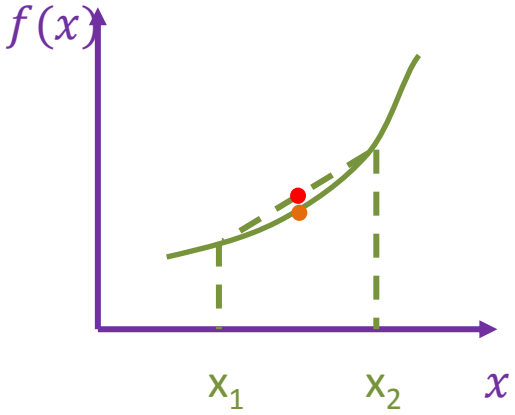
dEdx correction order check

WangMeng

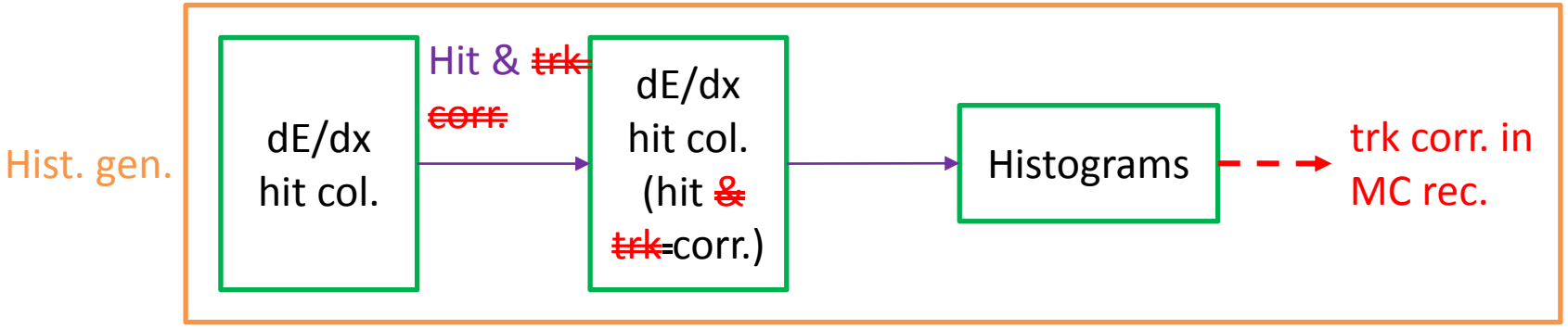
1.Modifications in reconstruncion: TestOrder4

- The correction order is non-trivial, as the track correction is not linear



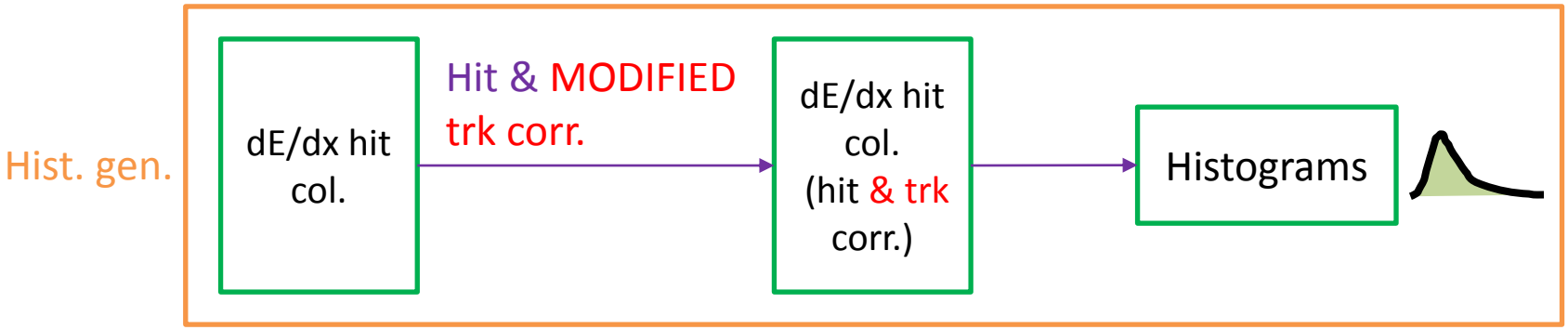
$$\frac{f(x_1)+f(x_2)}{2} \neq f\left(\frac{x_1+x_2}{2}\right)$$

- We propose a method that sampling from the hit-corrected-only data, and perform the track correction in MC reconstruction(**TestOrder4**).



1.Modifications in reconstruncion: TestOrder5

- We are testing another approach, in which we still sample the hit & trk corrected data, but with a modified track correction.(**TestOrder5**)

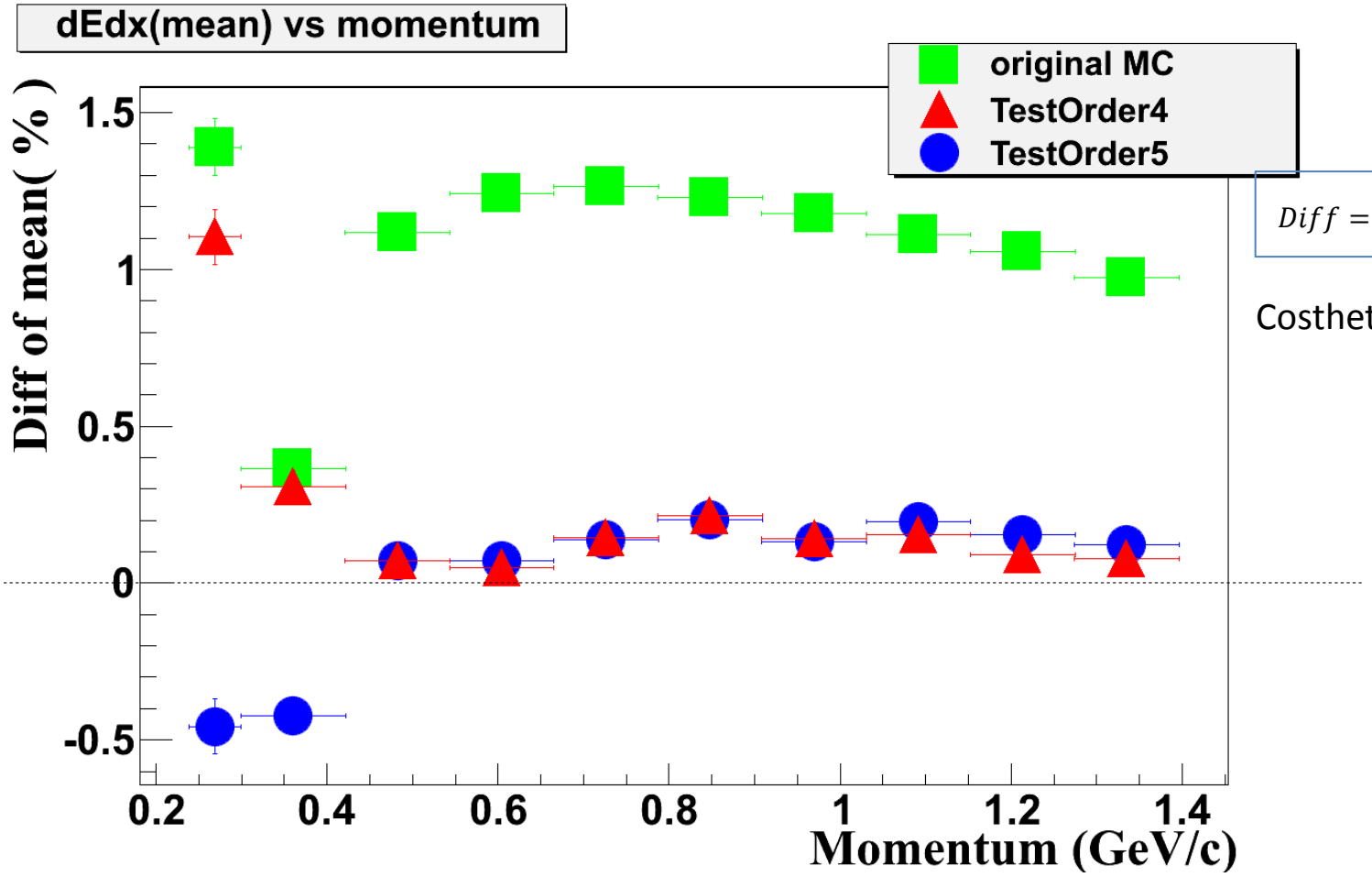


The old way: $f(x_1), f(x_2), \ldots, f(x_n)$ → Truncate & average → $\overline{f(x)}$

The new way: $\frac{x_1 f(\bar{x})}{\bar{x}}, \ldots, \frac{x_n f(\bar{x})}{\bar{x}}$ → Truncate & average → $f(\bar{x})$ **This is exactly what we need**

where x_i = dE/dx for the i^{th} hit in a track, $f(x)$ is the track correction function

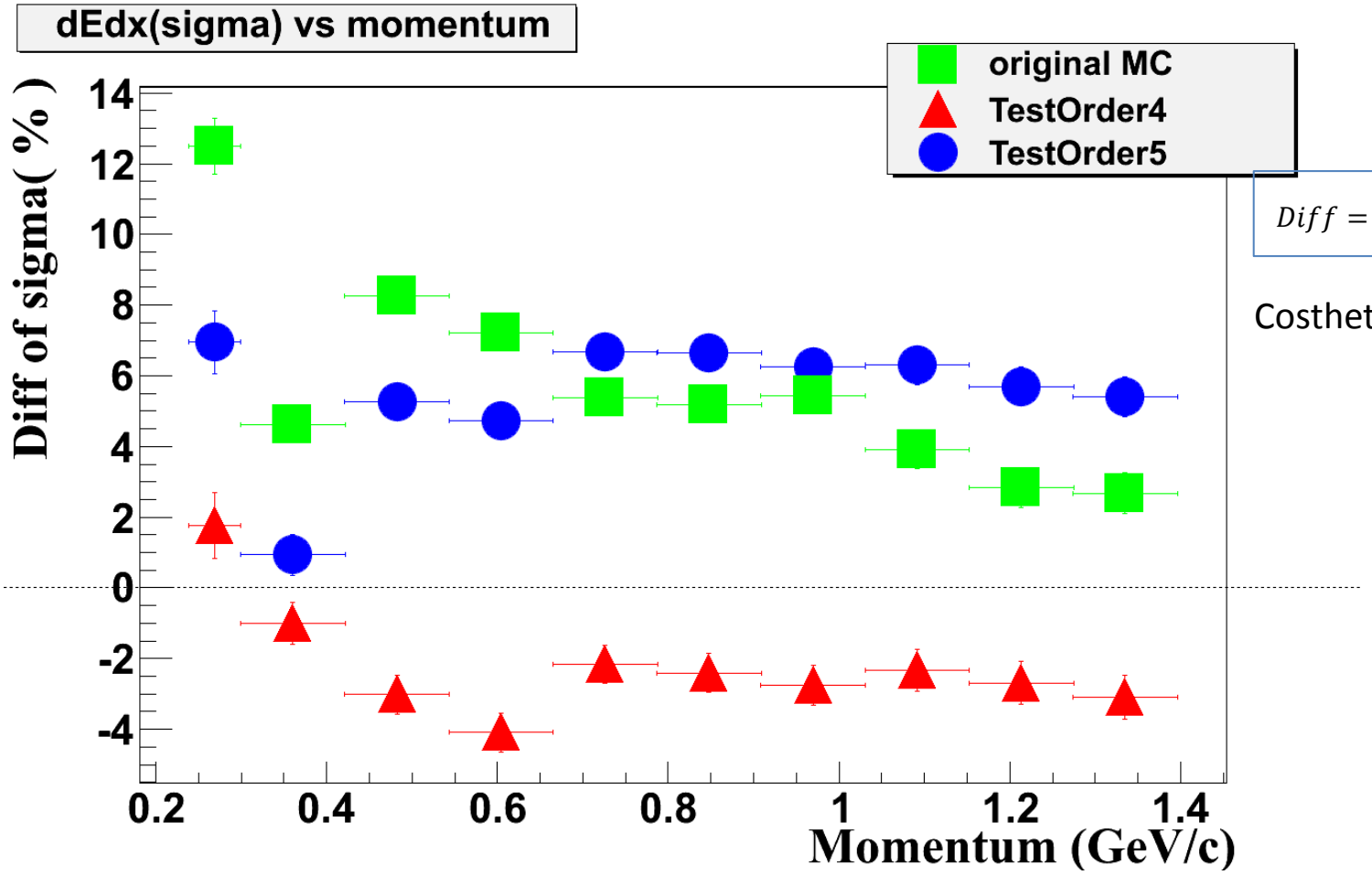
2.Check results :(1)
dEdx(mean) vs momentum (pion)



$$Diff = \frac{data - MC}{data}$$

Costheta:12 bins

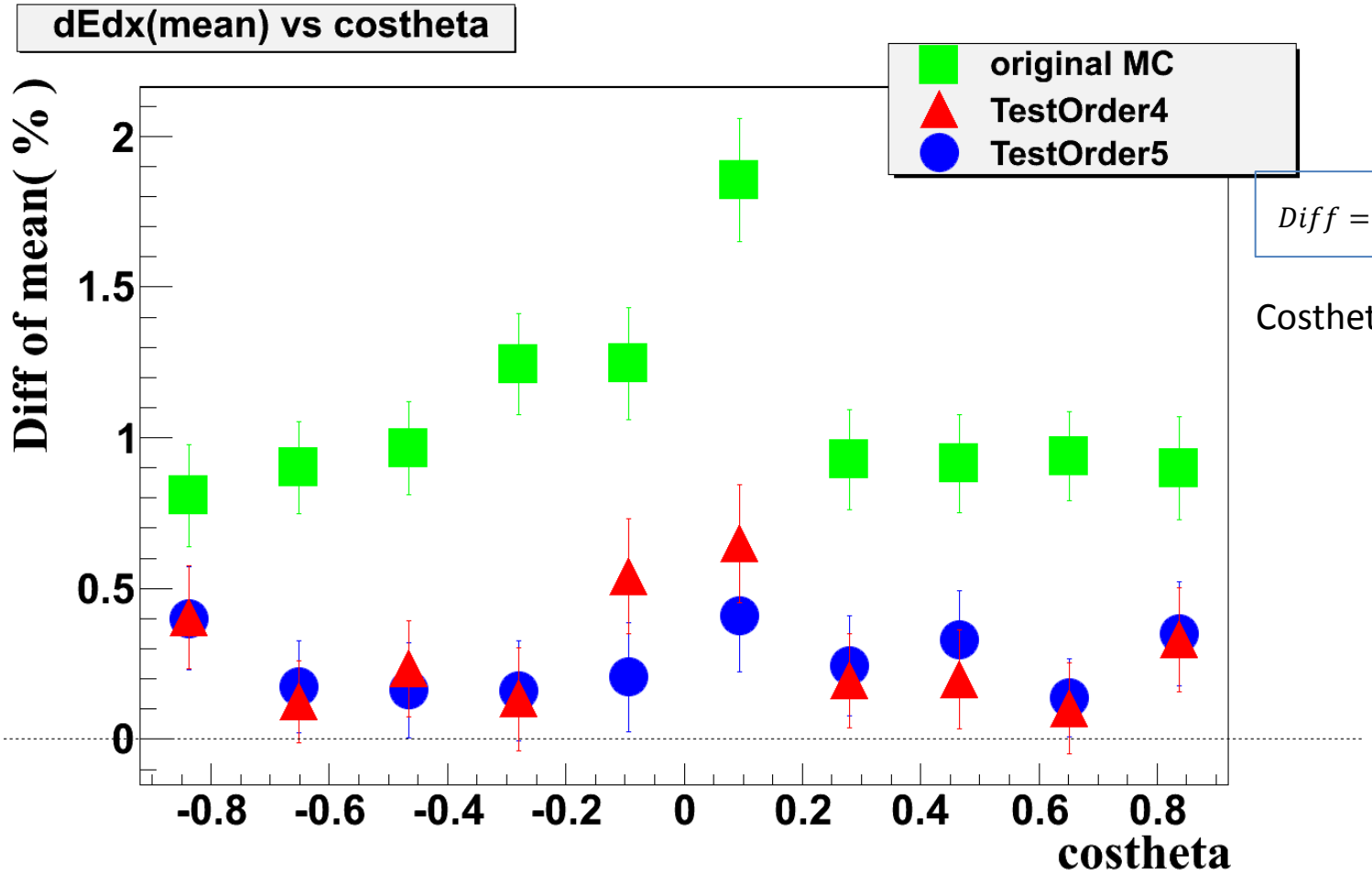
2.Check results :(1)
dEdx(sigma) vs momentum (pion)



$$Diff = \frac{data - MC}{data}$$

Costheta:12 bins

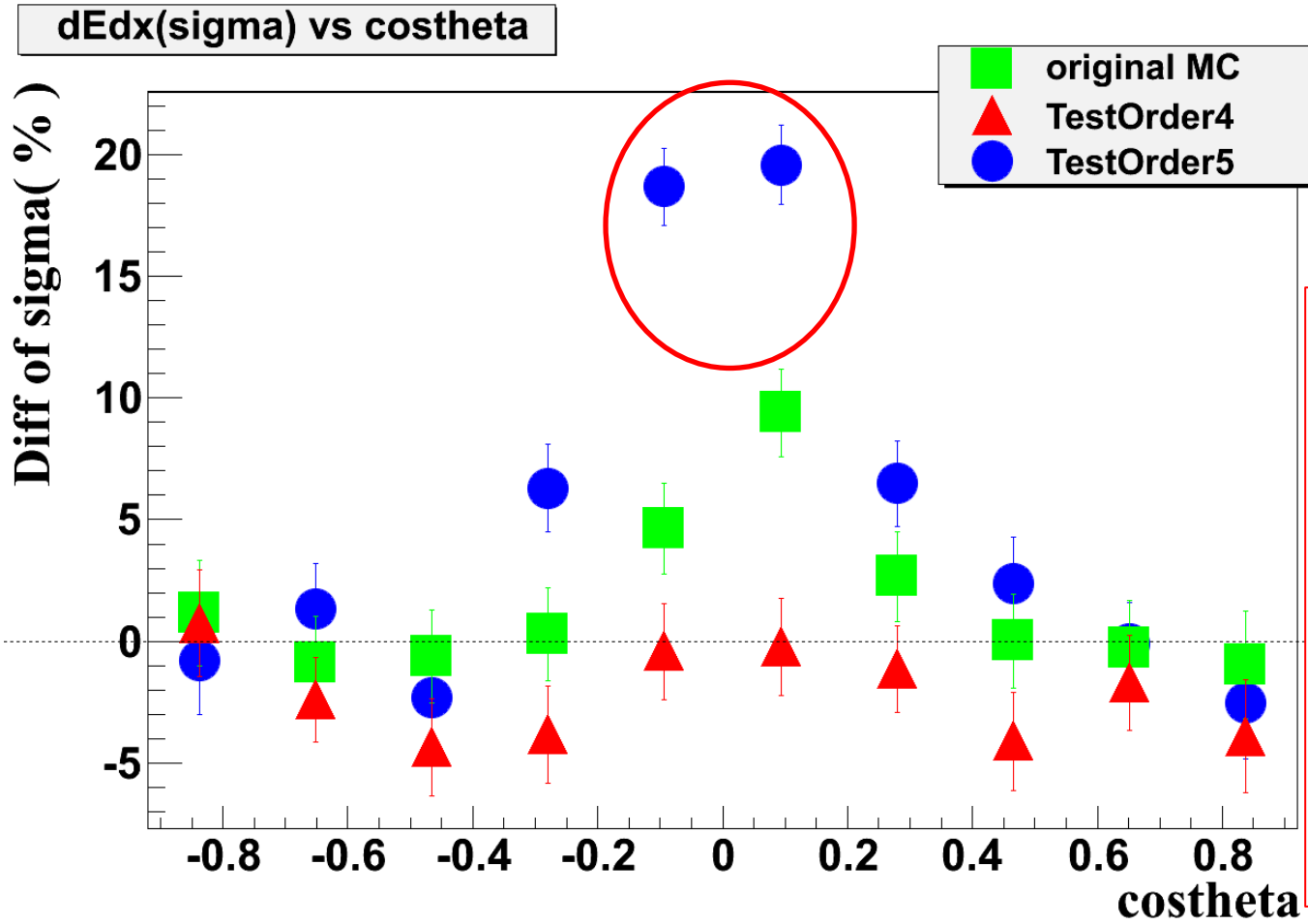
2.Check results :(1)
dEdx(mean) vs costheta



$$Diff = \frac{data - MC}{data}$$

Costheta:12 bins

2.Check results :(1)
dEdx(sigma) vs costheta



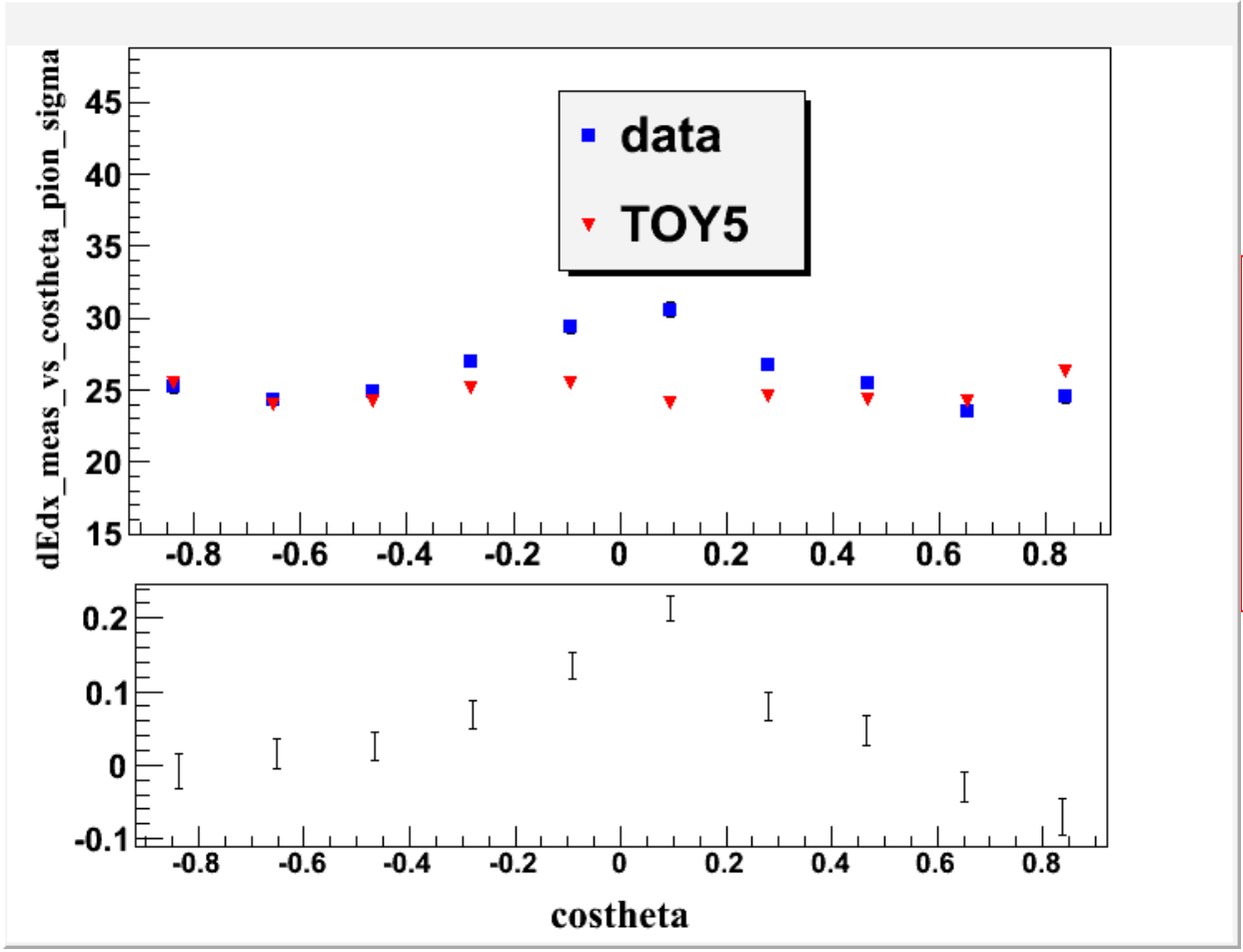
$$Diff = \frac{data - MC}{data}$$

Costheta:12 bins.

Sigma of TestOrder5(MC) is LESS than that of data.

Inconsistence of sigma of TestOrder5 may not be caused by binning of βγ.

2.Check results :(2)
dEdx(sigma) vs costheta



Costheta:20 bins

Inconsistence when costheta ~0 is not caused by binning of costheta.