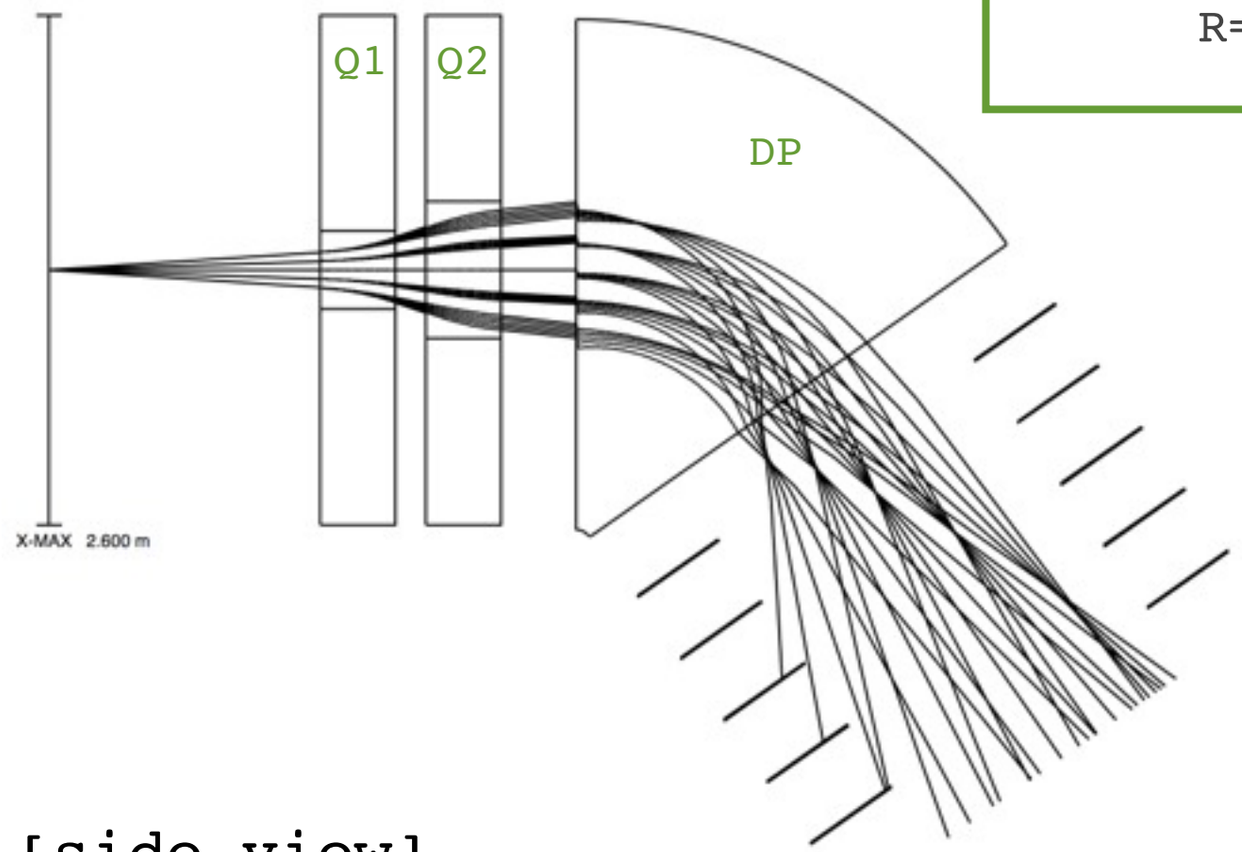
20130318 lab meeting - KYO

: Geant4 Simulation for QQD system

[GICOSY 130312]

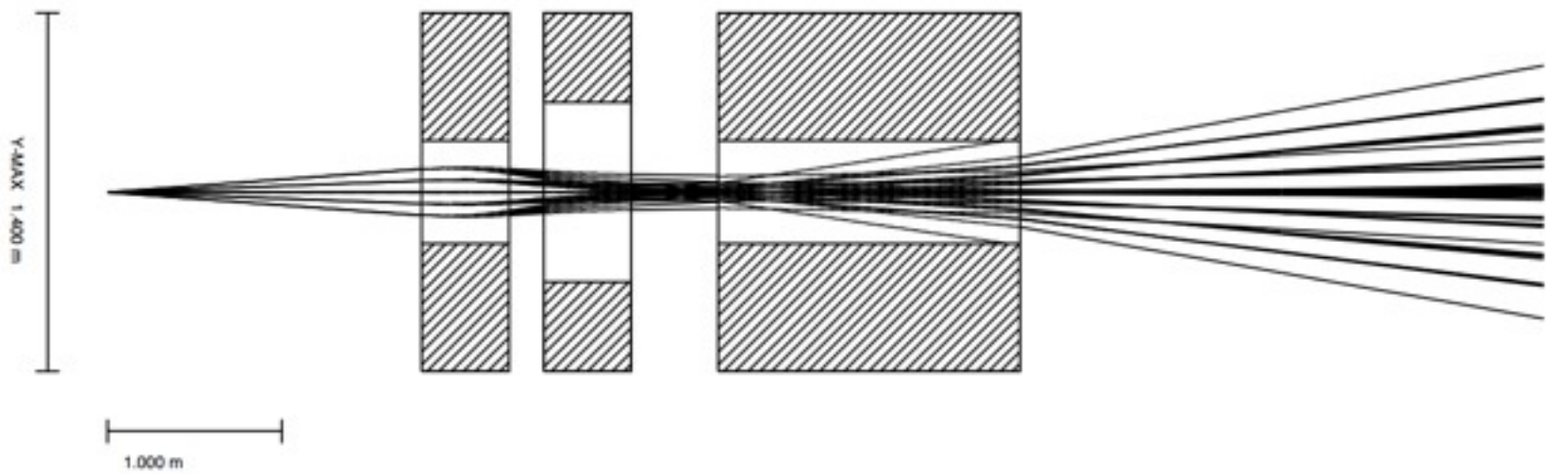
1.8m ->Q1-> 0.2m ->Q2-> 0.5m ->DP-> 1m -> C
***Q1** : L=50cm, full_a=40cm, B=-1.88/m (y-focusing)
***Q2** : L=50cm, full_a=70cm, B=+0.81T/m (x-focusing)
***DP** : θ=55°, half_gap=20cm, w1=2.4m, w2=2.4m,
R=1.8m, B =-0.36T, β_1=-25°, β_2=-25°

[top view]



1. angular acceptance = 50mr, 50mr
2. momentum Range = ±30%
   (corresponding KE Range ~ ±58%)

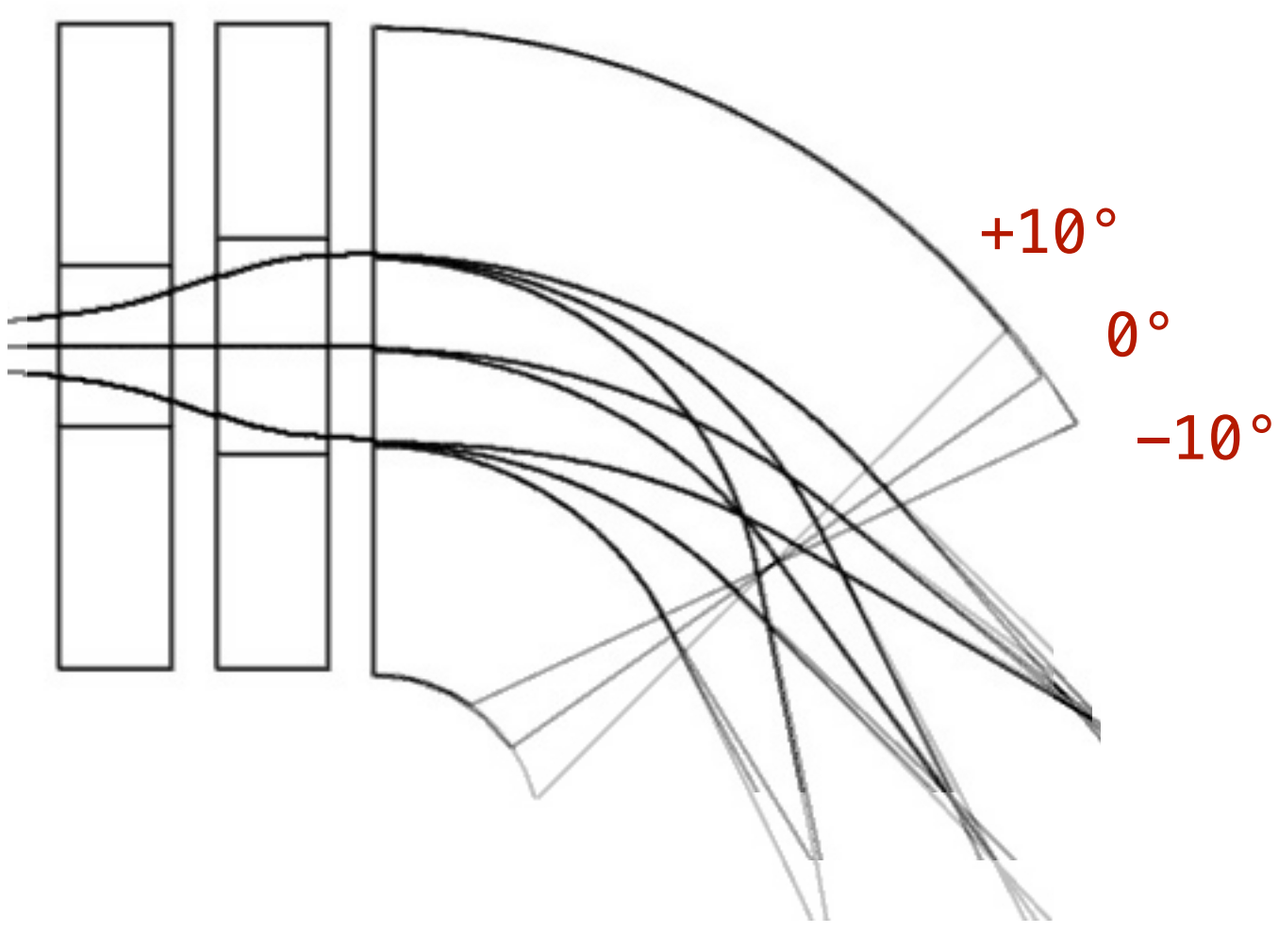
[side view]



[SHIM ANGLE in GICOSY]

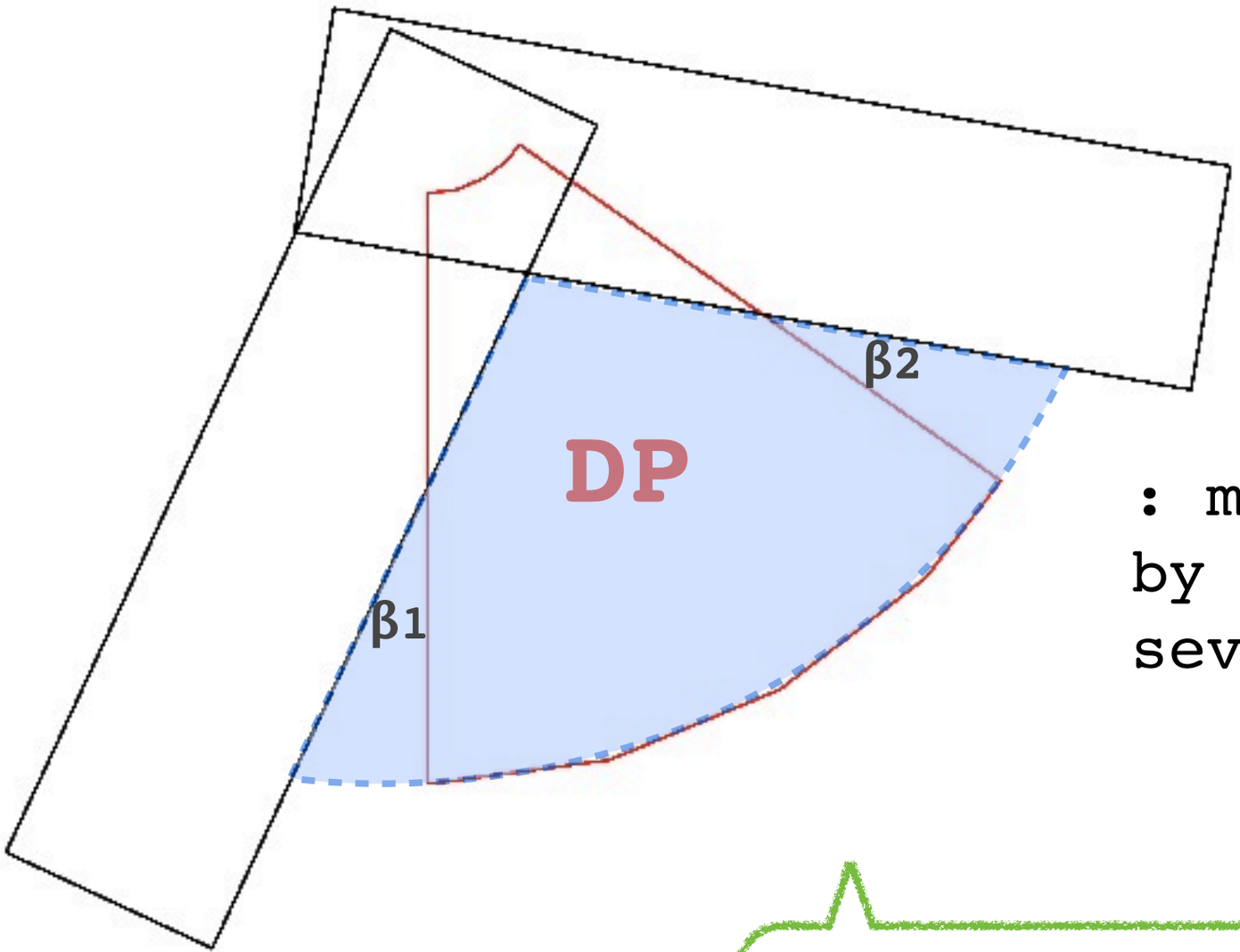
: For the plots on the previous slide,
there <u>are</u> shim angles but not geometrically visible.

e.g.) Shim angles are drawn well in normal cases

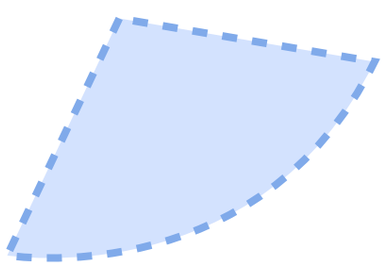


[SHIM ANGLE in Geant4]

- **shim angle β1=25°, β2=25°**

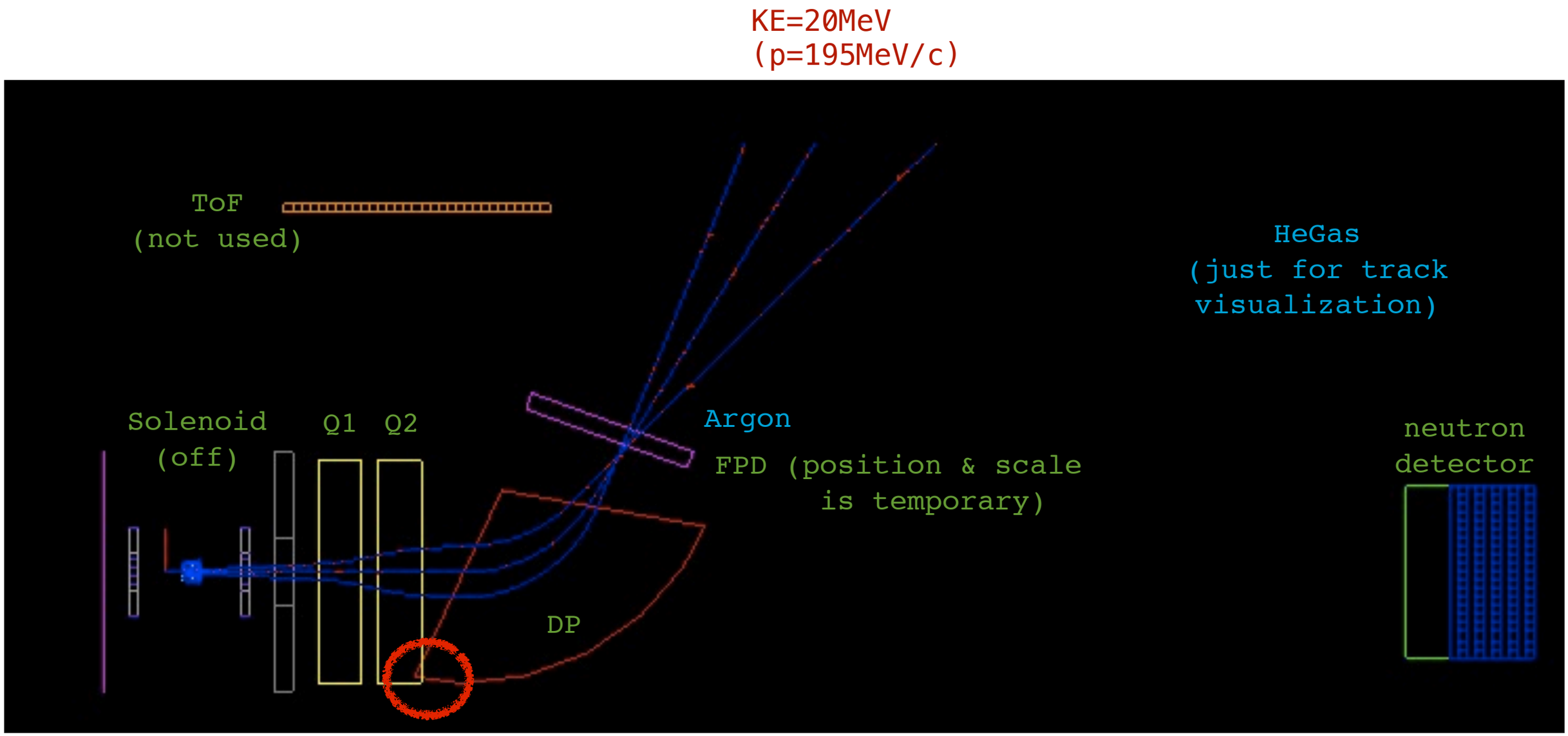


: make the real volume
by unifying or subtracting
several dummy volumes( )



Is this the dipole shape that we are going to make?

[Geant4 : whole Configuration]

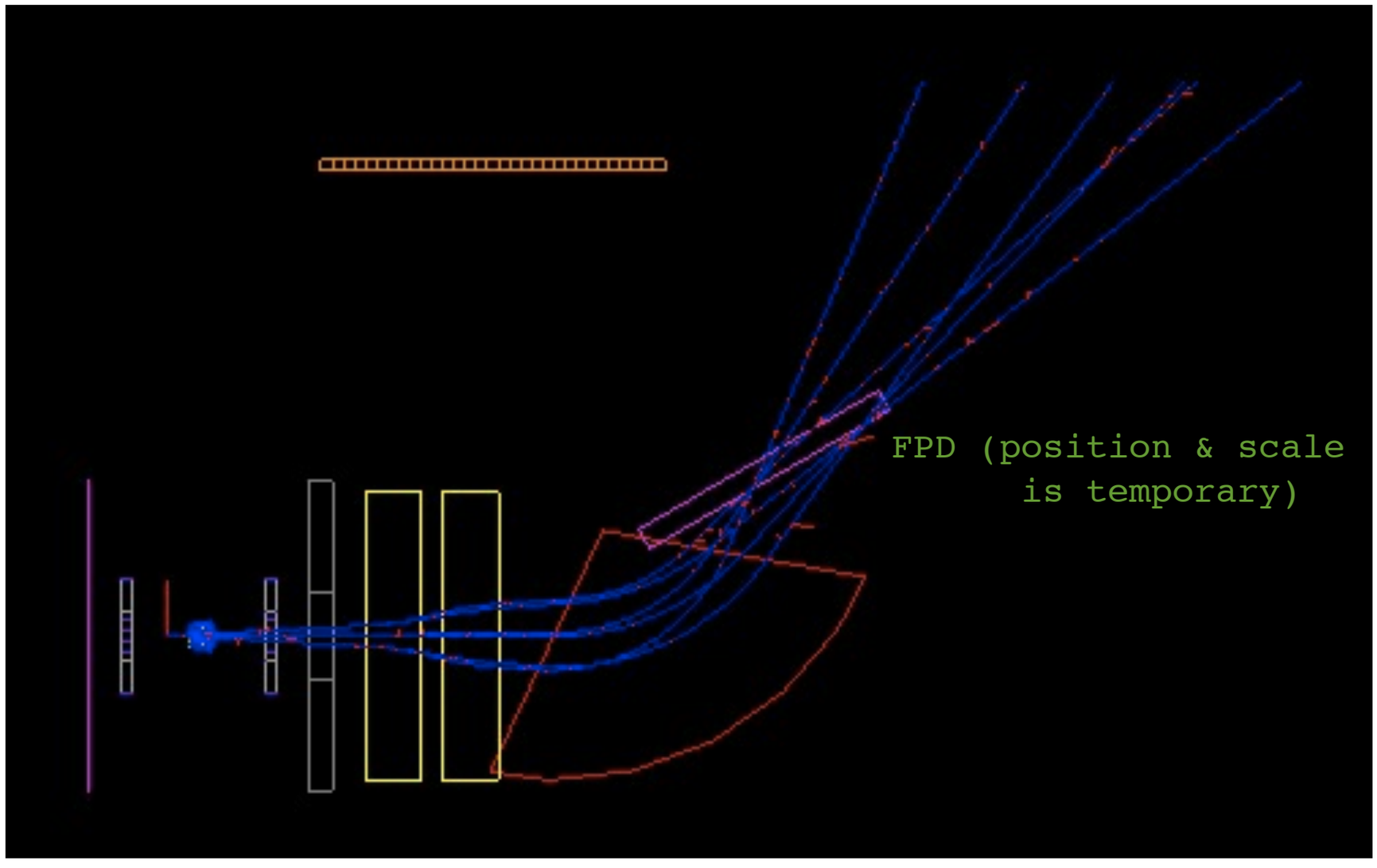


overlapped!

[Simulation – example]

KE=20 MeV (p=195MeV/c)

KE=33.6 MeV (p=253MeV/c)



: 윤종철박사님 is calculating the exact position of FPD
: temporary - width =2.5m, height = 0.5m, thickness = 0.2m
- tilted angle ≃ 40deg

[Future plans]

1. Study the 2nd order calculation
   & how to handle the vertical information

2. Same plans with the last meeting
   - Determine the position of FPD precisely
   - Simulation for position information
     (with different KE with given angular acceptance)
   - Apply the intrinsic resolution of detector
   - momentum information reconstruction
     & check the momentum resolution

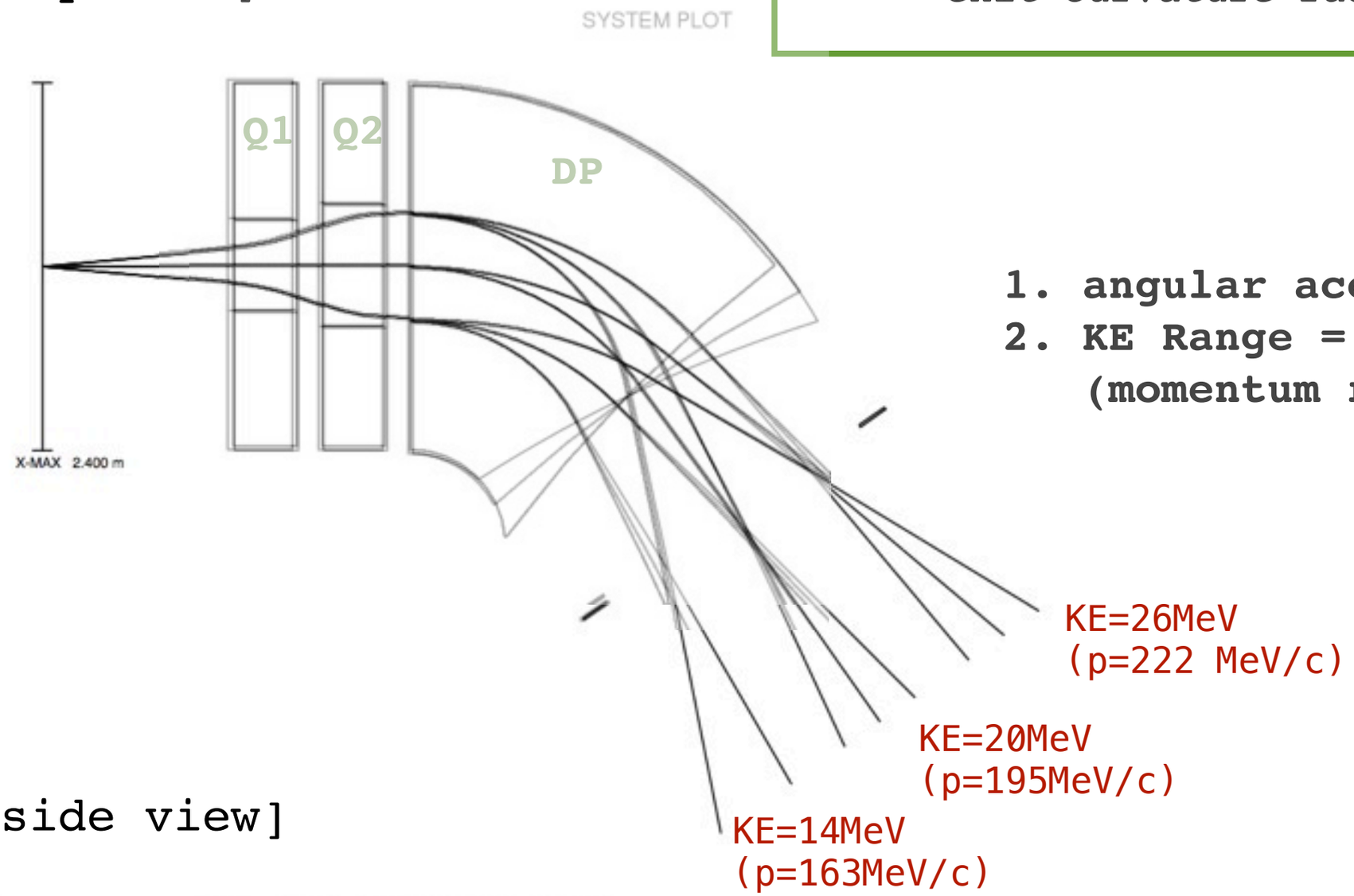
NEXT?
: Event Simulation with IQMD?
: acceptance plot (pT vs y) for the whole LAMPS
: more realistic design for FPD (e.q. layers..)
: Put ToF Wall at the end of FPD

Back up slides

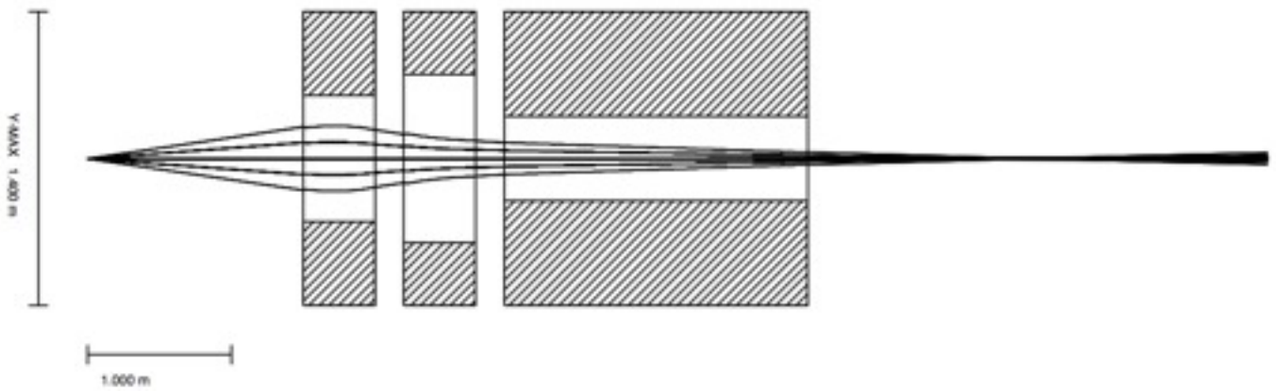
[GICOSY]

```
1.5m ->Q1-> 0.2m ->Q2-> 0.2m ->DP-> 1m -> C
*Q1 : L=50cm, full_a=60cm, B=-2.14T/m (y-focusing)
*Q1 : L=50cm, full_a=80cm, B=+1.37T/m (x-focusing)
*DP : θ=55°, half_gap=cm, w1=2.4m, w2=2.4m,
      R=2.2m, B =-0.29T, β1=0°, β2=10°
      exit curvature radius = 11m
```

[top view]

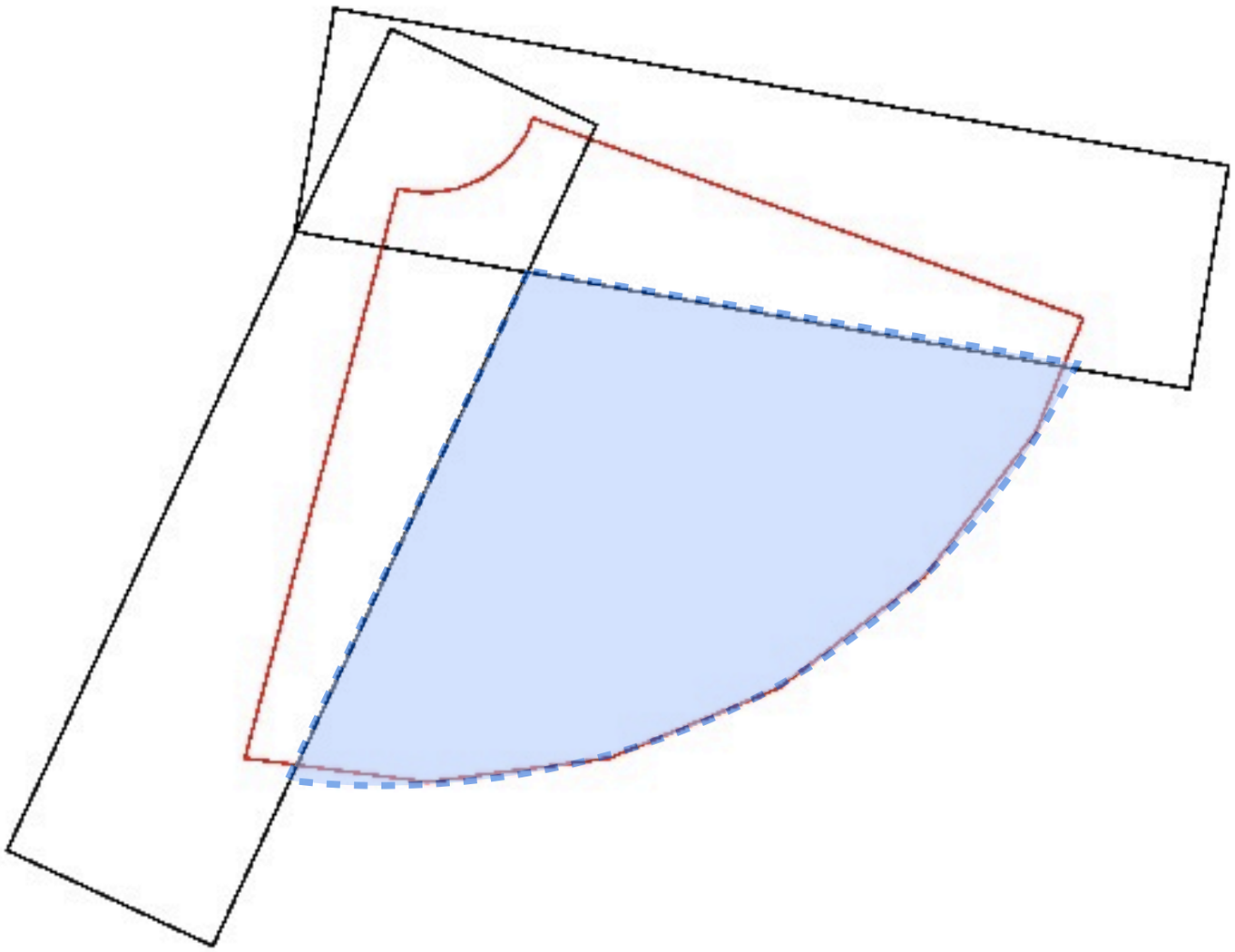


[side view]



1. **angular acceptance = 75mr, 100mr**
2. **KE Range = ± 30%**
   (momentum range = ± 14%)

- DP 시작점 -15도. 총앵글 +30한거



Field => beta_1=25, beta_2=25 일 때 (그림에도 넣음)

KE=9.86MeV (p=136.36MeV/c)　KE=20MeV (p=194.8MeV/c)　KE=33.56MeV (p=253.24MeV/c)