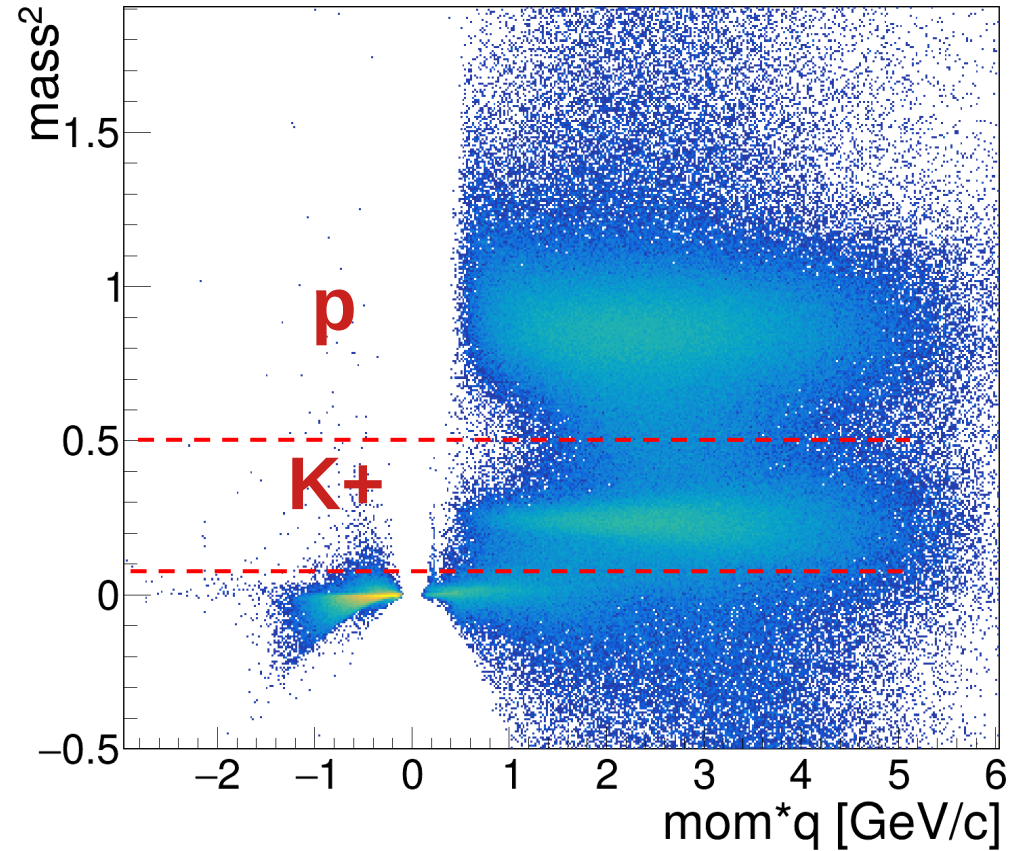
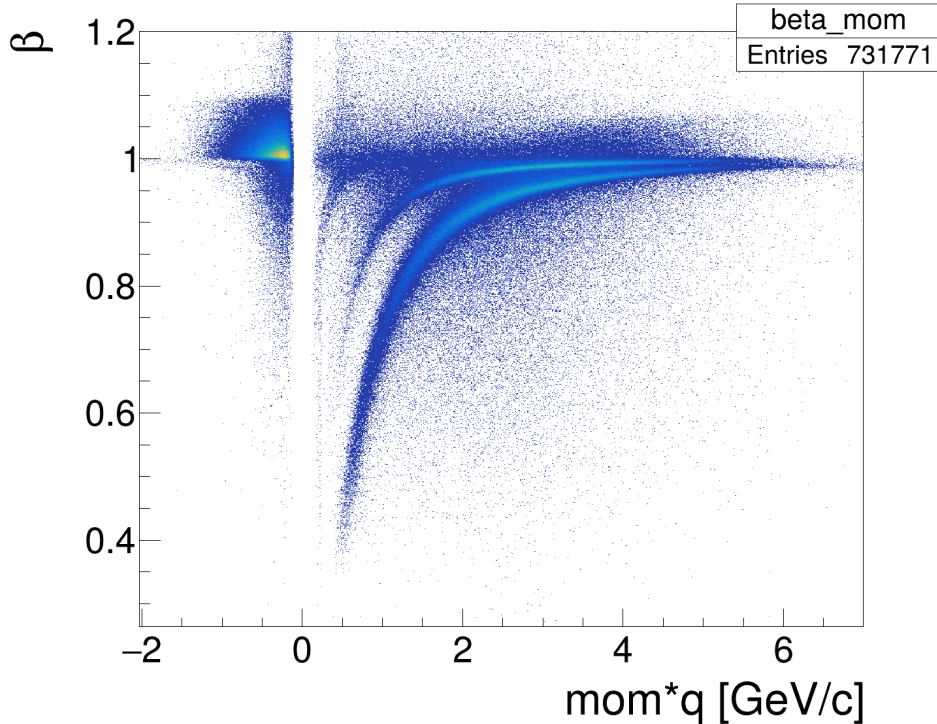


$pp \rightarrow p \ K^+ \Lambda [\rightarrow p e^- \nu_e] @ 7 \text{ GeV}$

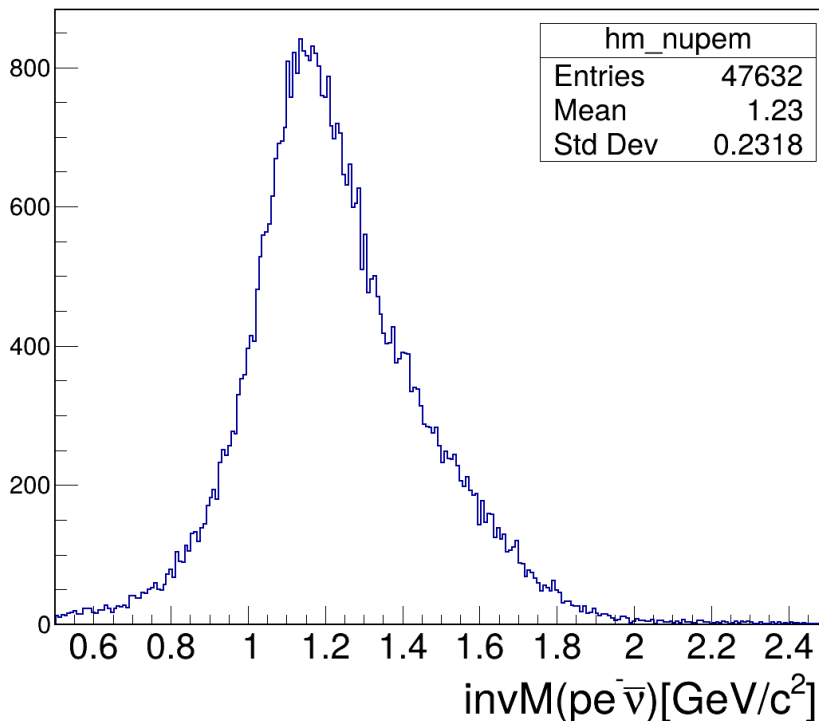
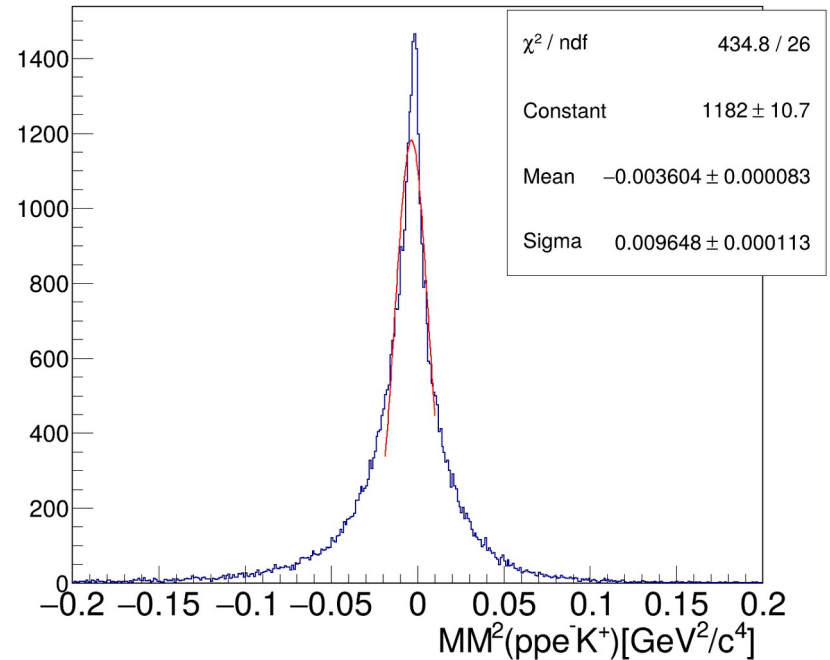
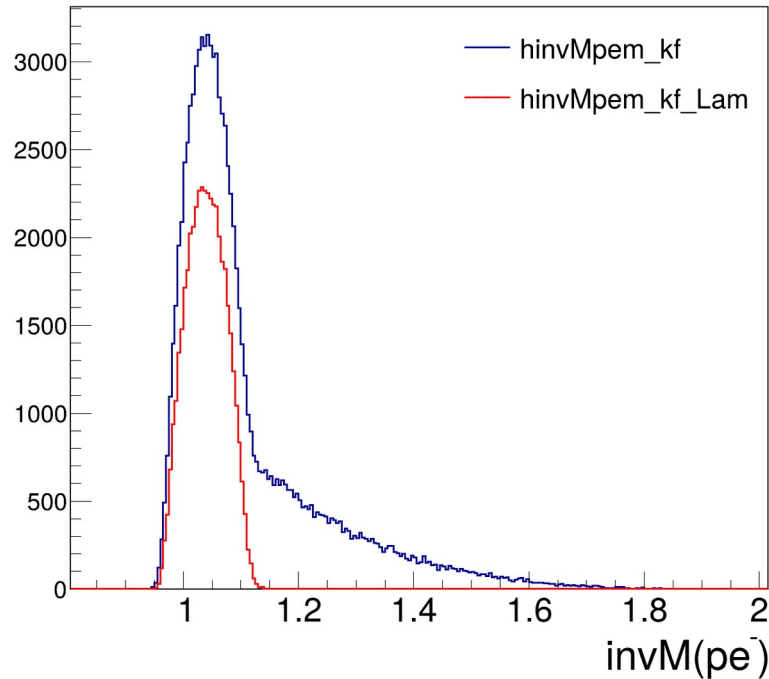
PID



e- - identified with Rich and TRD:

- $\text{richchi2} > 1. \ || \ \text{trdlikeEL} > 0.5$
- trdlikeEL – likelihood for electrons in TRD
- plus STS must be present

Lambda reconstruction with KF and PID



$$\epsilon_{\text{reco}} = 47632 / (199 \cdot 5000) = 4.8\%$$

$$pp \rightarrow p \text{ K}^+ \Lambda [\rightarrow \text{pe}^- \nu_e]$$

- ν reconstructed as a missing particle from $\text{K}^+, \text{p}, \text{p}, \text{e}^-$
- implementation of kin fit for missing particle (ν_e) in progress

Vertex p-K+

TARGET LH2:

length: 5 cm

z position: -44 cm

diameter: 2.5 cm

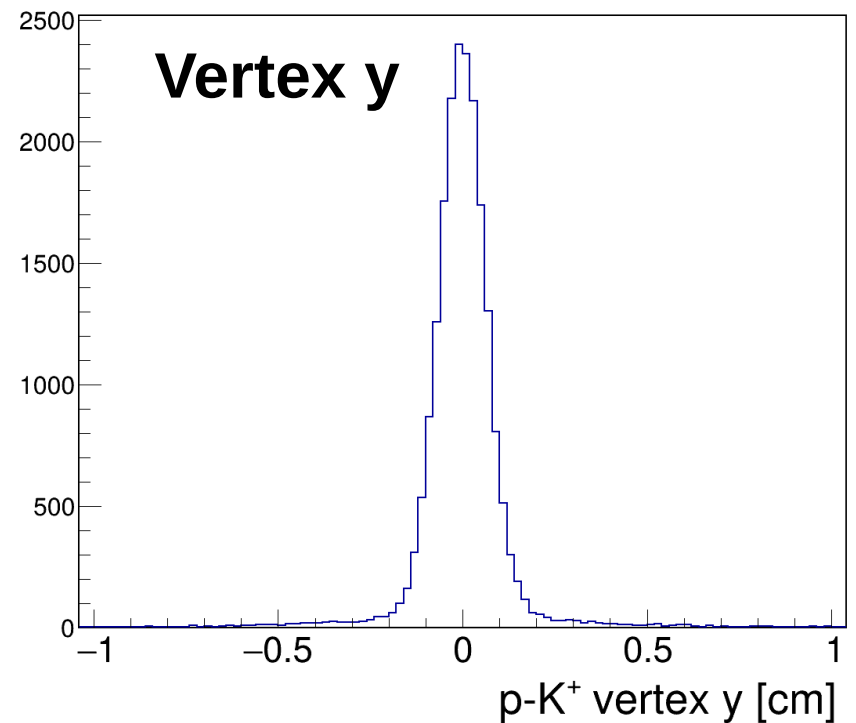
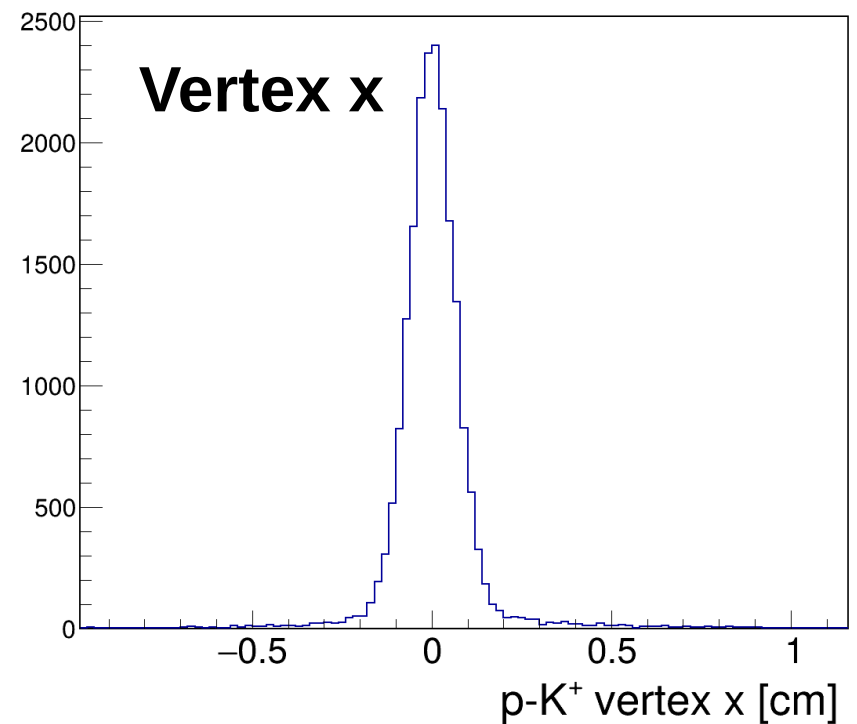
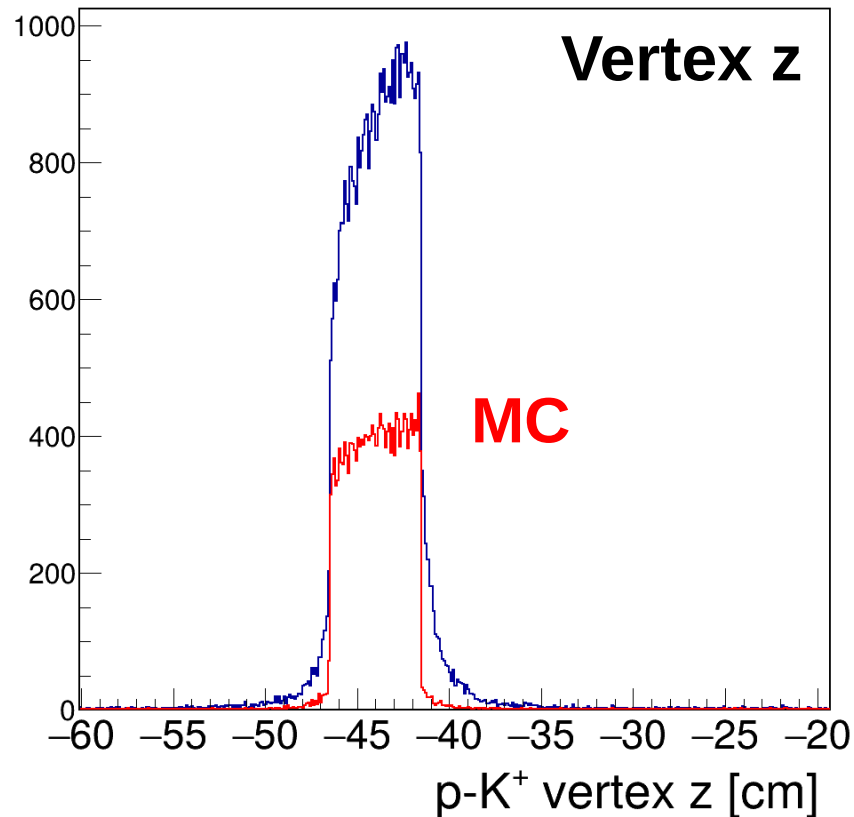
Beam:

position x: 0.0, y: 0.0,

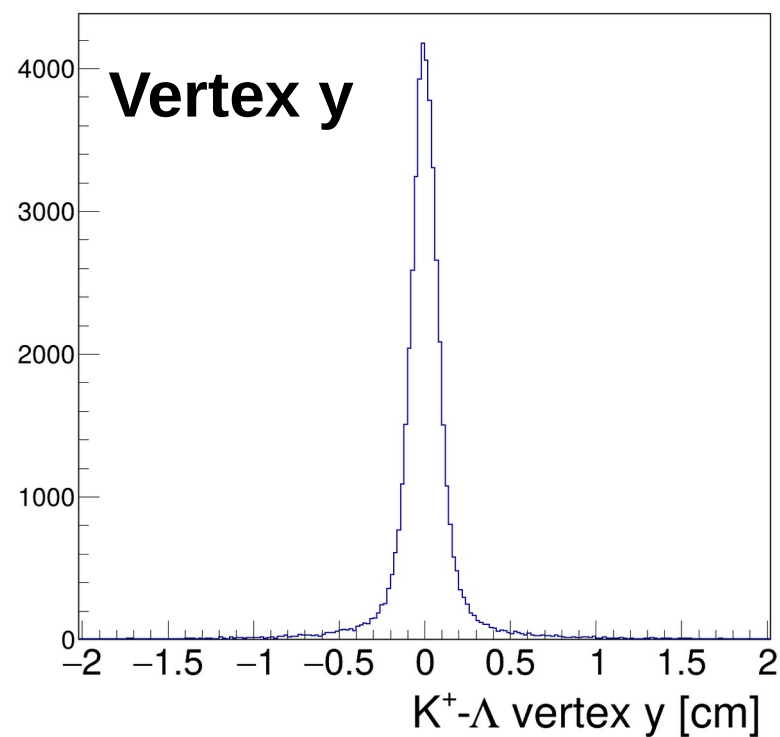
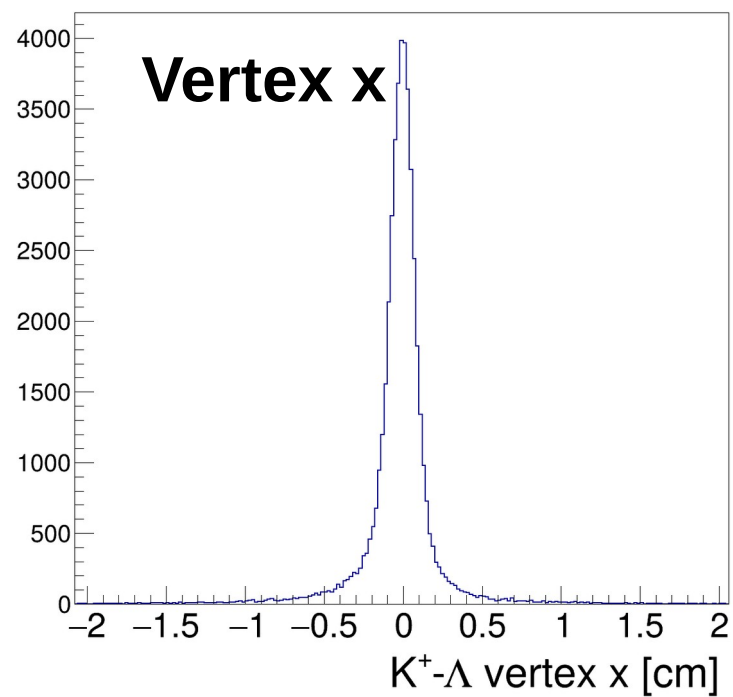
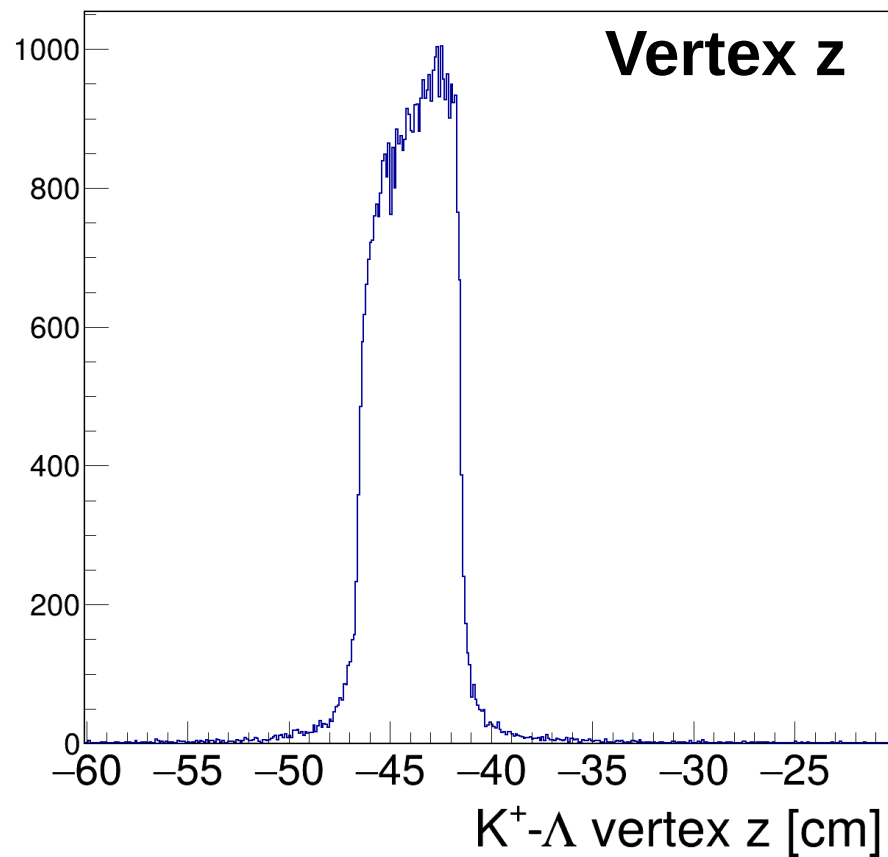
zFocus -44.0,

sigmaX: 0.06,

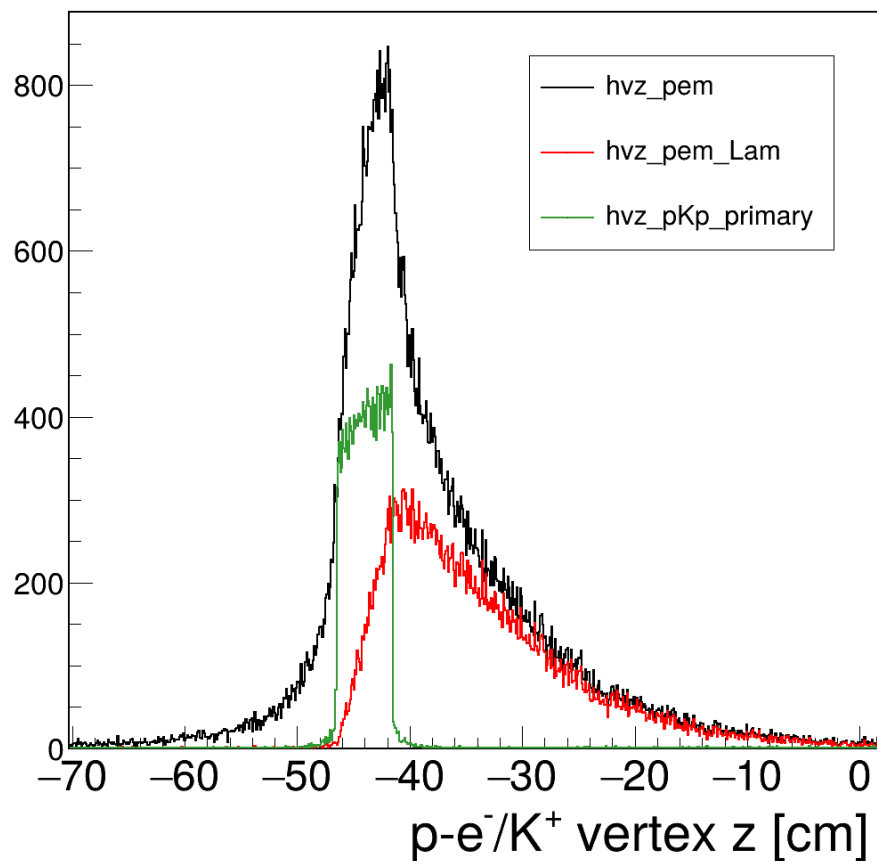
sigmaY: 0.06



vertex K^+ - Λ



vertex



reconstructed vertex from all p-e- candidates

p-e- with condition that p and e- must have the same MatherID (MC)

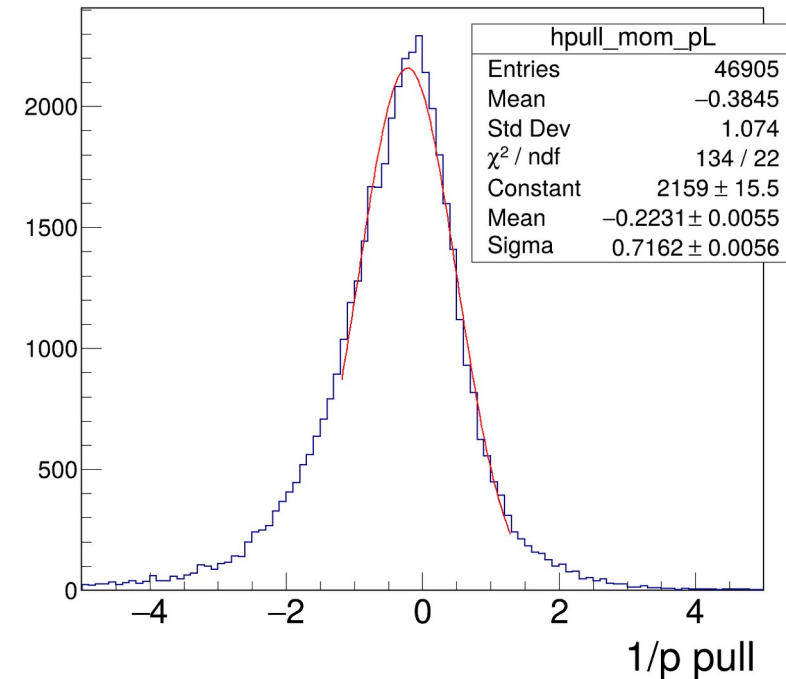
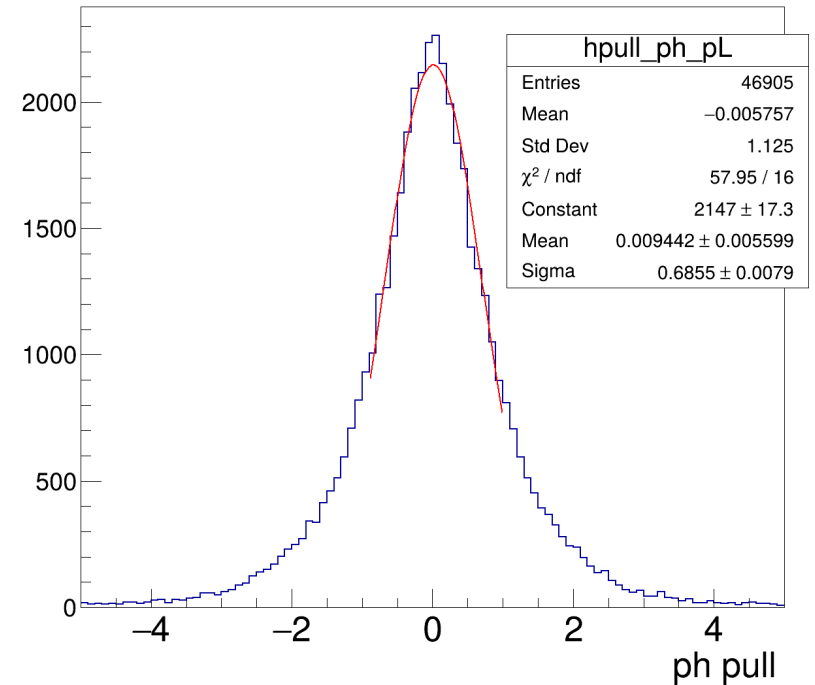
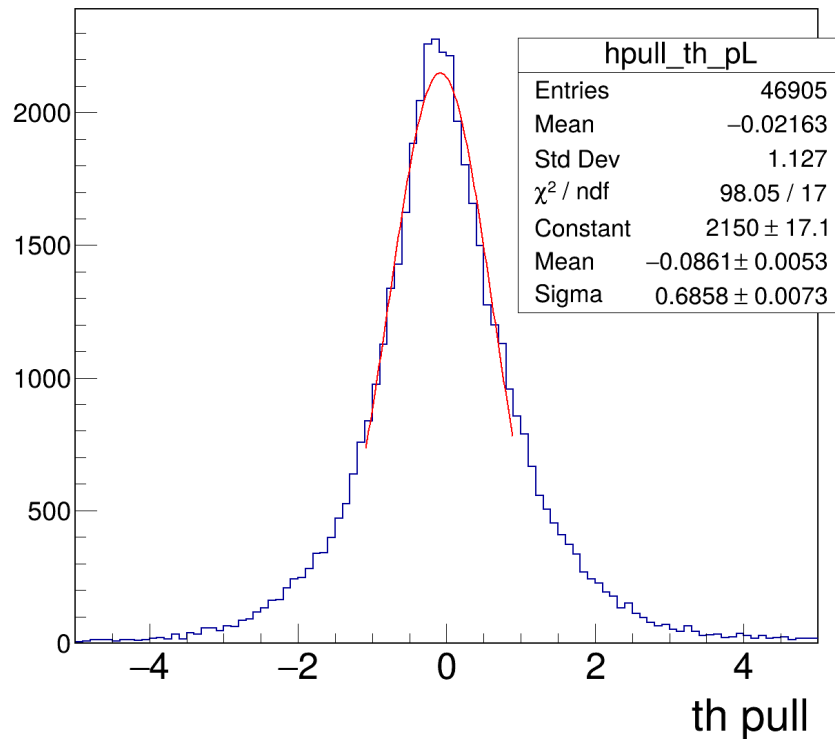
p-K+ primary based on MC MatherID

$pp \rightarrow p \ K^+ \Lambda [\rightarrow pe^- \nu_e] @ 7 \text{ GeV}$

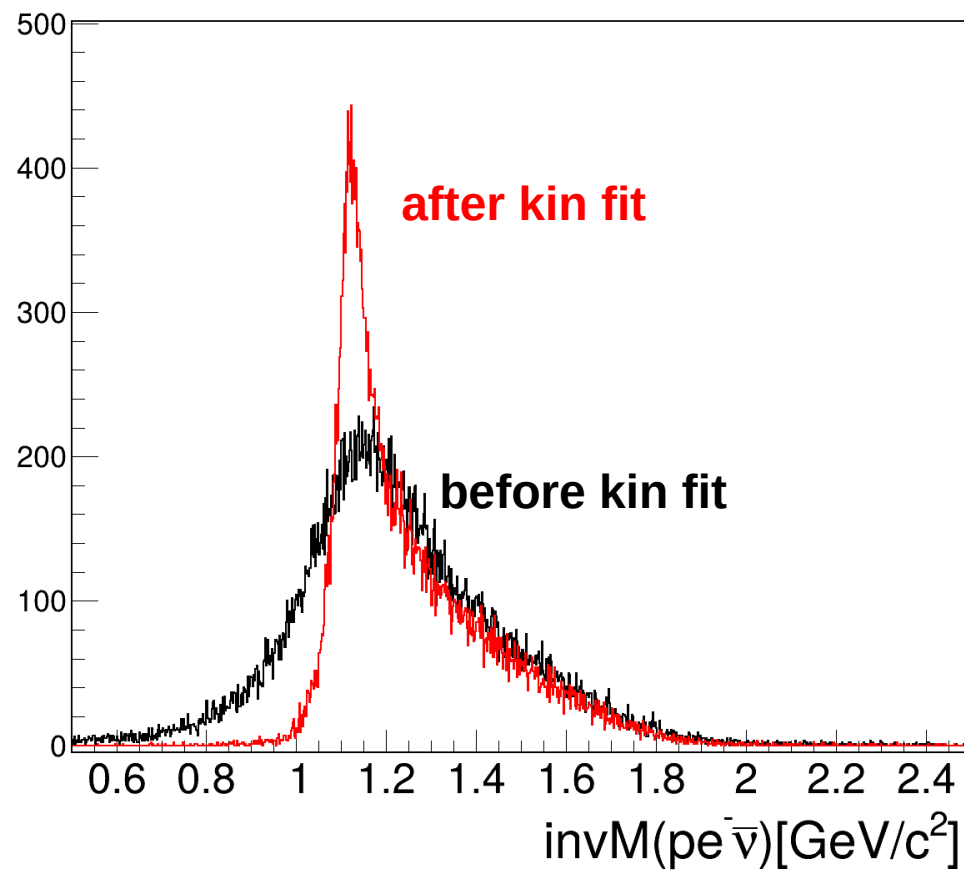
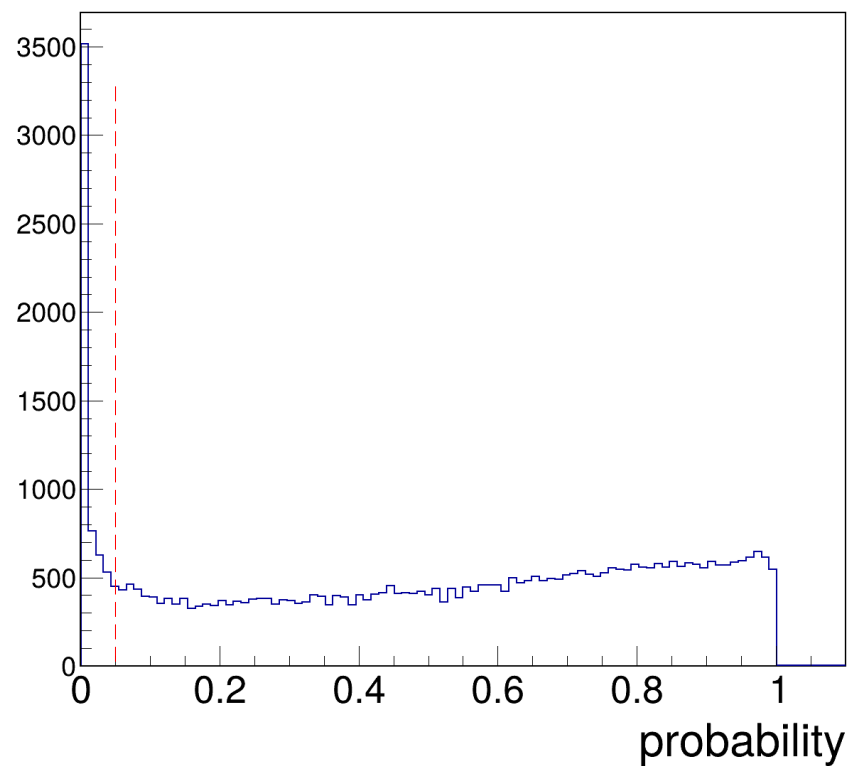
Kinematic Fit:

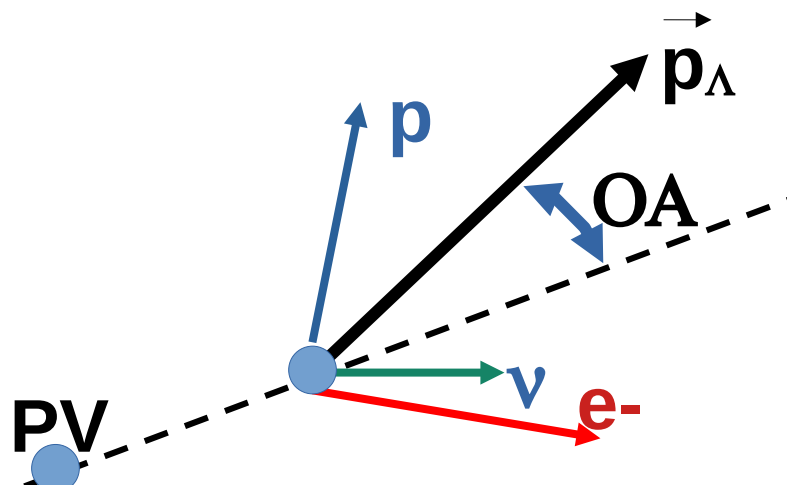
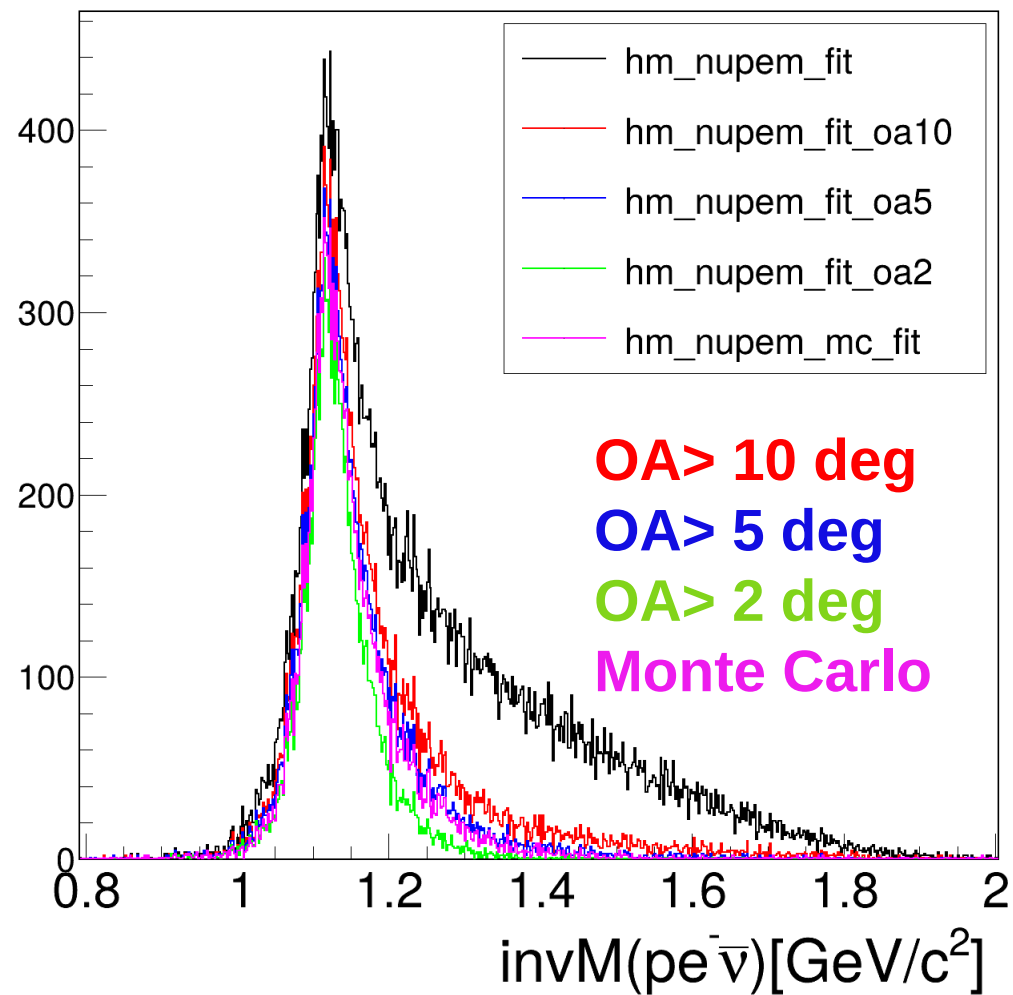
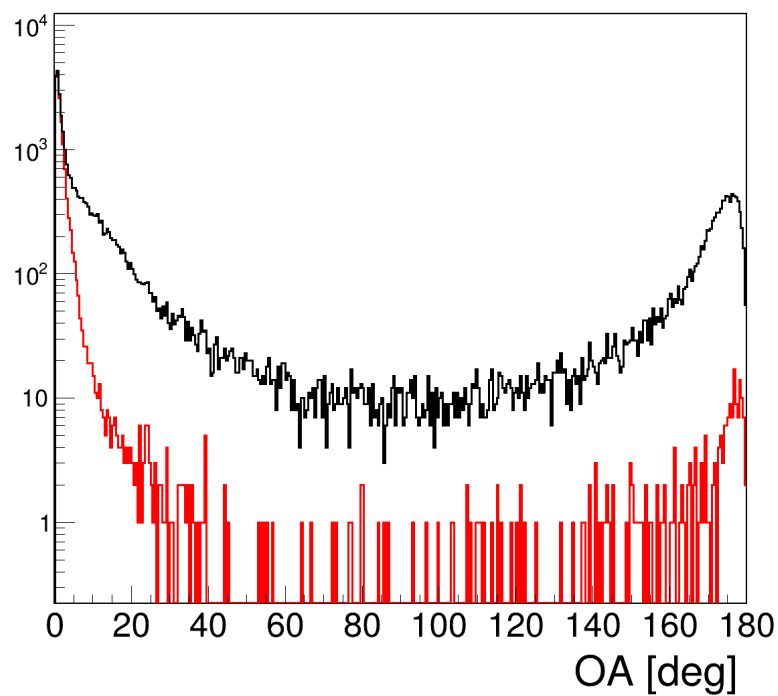
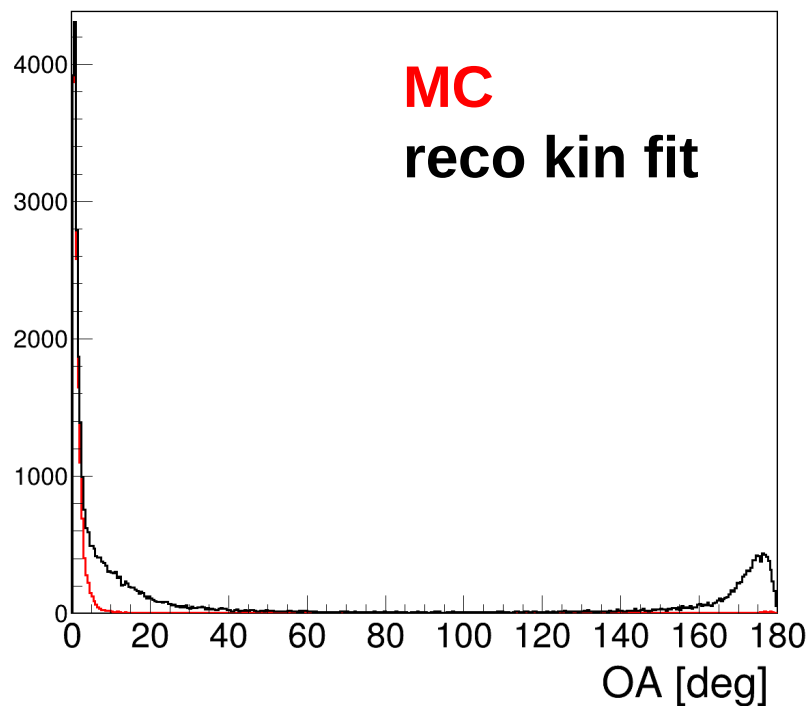
- Missing Mass Constraint: $mass=0$
- p , K^+ , p_L , e^-
- $1/p$, θ , ϕ ,

Pull spectra before fit



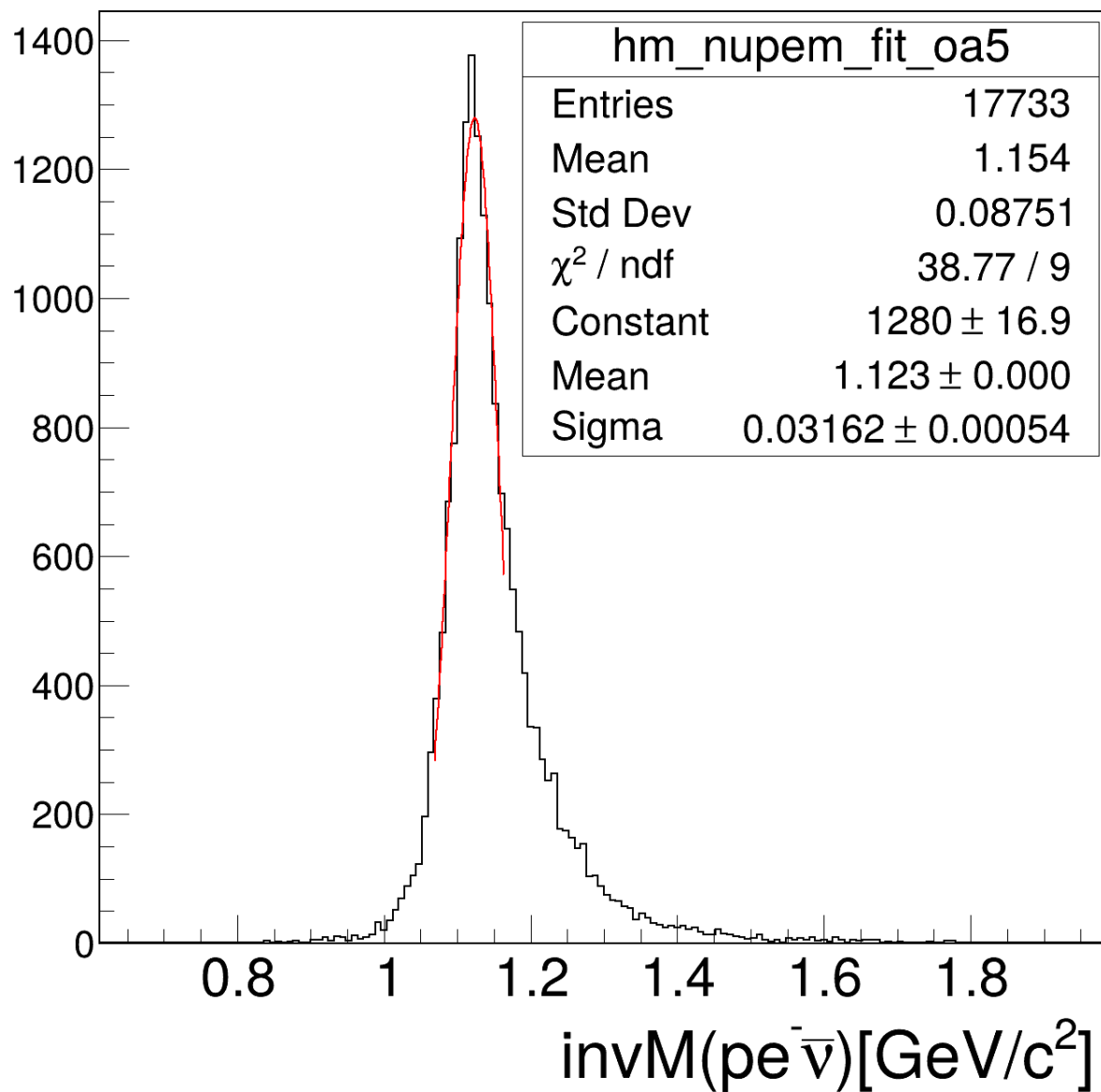
Cut: Prob>0.05





prob>0.05
OA> 5 deg

$$\epsilon_{\text{reco}} = 17730 / (199 \cdot 5000) = 1.8\%$$

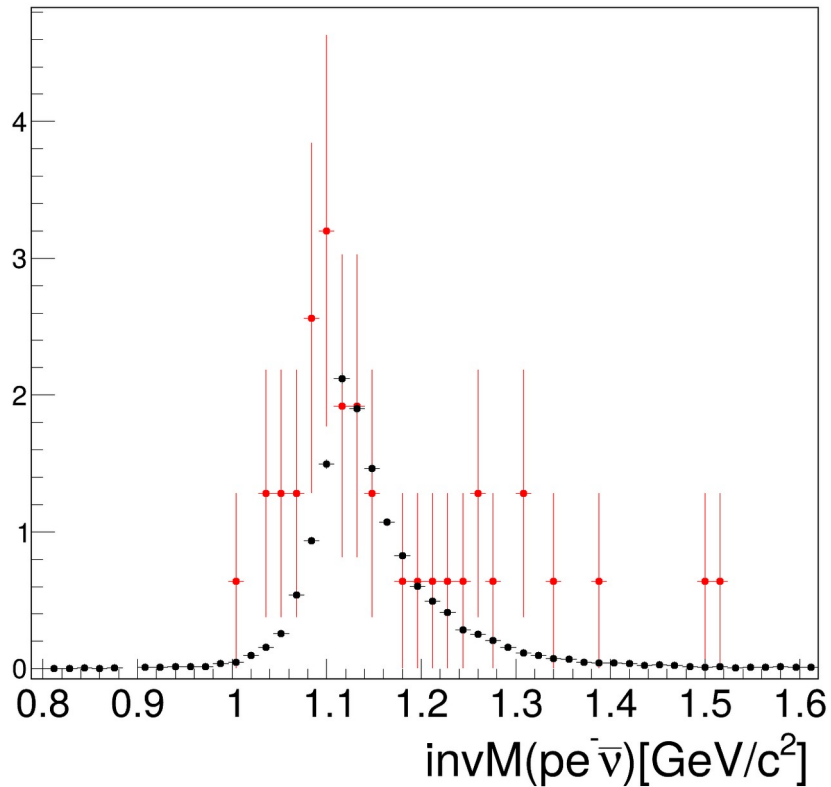


First look at background channels

$pp \rightarrow p \ K^+ \ \Lambda \ [\rightarrow p e^- \nu_e] \ @ \ 7 \ \text{GeV}$

$pp \rightarrow p \ K^+ \ \Lambda \ [\rightarrow p \pi^-]$

with kin fit, $oa > 5$



Other bkg channels:

$pp \rightarrow p \ K^+ \ \Lambda \ [\rightarrow p \pi^-] \ \pi^0 \ [\rightarrow \gamma \gamma]$

$pp \rightarrow p \ K^+ \ \Sigma^0 \ [\rightarrow \Lambda \ [\rightarrow p e^- \nu_e] \ \pi^0 \ [\rightarrow \gamma \gamma]]$

$pp \rightarrow p \ K^+ \ K^+ \ \Xi^- \ [\rightarrow \Sigma^0 \ [\Lambda \gamma] \ e^- \nu_e]$

$pp \rightarrow p \ K^+ \ K^+ \ \Xi \ [\rightarrow \Lambda \ [\rightarrow p e^- \nu_e] \ \pi^0 \ [\rightarrow \gamma \gamma]]$

Is the pion suppression sufficient ?
Needs further investigations.

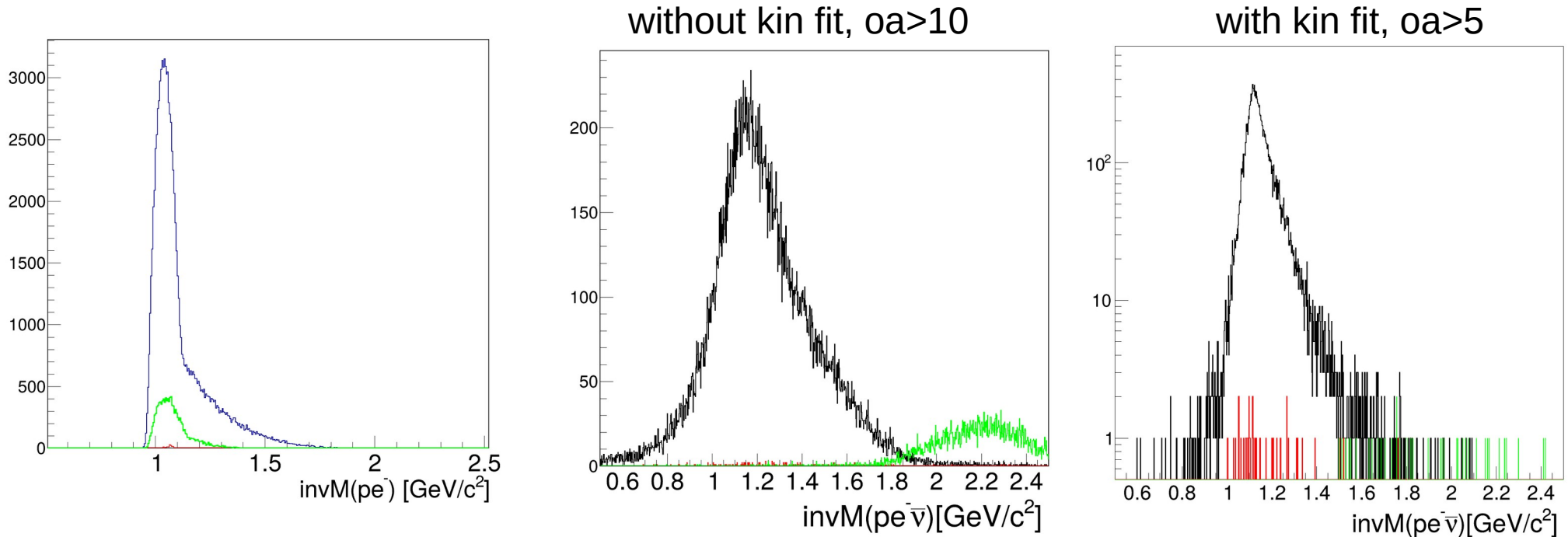
First look at background channels

$$pp \rightarrow p \ K^+ \ \Lambda \ [\rightarrow p e^- \nu_e] \ @ \ 7 \ \text{GeV}$$

$$pp \rightarrow p \ K^+ \ \Lambda \ [\rightarrow p \pi^-]$$

$$pp \rightarrow p \ K^+ \ K^+ \ \Xi^- \ [\rightarrow \Lambda \ [p \pi^-] e^- \nu_e]$$

Contributions not
scaled with XS and BR



$$pp \rightarrow p \ K^+ \ \Lambda \ [\rightarrow p \pi^-] \ \pi^0 \ [\rightarrow \gamma \gamma]$$

$$pp \rightarrow p \ K^+ \ \Sigma^0 \ [\rightarrow \Lambda \ [\rightarrow p e^- \nu_e] \ \pi^0 \ [\rightarrow \gamma \gamma]]$$

$$pp \rightarrow p \ K^+ \ K^+ \ \Xi^- \ [\rightarrow \Sigma^0 \ [\Lambda \gamma] e^- \nu_e]$$

$$pp \rightarrow p \ K^+ \ K^+ \ \Xi \ [\rightarrow \Lambda \ [\rightarrow p e^- \nu_e] \ \pi^0 \ [\rightarrow \gamma \gamma]]$$