## parameters in simulation

| Components | Radius(mm) | Half Z (mm) | $\sigma_{R\emptyset}(\mu m)$ | $\sigma_z(\mu m)$ | Thickness($X_0$ %) |
|---|---|---|---|---|---|
| Beam Tube | 10.35 | 3000 | | | 0.14 |
| VTX | 12.3/14.4/35.5/37.5/58.3/60.3 | 200 | 2.8/6/4/4/4/4 | 2.8/6/4/4/4/4 | 0.053 |
| VTX-shell | 65 | 220 | | | 0.14 |
| Inner track | 70/100/590 | 371/664/1220 | 7.2/10 | 43/43 | 0.65 |
| DC inner wall | 600 | 2980 | | | 0.51 |
| DC(66) | 610-1790 | 2980 | | | 0.013 |
| DC outer wall | 1800 | 2980 | | | 1.3 |
| SET | 1811 | 2980 | 7.2/14.4/21.7/10 | 43/43/2890/1000 | 1.0 |

mass of particles：0.106 GeV
Polar angle theta：85 deg

# dpt/pt & dpt/pt² at different resolution in python

Momentum resolution
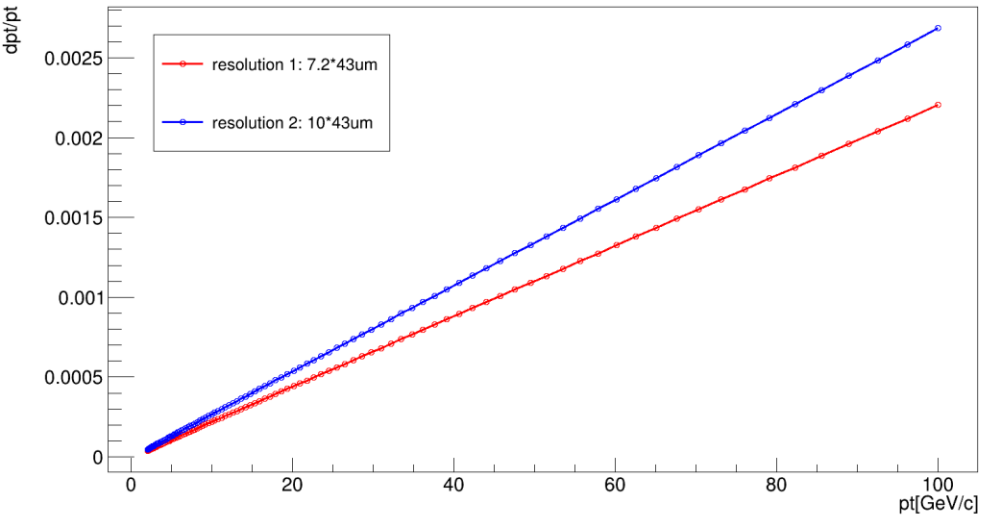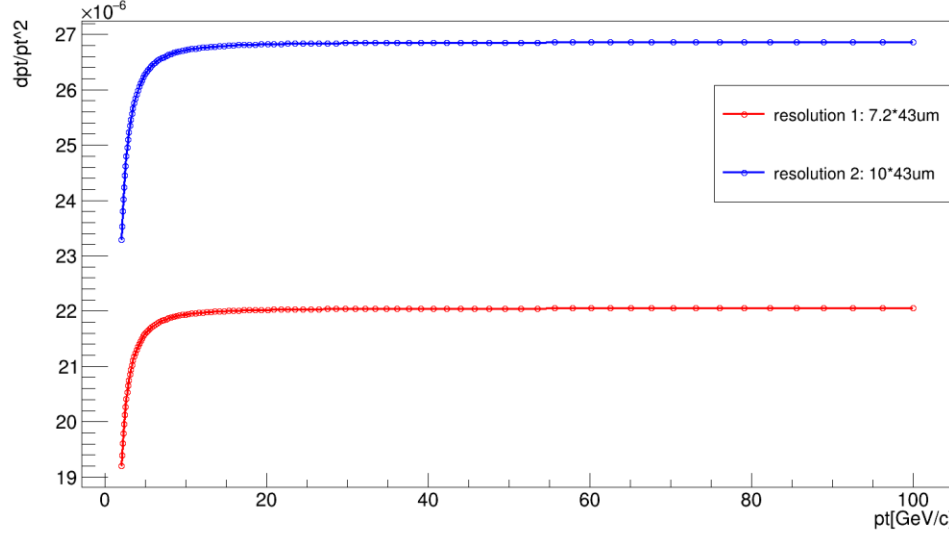normalised: σ(1/pT)
= a ± b/pT



dpt/pt in different otk resolution
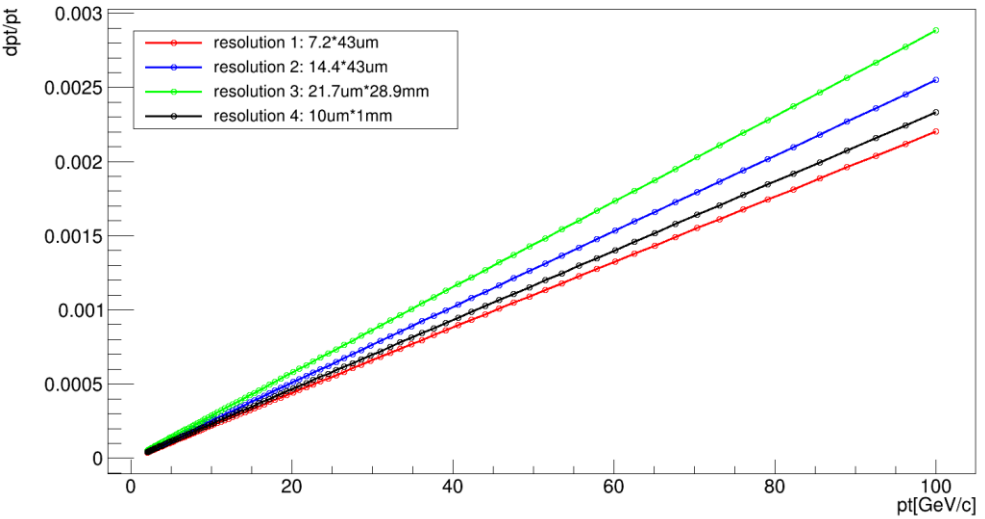


dpt/pt^2 in different otk resolution
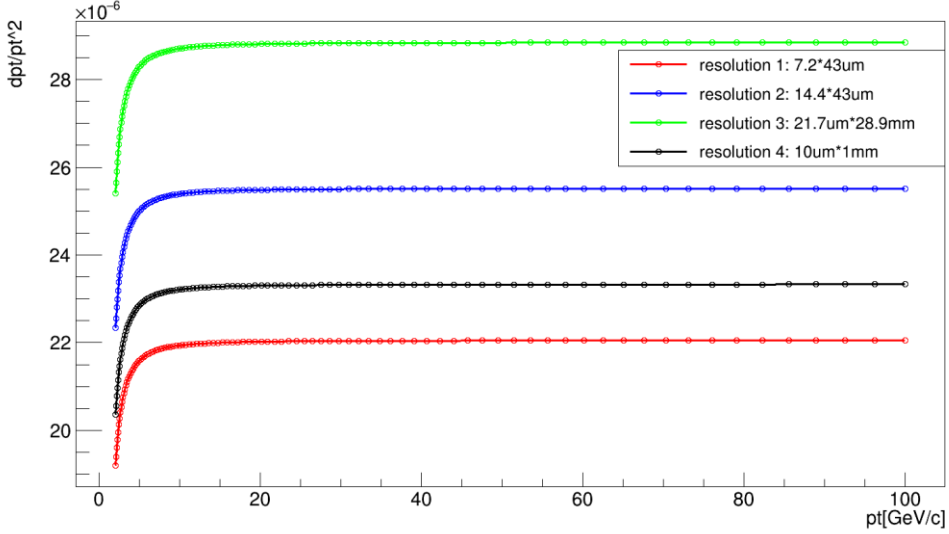


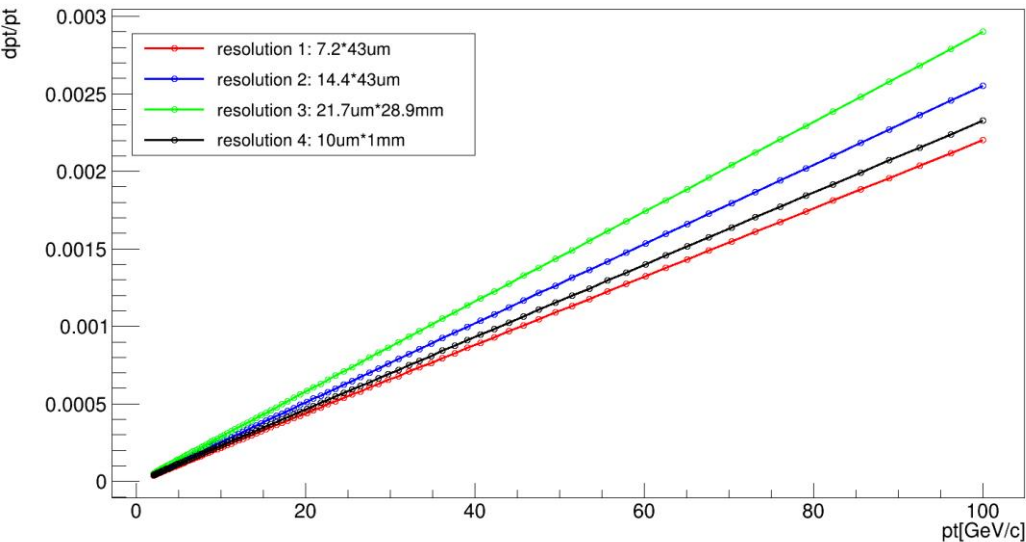dpt/pt in different itk resolution



dpt/pt^2 in different itk resolution

**case1:**

| | |
|---|---|
| inner= | 7.2um*43um |
| outer= | 7.2um*43um |
| | 14.4um*43um |
| | 21.7um*28.9mm |
| | 10um*1mm |
| **a*e5=** | **2.20** |
| | **2.55** |
| | **2.88** |
| | **2.33** |

**case2:**

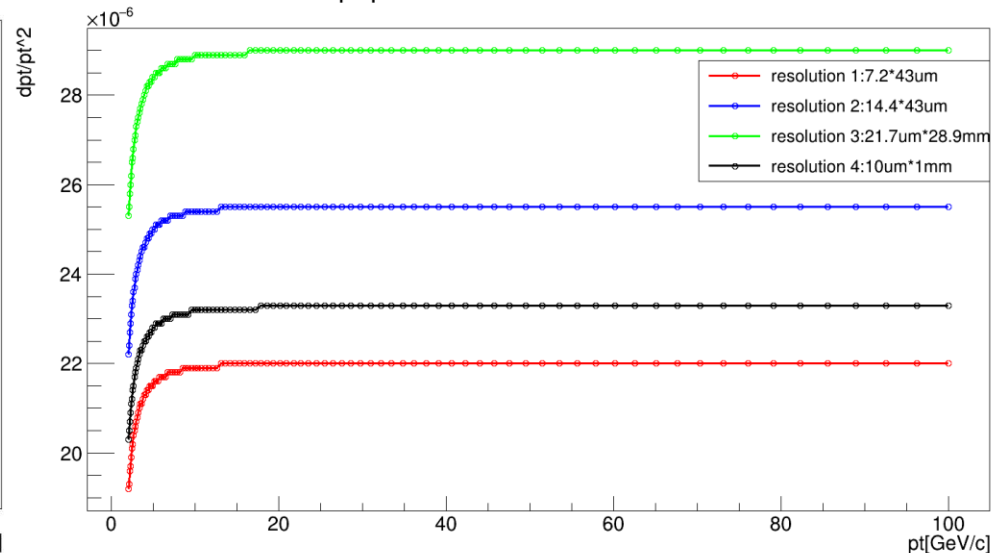| | |
|---|---|
| inner= | 7.2um*43um |
| | 10um*43um |
| outer= | 7.2um*43um |
| **a*e5=** | **2.20** |
| | **2.68** |

# dpt/pt & dpt/pt$^2$ at different resolution in LDT

Momentum resolution normalised: σ(1/pT) = a ± b/pT
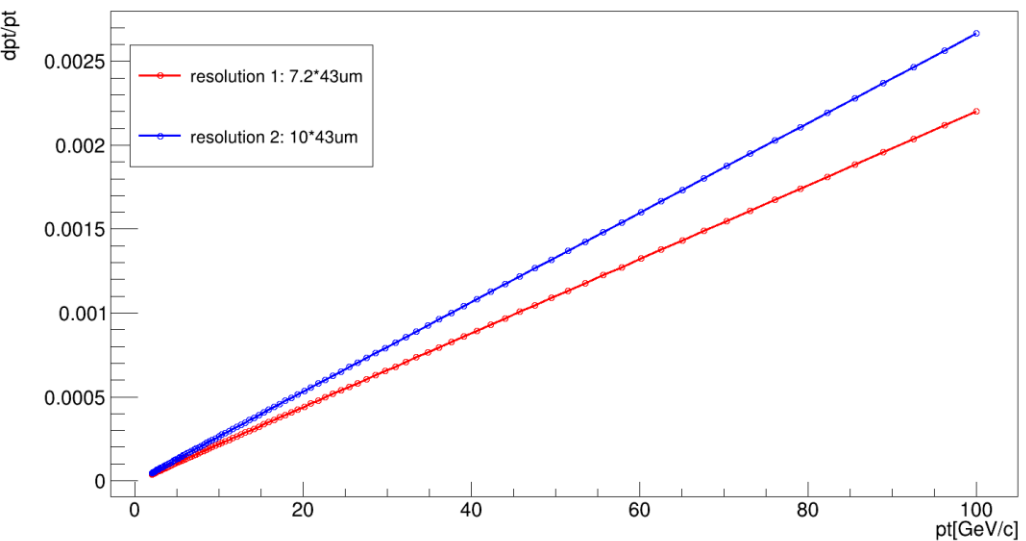
### dpt/pt in different otk resolution



Legend:
- resolution 1: 7.2*43um
- resolution 2: 14.4*43um
- resolution 3: 21.7um*28.9mm
- resolution 4: 10um*1mm

### dpt/pt^2 in different otk resolution



Legend:
- resolution 1:7.2*43um
- resolution 2:14.4*43um
- resolution 3:21.7um*28.9mm
- resolution 4:10um*1mm

### dpt/pt in different itk resolution



Legend:
- resolution 1: 7.2*43um
- resolution 2: 10*43um

### dpt/pt^2 in different itk resolution



Legend:
- resolution 1:7.2*43um
- resolution 2:10*43um

**case1:**

| inner= | 7.2um*43um |
|--------|------------|
| outer= | 7.2um*43um |
| | 14.4um*43um |
| | 21.7um*28.9mm |
| | 10um*1mm |

a*e5=   2.20
        2.55
        2.90
        2.33

**case2:**

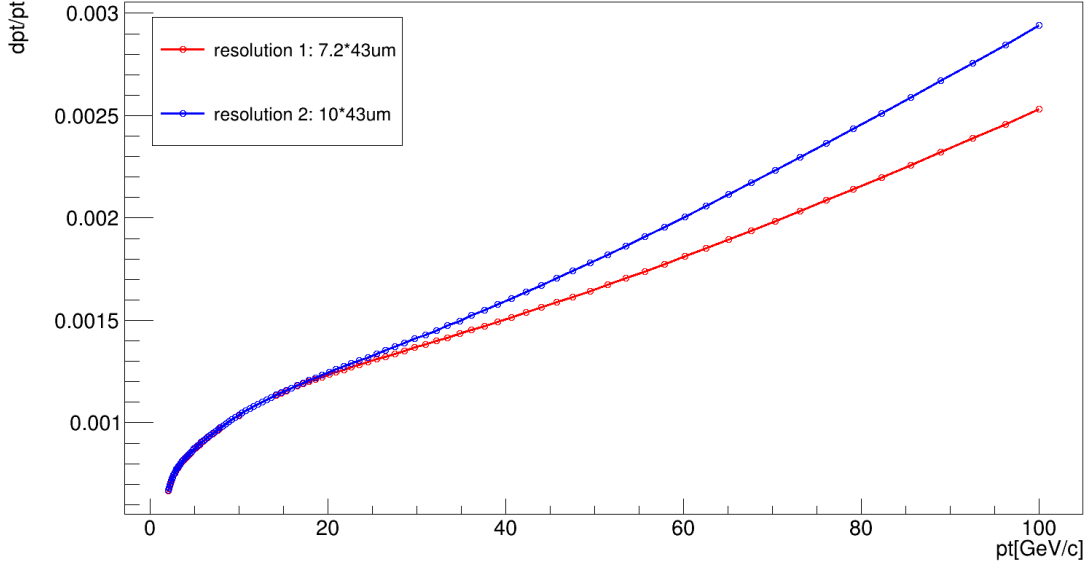| inner= | 7.2um*43um |
|--------|------------|
| | 10um*43um |
| outer= | 7.2um*43um |

a*e5 =   2.20
         2.67

# dpt/pt at different resolution with Multiple scattering in python

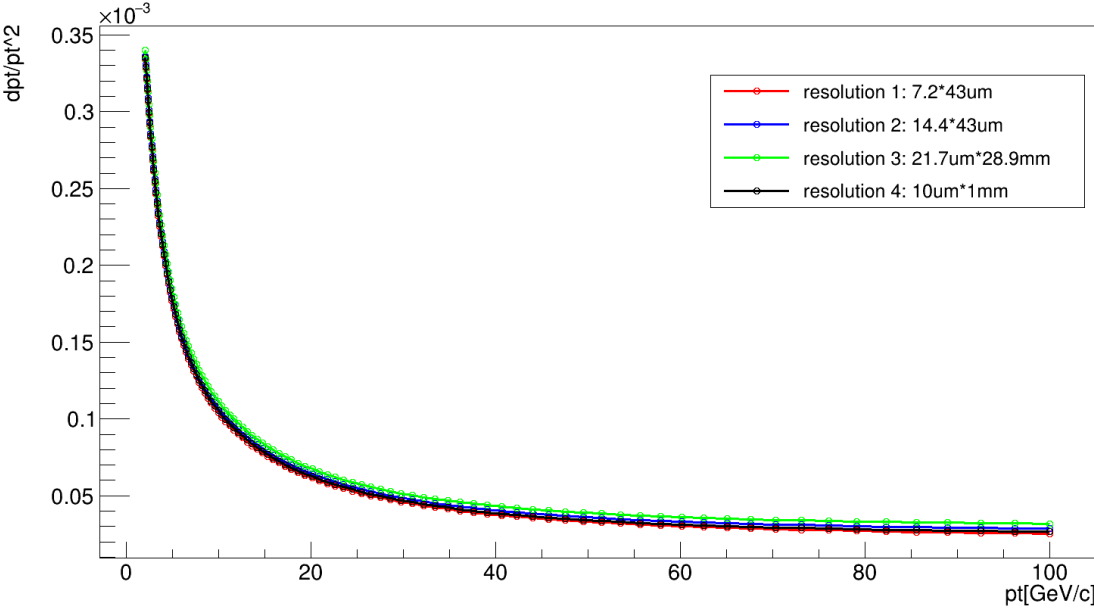

dpt/pt in different otk resolution

resolution 1: 7.2*43um
resolution 2: 14.4*43um
resolution 3: 21.7um*28.9mm
resolution 4: 10um*1mm

dpt/pt in different itk resolution

resolution 1: 7.2*43um
resolution 2: 10*43um
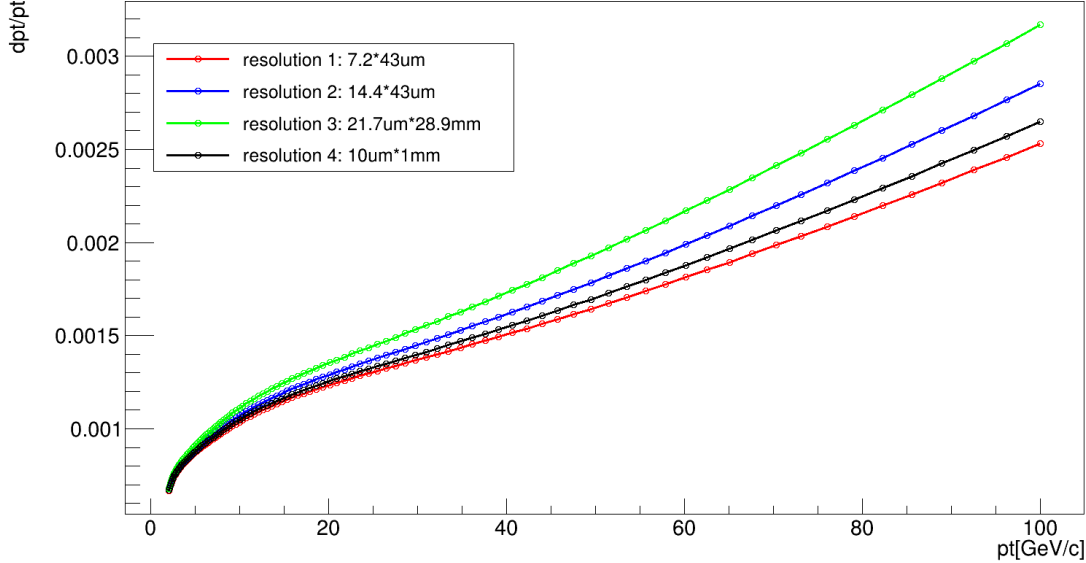
# back up



dpt/pt^2 in different otk resolution

- resolution 1: 7.2*43um
- resolution 2: 14.4*43um
- resolution 3: 21.7um*28.9mm
- resolution 4: 10um*1mm

dpt/pt^2 in different itk resolution

- resolution 1: 7.2*43um
- resolution 2: 10*43um