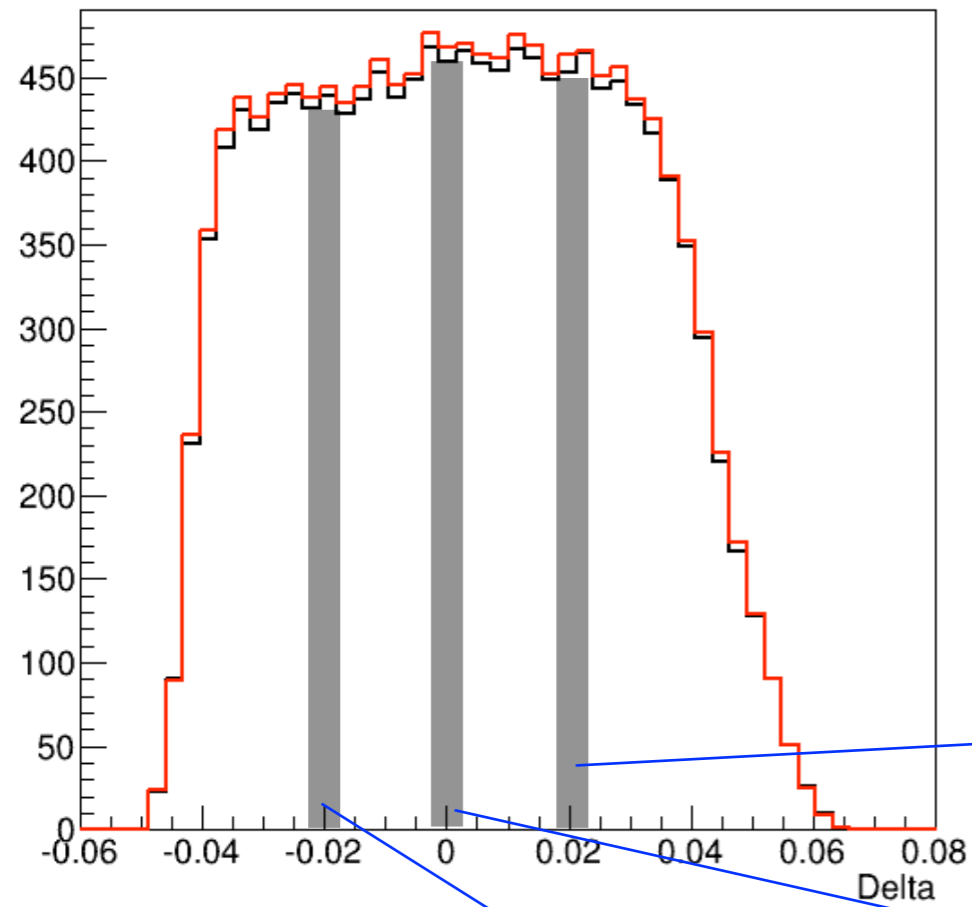
Simulation Package

- The purpose is to test the reconstruction method
 - compare the reconstructed and thrown variables in simulation to see if the method will keep the center value
- Test conditions:
 - $E = 2.254\text{GeV}$, $P_0 = 1.500\text{GeV}$
 - 28mm target length
 - 1.5cm raster radius
 - Use P. Bosted Model to provide cross section

Delta

Red : reconstructed

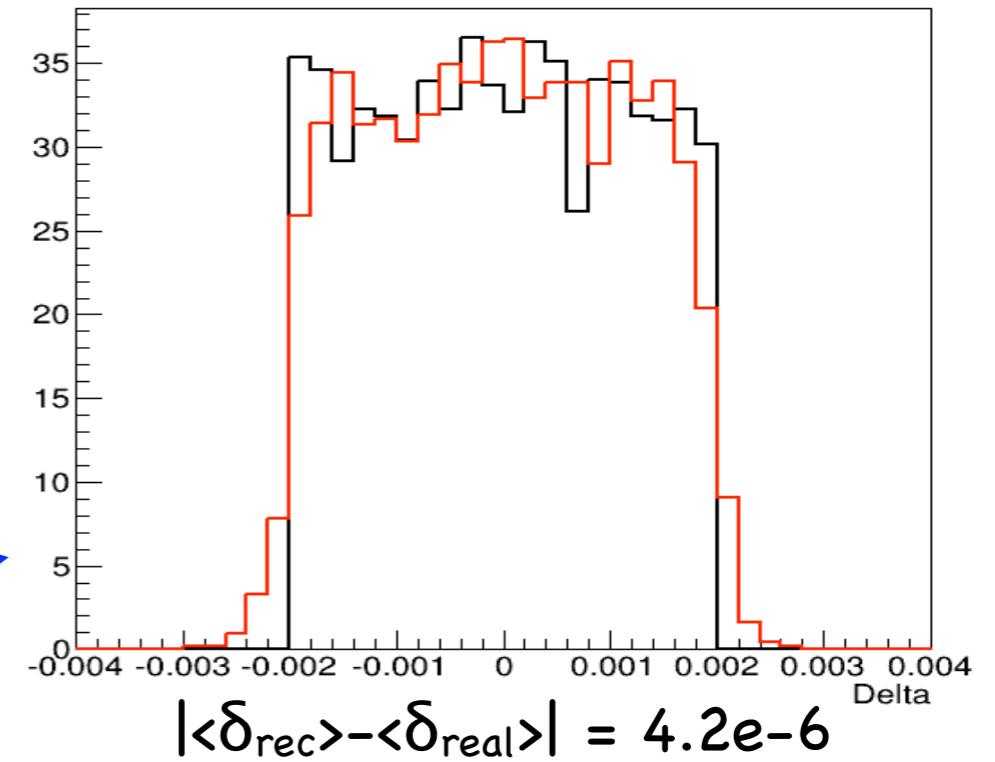
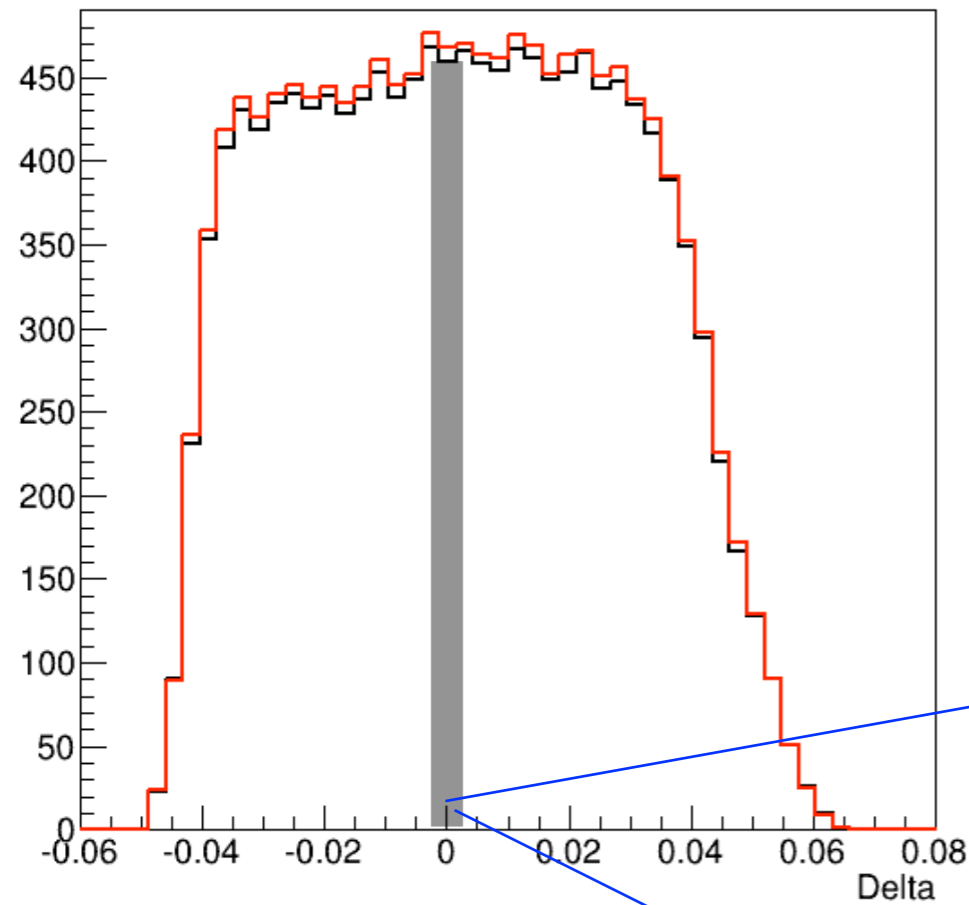
Black : original



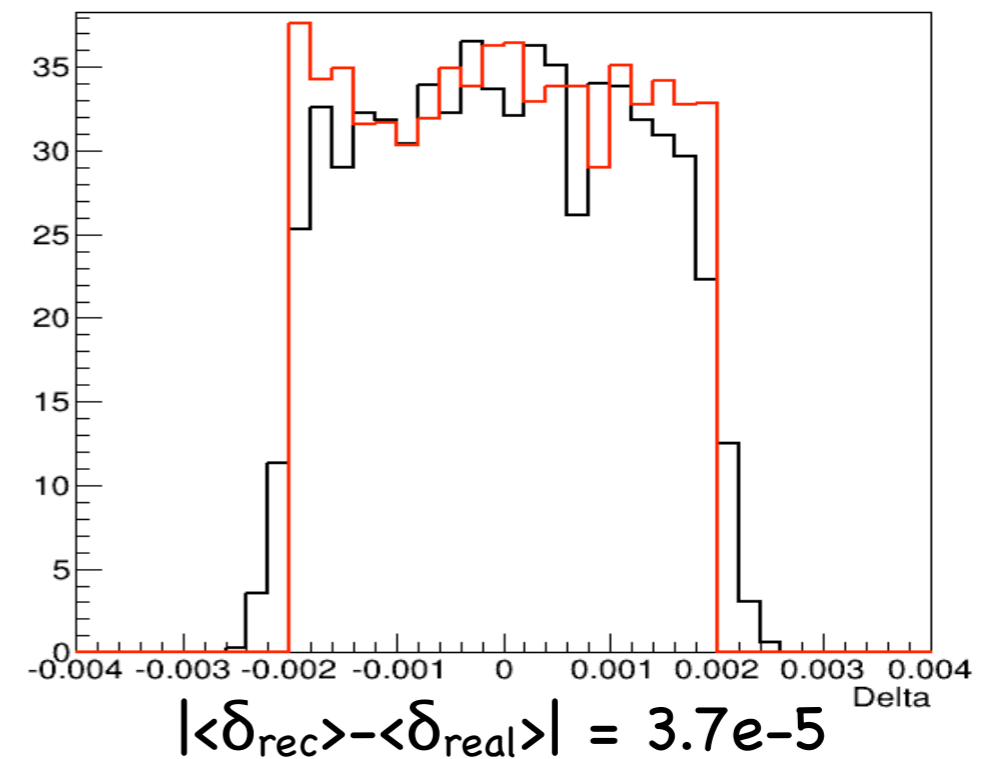
Delta

Red : reconstructed

Black : original



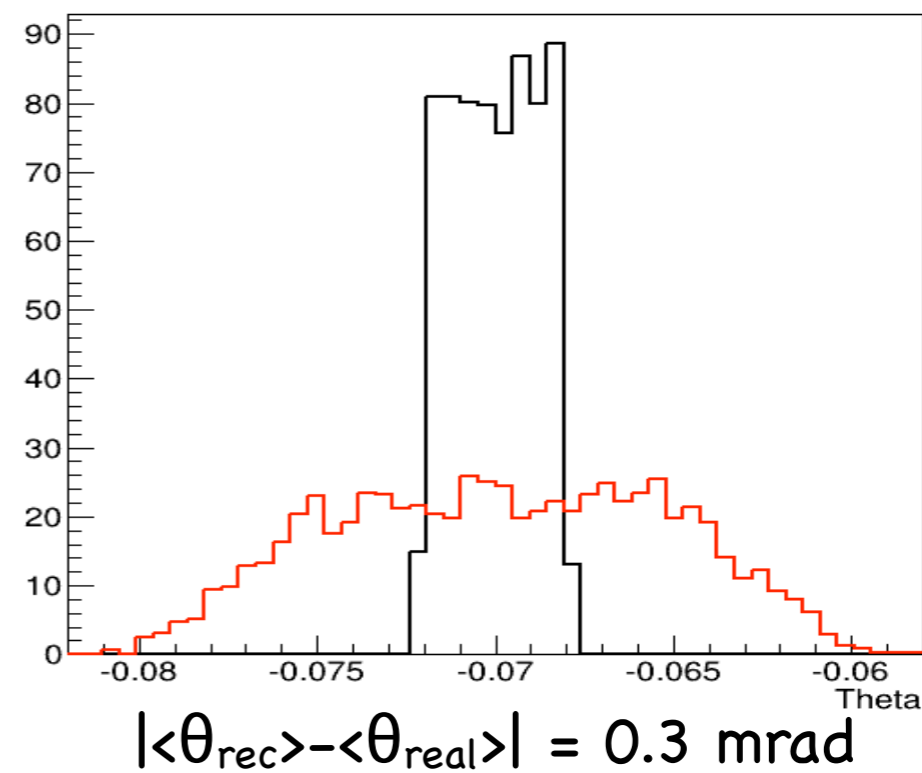
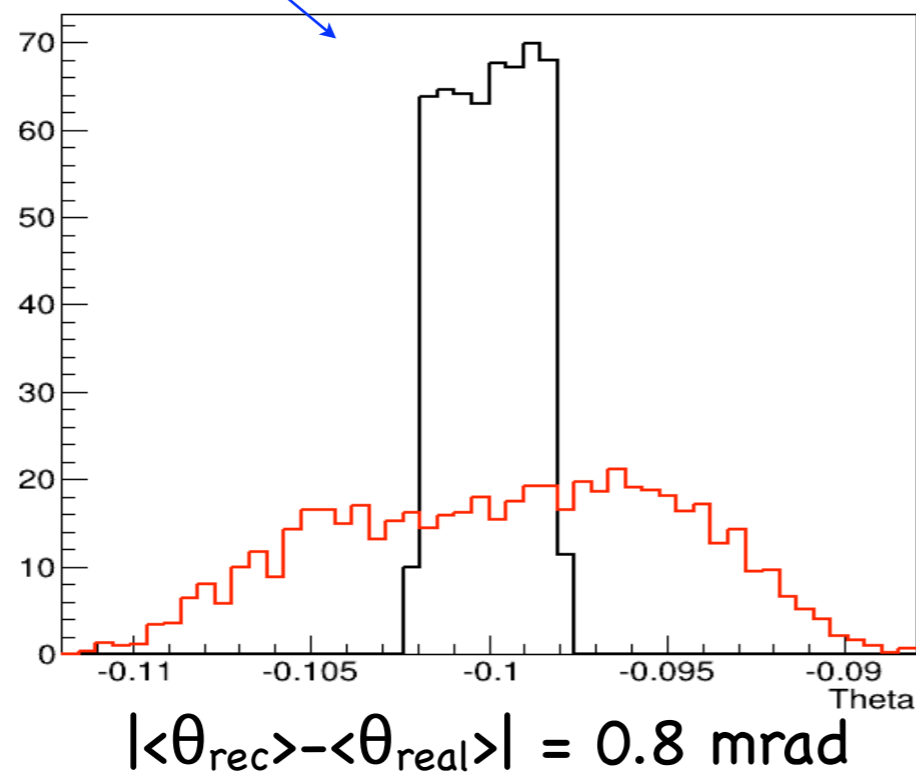
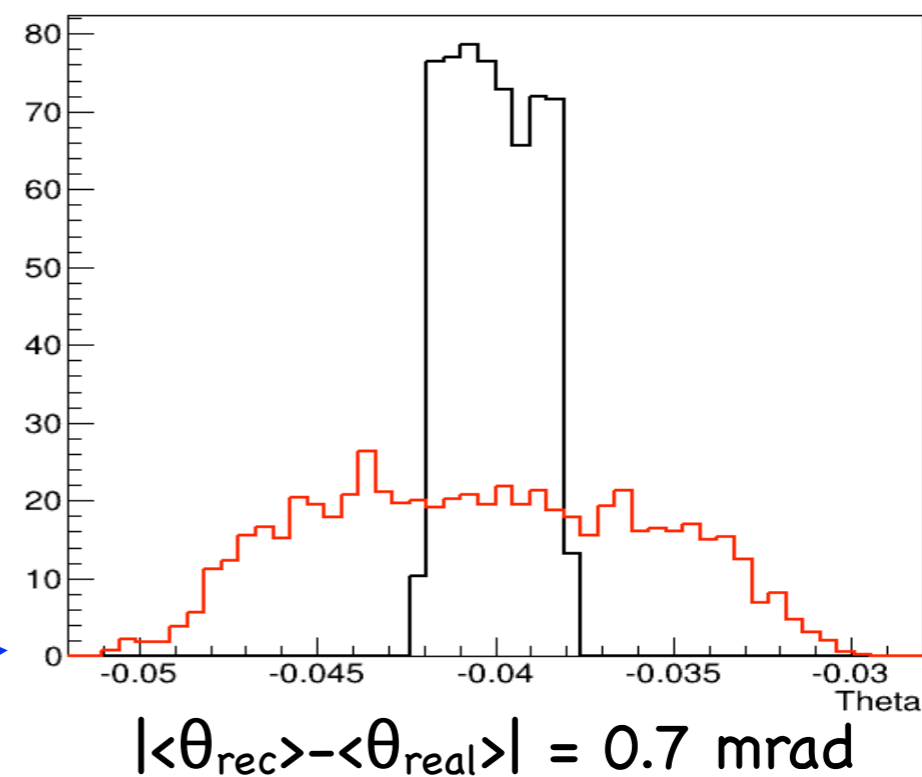
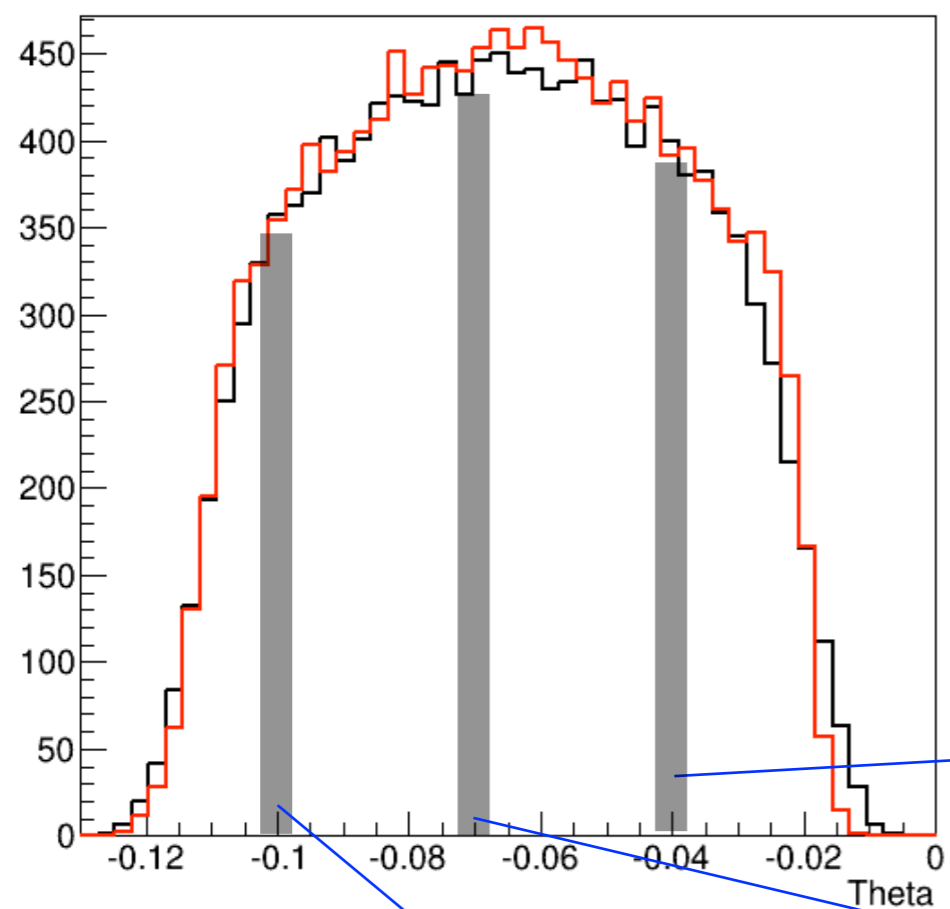
TOP: cut on original variable
BOTTOM: cut on reconstructed variable



Theta

Red : reconstructed

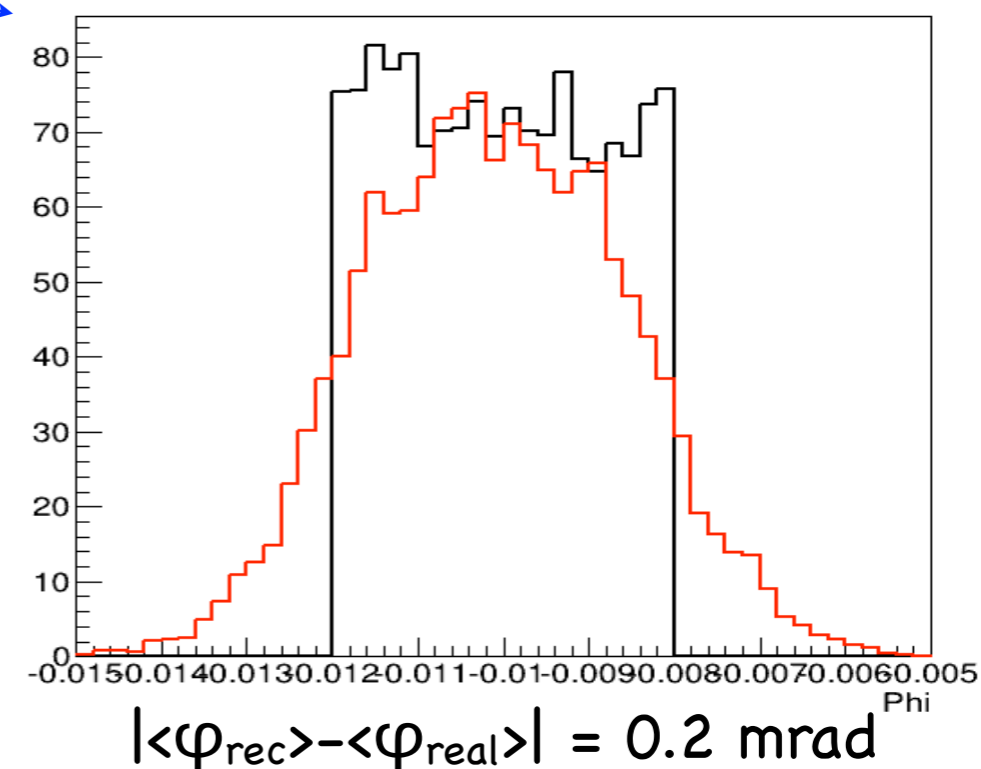
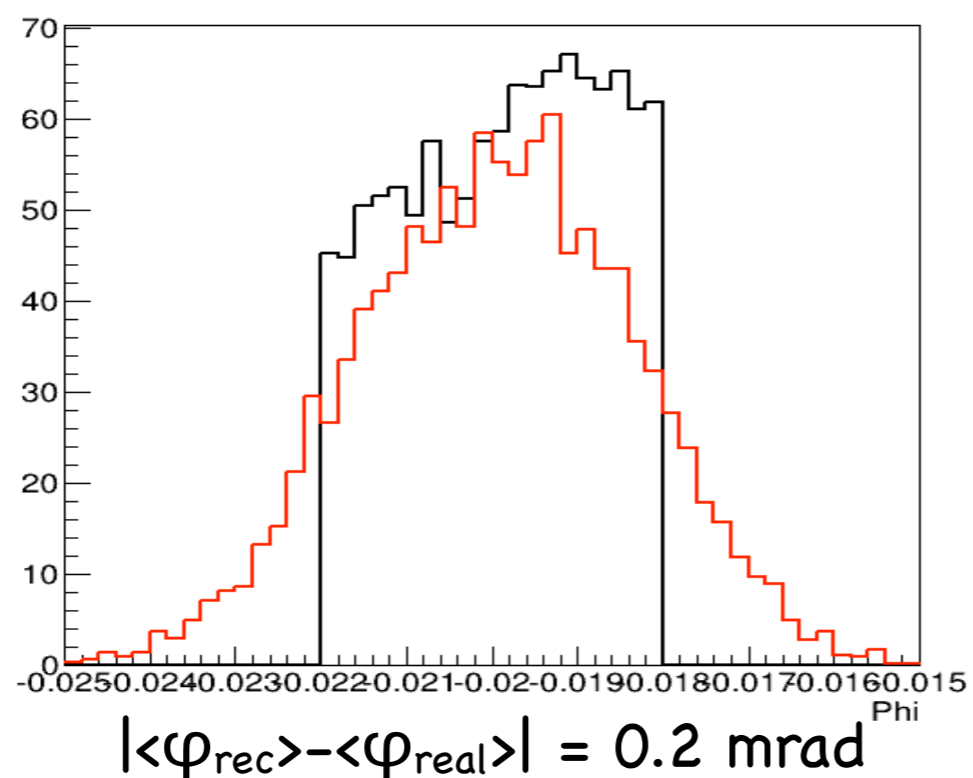
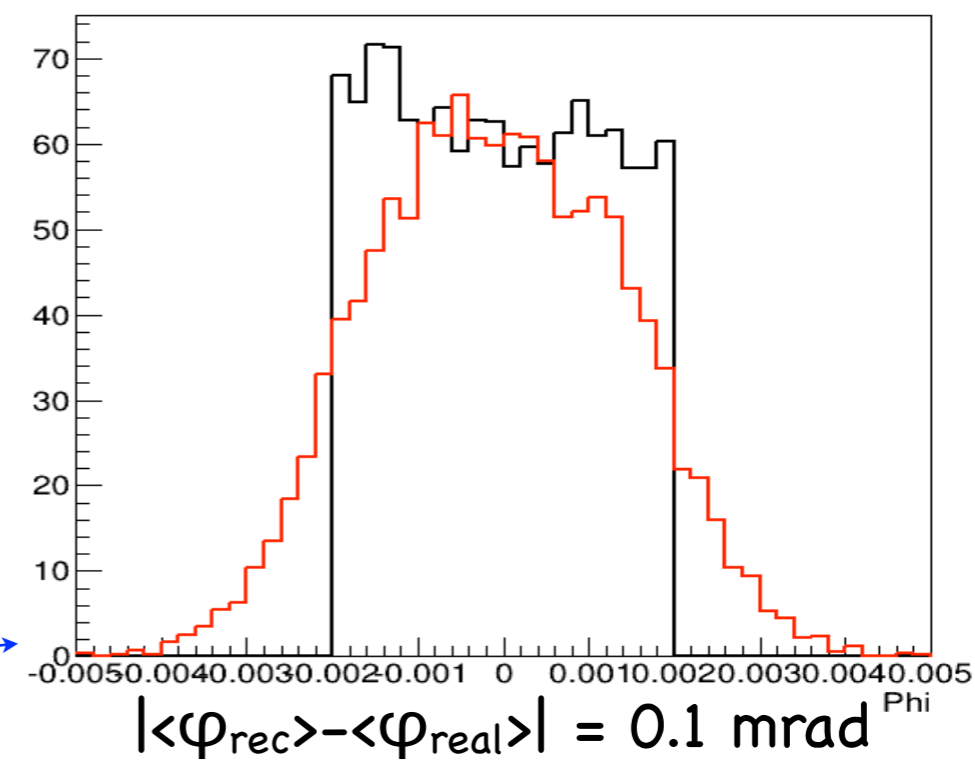
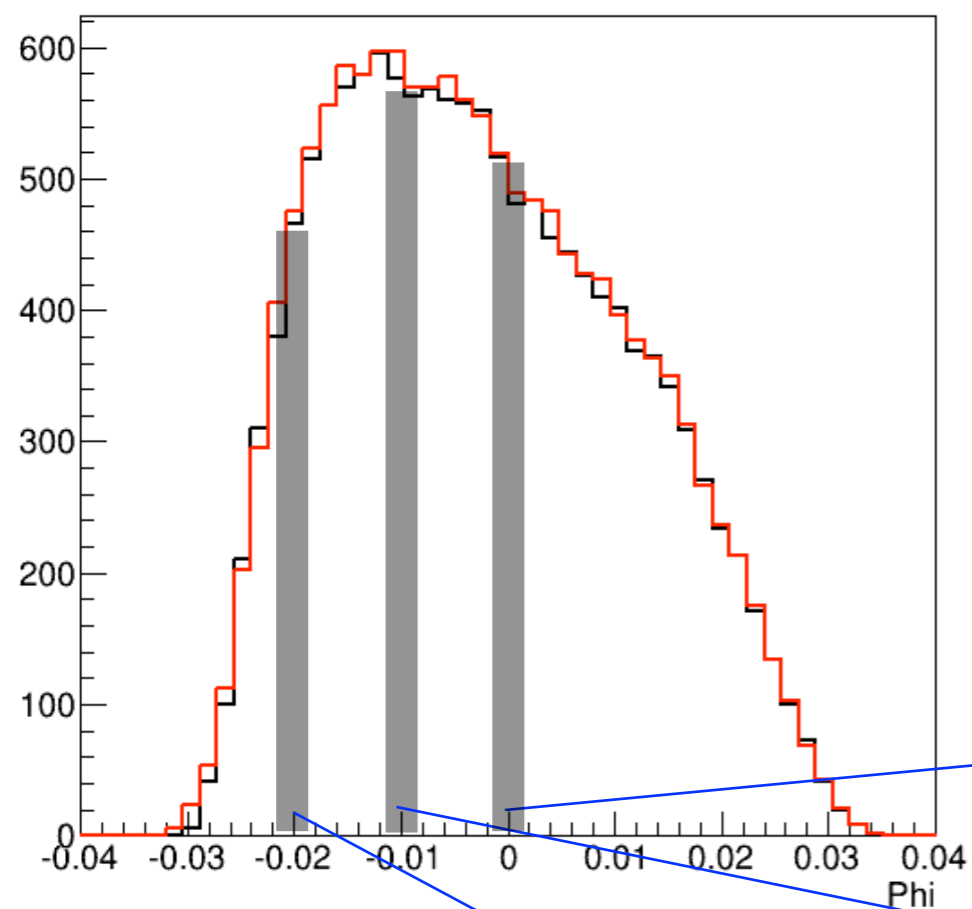
Black : original



Phi

Red : reconstructed

Black : original



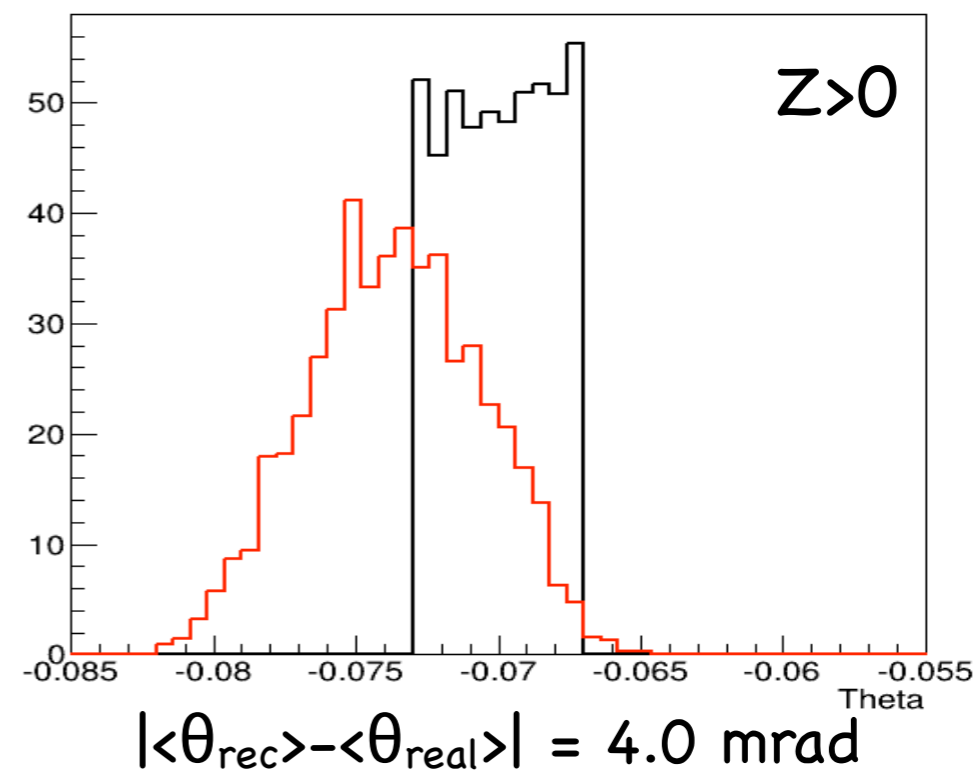
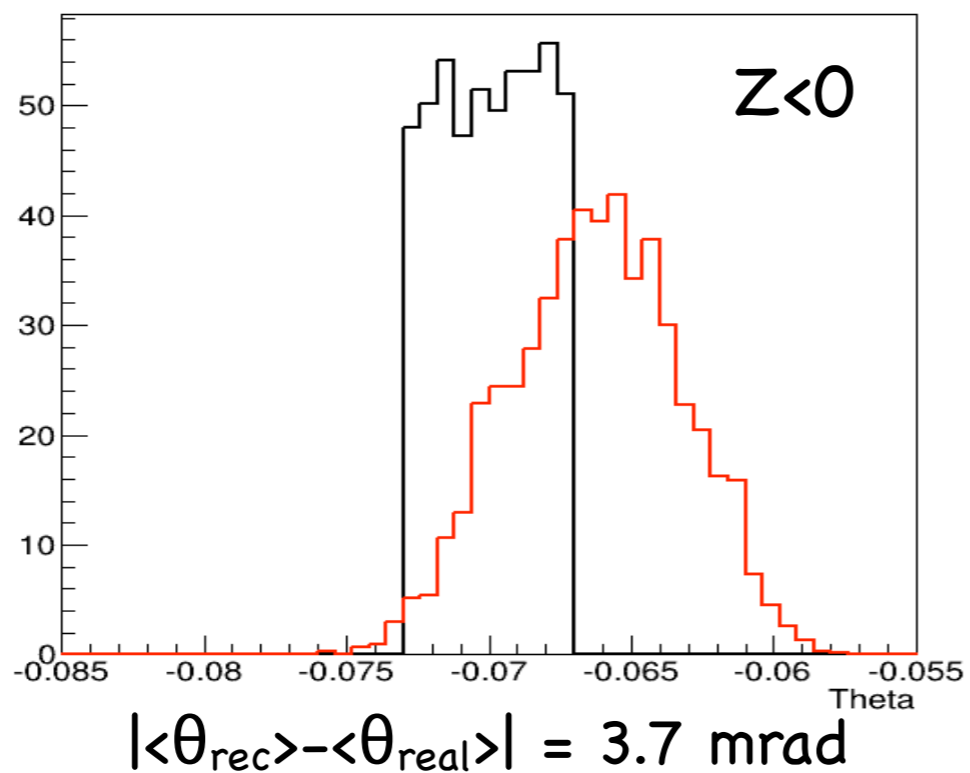
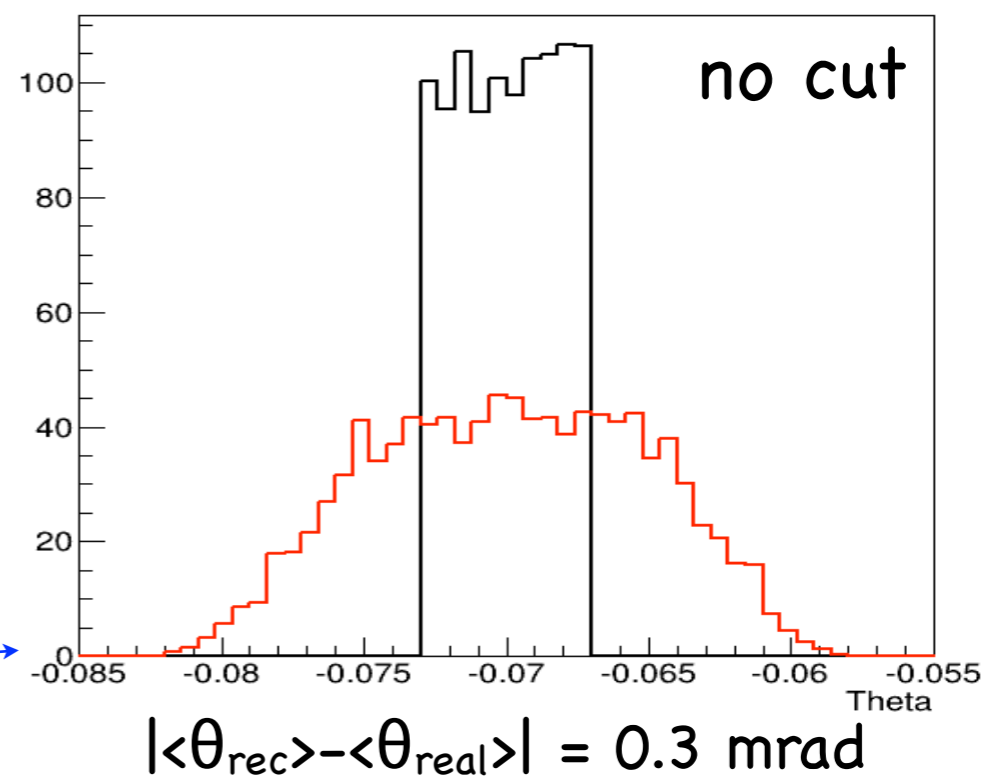
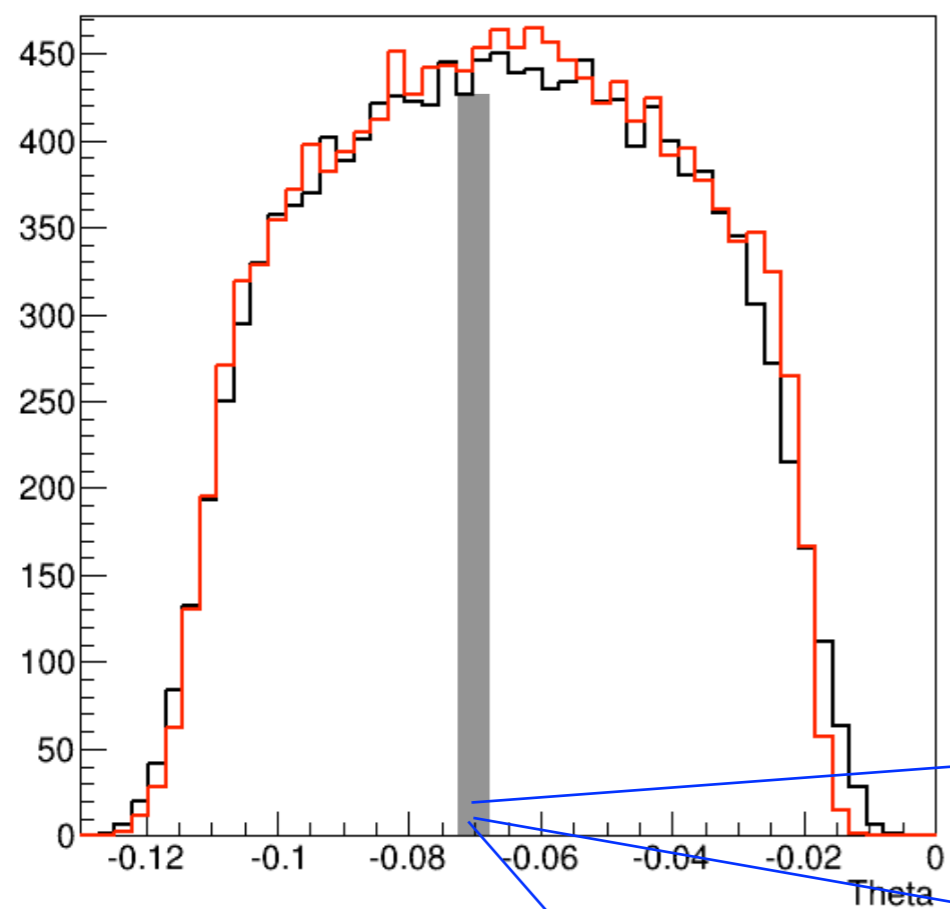
Simulation Package

- Since the reconstruction always stop at target plane with $z=0$, it is important to assume the target is symmetric along z direction
- This will not always be true
 - need to find some method to correct

Theta

Red : reconstructed

Black : original



Simulation Package

- TODO
 - Use the simulation package to study the broken septum
 - we have SNAKE model for 484816 and 400016 septum setting