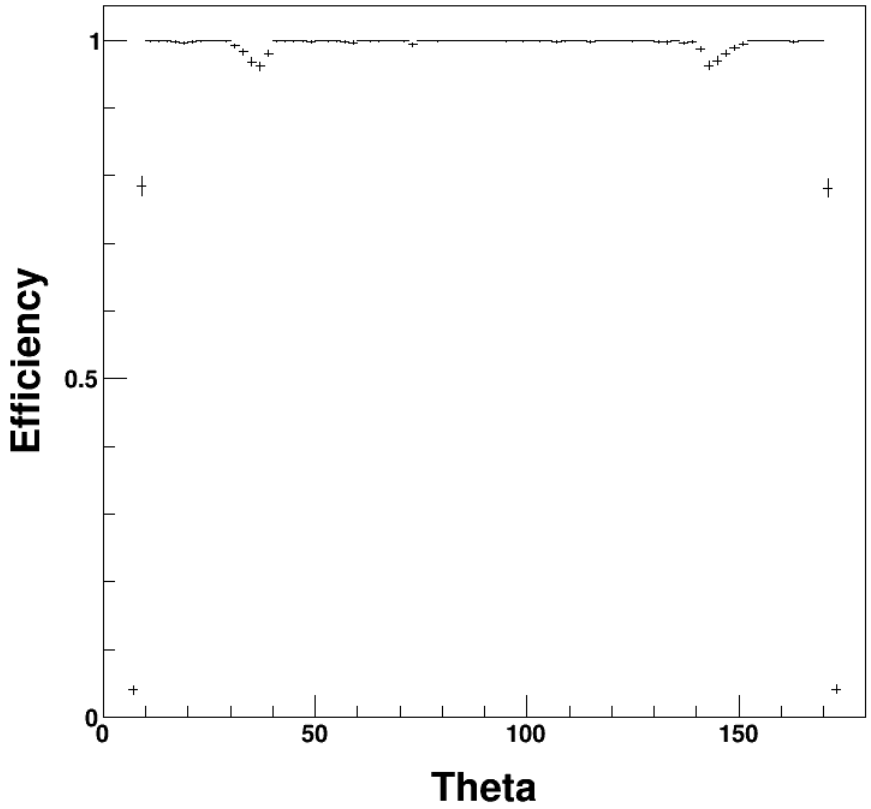
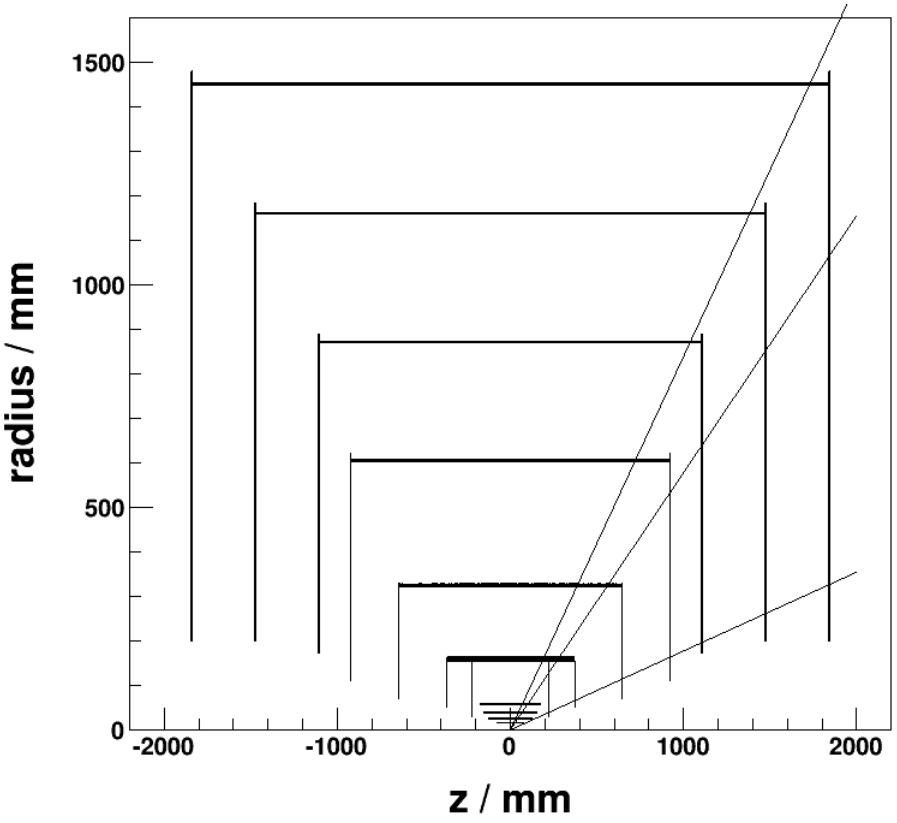
Cepc_new4

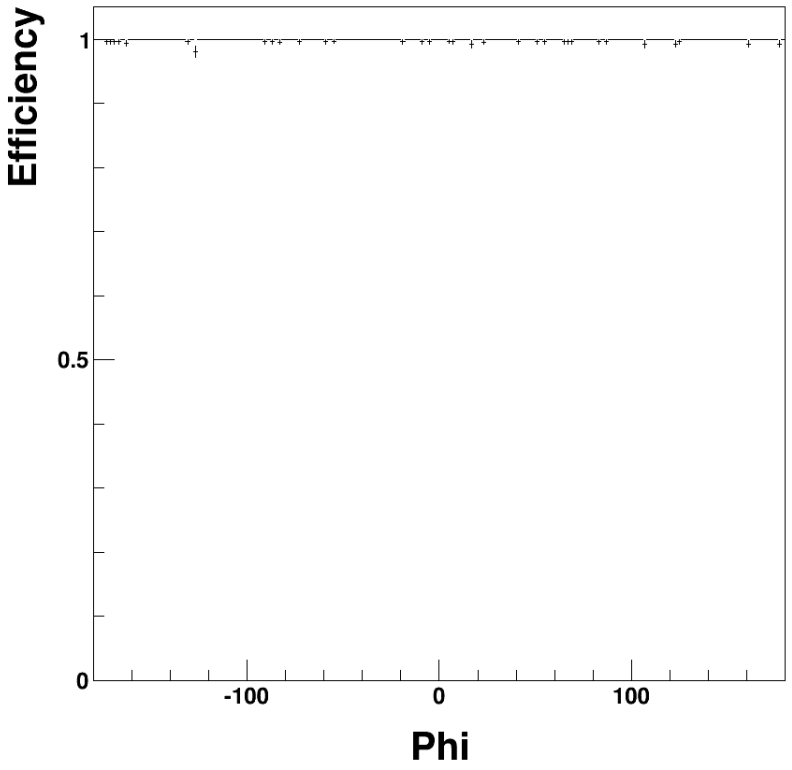

Efficiency
1
0.5
0
0
50
100
150
Theta


radius / mm
1500
1000
500
0
-2000
-1000
0
1000
2000
z / mm

Efficiency VS Phi

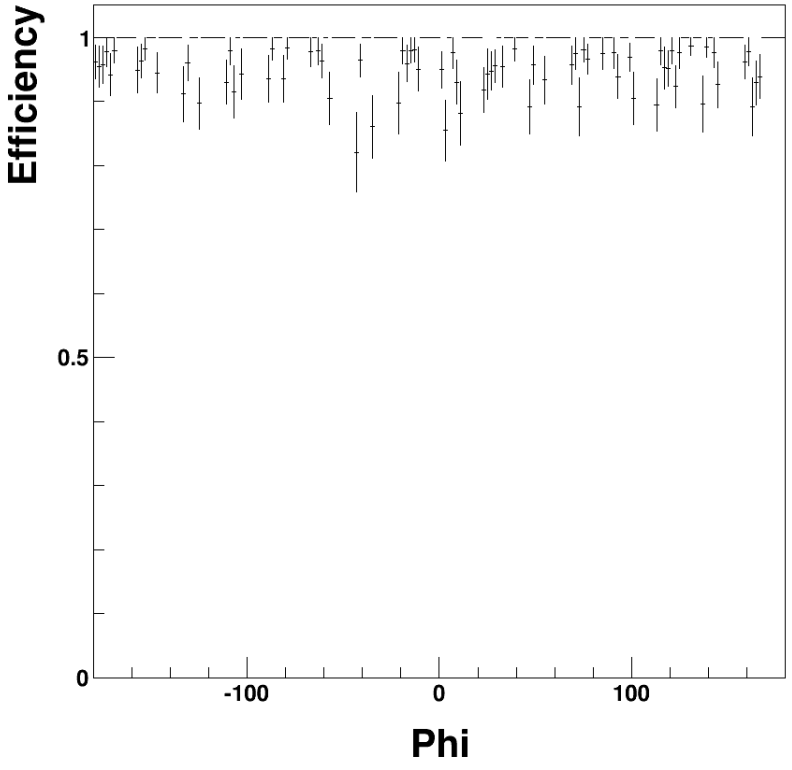
Theta

40°-140°

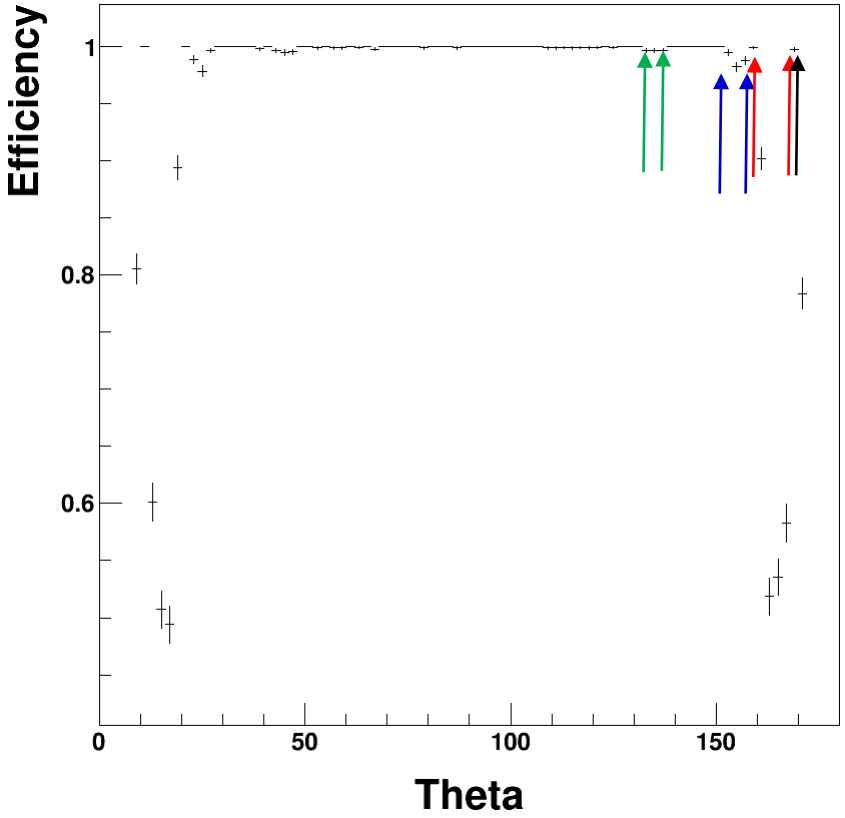


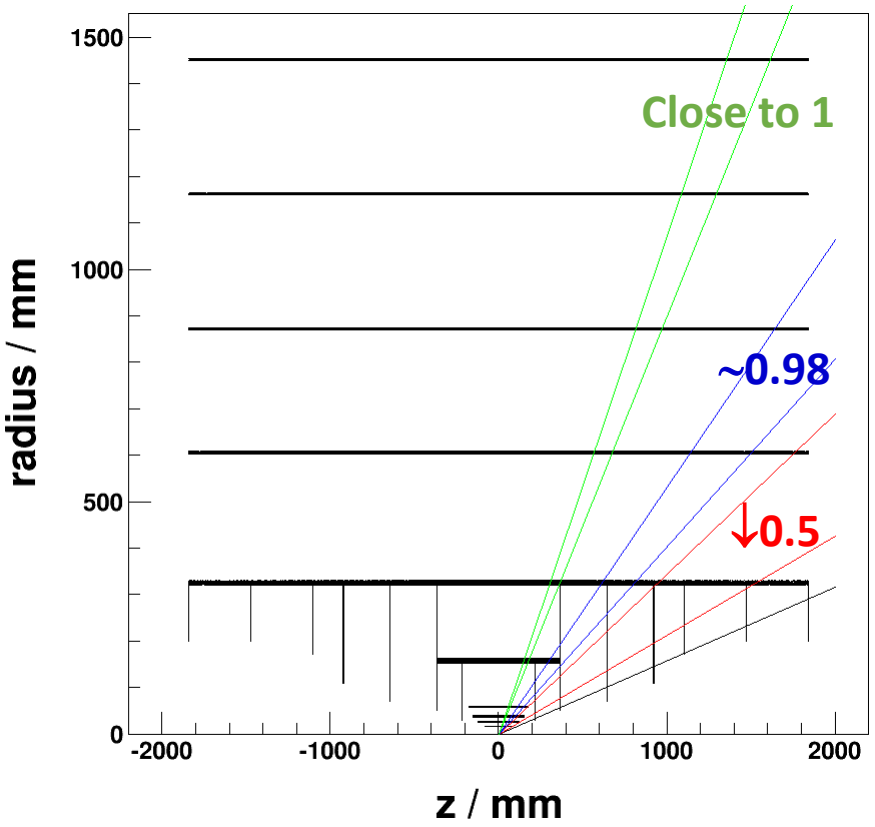
30°-40°

140°-150°



Another full-silicon tracker



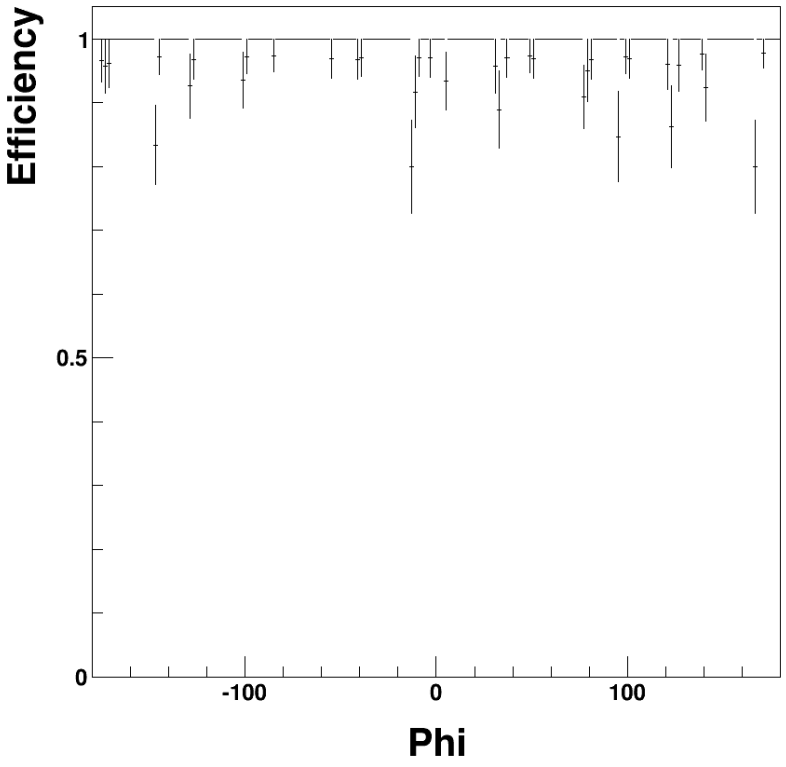


Efficiency VS Phi

Theta

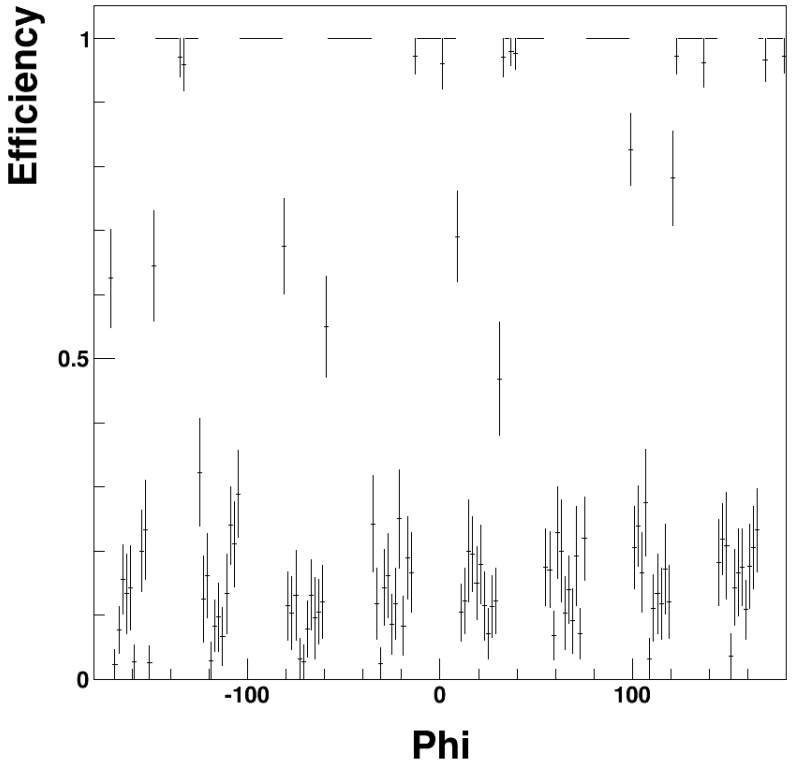
22°-28°

152°-158°

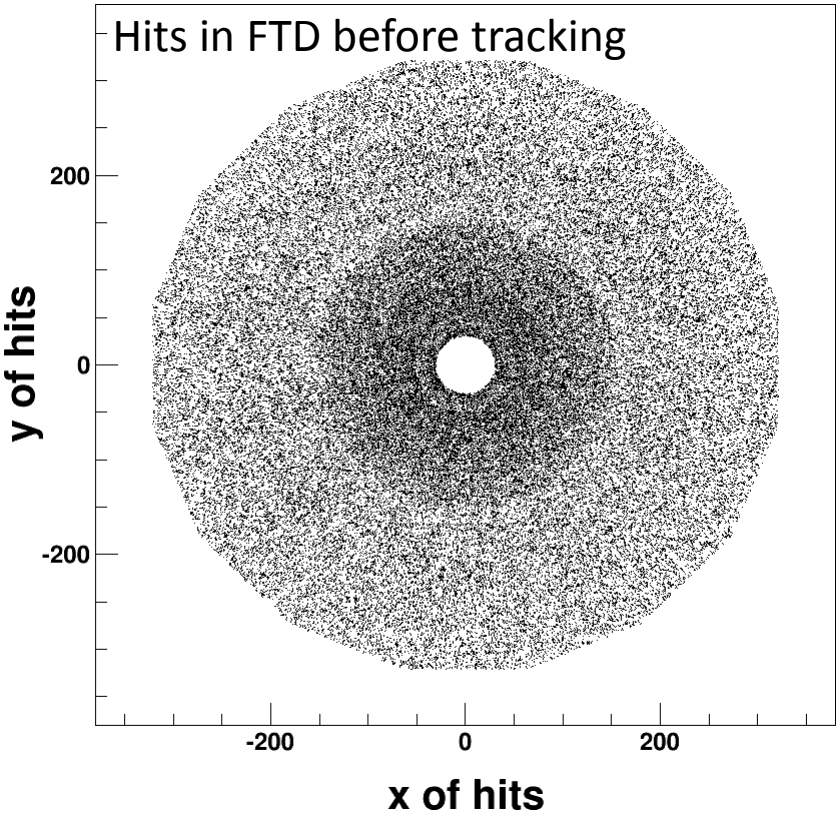


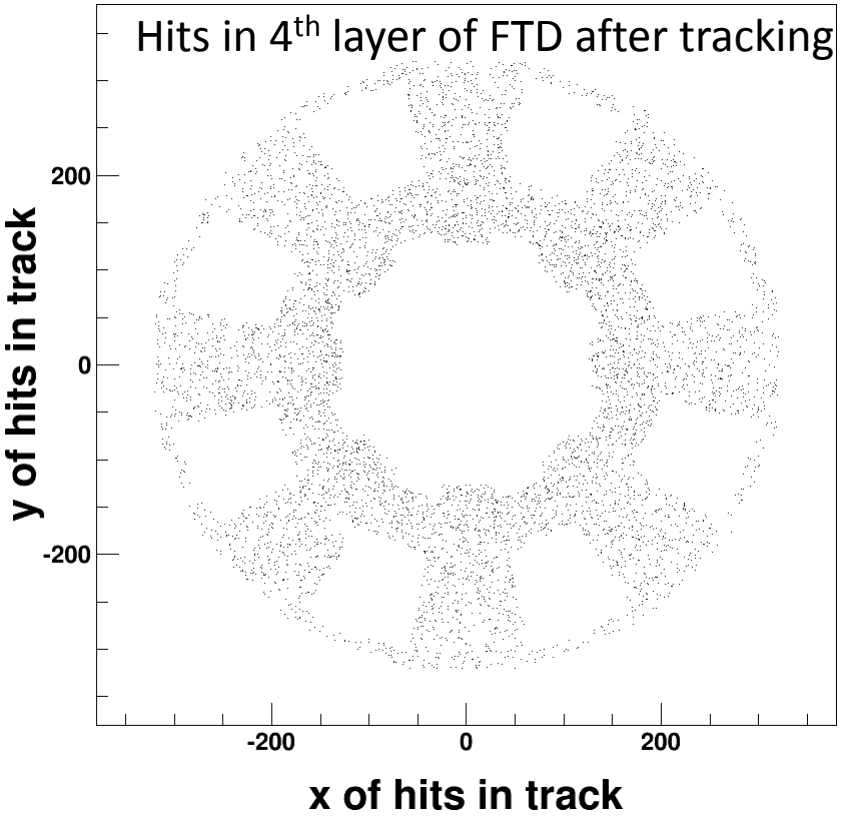
12°-19°

161°-168°



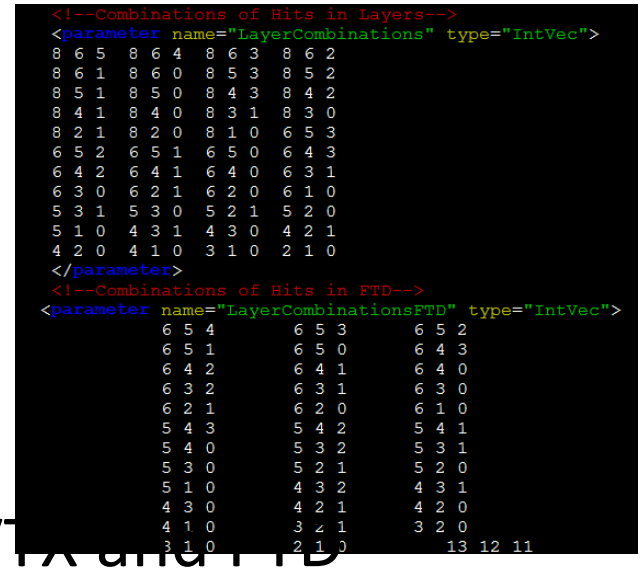
Hits





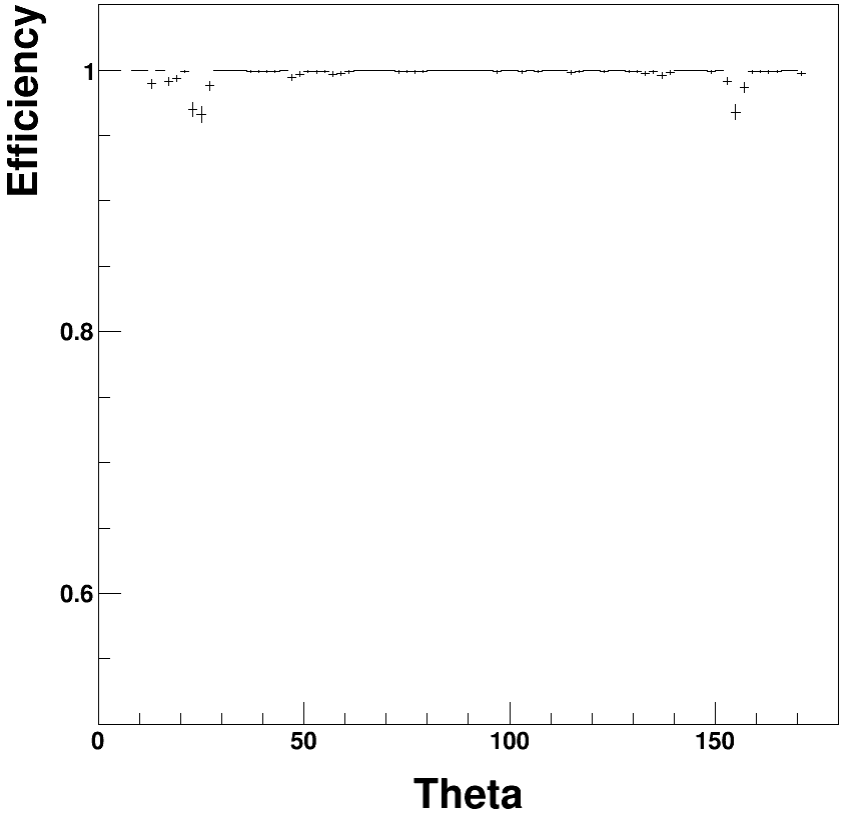
- Tracking lose part of hits in overlap region, which is relative with phi angle.

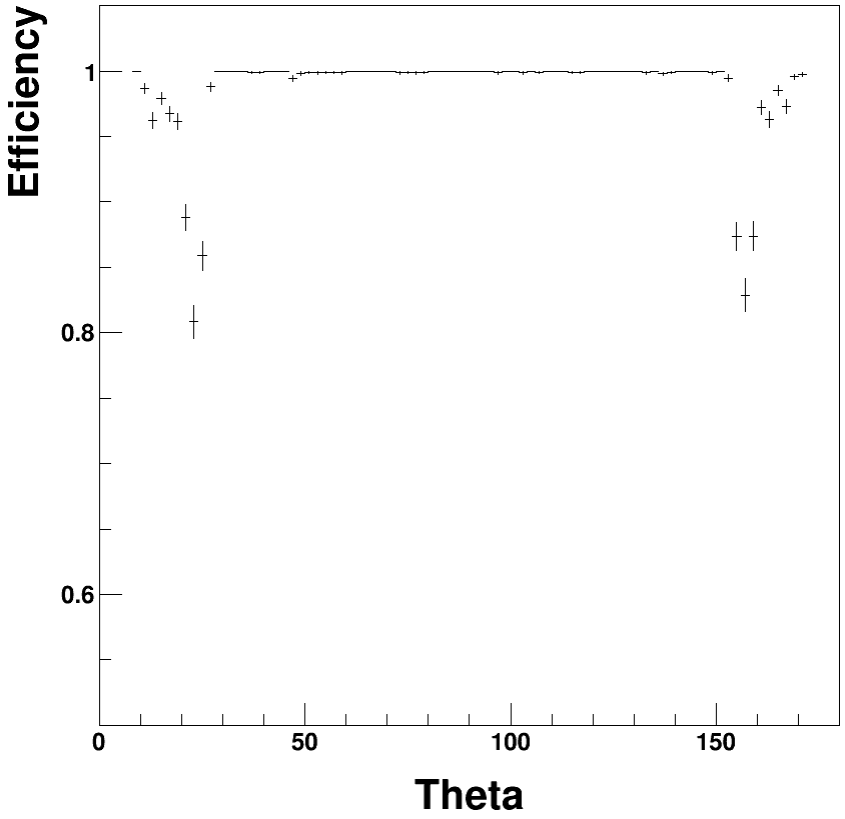
- InitialiseVTX(LCEvent *evt)
- InitialiseFTD(LCEvent *evt)
- ProcessOneSector(iPhi,iTheta)
  - TestTriplet(…)
- TrackingInFTD()
  - TestTriplet(…)



- Difficult to track-finding using VTX and FTD together? Not a good idea?
- What is best triplet to start?

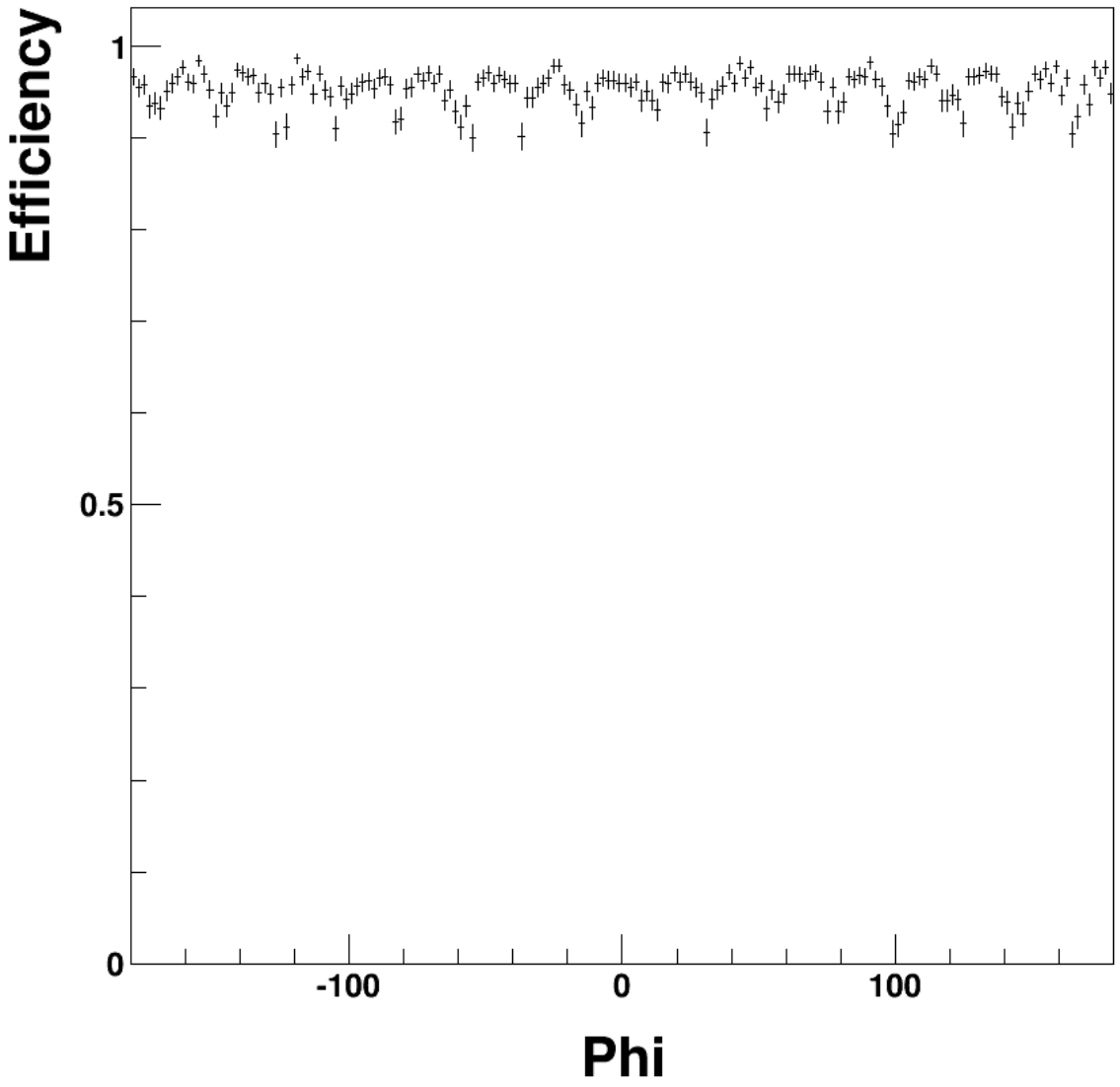
After update LayerCombinationsFTD






```
<parameter name="LayerCombinations" type="IntVec">
16 14 12   16 14 10   16 12 10   14 12 10
14 12 8   14 10 8   12 10 8   12 10 6
8 6 5   8 6 4   8 6 3   8 6 2
8 5 3   8 5 2   8 4 3   8 4 2
6 5 3   6 5 2   6 4 3   6 4 2
6 3 1   6 3 0   6 2 1   6 2 0
5 3 1   5 3 0   5 2 1   5 2 0
4 3 1   4 3 0   4 2 1   4 2 0
</parameter>
```

```
<parameter name="LayerCombinations" type="IntVec">
10 8 6   10 8 5   10 8 4   10 8 3
10 8 2   10 8 1   10 8 0   10 6 5
10 6 4   10 6 3   10 6 2   10 6 1
10 6 0   10 5 3   10 5 2   10 5 1
10 5 0   10 4 3   10 4 2   10 4 1
10 4 0   10 3 1   10 3 0   10 2 1
10 2 0   10 1 0
8 6 5   8 6 4   8 6 3   8 6 2
8 6 1   8 6 0   8 5 3   8 5 2
8 5 1   8 5 0   8 4 3   8 4 2
8 4 1   8 4 0   8 3 1   8 3 0
8 2 1   8 2 0   8 1 0   6 5 3
6 5 2   6 5 1   6 5 0   6 4 3
6 4 2   6 4 1   6 4 0   6 3 1
6 3 0   6 2 1   6 2 0   6 1 0
5 3 1   5 3 0   5 2 1   5 2 0
5 1 0   4 3 1   4 3 0   4 2 1
4 2 0   4 1 0   3 1 0   2 1 0
</parameter>
```


Efficiency
1
0.5
0
-100
0
100
Phi

Way to improve efficiency

- LayerCombinations
- Tracking with VTX and FTD together
- Design of silicon-tracker
  - Make sure at least 3 layer VTX or 3 layer FTD at any theta direction
  - Not cost-optimizated, but temporarily before optimizing the tracking algorithm

backup

- Is onSurface check necessary? Since boundary has been checked while smearing
- Digitization

```
Hit = 1 has celId 33751331
side = 1
layerNumber = 2
moduleNumber = 3
sensorNumber = 2
 --- will smear hit with resU = 7.000000e-03 and resV = 0.000000e+00
Position of hit before smearing global: ( 5.812337e+01 2.889596e+02 6.467248e+02 ) local: ( 6.478899e+01 8.790451e+01 -7.934101e-15 )
Position of hit after smearing global: ( 1.753066e+01 2.109889e+02 6.467248e+02 ) local: ( 6.479230e+01 0.000000e+00 -7.934101e-15 )
 U[0] = 1.570796e+00 U[1] = 2.661627e+00 V[0] = 1.570796e+00 V[1] = 1.090831e+00
 Set relation between  sim hit 0x3c7ed00 to tracker hit 0x3c91590 with a weight of 1.000000e+00
```

```
strips: CellID0 16974115 (su3,si1,la2,mo3,se1)(1 hits) <---> CellID0 33751331(su3,si1,la2,mo3,se2)(1 hits)
--> 1 possible combinations
attempt to create space point from:
 front hit: 0x3c91450 no. of simhit = 1 first simhit = 0x3c5db50 mcp = 0x3c5de40 ( 5.792965e+01 2.877679e+02 6.440750e+02 )
  rear hit: 0x3c91590 no. of simhit = 1 first simhit = 0x3c7ed00 mcp = 0x3c5de40 ( 5.812337e+01 2.889596e+02 6.467248e+02 )
SpacePoint creation from two good hits:
        ( 2.887738e+01 1.956142e+02 6.440750e+02 ) <--> ( 1.753066e+01 2.109889e+02 6.467248e+02 )
 L1 = (4.836314e+01,8.881784e-15,-5.922581e-15)
 L2 = (6.479230e+01,3.552714e-15,-7.934506e-15)
 stripLength = 1.375000e+03
 S1 = (-1.778579e+02,-4.600662e+02,6.440750e+02)
 E1 = (2.356126e+02,8.512946e+02,6.440750e+02)
 S2 = (-2.999215e+02,-3.988310e+02,6.467248e+02)
 E2 = (3.349828e+02,8.208089e+02,6.467248e+02)
       Vertex: Position of space point (global) : ( 5.801911e+01 2.880400e+02 6.440750e+02 )
        cov plane  =
```