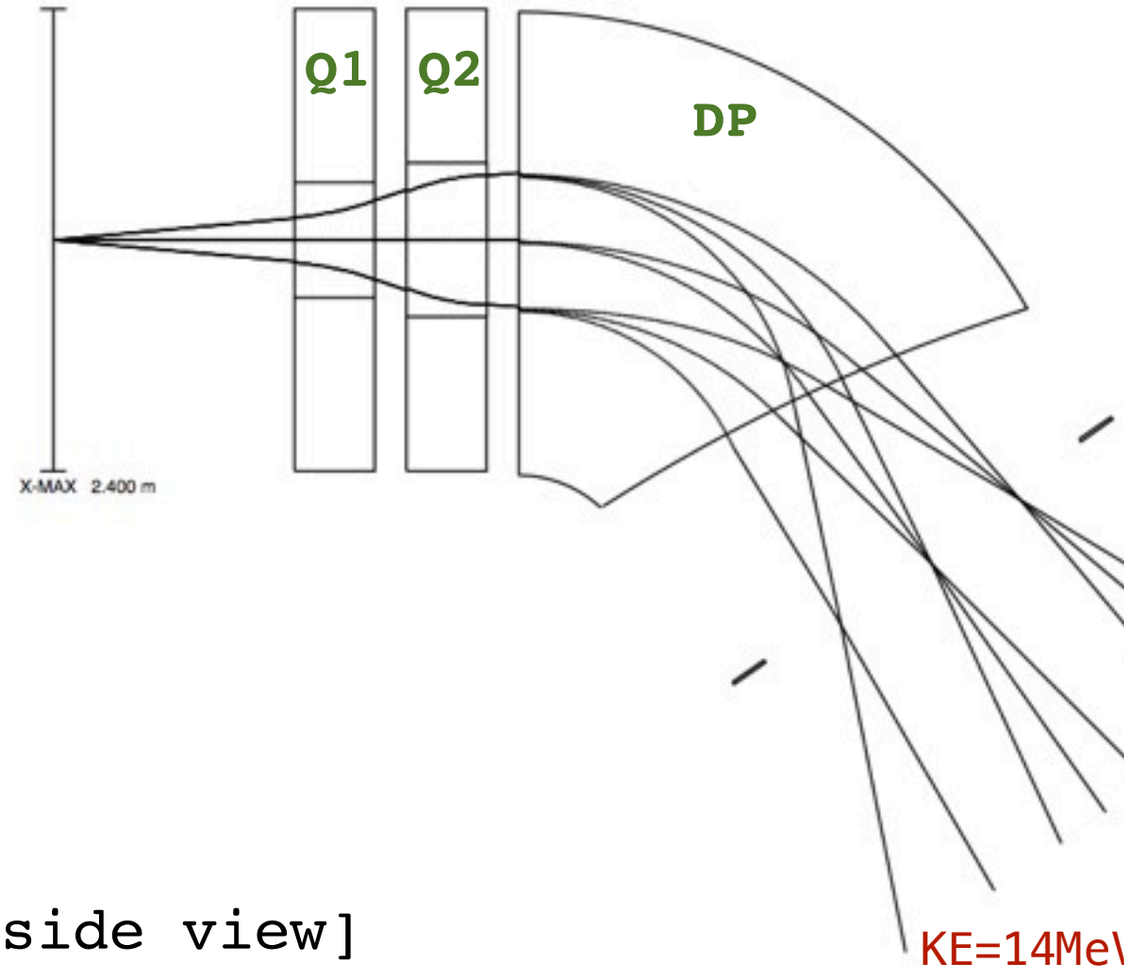
20130314 lab meeting - KYO

: Geant4 Simulation for QQD system

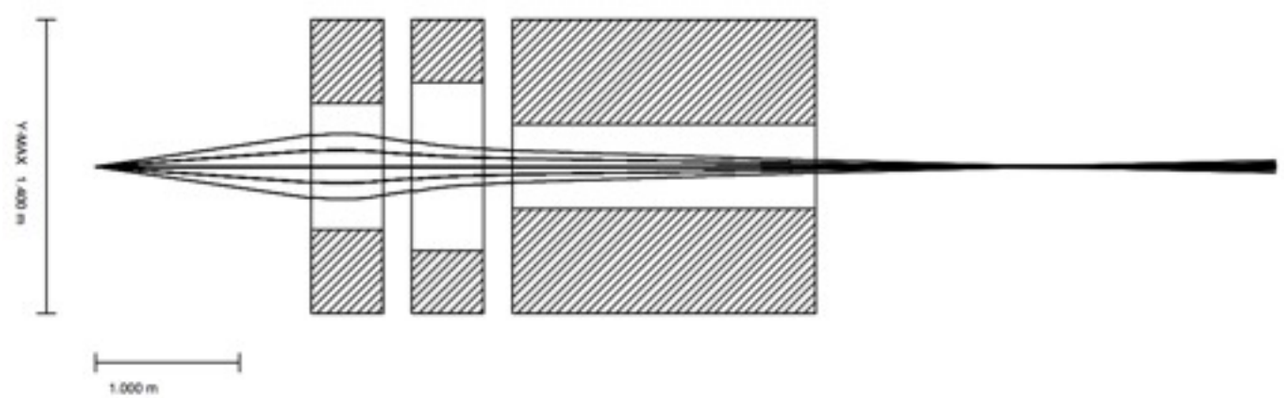
[GICOSY]

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°, gap=35cm, w1=2.4m, w2=2.4m,
R=2.2m, B =-0.29T, β_1=0°, β_2=10°
exit curvature radius = 11m

[top view]

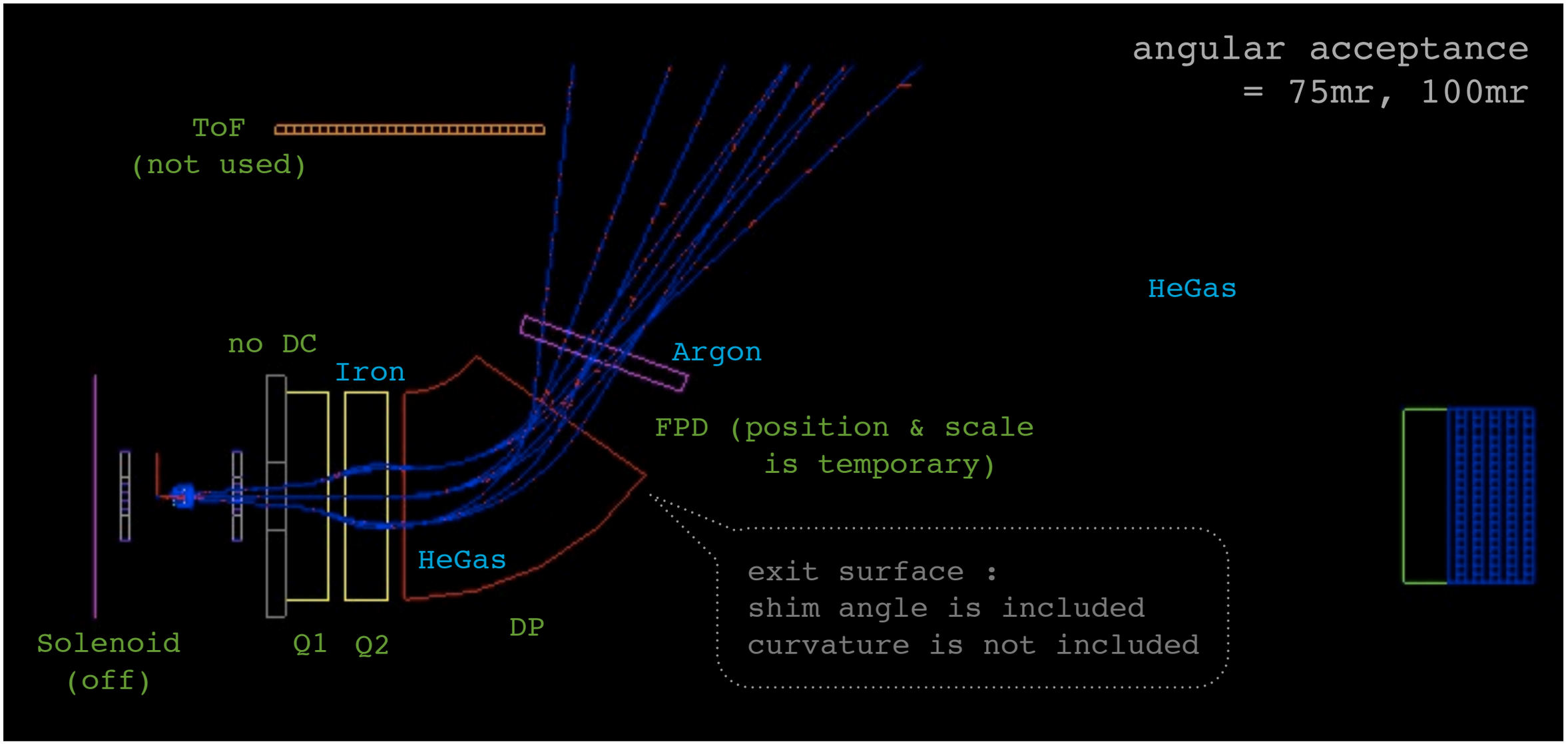


[side view]



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

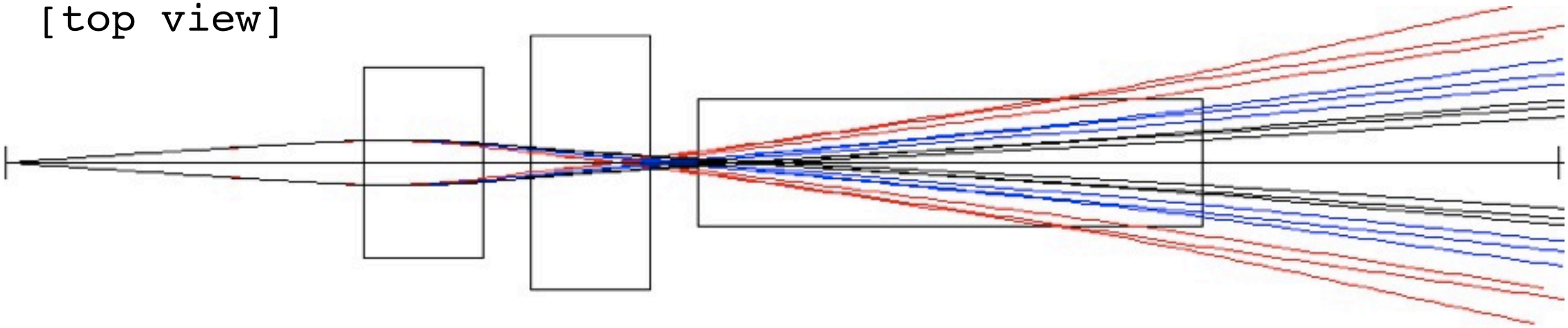
[Geant4 Simulation]



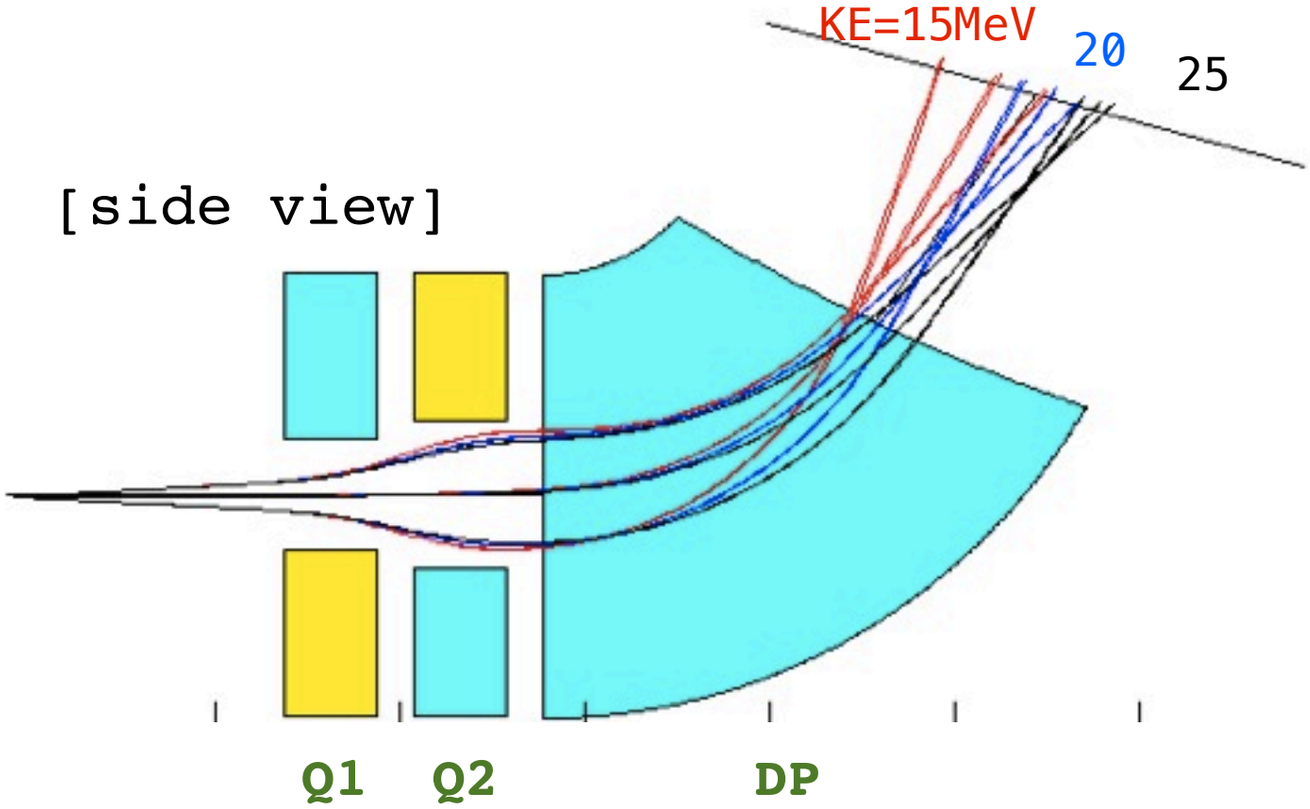
Focal plane doesn't match with GICOSY simulation!

[K-trace Simulation]

[top view]



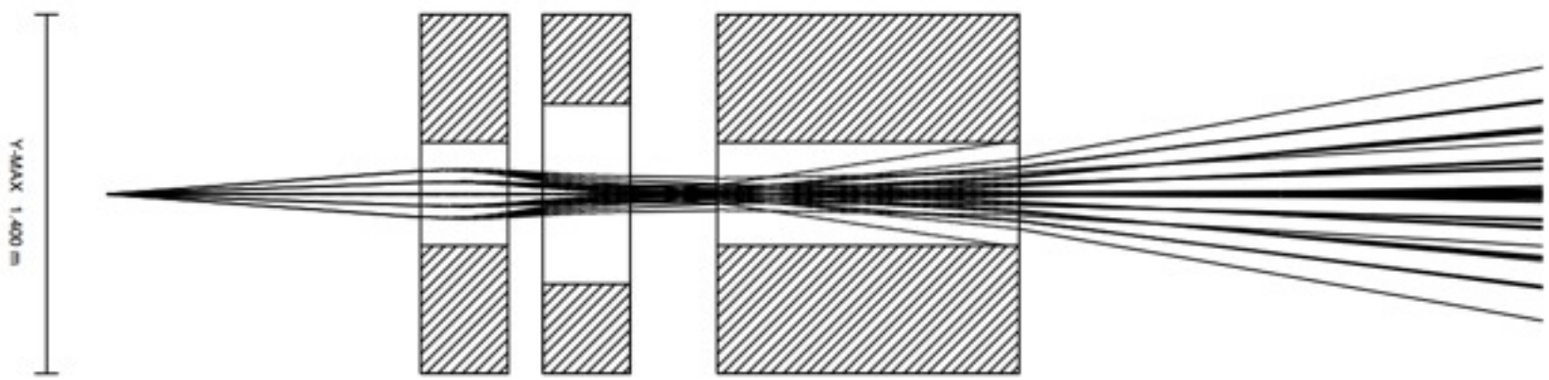
[side view]

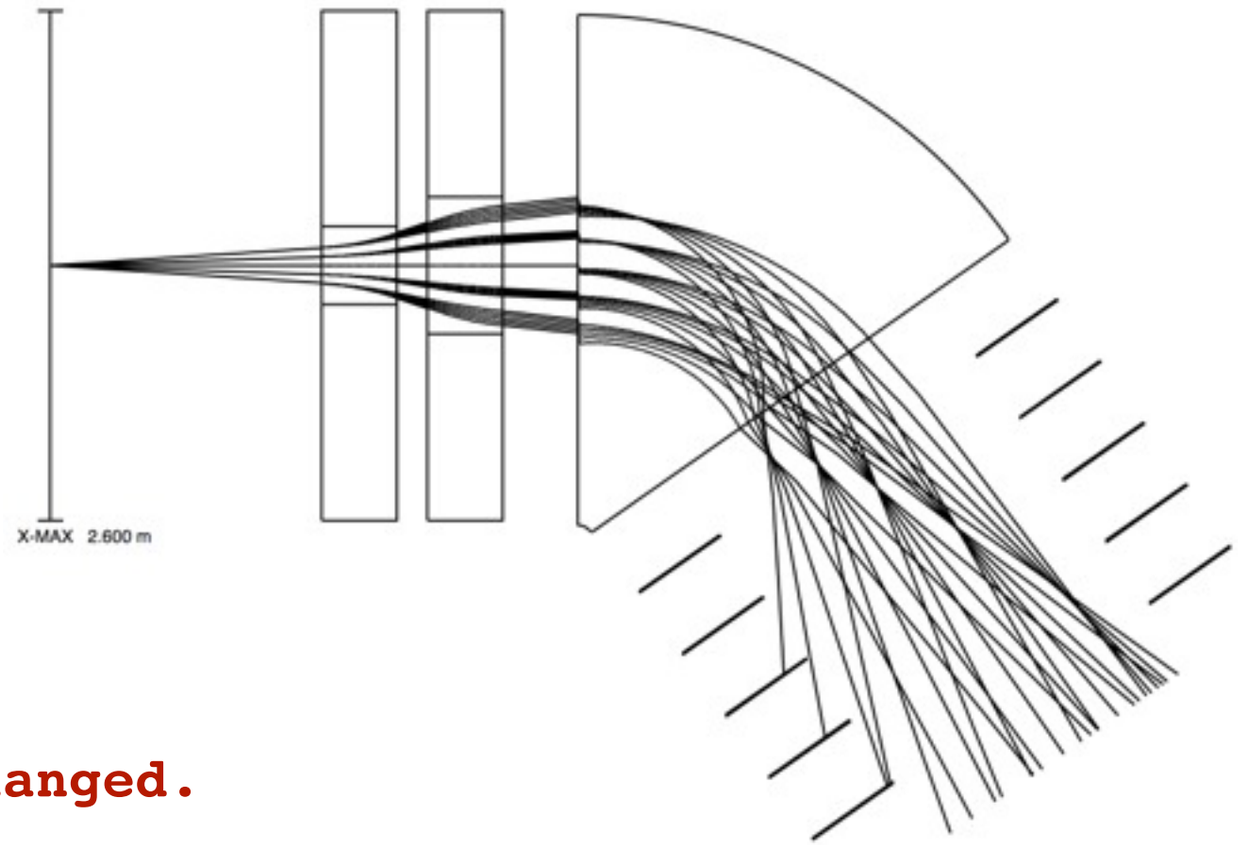


All the parameters are same with GICOSY, but K-trace also agrees with Geant4 not GICOSY!

[GICOSY from yesterday]

- 2nd order matrix calculation (for position of FPD)





1. angular acceptance = 50mr, 50mr
2. KE Range = ± 30% ?
   (momentum range = ± 14%)
3. correct Q-magnet aperture
4. B-fields and DP design has been changed.
5. focal points are different!!

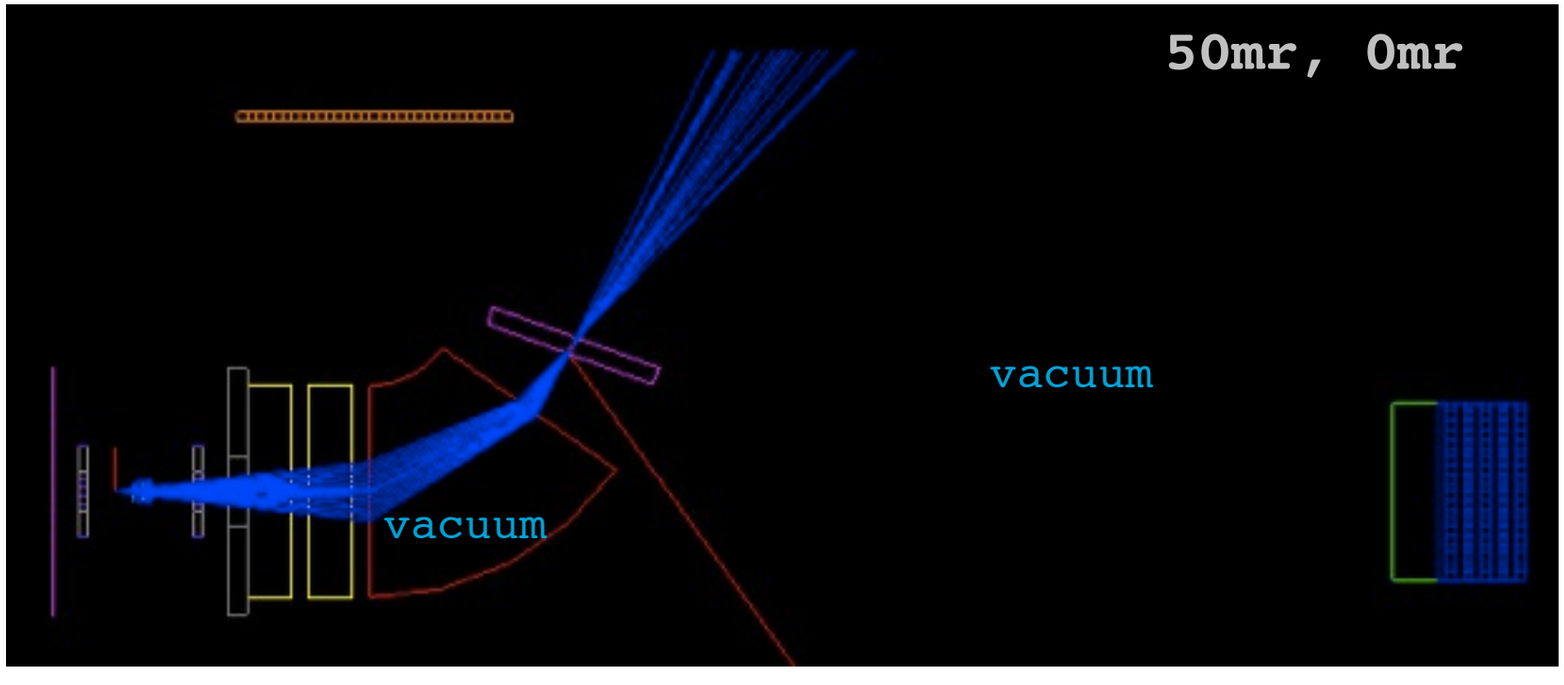
[Future plans]

1. Study the last GICOSY simulation and find out the reason why “GICOSY” and “Geant4 & K-trace” disagree.

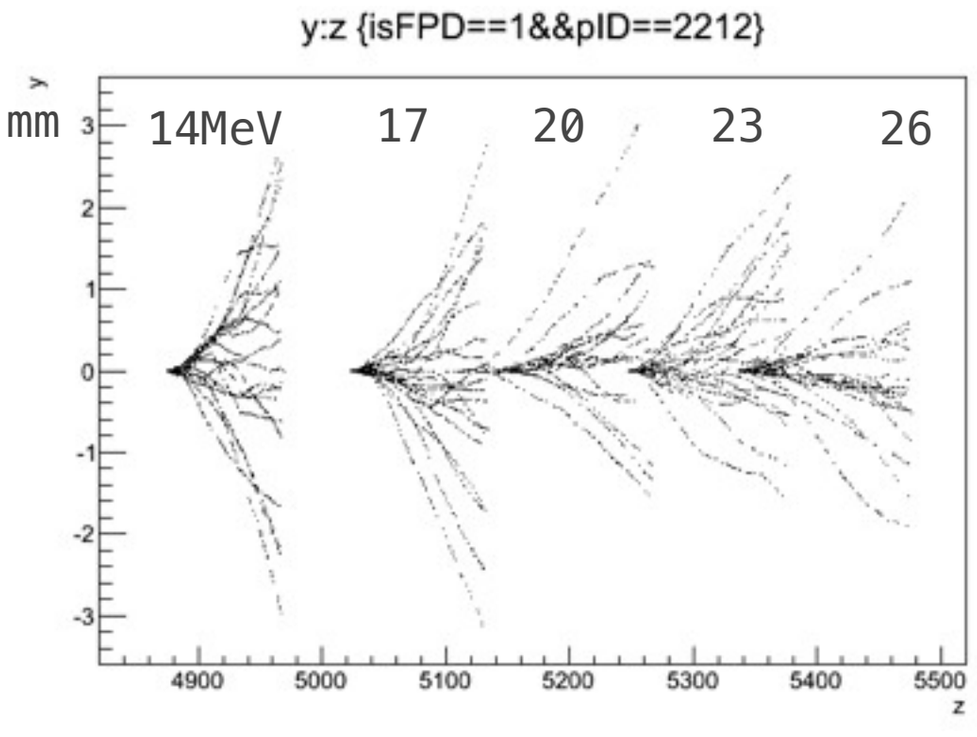
2. Confirm the design and our goal more clearly first, and then simulate it with Geant4.

   - Angular acceptance?
     (75mrad, 100mrad), (50mrad, 50mrad)
   - KE range ?
     15-40 MeV : KE range = ±60%, p range = ±34%
     14-26 MeV : KE range = ±30%, p range = ±14%

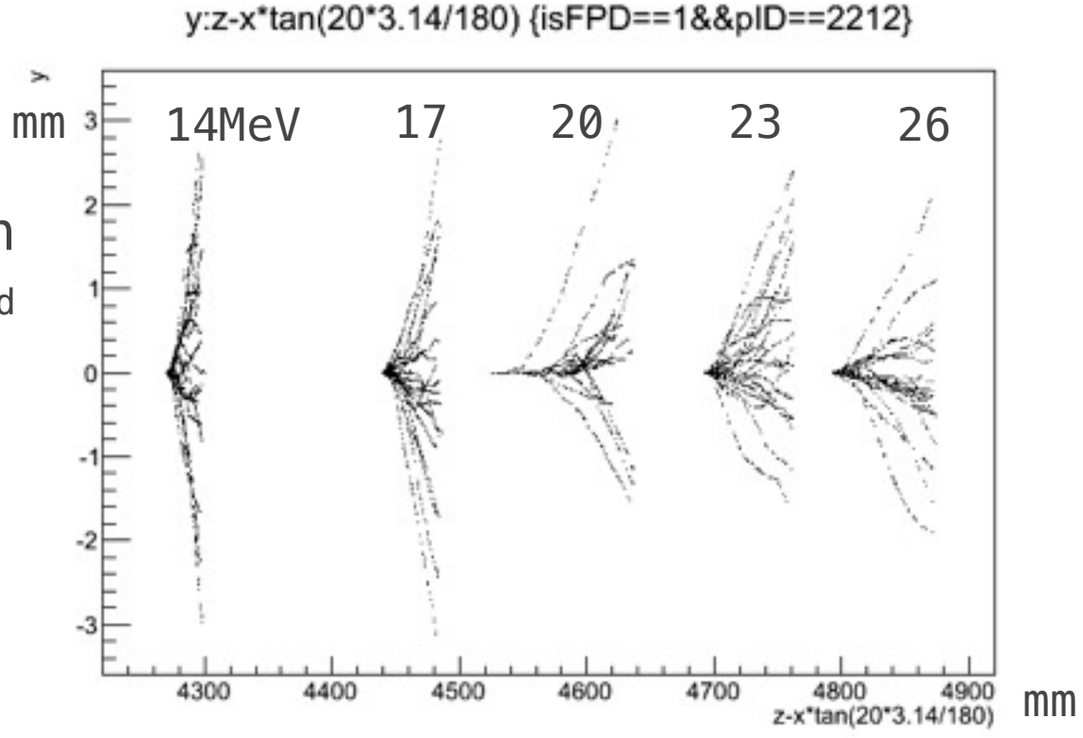
[check the FPD]



This is just for checking if FPD works. plots are meaningless.



corretion
for θ_{tilted}



[Future plans]

1. Determine the position of FPD precisely

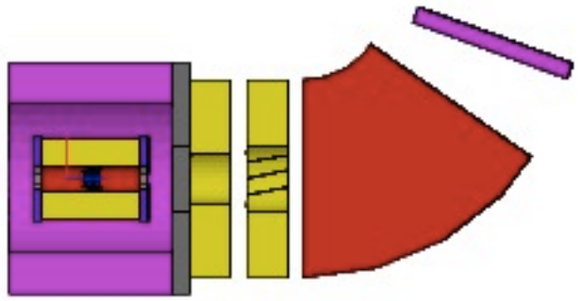
2. Simulation for position information (with different KE with given angular acceptance)

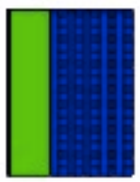
3. Apply the intrinsic resolution of detector

4. 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





[check the FPD]