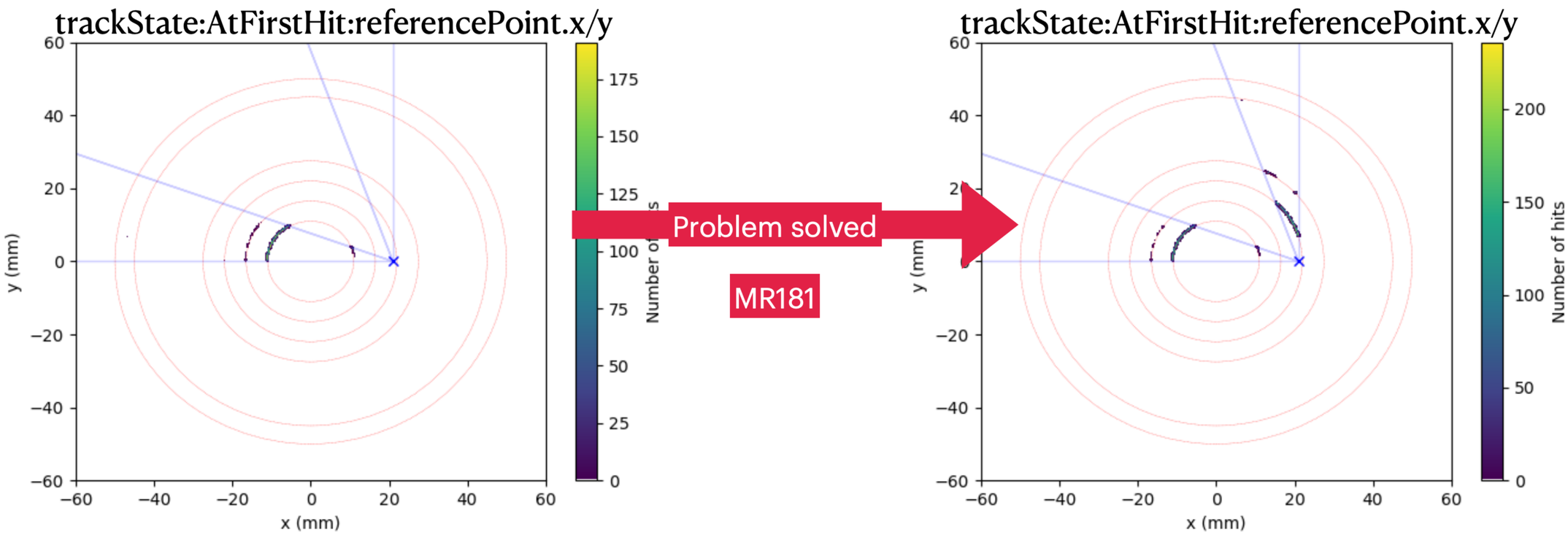
Trk & Vtx & PID

C.Zhang/30Dec2024

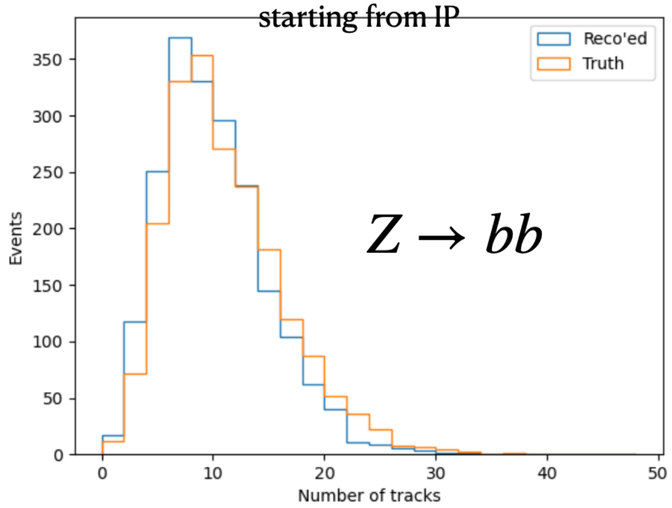
Trk

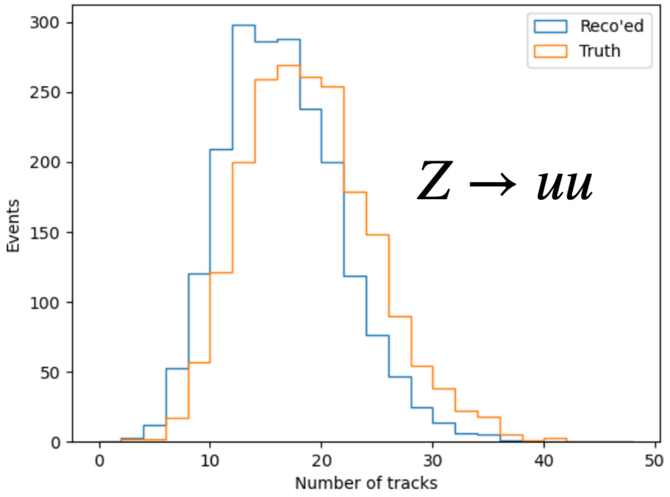
- Particle-gun μ^+ (μ^-)from (21,0,0), momenta=5GeV, $\theta = 85^\circ$, $\phi = 90^\circ \sim 100^\circ (160^\circ \sim 180^\circ)$



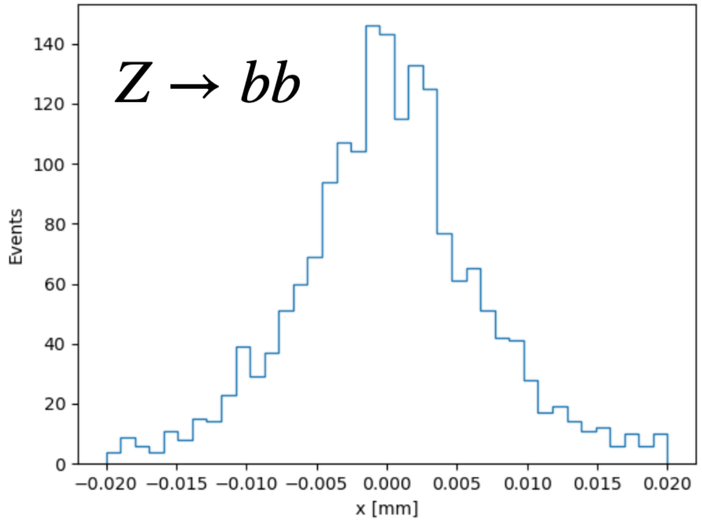
Primary vertex

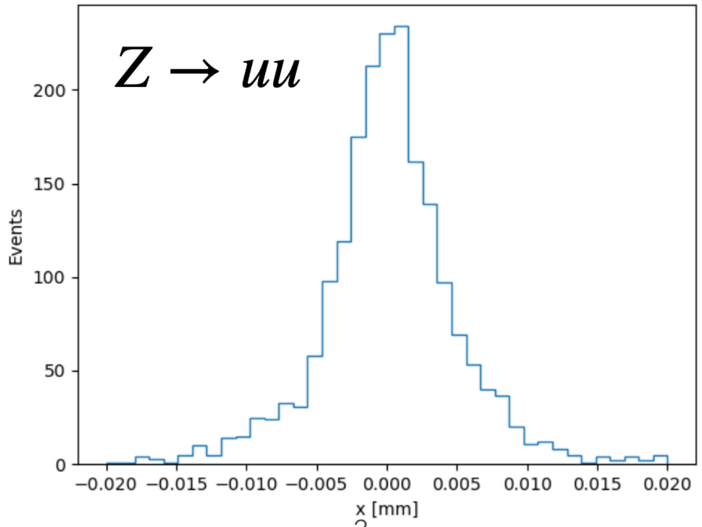
Number of primary tracks
VS.
Number of Charged & Stable MCParticle
~~starting from IP~~



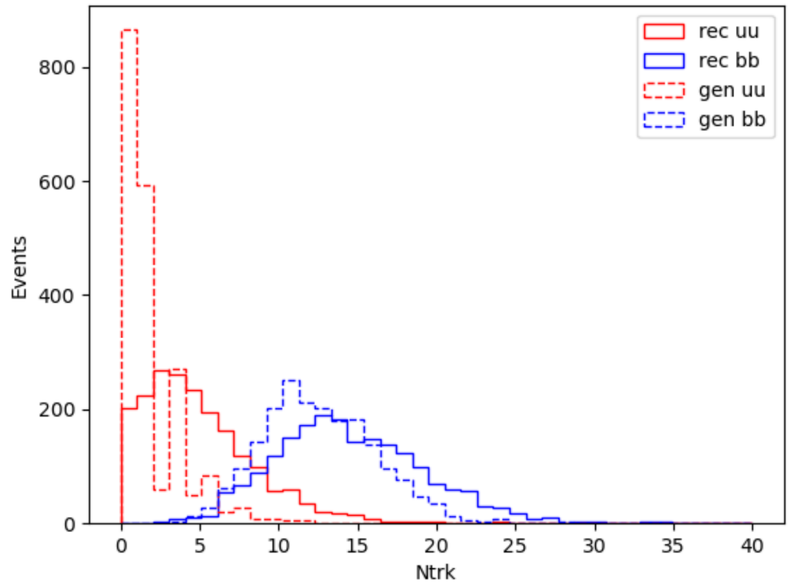


Primary vertex precision





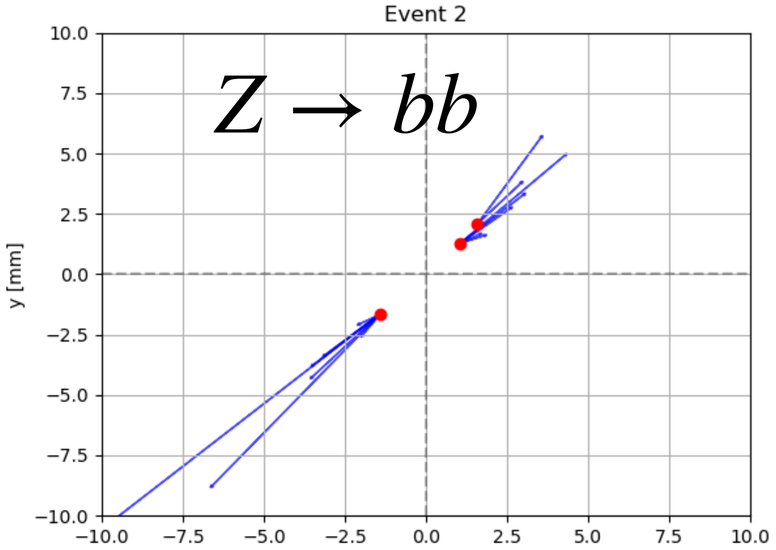
Number of tracks for SV reconstruction, in progress..

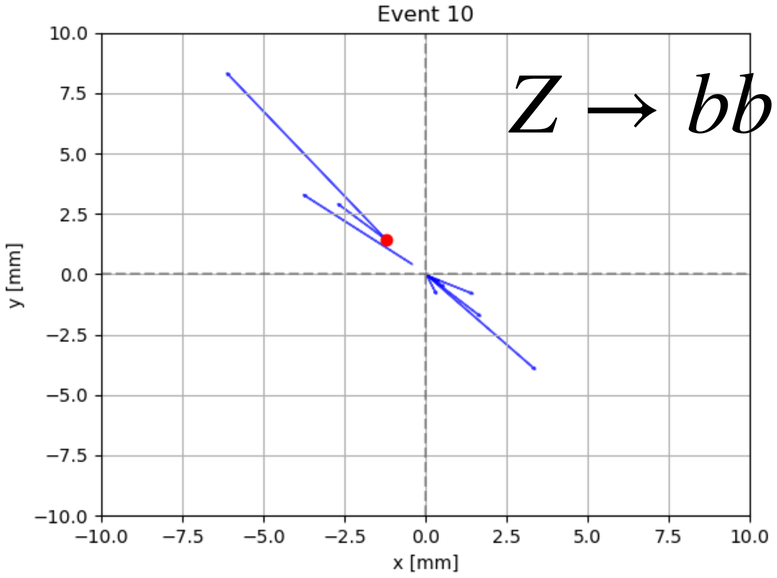


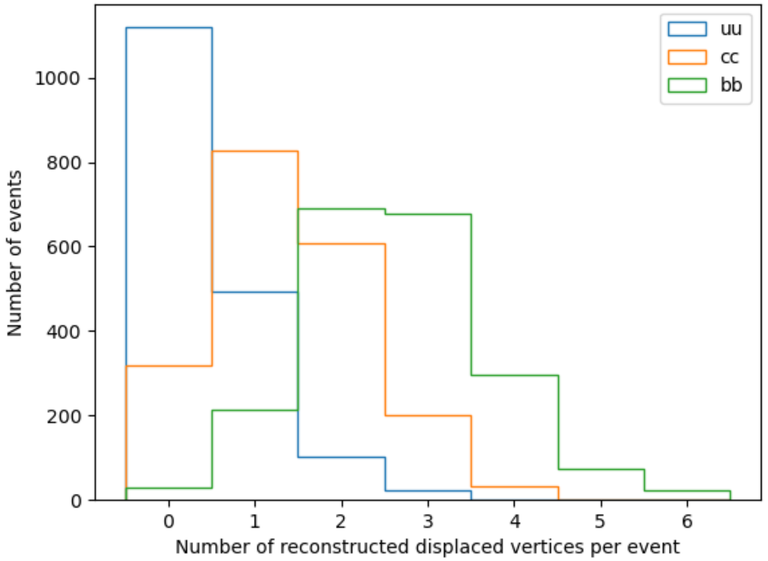
Secondary vertex

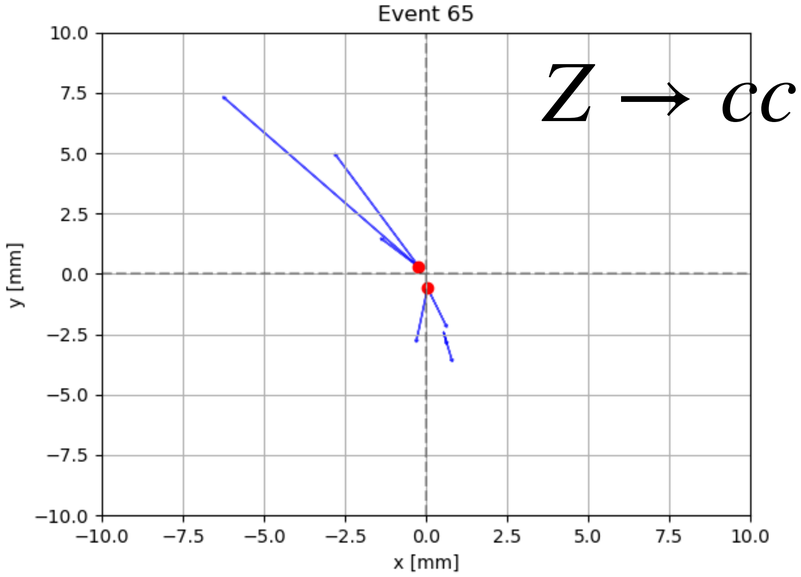
Blue, truth track from truth starting point
Red, reconstructed vertex

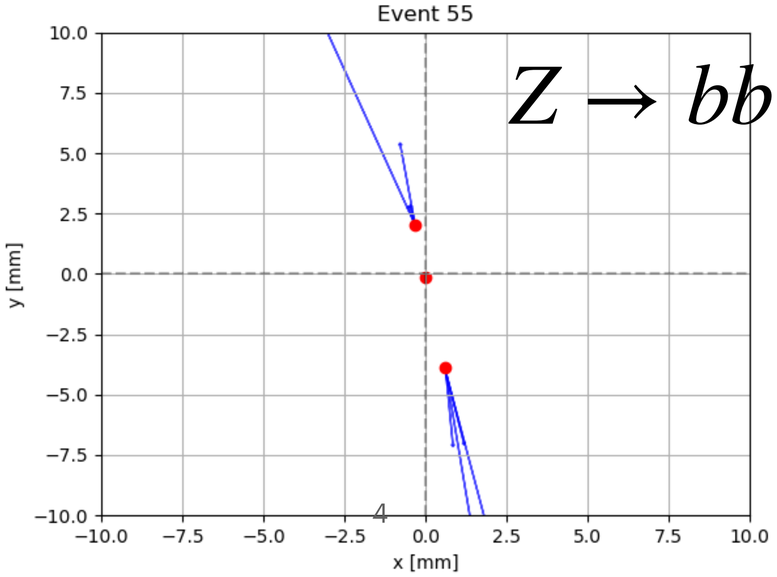
A common mistake, competition with PV











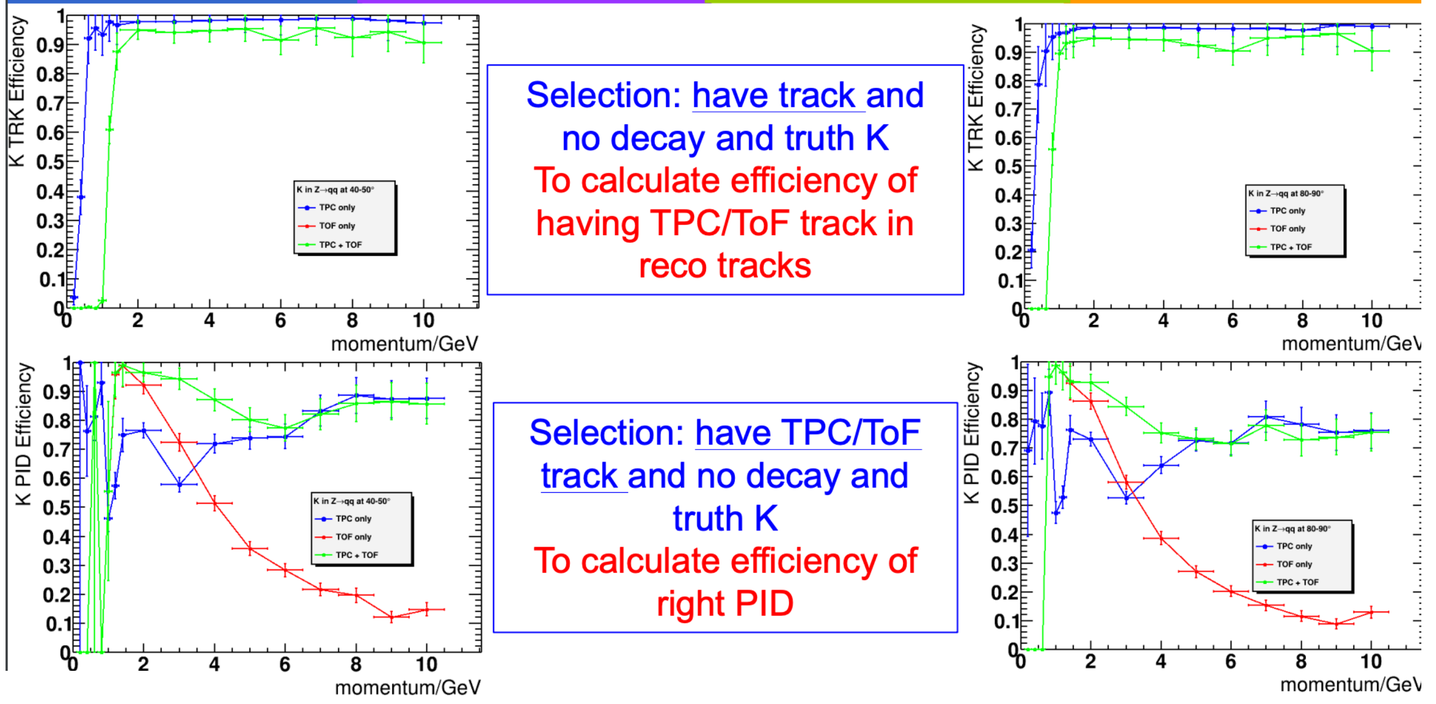
- Summary & Todo
  - Code for SV/PV competition
  - Truth matching for performance study

PID

Xiaotian Ma

- Waiting for the new dN/dx algorithm, it will significantly improve PID performance
- From particle-gun to Zqq, overall the performance agrees with expectations
- Provide code to show how to implement PID for analysis

TPC/ToF TRK/PID efficiency at 40-50 / 80-90 degree for K in $Z \rightarrow qq$



Selection: have track and no decay and truth K
To calculate efficiency of having TPC/ToF track in reco tracks

Selection: have TPC/ToF track and no decay and truth K
To calculate efficiency of right PID

K in $Z \rightarrow qq$ efficiency at 40-50 / 80-90 degree

- Summary of efficiency study in physical process $Z \rightarrow qq$
  - Analysis package "AnalysisPIDAlg" is ready for PID studies with more info.
    - Usage: ./run.sh AnalysisPID.py (waiting for being merged to master)
    - Input: track.toot ("CompleteTracks", "CompleteTracksParticleAssociation", "DndxTracks", "RecTofCollection")
    - Output: pid.root