Reconstruction of the K0s

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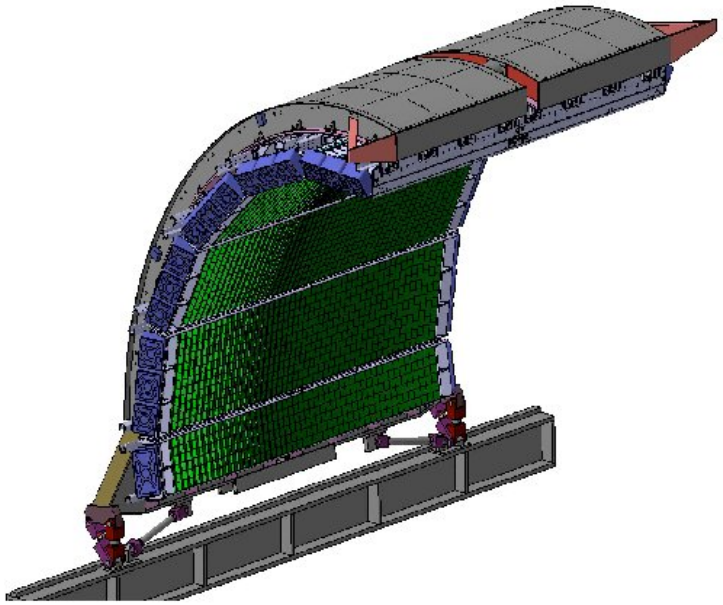
Outline

- Recap/Motivations
- Current Progress
- Challenges of K0s Reconstruction

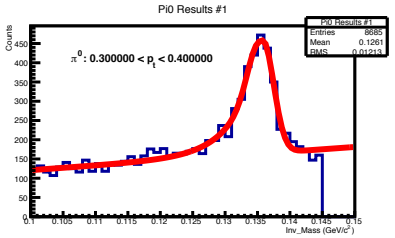
Recap

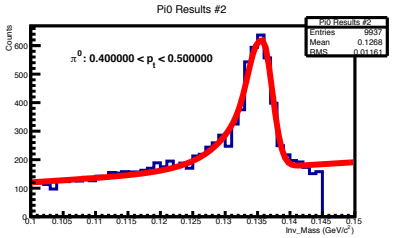
- Reconstruction of the K0s at 8 TeV using ALICE pp-data.
  - Interested in the $\pi^0\pi^0$ decay channel $(30.69 \pm 0.05)\%$.
  - Using photon reconstruction through the electromagnetic calorimeter (EMCAL) and the photon conversion method (PCM).

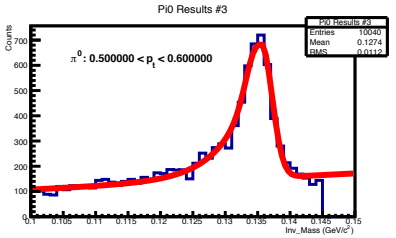


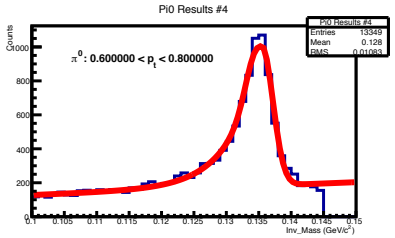
Motivations

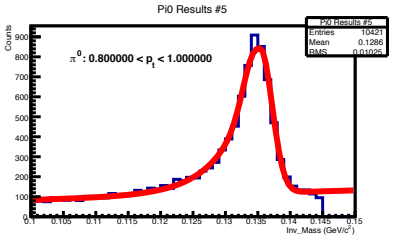
- Why measure the $\pi^0\pi^0$ decay channel?
  - Want a measurement independent of the $\pi^+\pi^-$ decay channel $(69.20 \pm 0.05)\%$.
  - Exploit the triggering capabilities of the EMCAL in measuring neutral pions (Pi0s) at high transverse momentum (p_T).
  - Provide data so that models or MC generators can be better tuned.

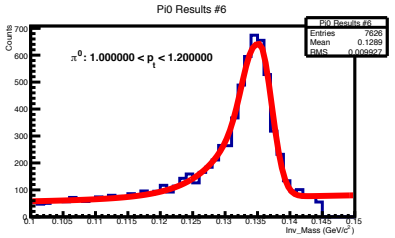


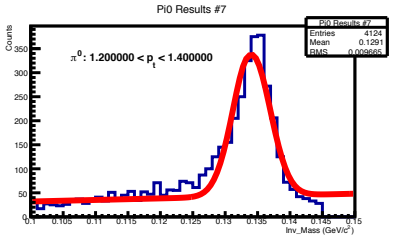


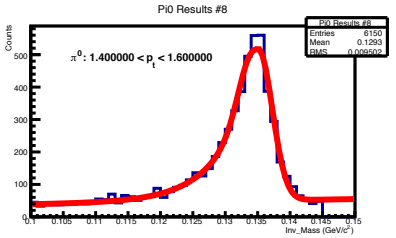


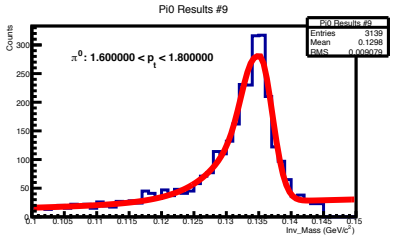


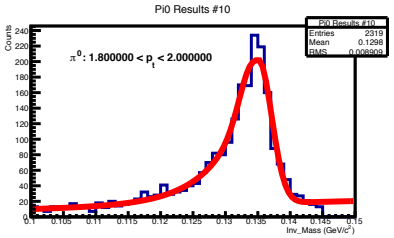


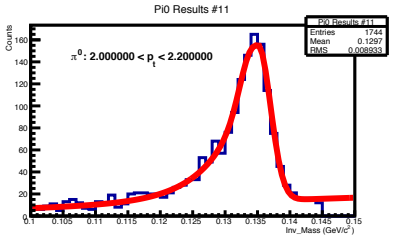


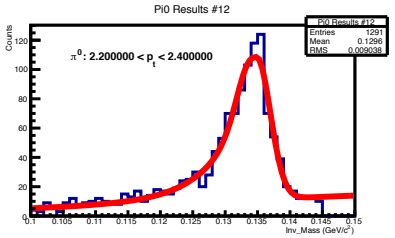


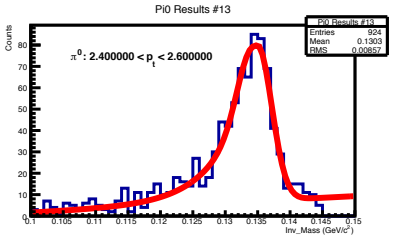


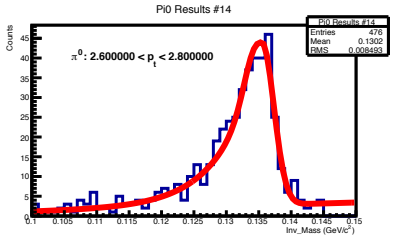


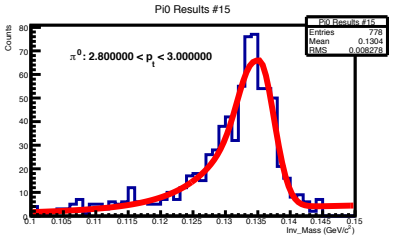


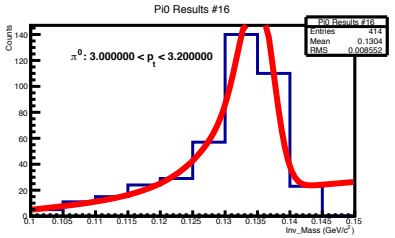


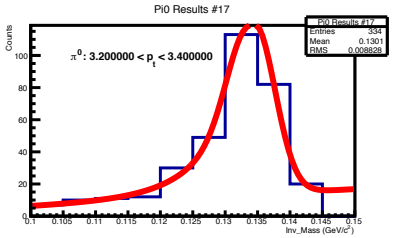


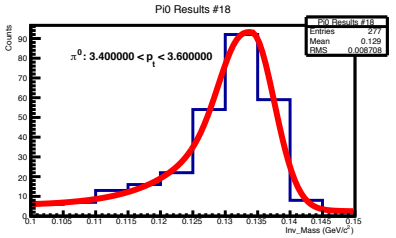


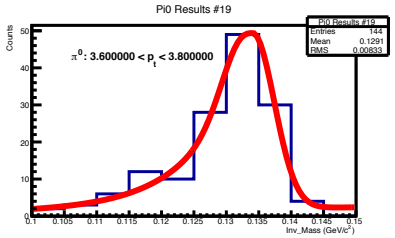












ALICE Data pp, $\sqrt{s}$ = 8 TeV

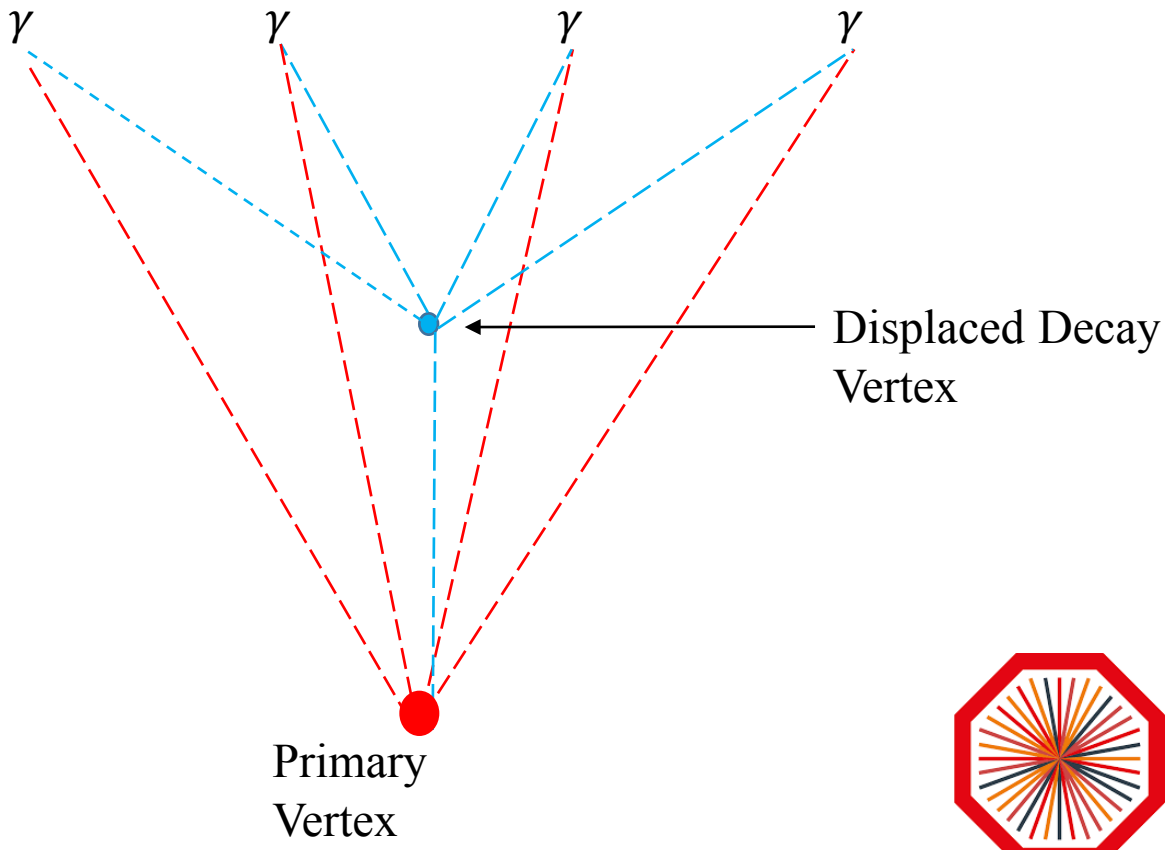
Work in Progress

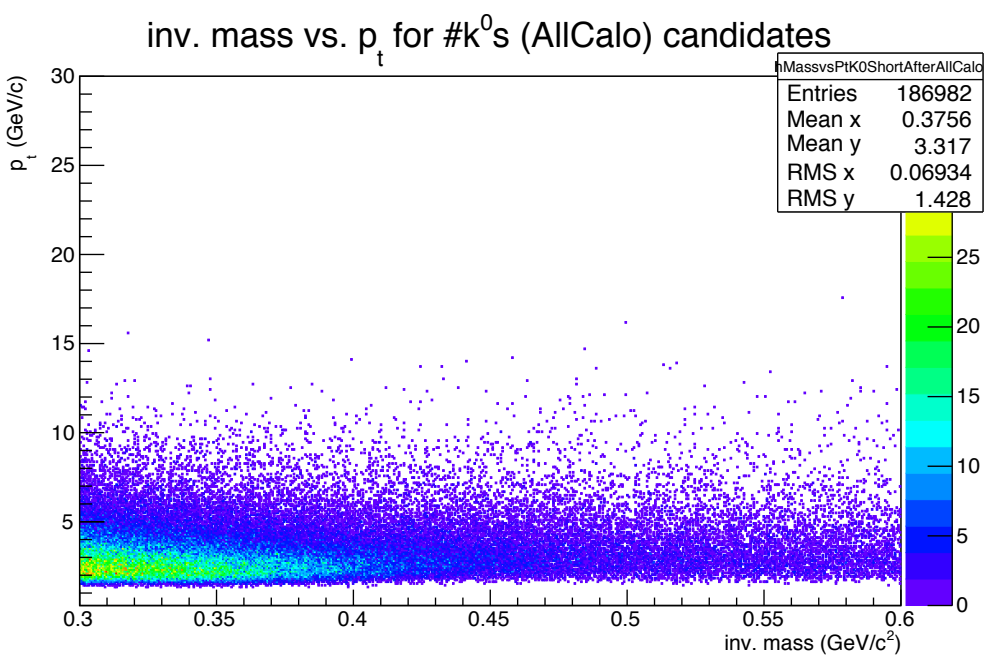
L_{int} = 1.25 mb^{-1}

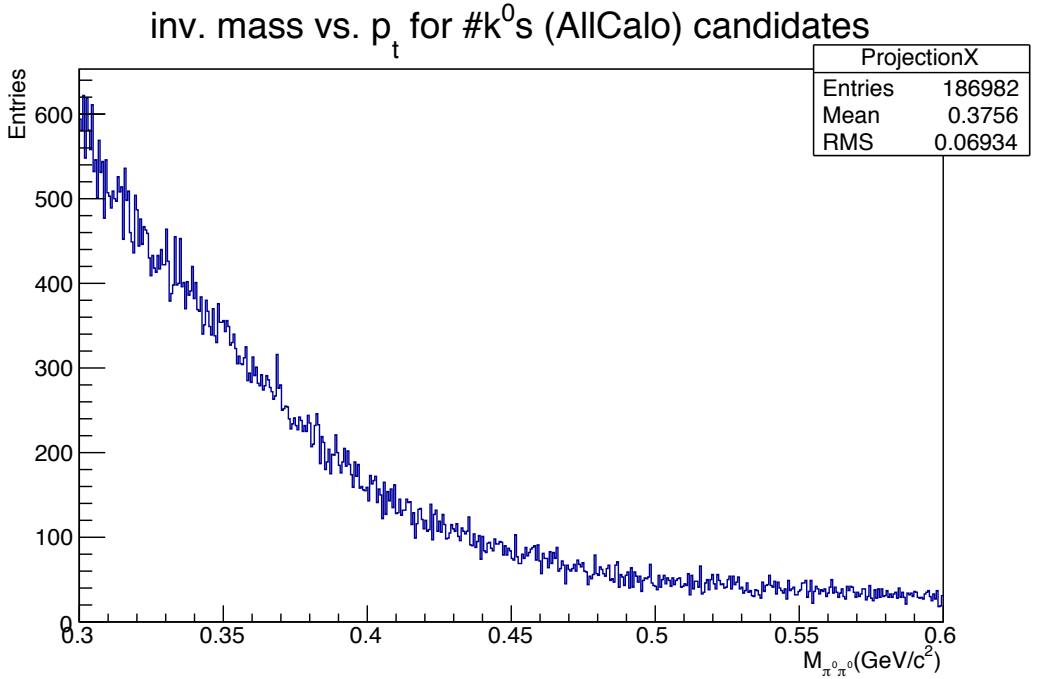
~ 39 Million Events

Challenges of K0 Reconstruction

- Currently analysis is only sensitive to decays that occur close to the primary vertex.
  - Need a large number of stats to see a peak.
- Low mass resolution.
- Pi0 Reconstruction
  - Limited EMCal Acceptance (110°)
  - Low Conversion probability (9%)

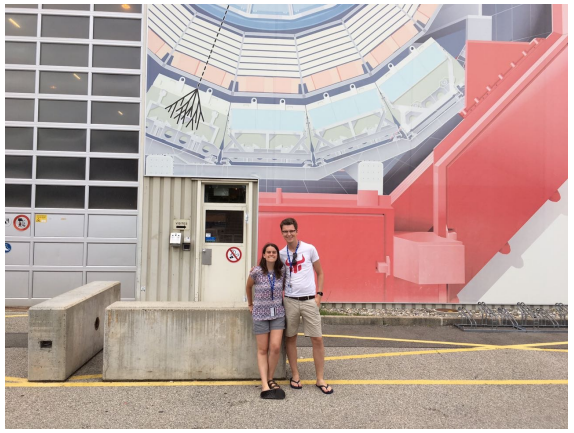


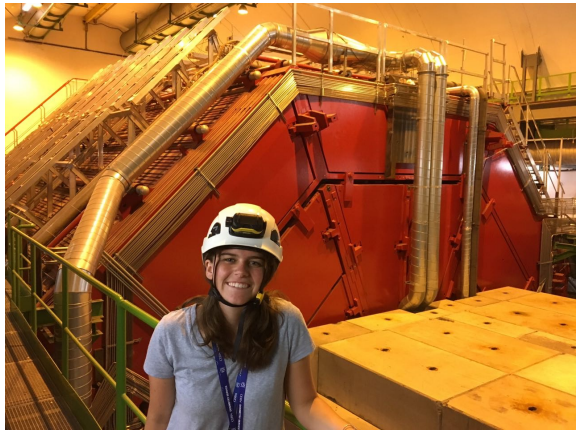


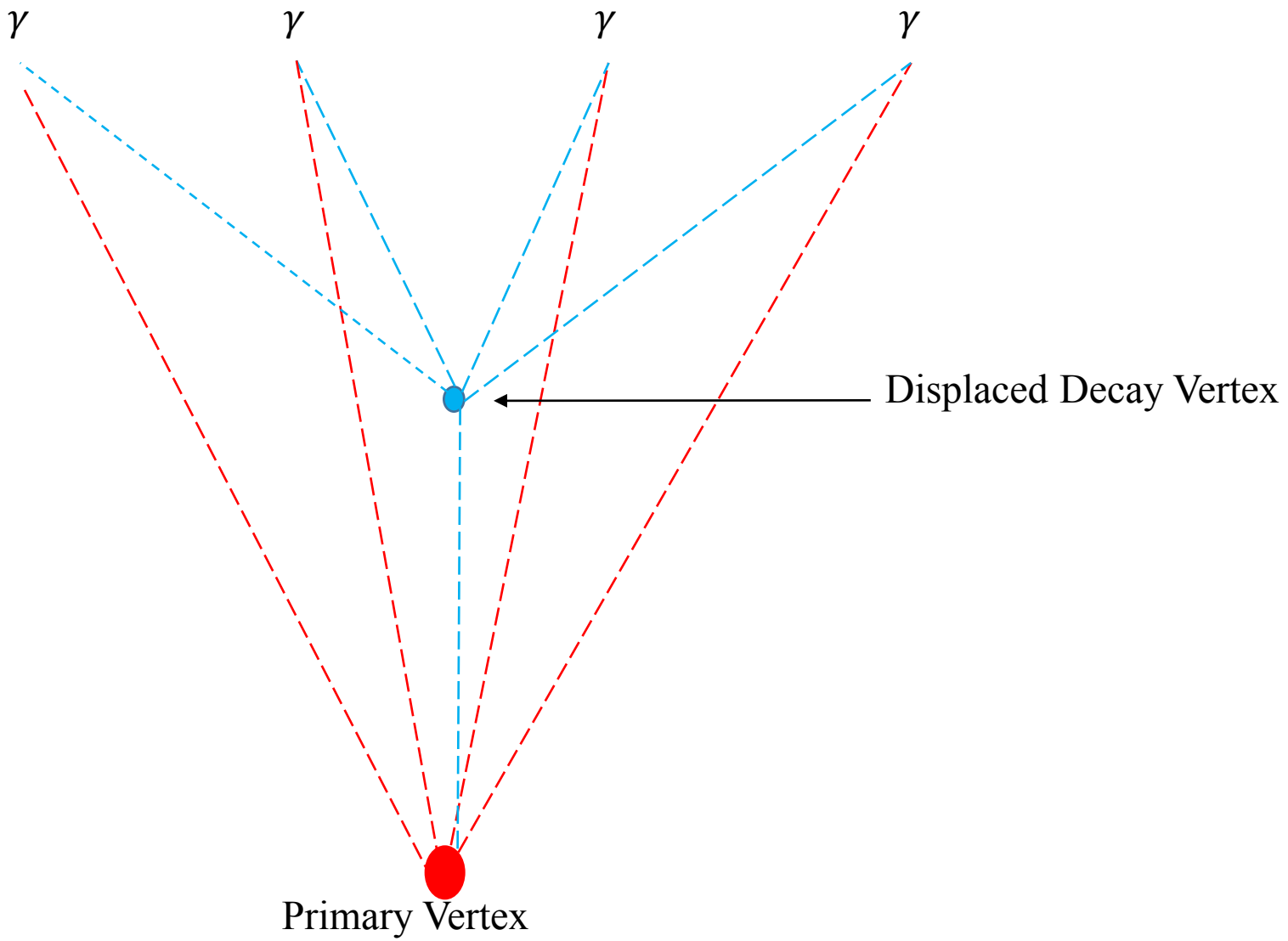


~70 Million Events

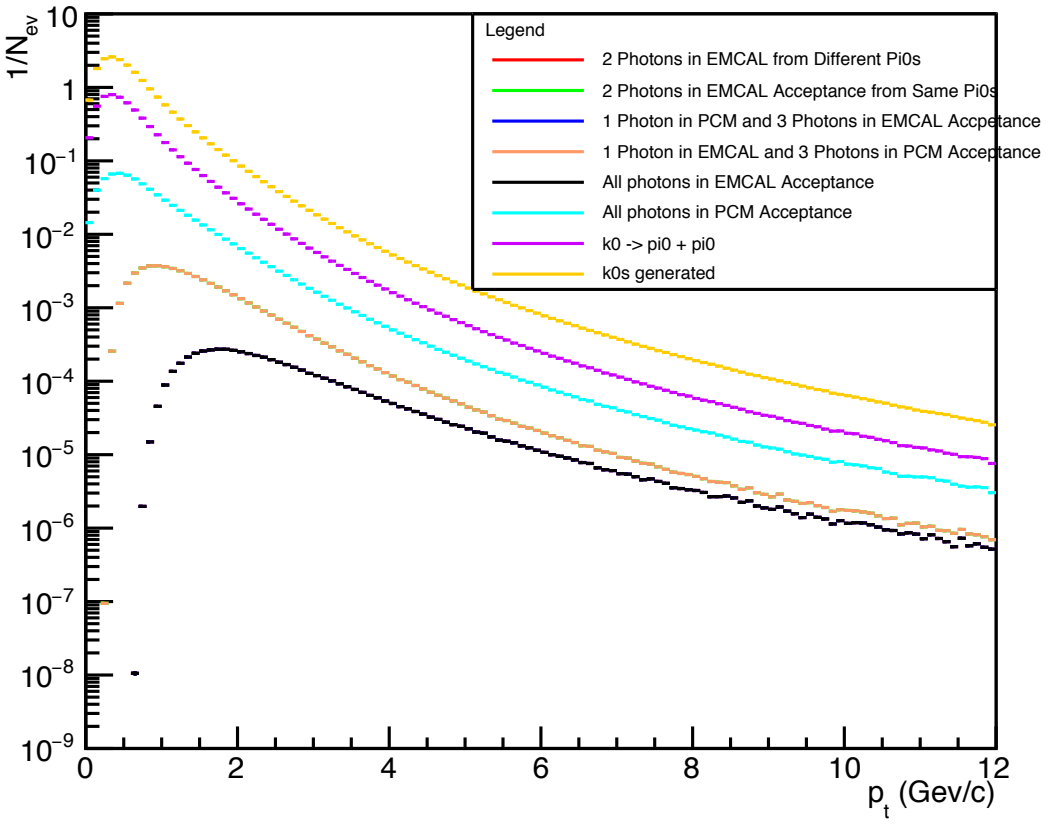
Questions?



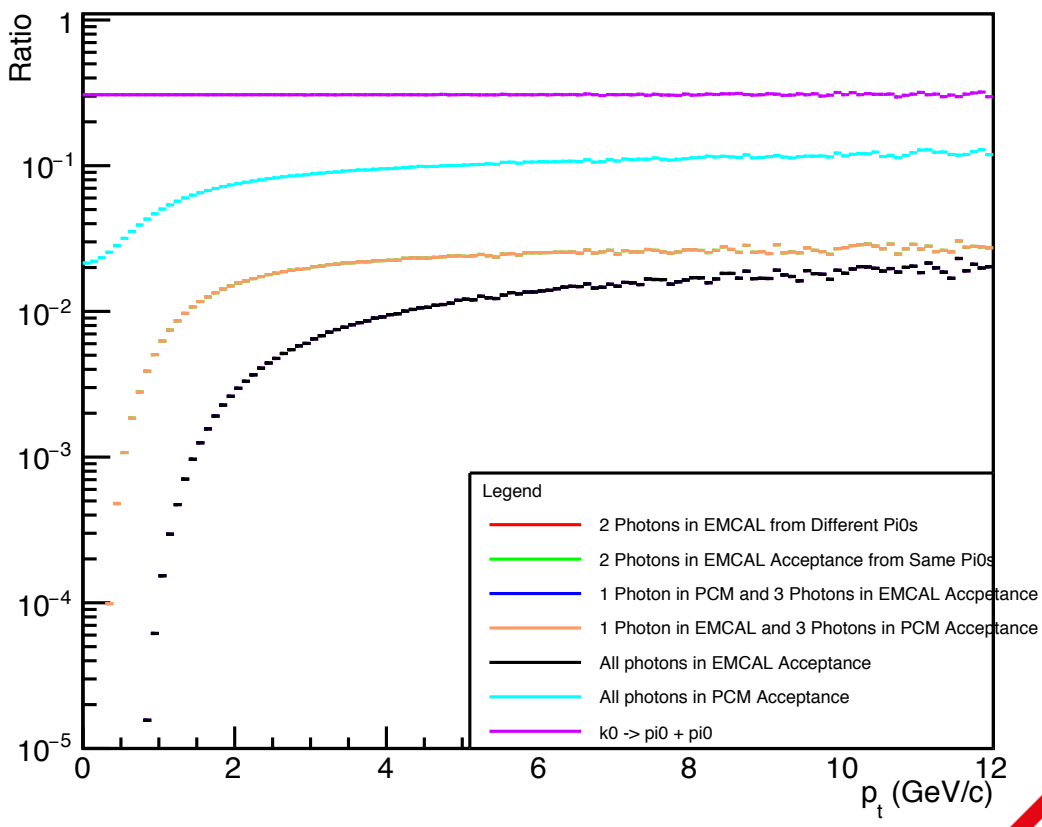


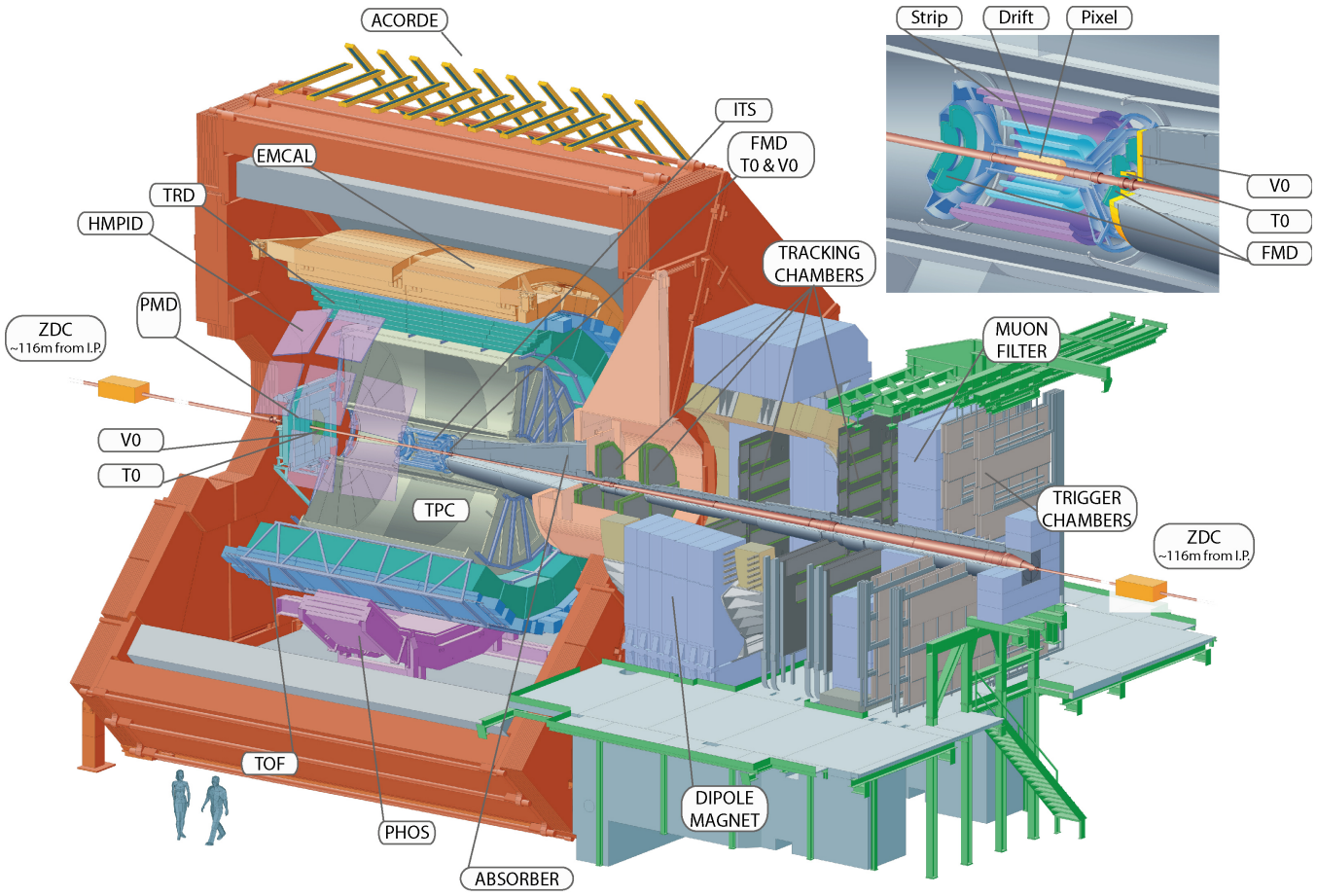

γ
γ
γ
γ
Displaced Decay Vertex
Primary Vertex

p_t Distribution



Ratios to k0s




ACORDE
ITS
FMD
T0 & V0
EMCAL
TRD
HMPID
TRACKING
CHAMBERS
PMD
ZDC
~116m from I.P.
MUON
FILTER
V0
T0
TPC
TRIGGER
CHAMBERS
ZDC
~116m from I.P.
TOF
PHOS
DIPOLE
MAGNET
ABSORBER
Strip
Drift
Pixel
V0
T0
FMD