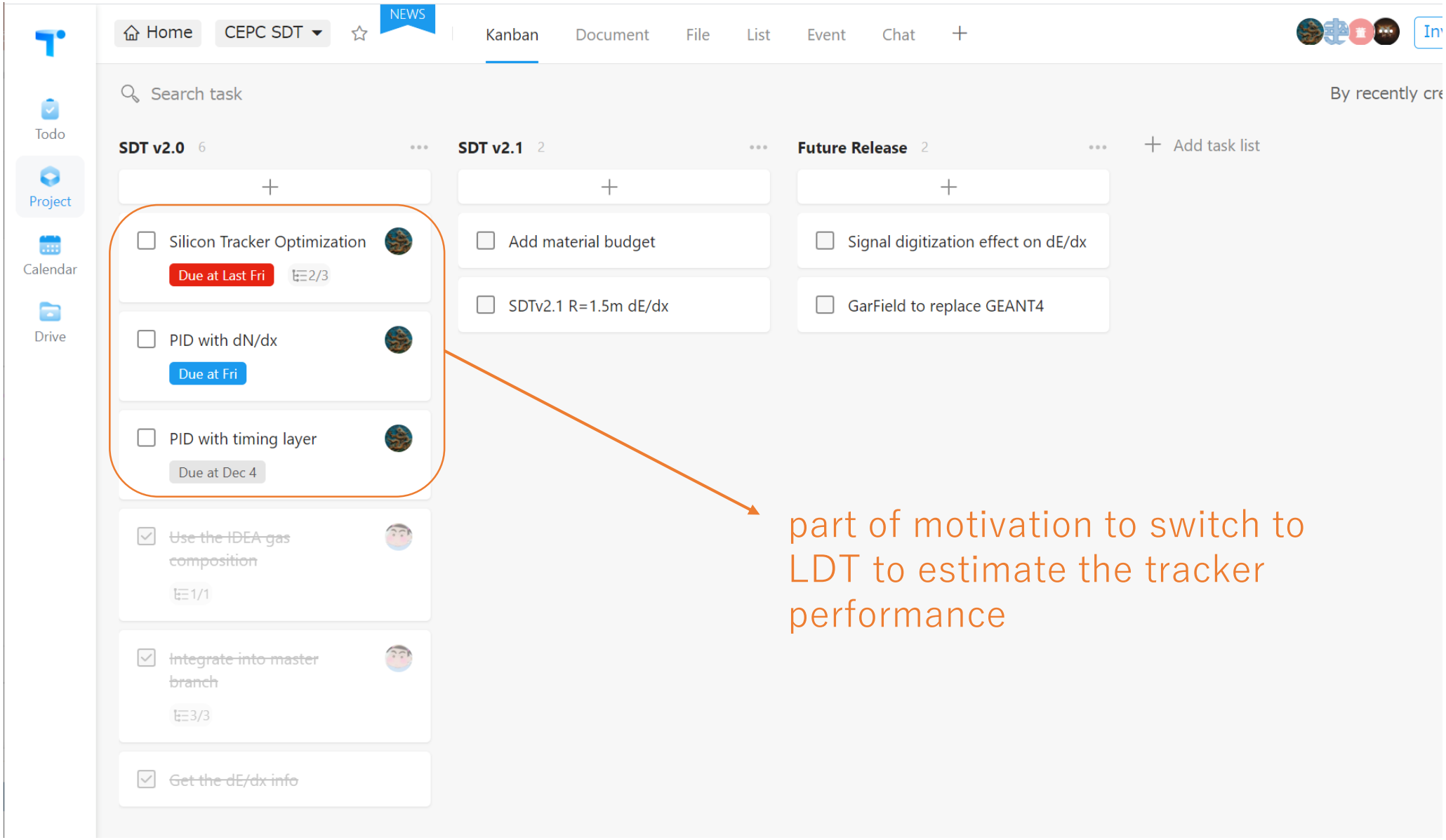
Status on SDT simulation work

Contents

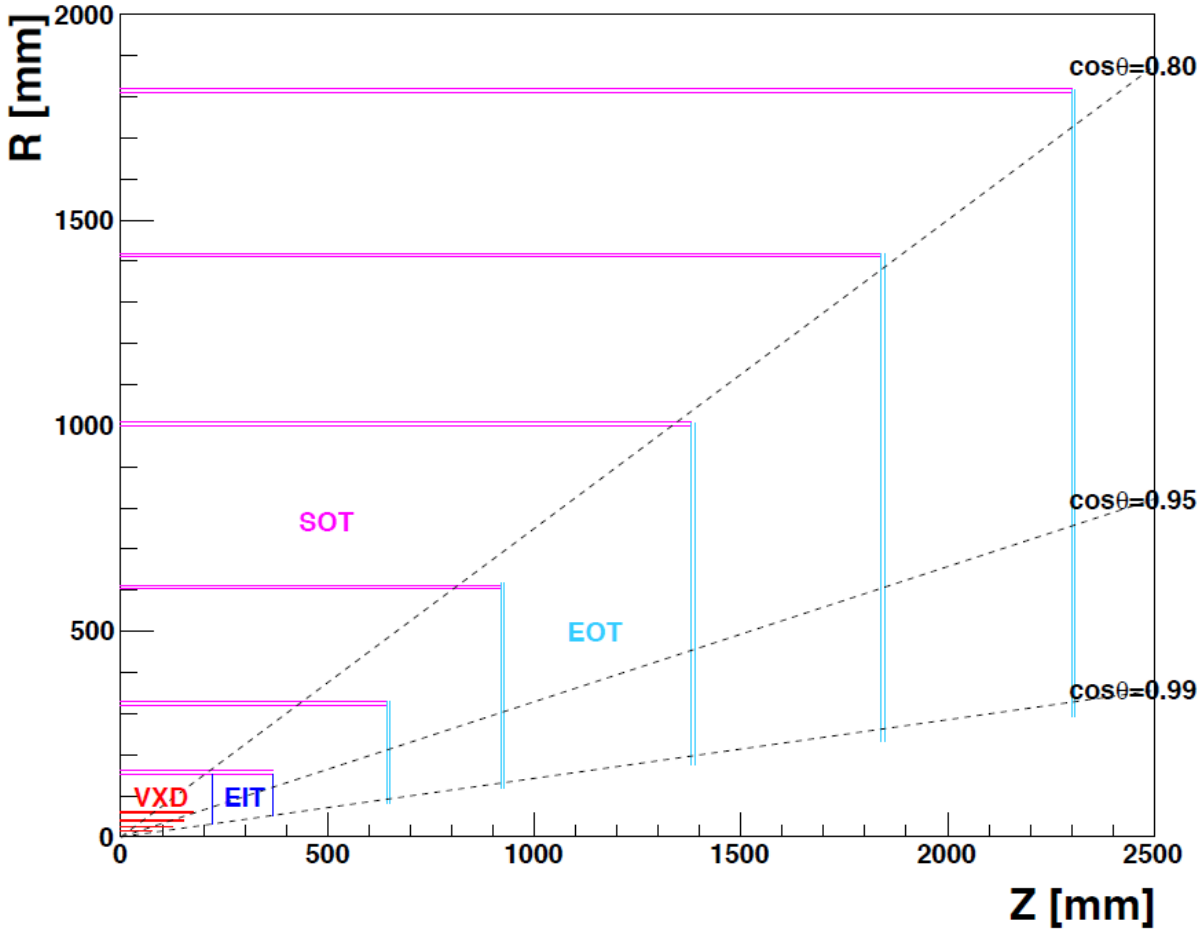
- Switch to use LDT to see the performance difference from different tracker composition

Timeline suggested from Xin last week



Reference (from CDR) : FST&FST2

FST



FST2

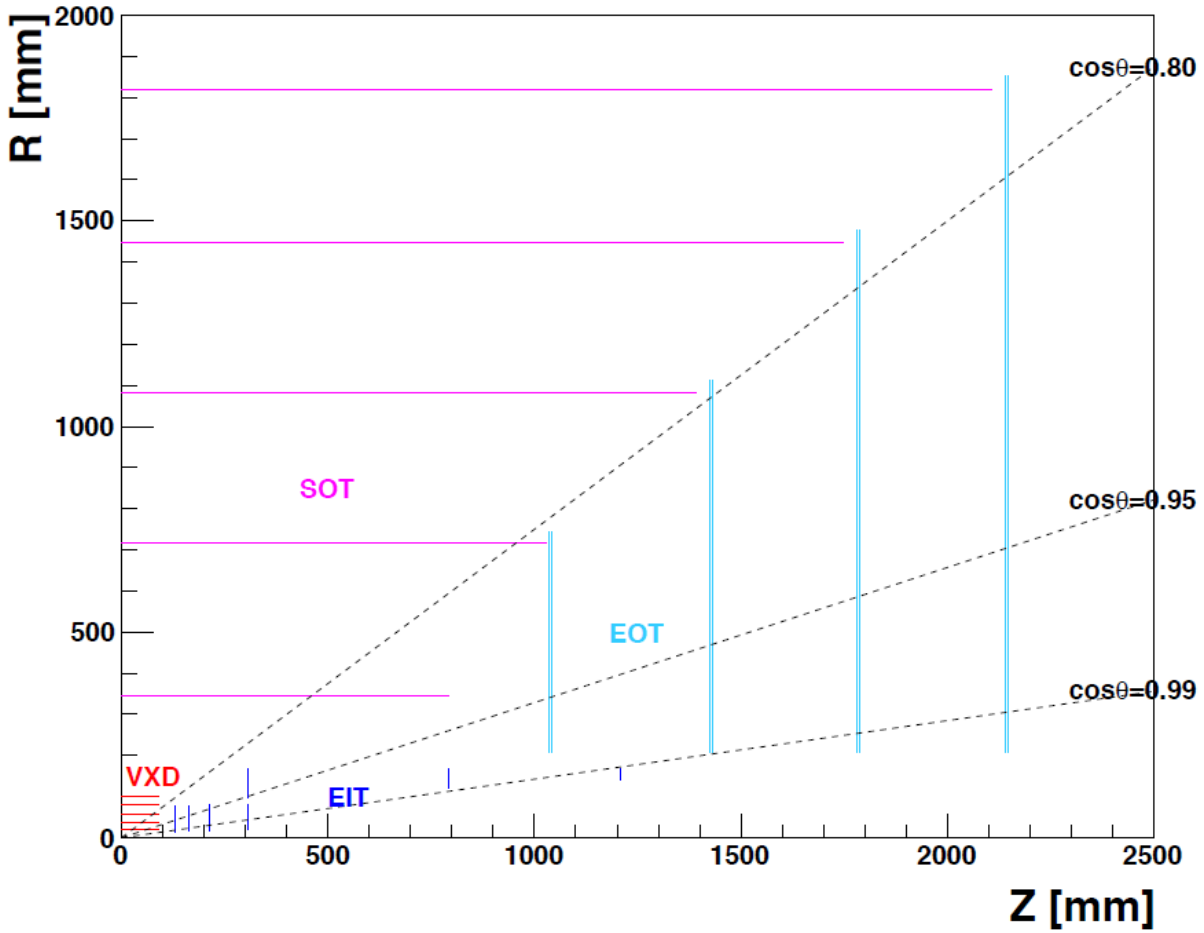
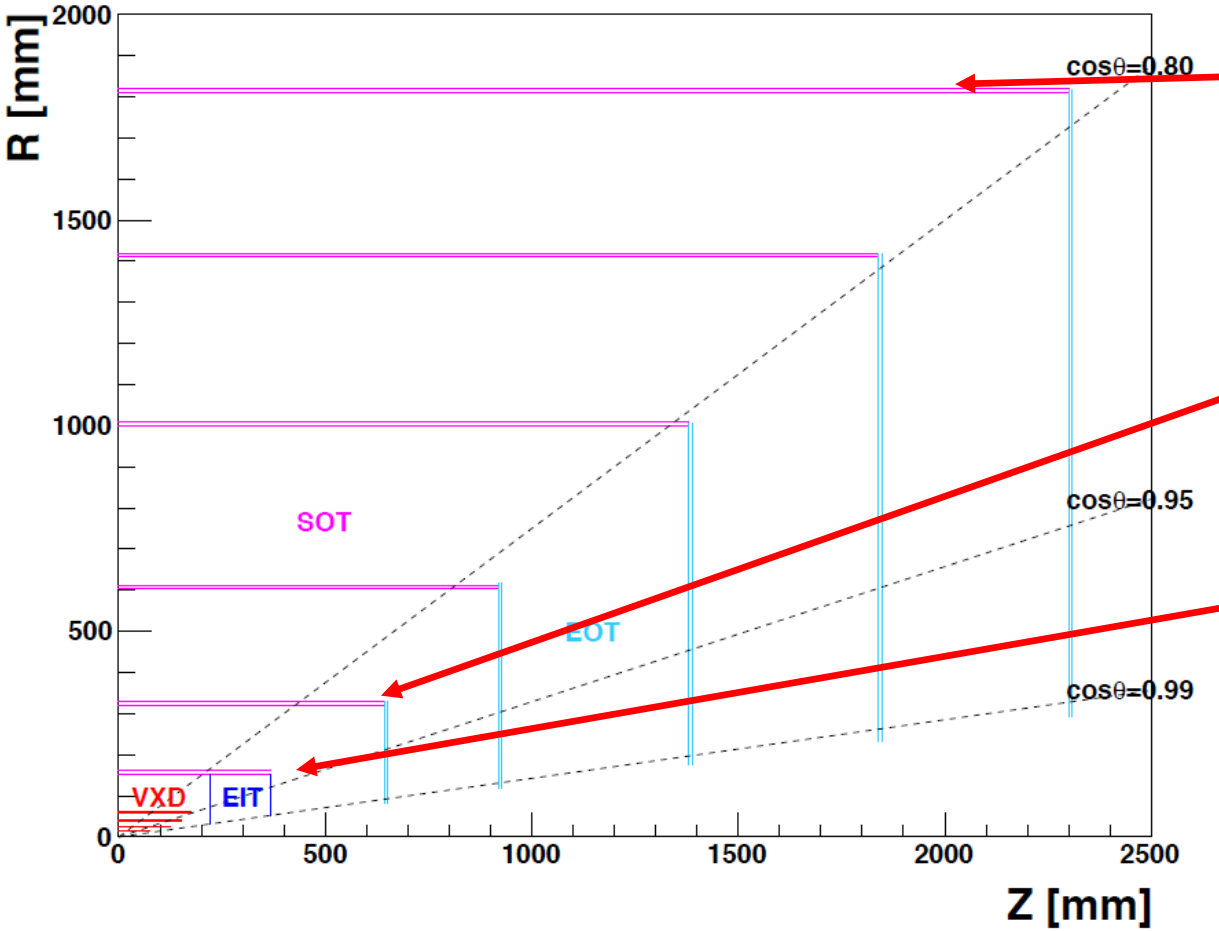


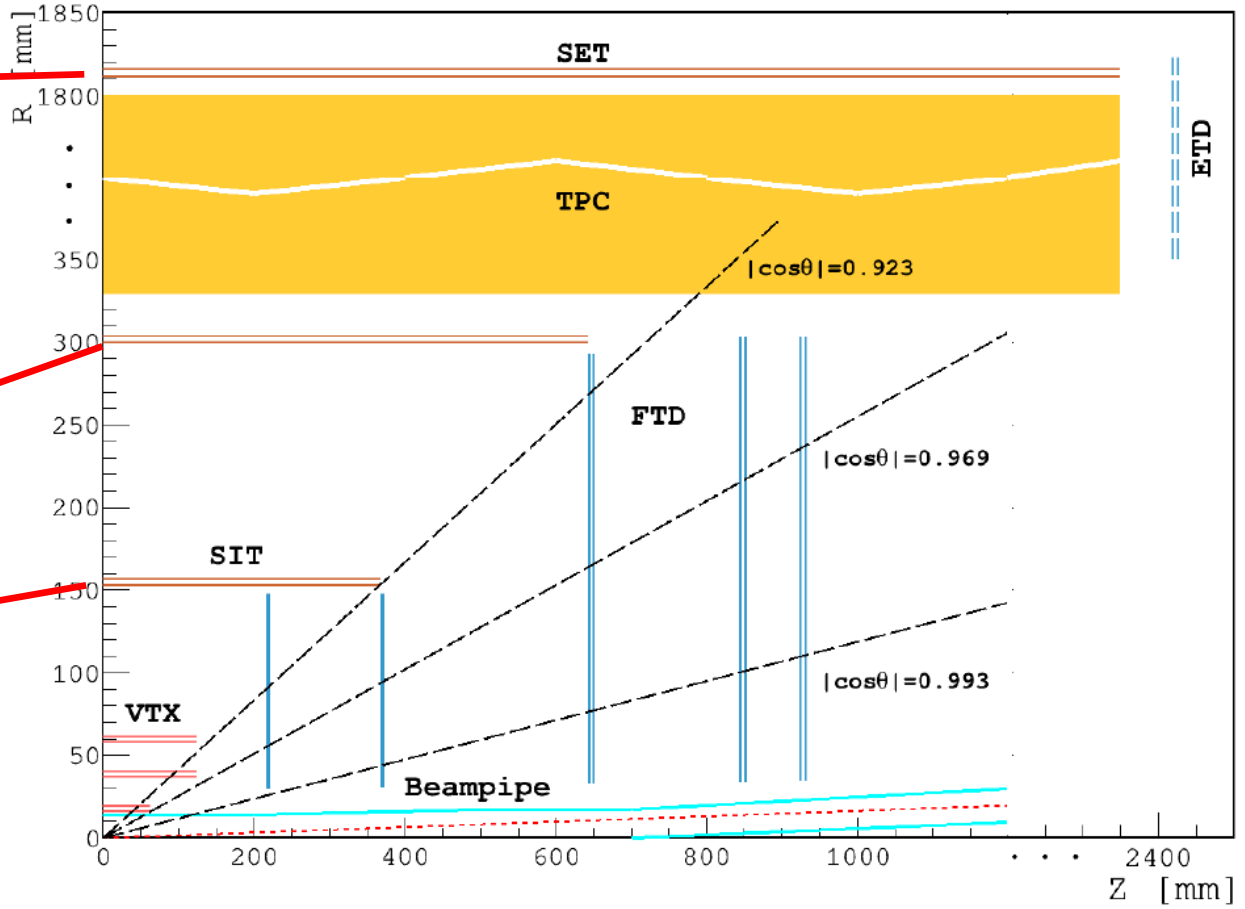
Figure 4.23: $R-Z$ views of the full-silicon tracker options, FST (top) and FST2 (bottom). In the FST layout, the full strip detector (SOT and EOT) is composed of double silicon strip layers. In the FST2 layout, the SOT consists of single layers, while the EOT consists of double-strip layers.

Tracker position ： FST & baseline

FST



CEPC baseline detector concept

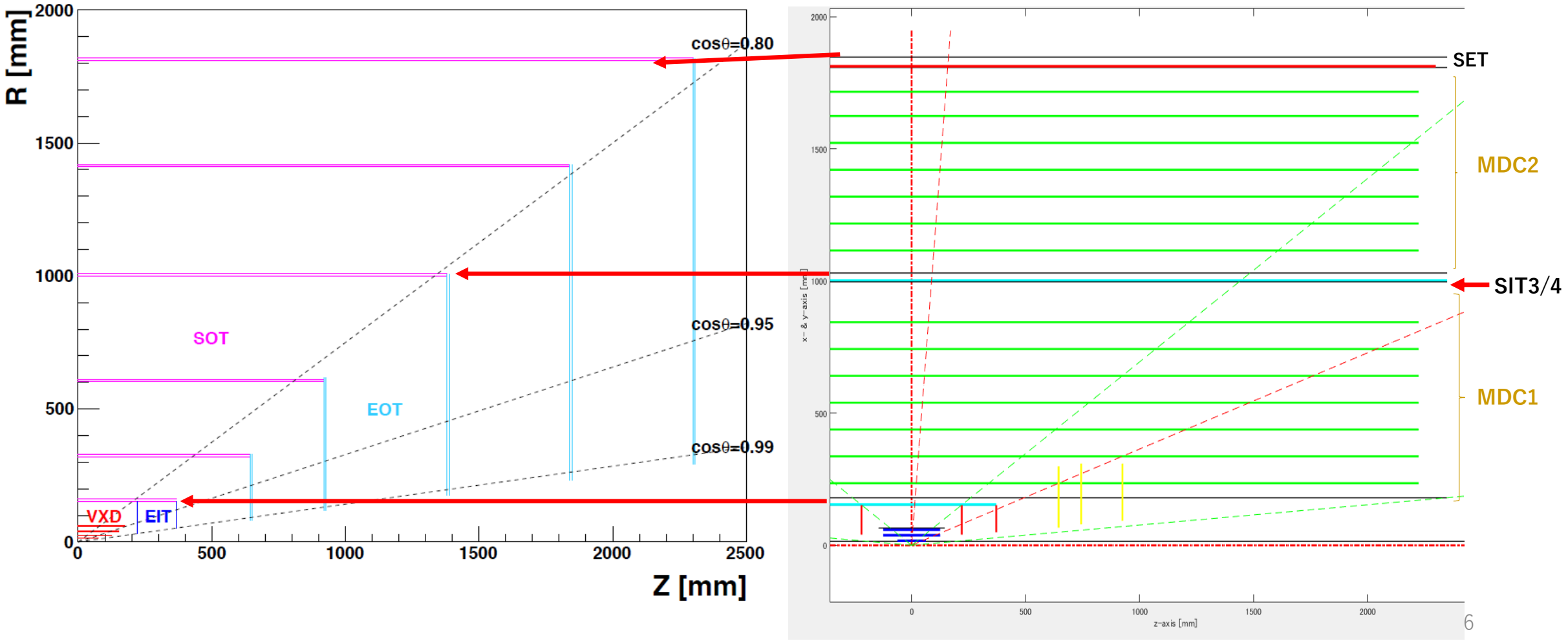


note that “R” axis, 350~1800, is drawn with a short-cut

Tracker position ： FST & SDT (w 2MDC)

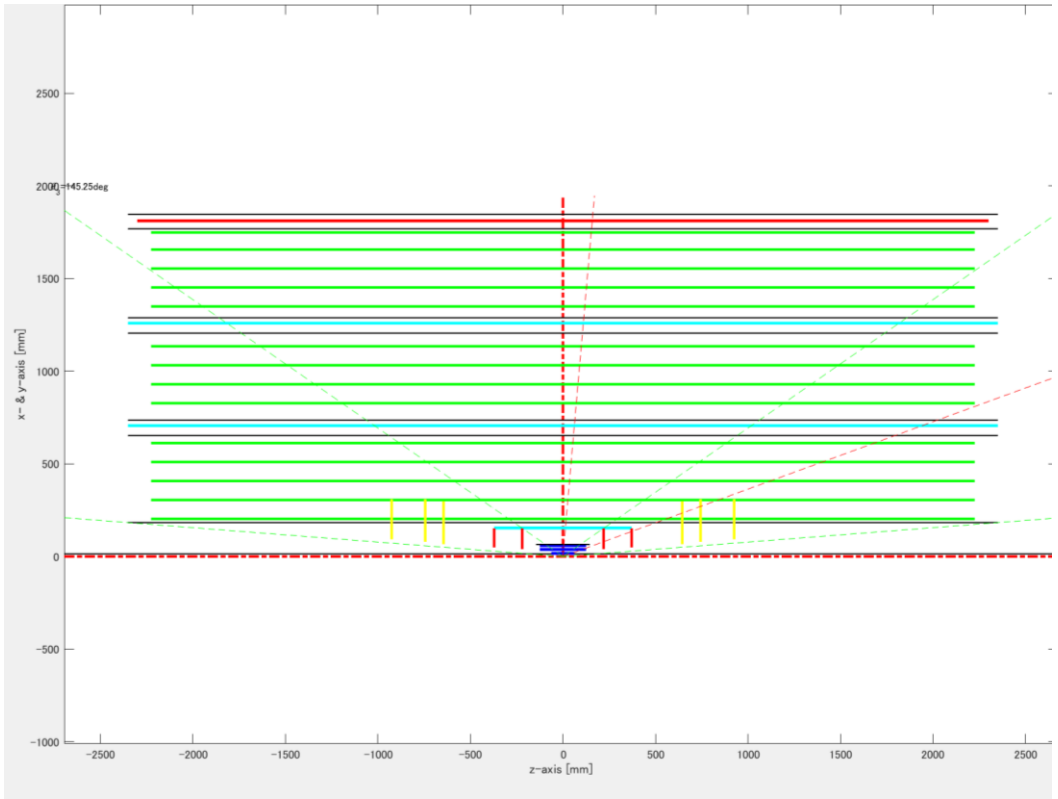
FST

SDT(2*MDC)

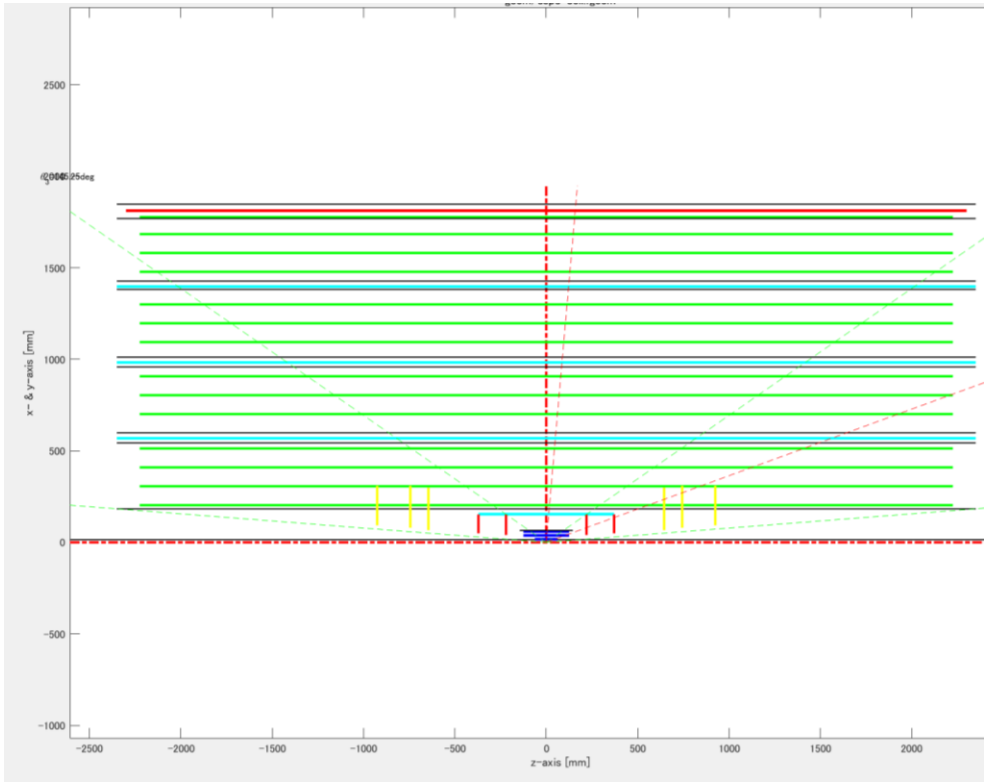


trial: SDT with different configuration

SIT1/2+SIT3/4+SIT5/6, 3*MDCs



SIT1/2+SIT3/4+SIT5/6+SIT7/8 , 4*MDCs

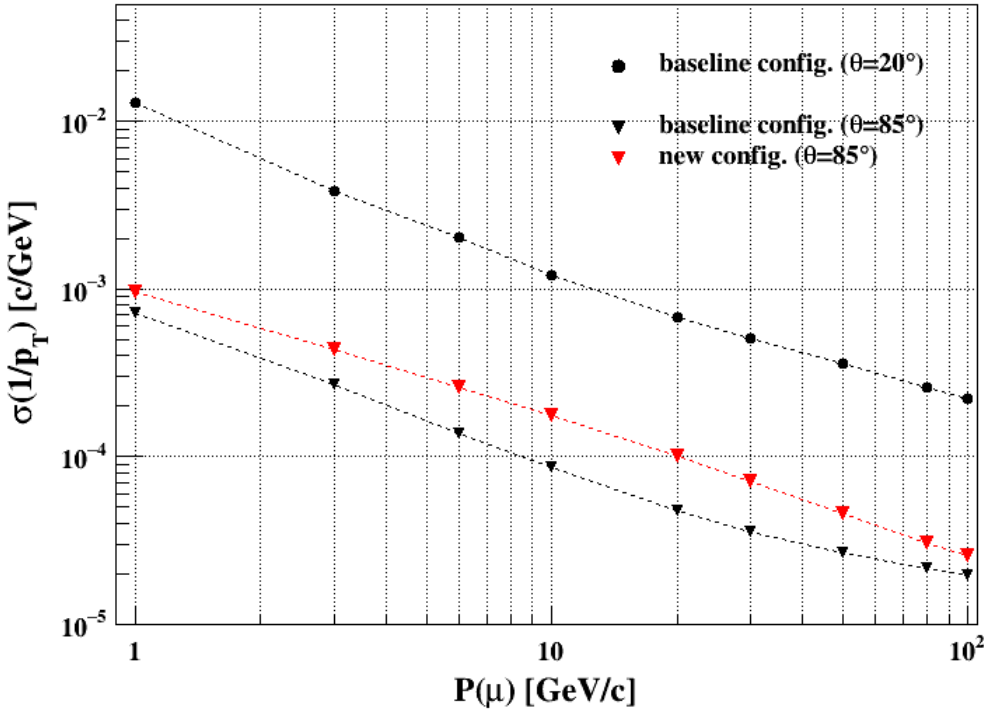


-- keep the total DCH layers/dimension

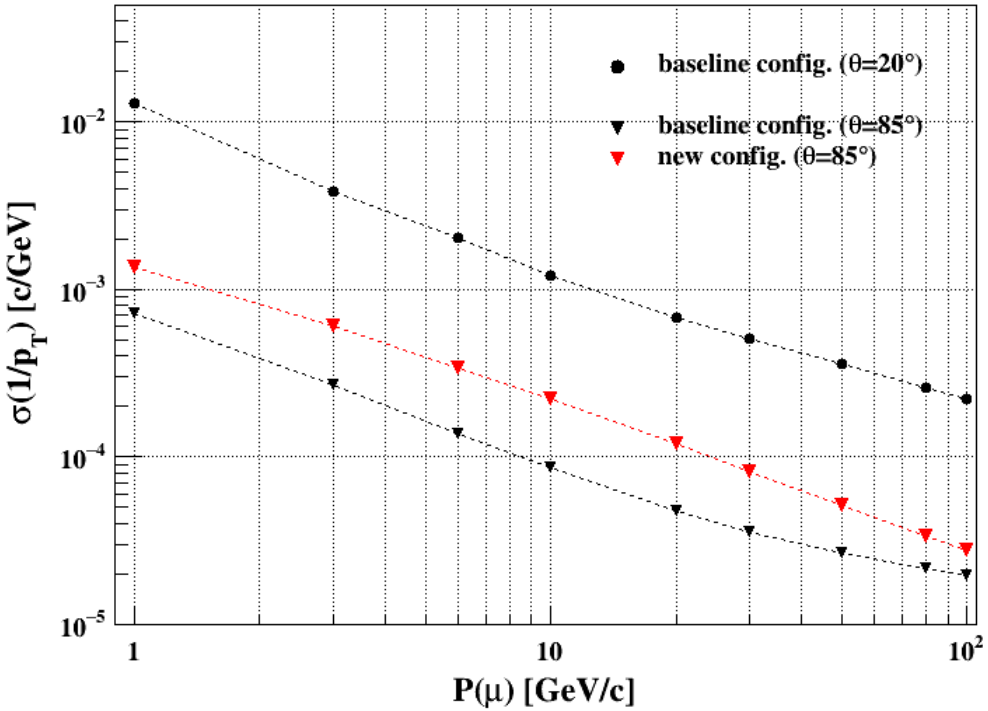
-- insert one (left fig.) or two (right fig.) SIT pairs

Momentum resolution

SIT1/2+SIT3/4+SIT5/6, 3*MDCs



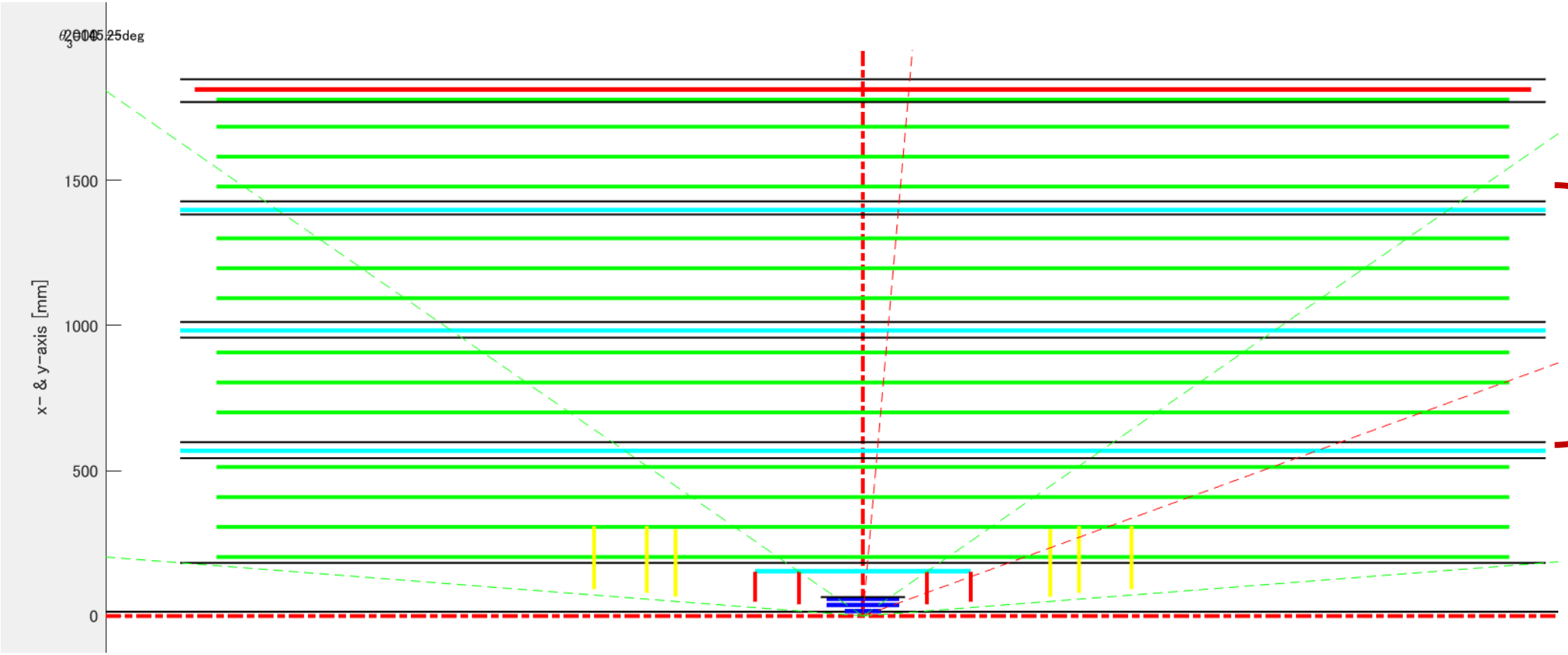
SIT1/2+SIT3/4+SIT5/6+SIT7/8 , 4*MDCs



trial: set back the total material

-- material budget is the same but more layers this configuration have.

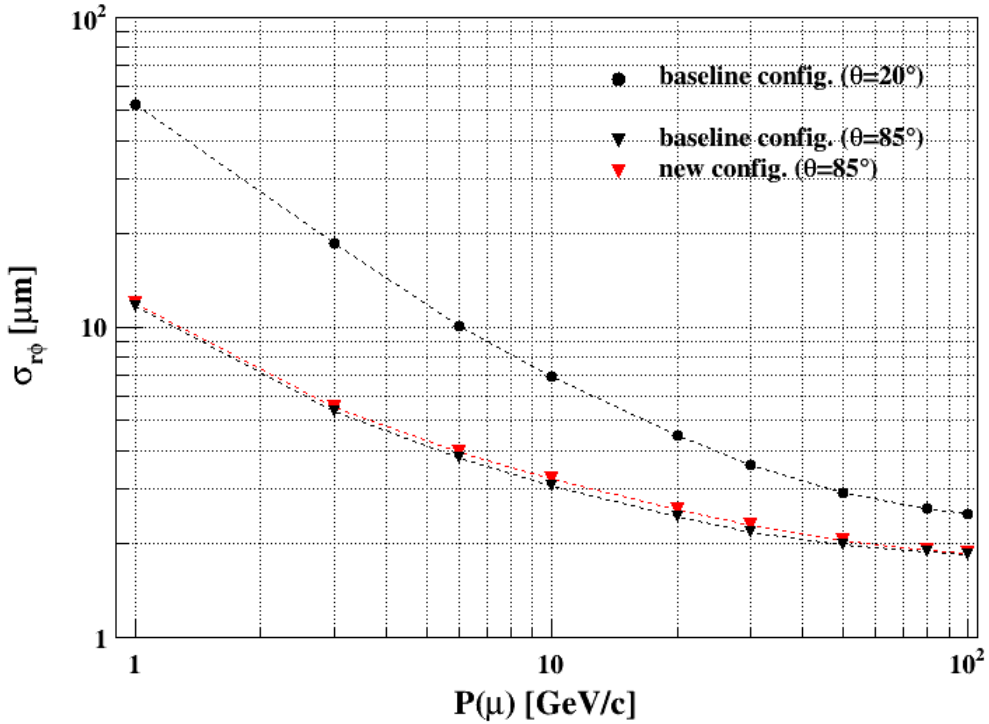
SIT1/2+SIT3/4+SIT5/6+SIT7/8 , 4*MDCs

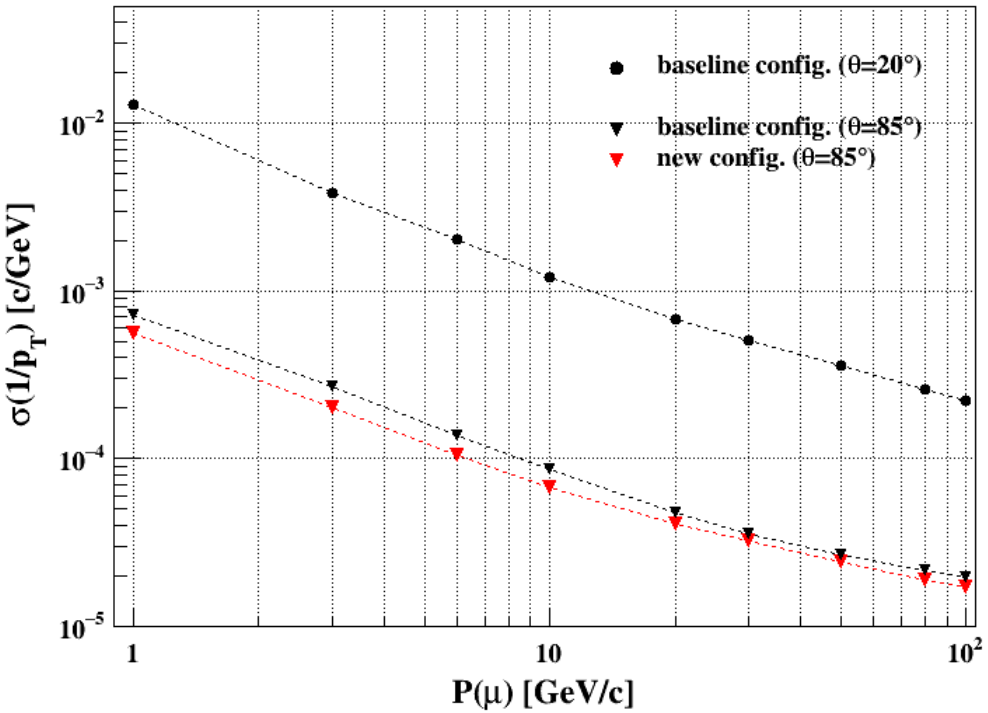


Set material of SIT4~8 & wall of DCHs as 0

but still SIT4~8 are set sensitive as trackers

quick look


baseline config. (θ=20°)
baseline config. (θ=85°)
new config. (θ=85°)
σ_rφ [μm]
P(μ) [GeV/c]


baseline config. (θ=20°)
baseline config. (θ=85°)
new config. (θ=85°)
σ(1/p_T) [c/GeV]
P(μ) [GeV/c]

Comments

・ As for momentum resolution, dependence of material budget should be investigated

・ Idea about the PID performance ?

-- which level/way for the study ?