

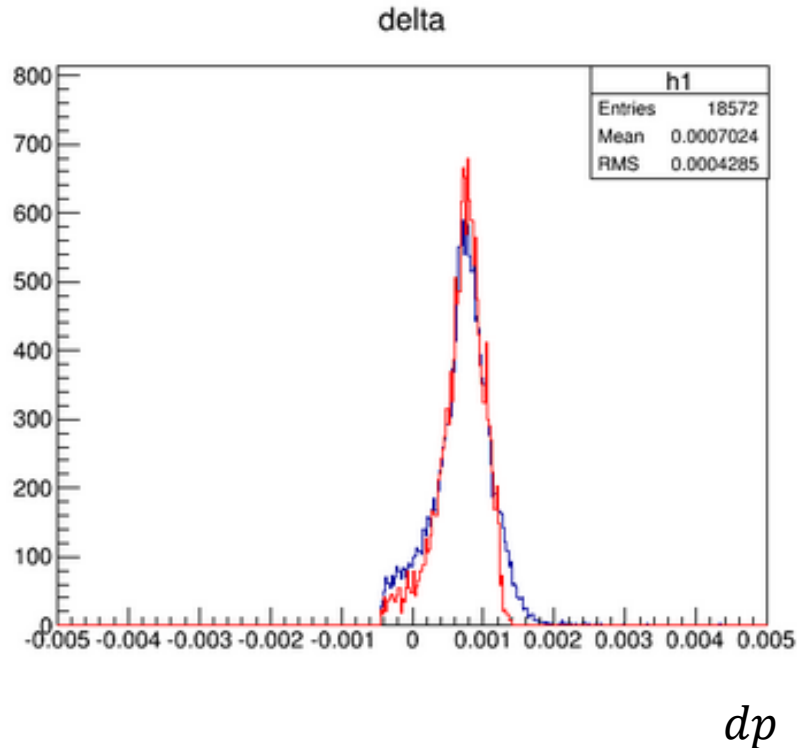
# Dp Distribution

Jie Liu

11/19/2014

## Last time Review

# Model vs Data

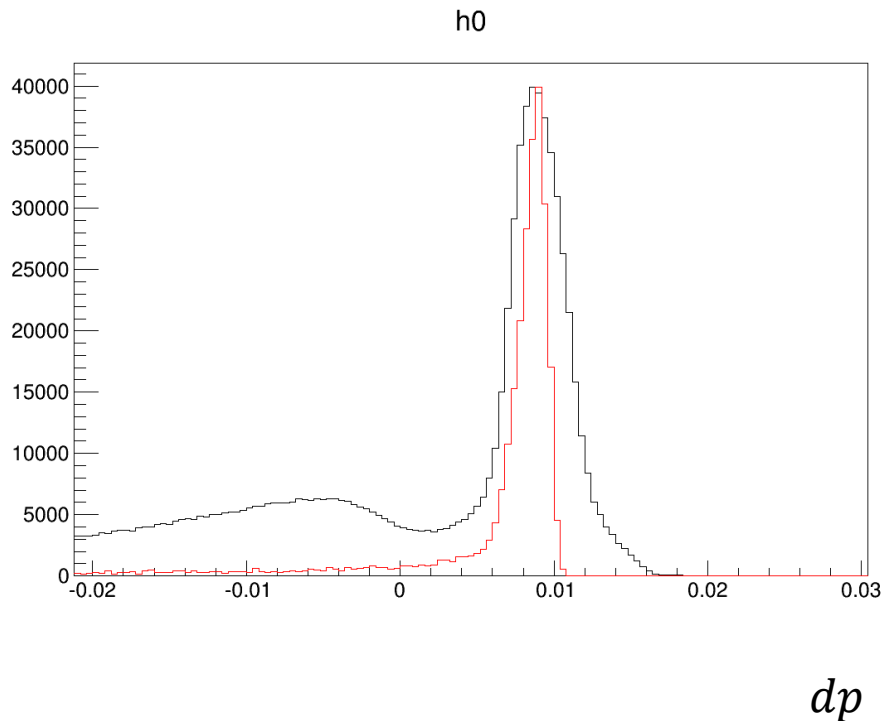


- ❑ Blue: from data, *C* w/o He optics
- ❑ Red: is from simulation:  
ioni fluctuation  
+ internal+external brems.
- ❑ Total sieve holes

2.2 GeV, straight through Carbon without LHe run

# Last time Review

## Model vs Data



- ❑ Total energy loss simulation compared with data
- ❑ Blue: from data
- ❑ Red: is from simulation:  
**ioni fluctuation**  
+ internal+external brem.

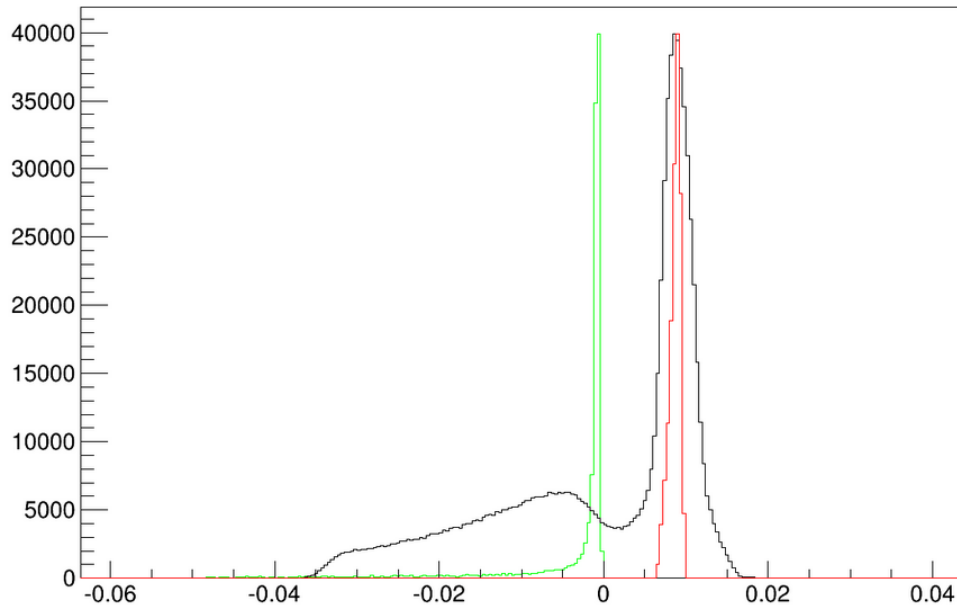


Simulation width narrower

2.2 GeV, 5T **empty** Run 5650

## Last time Review

# Model vs Data



- Total energy loss simulation compared with data
- Blue: from data
- Green: energy loss due to ionization and bremsstrahlung
- Red:  $dp$  distribution due to elastic scattering
- Other cause the width larger?

$dp$

2.2 GeV, 5T **empty** Run 5650

Simulation width smaller

## □ Smearing Source

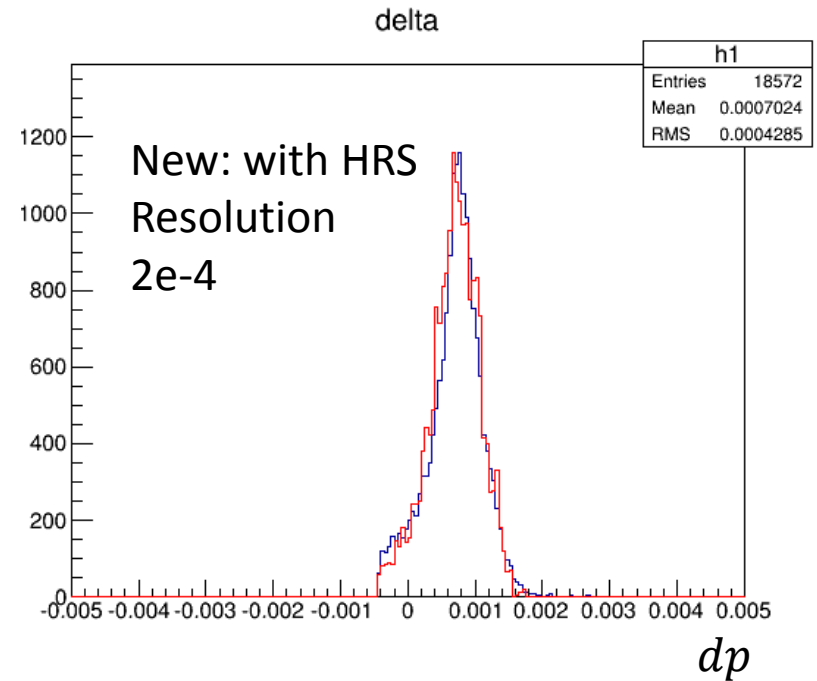
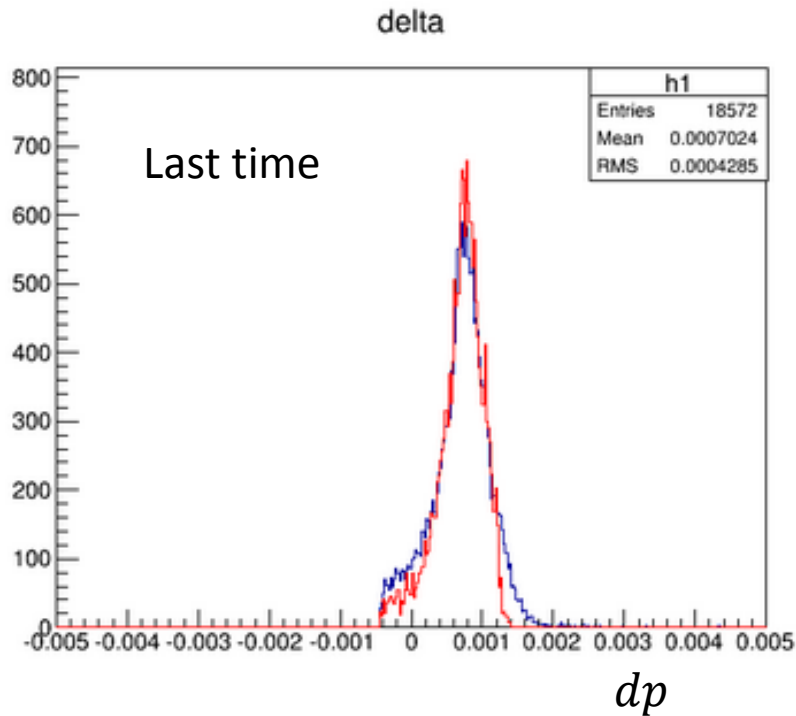
- beam:  $3e-5$
- VDC

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

- Energy loss model
- Multiple Scattering
- Elastic scattering (dp versus angle)
- HRS momentum:  $2e-4$  New

# Model vs Data - previous run

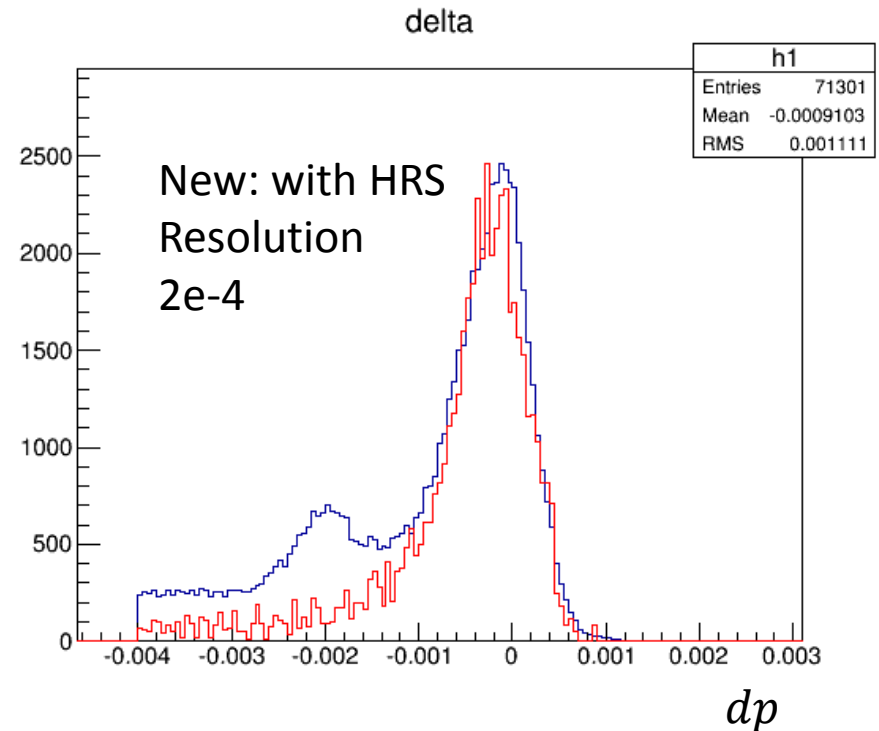
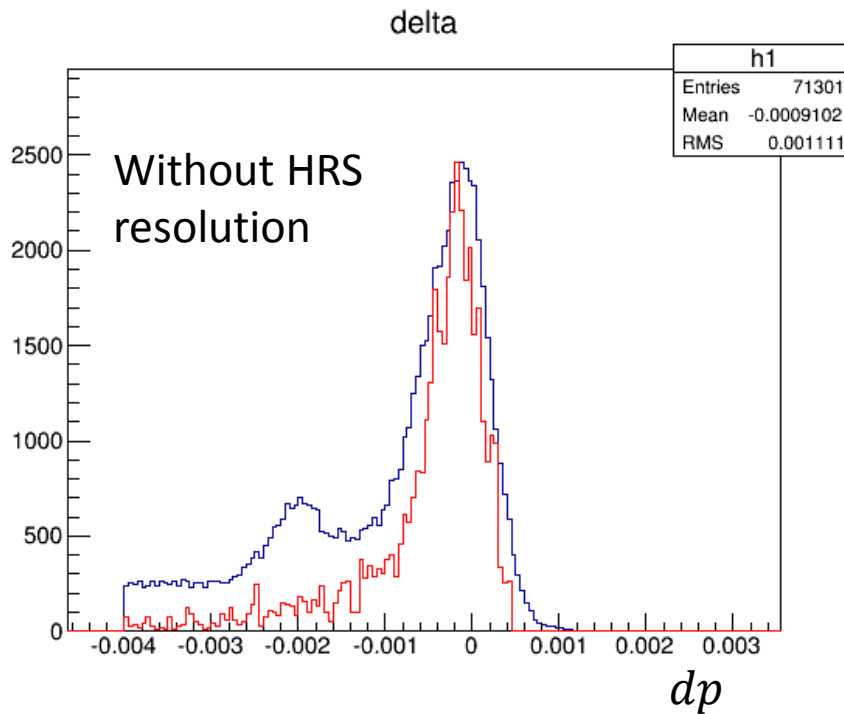
2.2 GeV, **straight through 40 mil** Carbon without LHe run



- Blue: from data, C w/o He optics
- Red: is from simulation:
- Total sieve holes

# Model vs Data

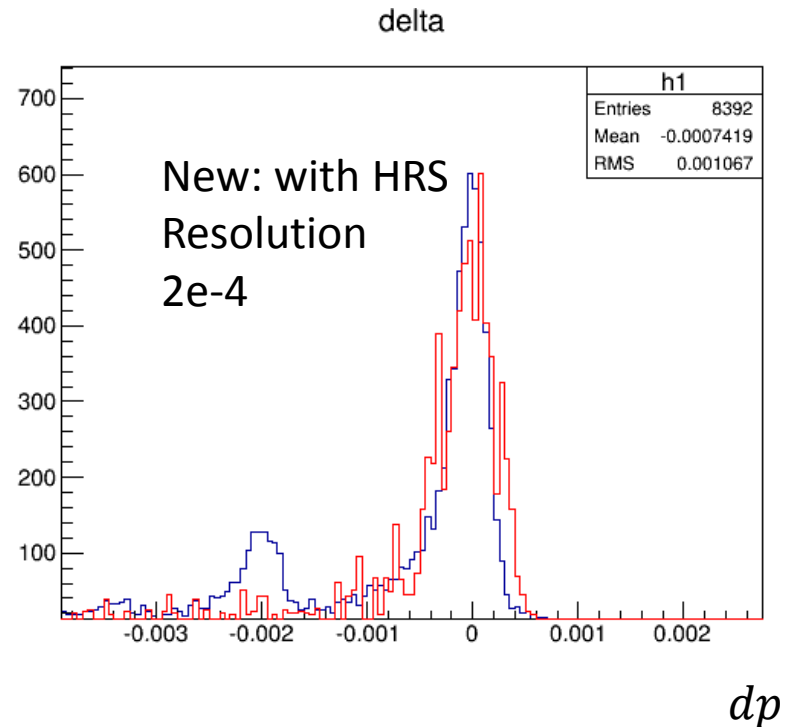
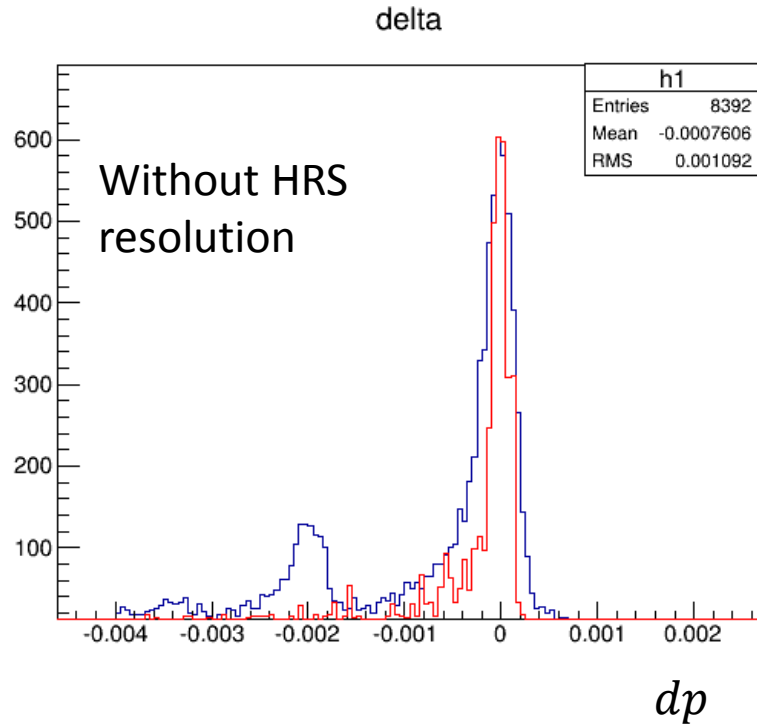
2.2 GeV, 5T, Longitudinal 125mil Carbon without LHe run



- Blue: from data
- Red: is from simulation:
- Total sieve holes

# Model vs Data

2.2 GeV, 5T, Longitudinal 125 mil Carbon without LHe run

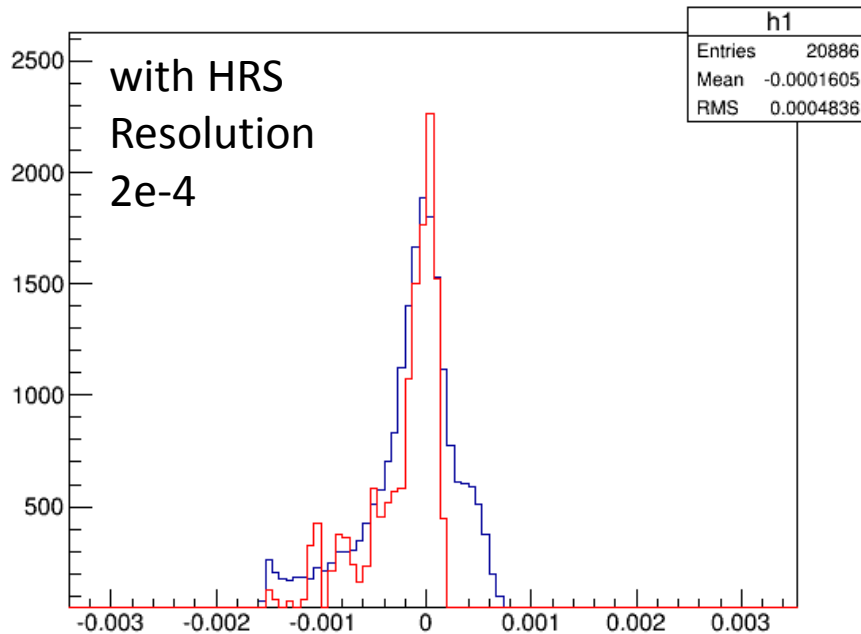


- Blue: from data
- Red: is from simulation:
  - Center sieve hole



# Model vs Data

2.2 GeV, 5T, Longitudinal 125 mil Carbon with LHe run

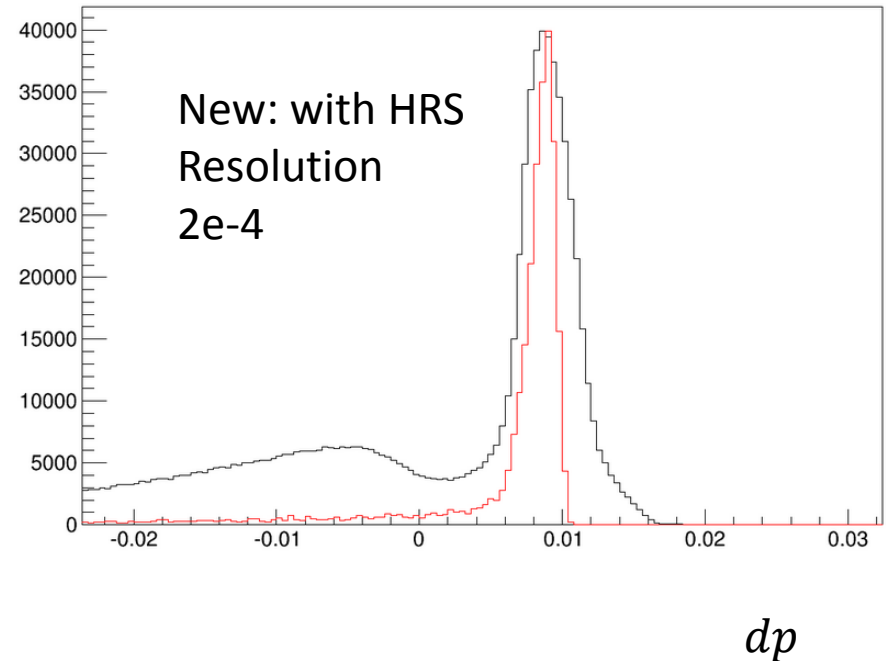
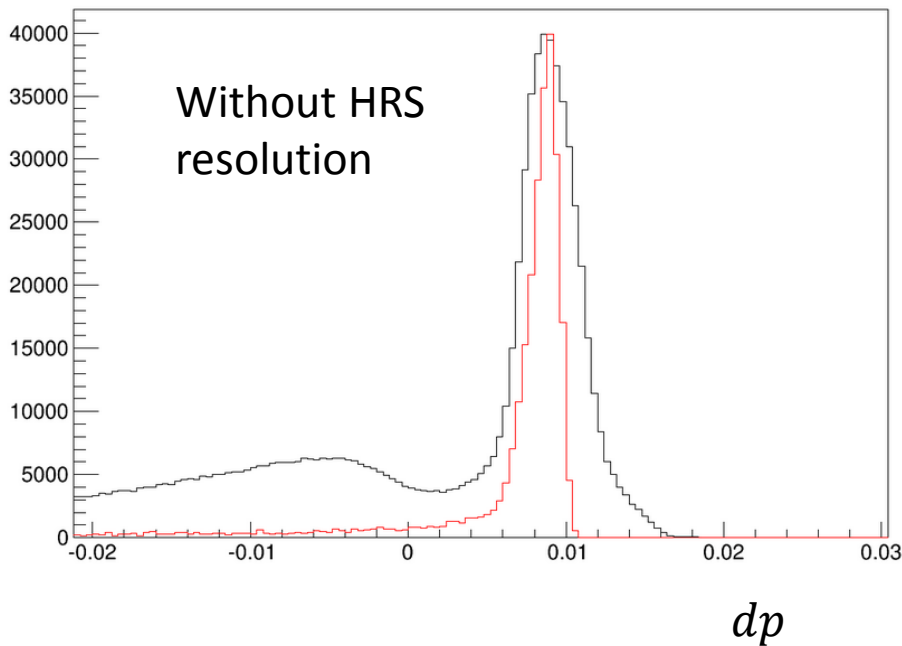


- Blue: from data
- Red: is from simulation:
  - Center sieve hole

$dp$

# Model vs Data

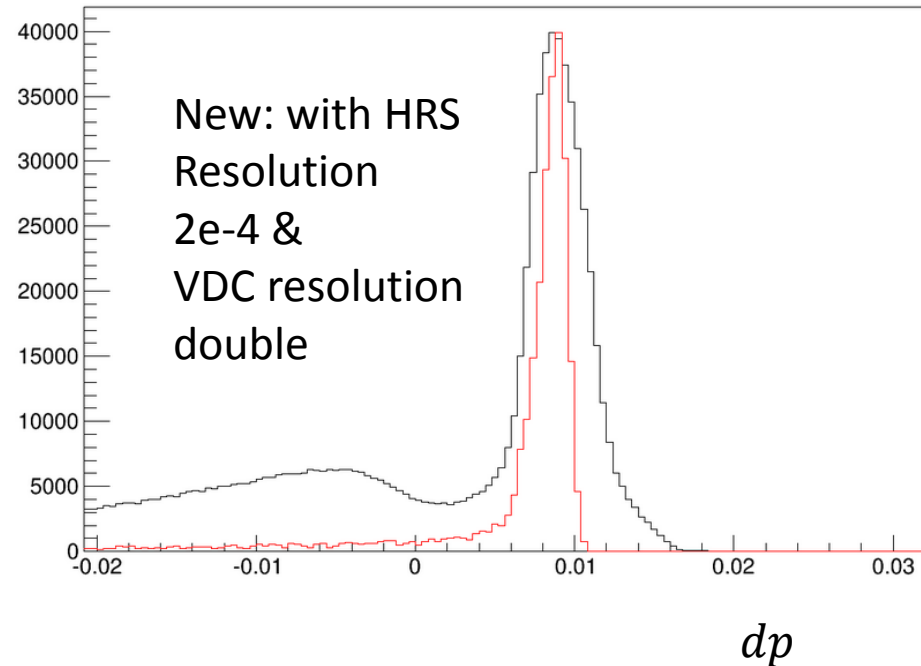
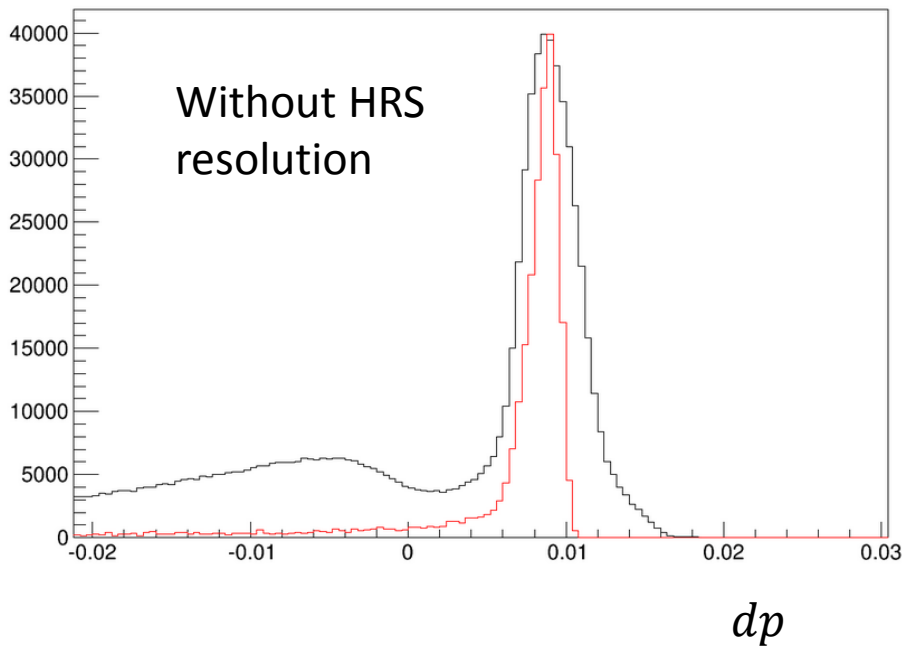
2.2 GeV, 5T, Longitudinal empty run 5650



- Blue: from data
- Red: is from simulation:
- Total sieve holes

# Model vs Data

2.2 GeV, 5T, Longitudinal empty run 5650



- Blue: from data
- Red: is from simulation:
- Total sieve holes

# Todo

- Simulation width too small?
- Any suggestions?
- Will update the package these two days