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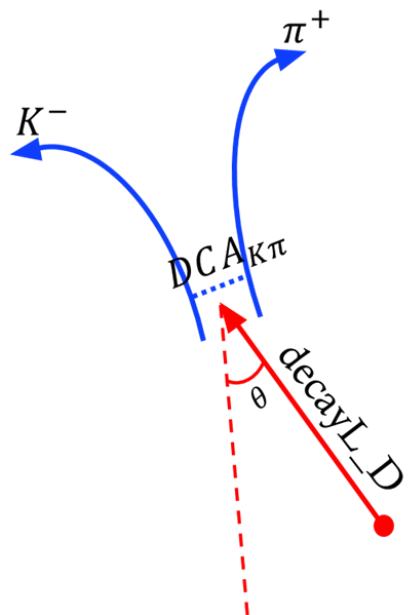
# $D^0$ Reconstruction

Senjie Zhu

December 13, 2022

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# Topological Cut

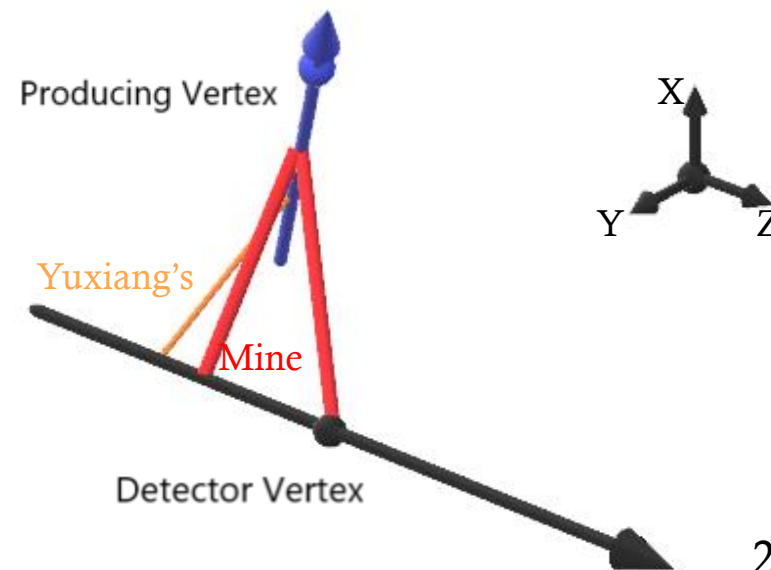
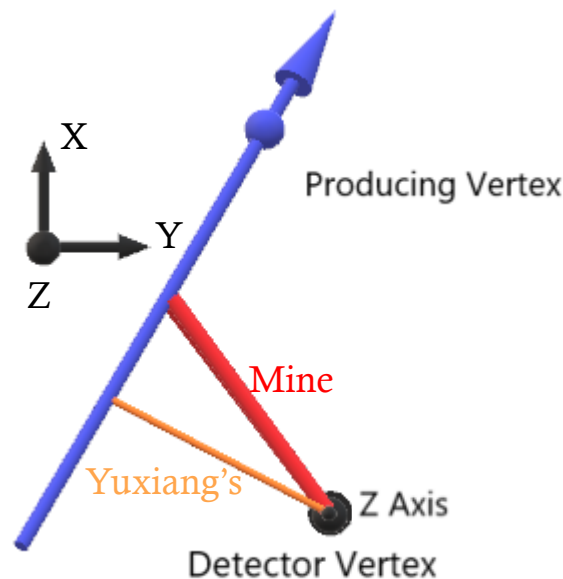
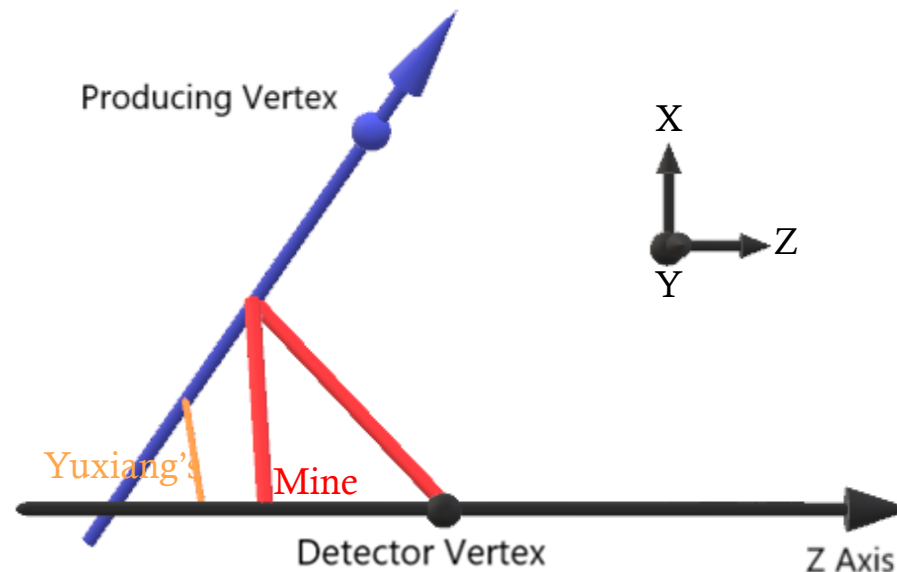


$D^0$  topological cut

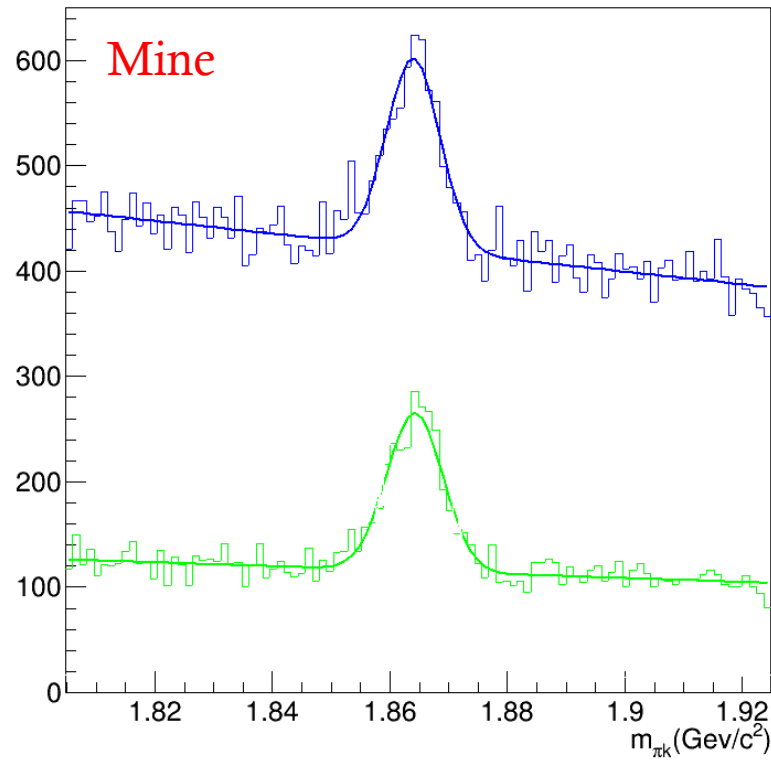
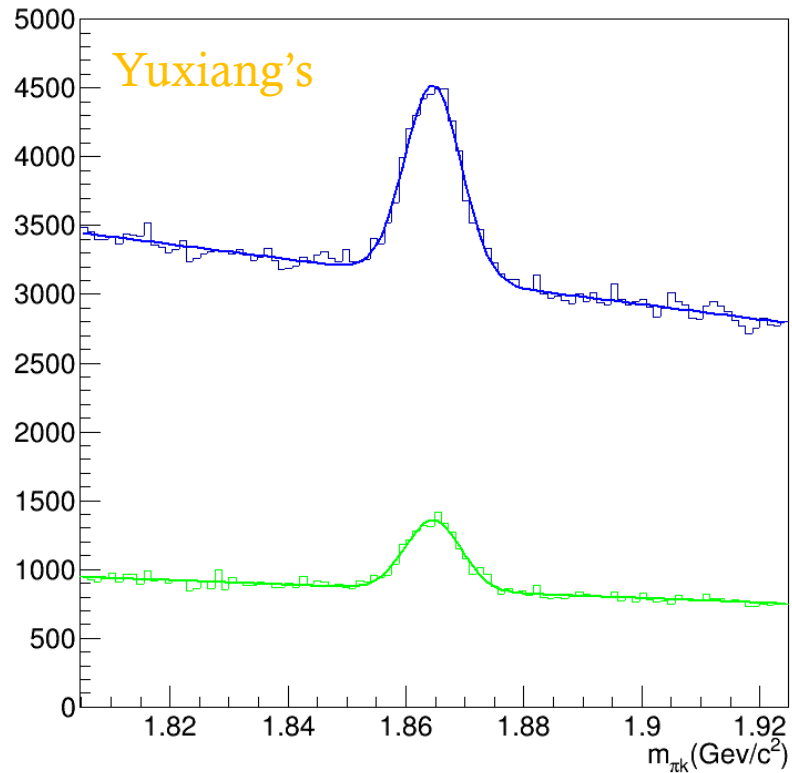
- $DcaXY_K$
- $DcaXY_\pi$
- $Dca_{K\pi}$
- $DecayLengthXY_{D^0}$
- $\cos \theta_{XY}$

Difference when calculating *Daughters' DcaXY*

- **Yuxiang's**: Project the prime vertex(reconstructed) and the daughter's track to X-Y plane and calculate  $DcaXY$  at the plane
- **Mine**: Find the point, at the track, which is closest to the detector vertex and Using the magnitude of the X-Y projected position of the point as  $DcaXY$



# Reconstruction



**Blue line:** daughter's DcaXY cuts not applied  
**Green line:** daughter's DcaXY cuts applied to suppress the background down to 2/7 of the blue line

**Mine:**

`/beegfs/home/zhusj/eicc_dir/Data/pythiaeRHI  
C/3p5_20/cut/d0_raw/cut_d0_multi.root`

**Yuxiang's:**

`/beegfs/home/zhaoyx/EIC/EicC/EicC_smear  
d_data_v3/3.5_20/D0_tree_3.5_20_10M.1.root`