

Dp simulation

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□ Smearing Source

- beam: $3e-5$
- VDC

$$\sigma_{x,y} \approx 0.1\text{mm}, \sigma_{th,ph} \approx 0.5\text{mrad}$$

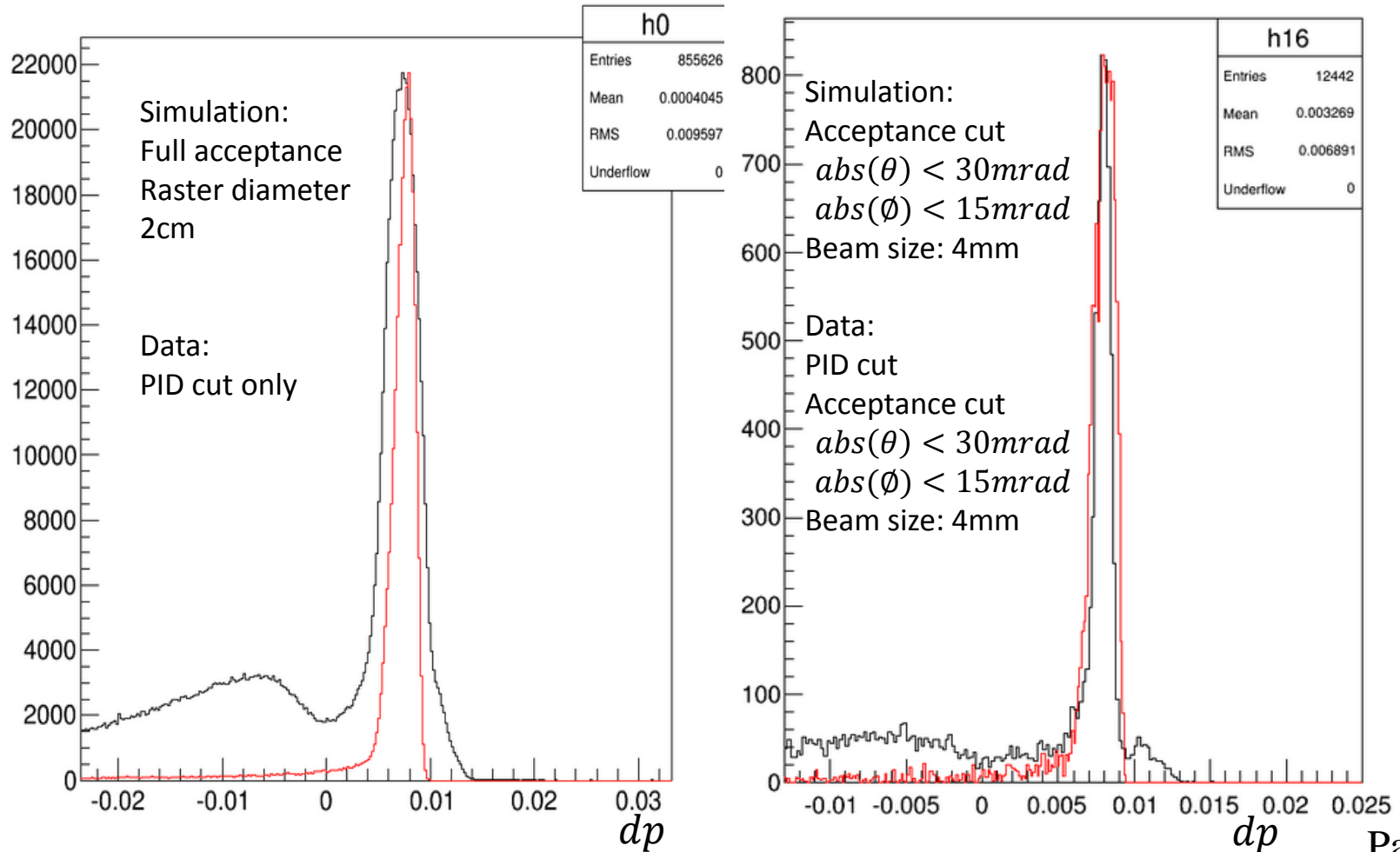
- Energy loss model
- Multiple Scattering
- Elastic scattering (dp versus angle)

Model vs Data

➤ 2.2 GeV, 5T, Longitudinal empty run 5650

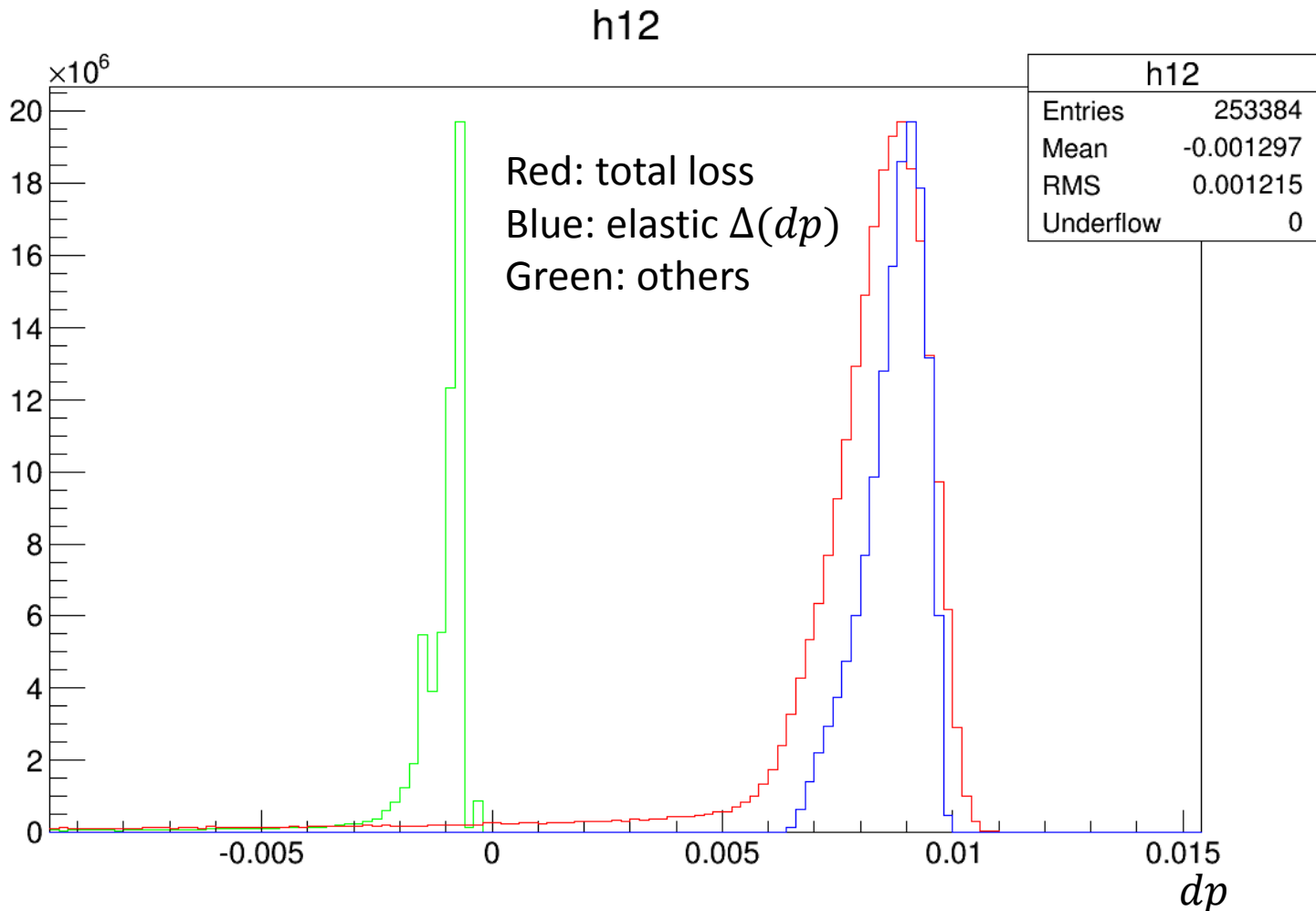
❑ Black: Data VS. Red: simulation: empty run

❑ $\sigma_{x,y} \approx 0.1\text{mm}, \sigma_{th,ph} \approx 0.5\text{mrad}$



Simulation dp

- Simulation dp decomposed to two parts:
 - Elastic scattering dp loss
 - Others: include ionization, internal + external bremsstrahlung

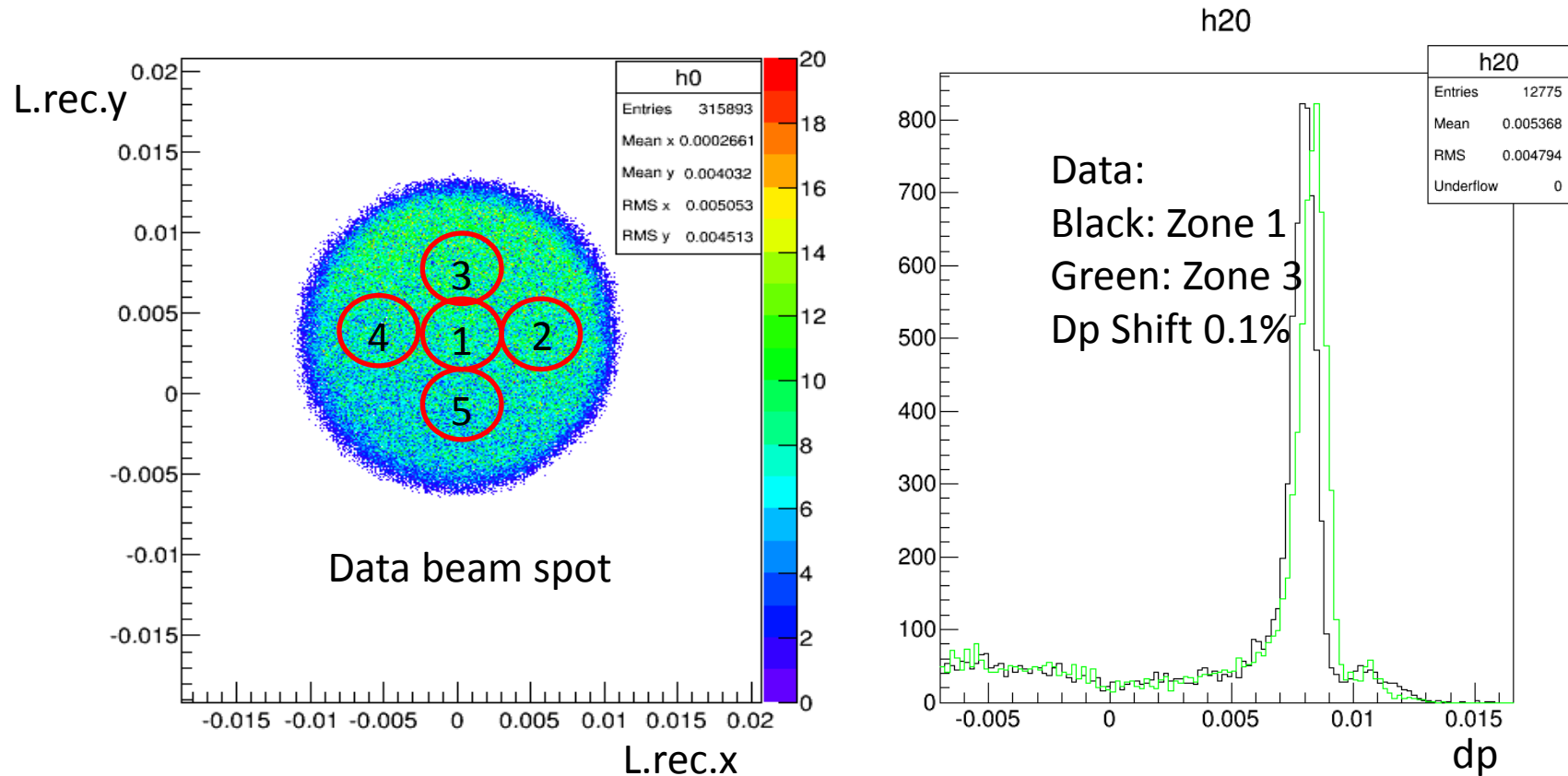


Data dp

➤ 2.2 GeV, 5T, Longitudinal empty run 5650

□ Problem: Full simulation dp narrower

- Divide the beam spot to 5 zones (each 2mm radius)
- Check dp difference

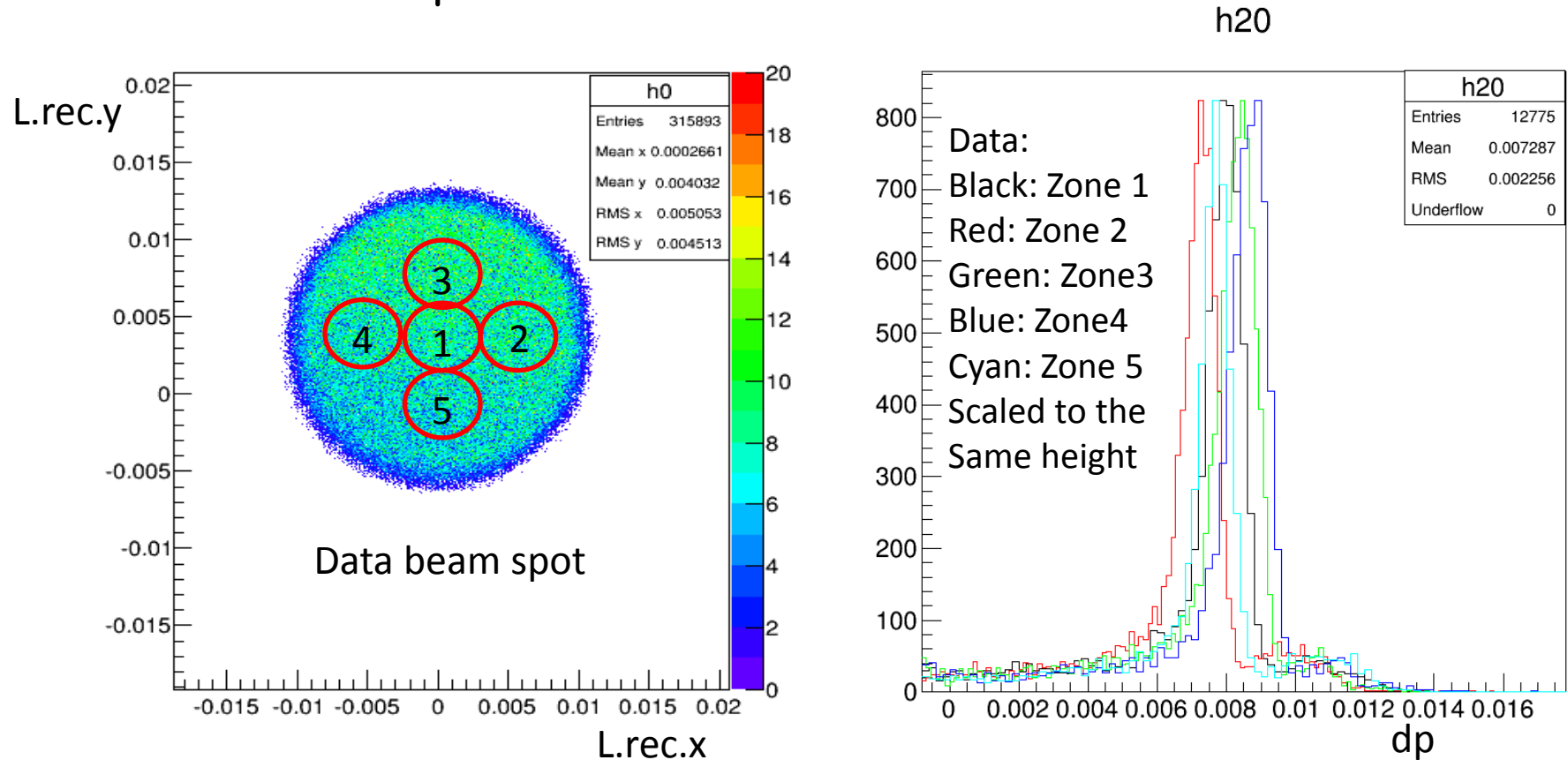


Data dp

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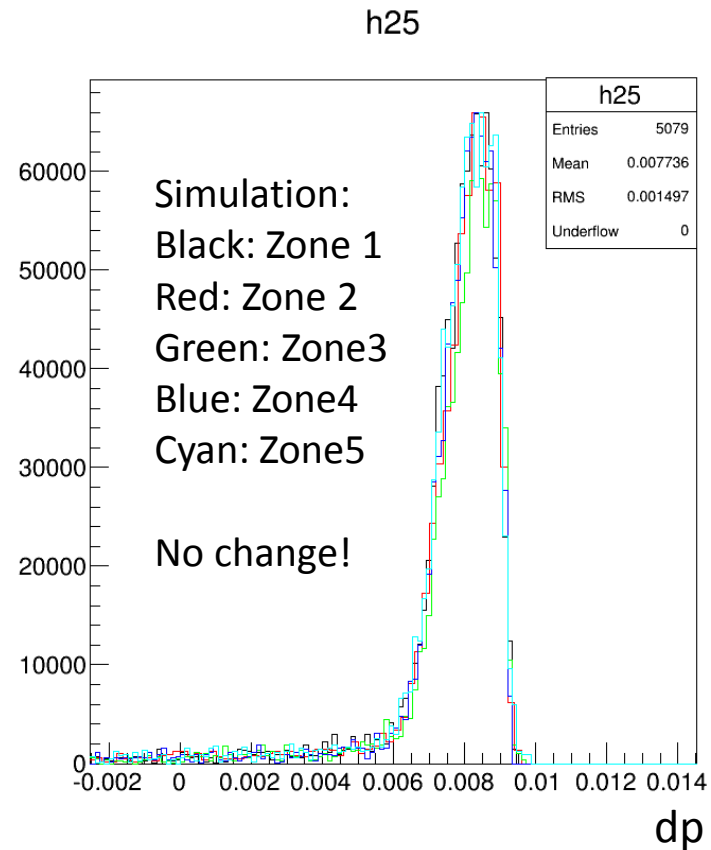
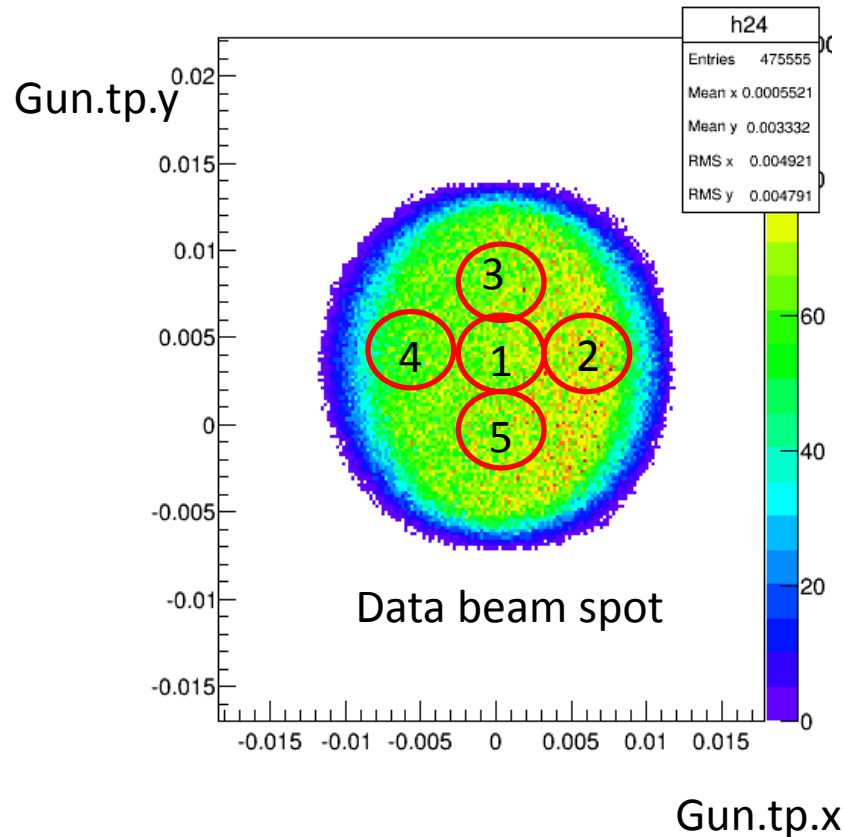
Simulation Dp

➤ 2.2 GeV, 5T, Longitudinal empty run 5650

❑ Problem: Full simulation dp narrower

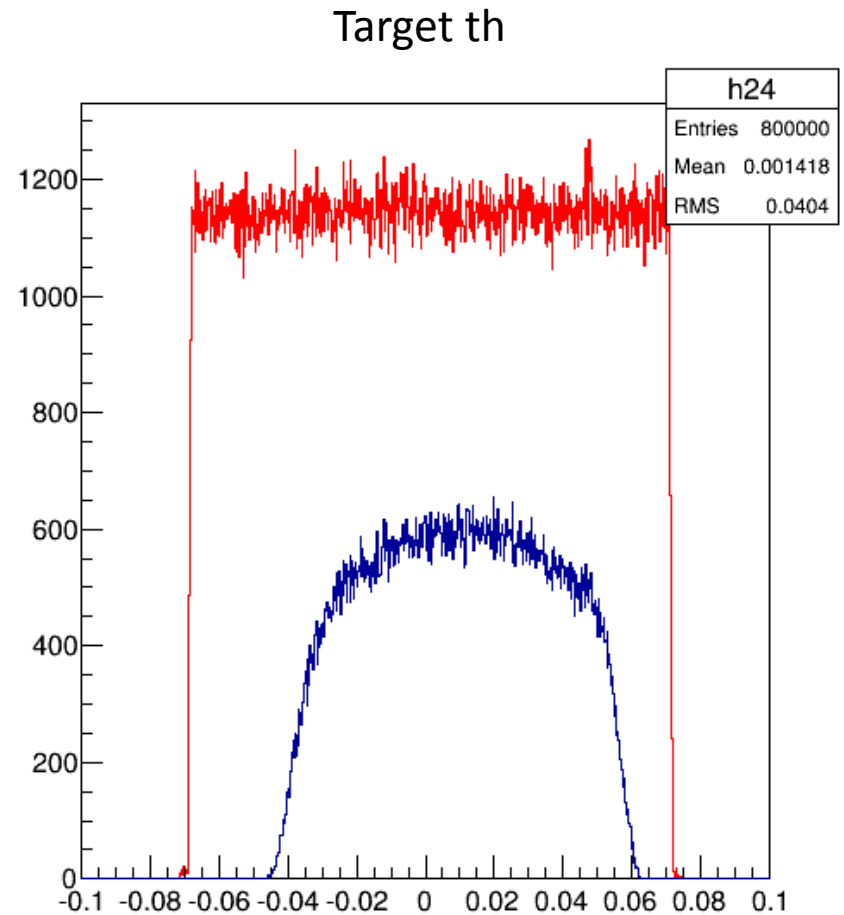
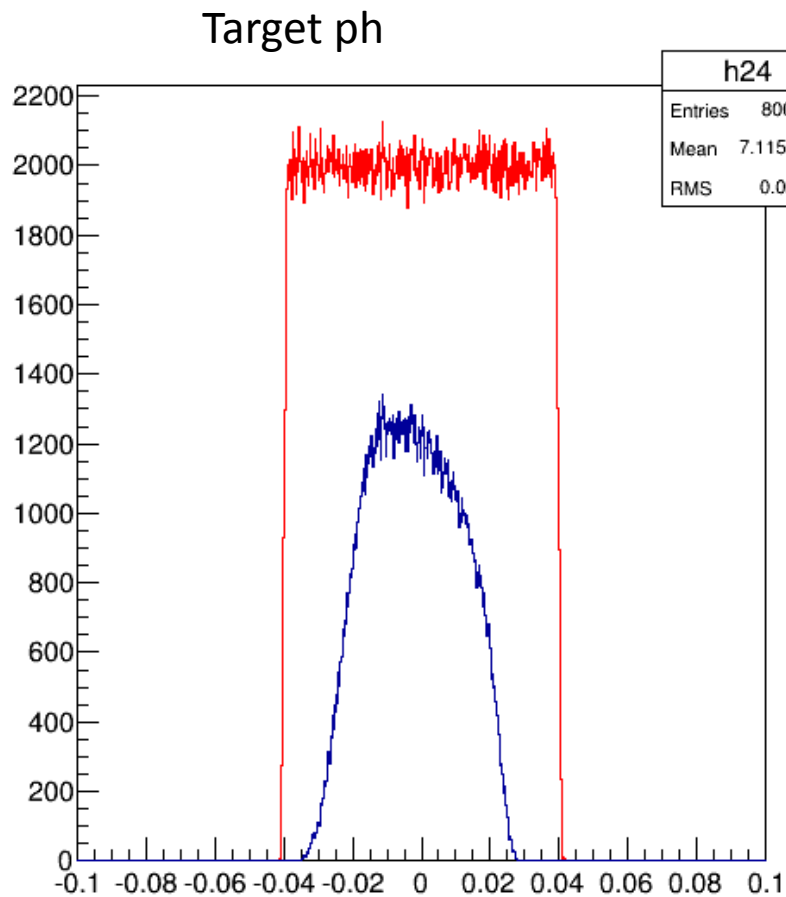
- Divide the beam spot to 5 zones (each 2mm radius)
- Check dp difference

gun.tp.x:gun.tp.y {isgood}



Acceptance

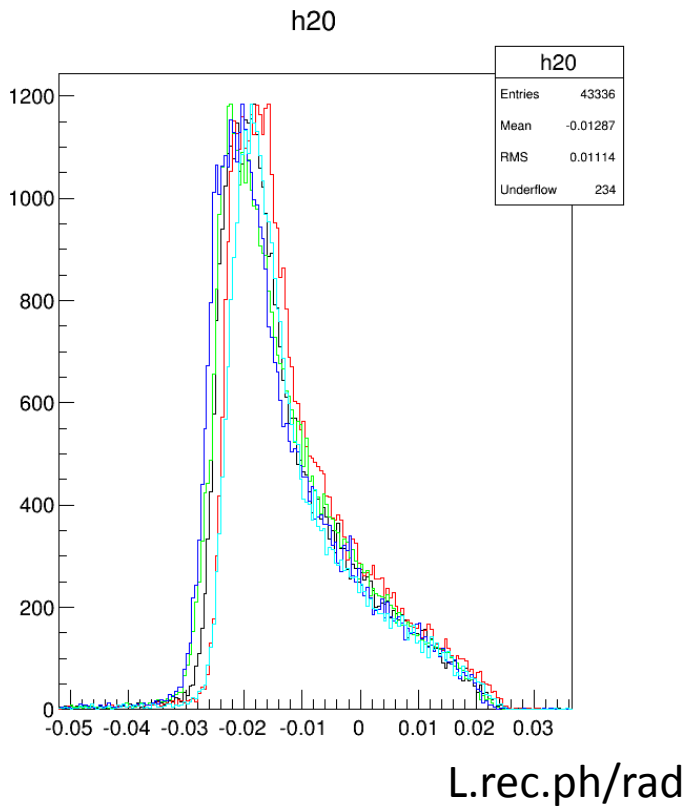
- 1st, Simulation cover full acceptance



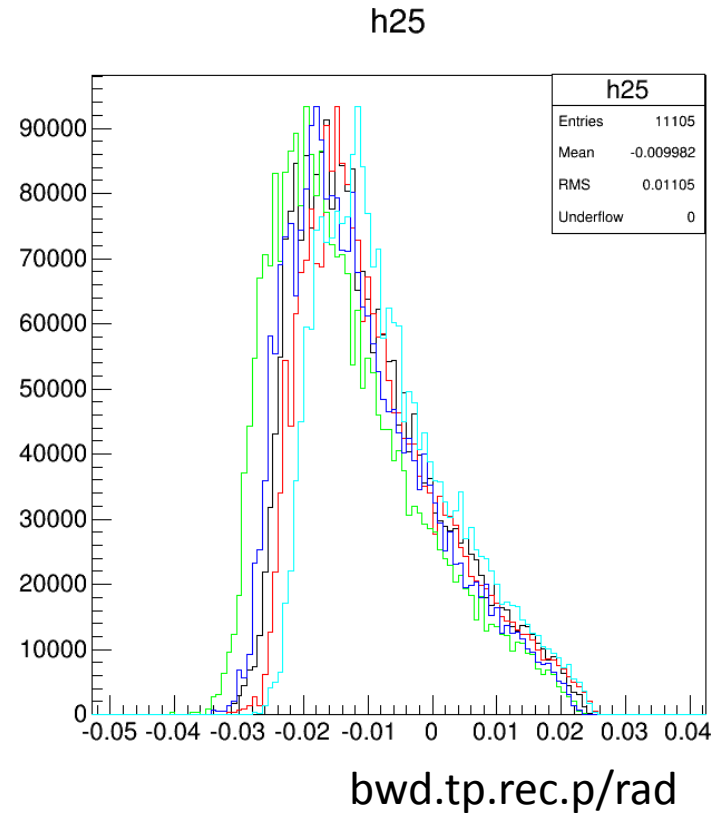
Acceptance (Data vs Simu)

- Target ph (5 zones)

Data target ph distribution



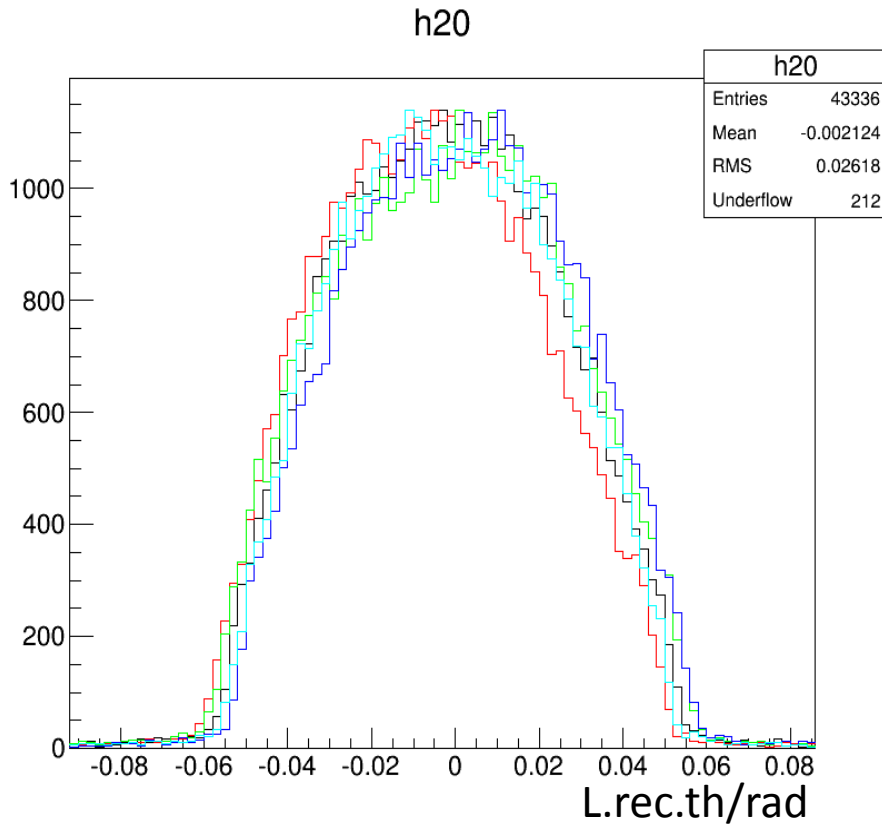
Simulated target ph distribution



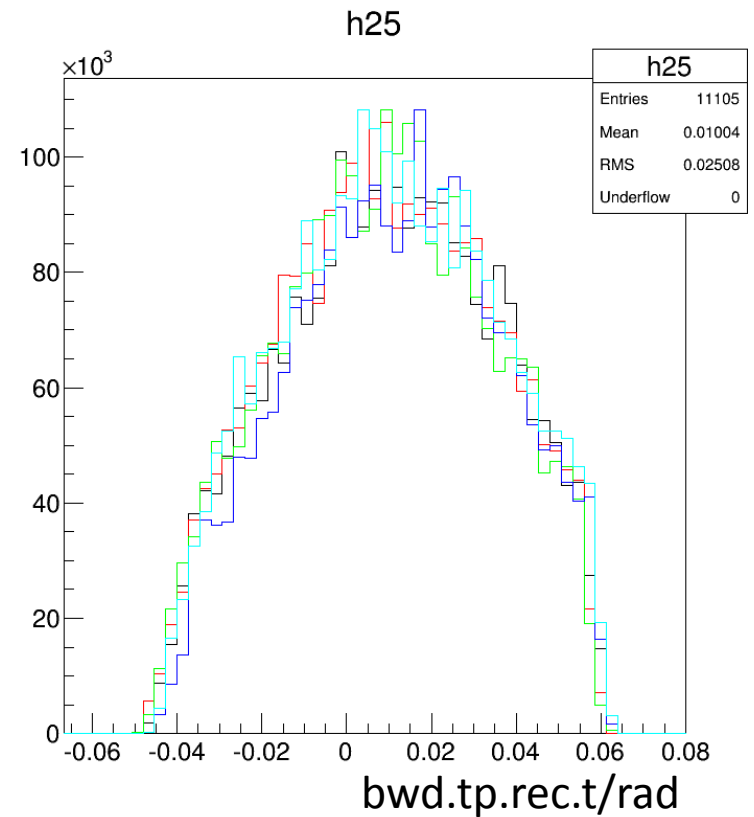
Acceptance (Data vs Simu)

- Target th (5 zones)

Data target th distribution

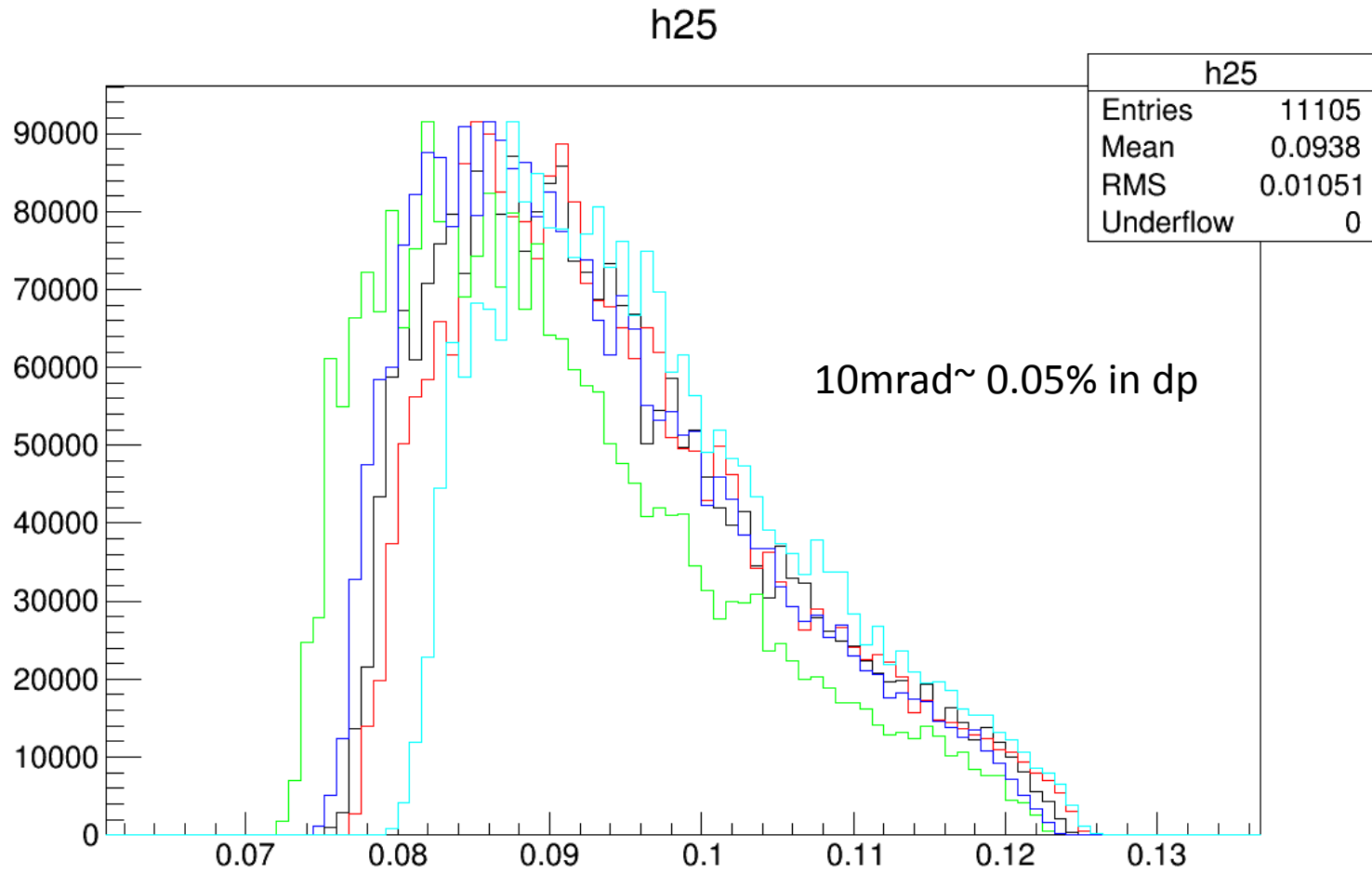


Simulated target th distribution



Acceptance

➤ Simulated Scattering Angle distribution



Todo

- Simulation dp narrower - Suggestions?