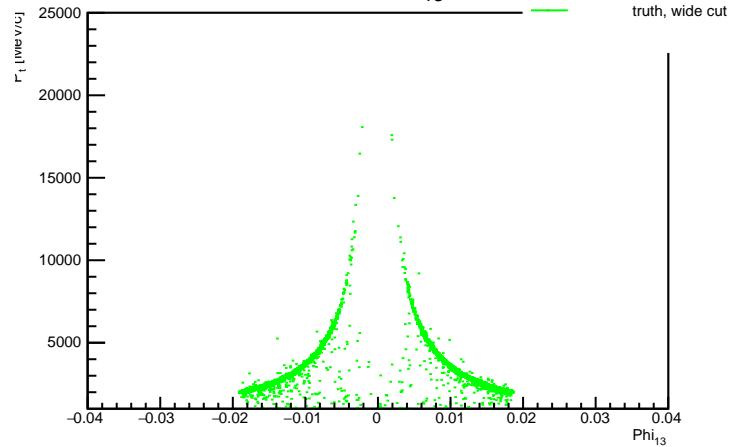
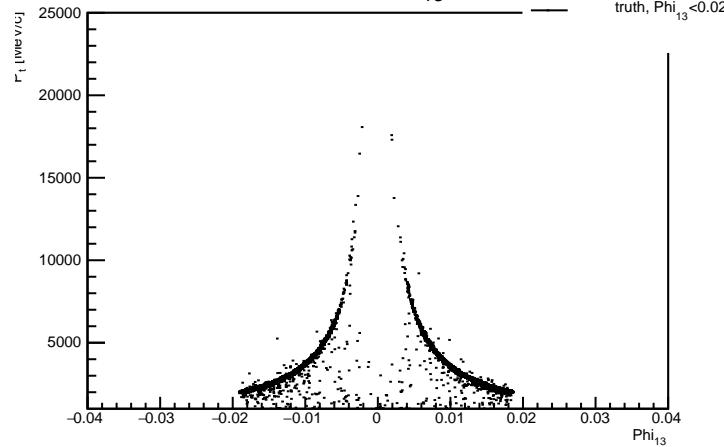
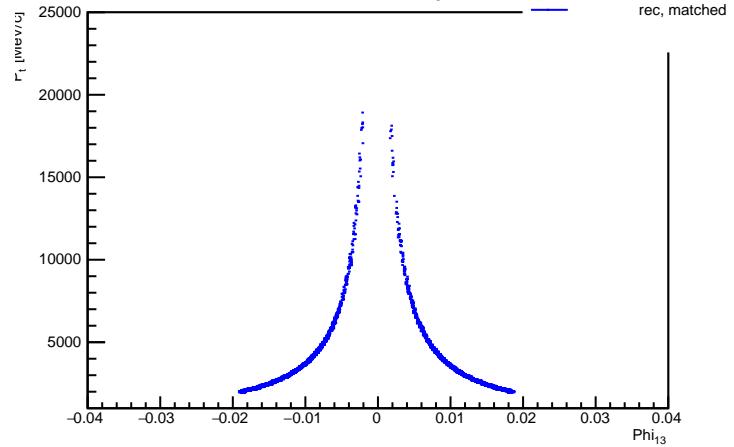
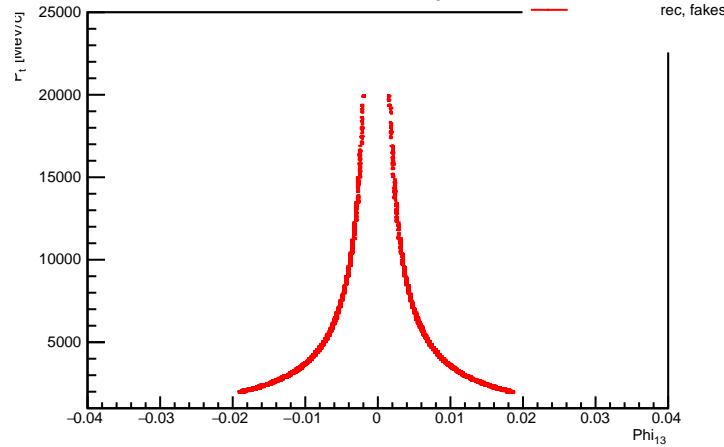
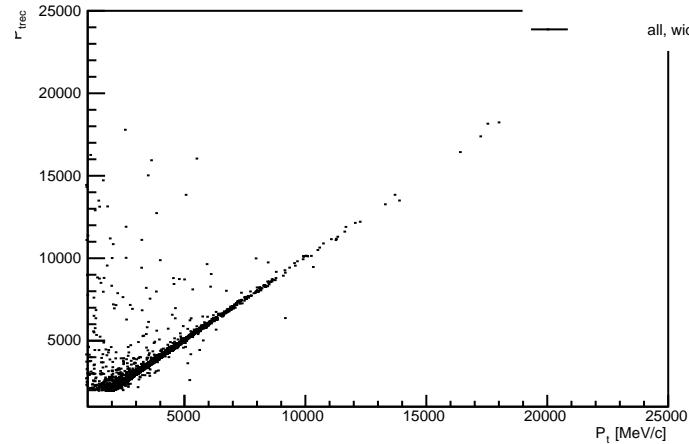


P_t Vs Φ_{13}  P_t Vs Φ_{13}  P_t Vs Φ_{13}  P_t Vs Φ_{13} truth, $\Phi_{13} < 0.02$

rec, matched

rec, fakes

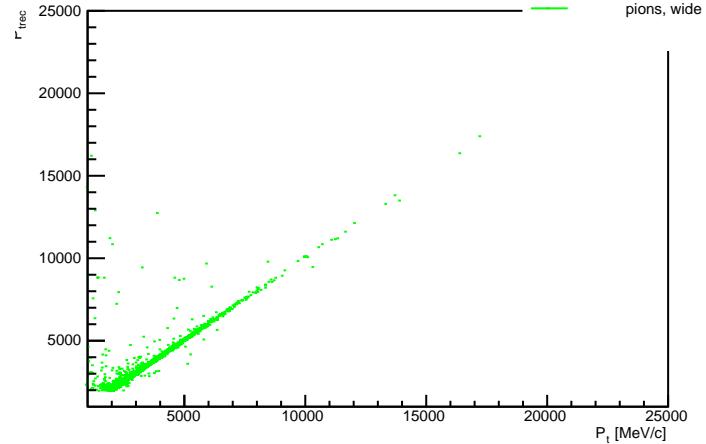
$P_{t\text{rec}}$ Vs P_t



rec, matched

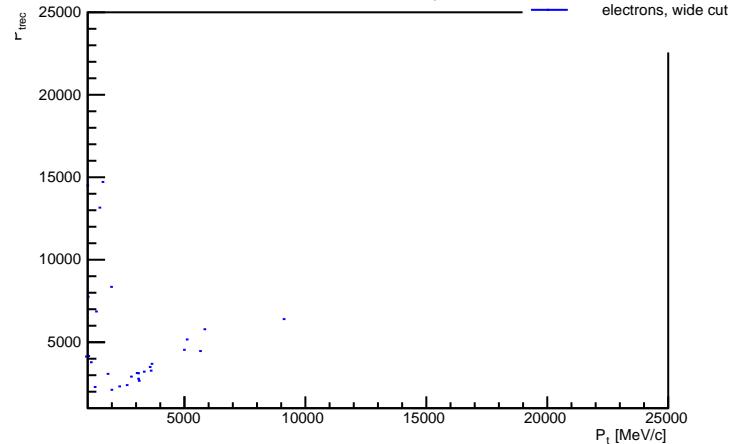
all, wide cut

$P_{t\text{rec}}$ Vs P_t



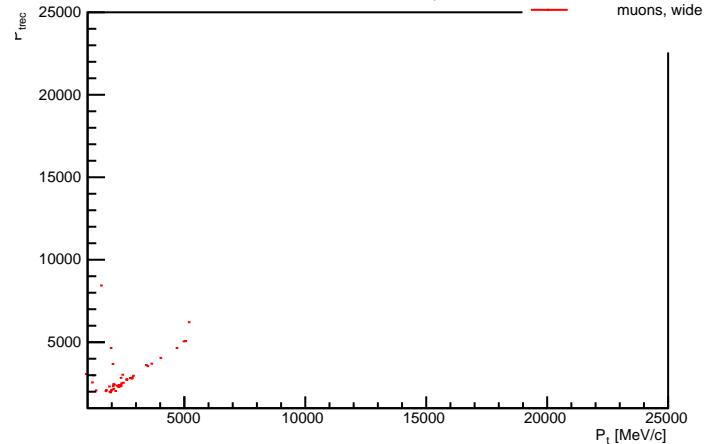
pions, wide cut

$P_{t\text{rec}}$ Vs P_t



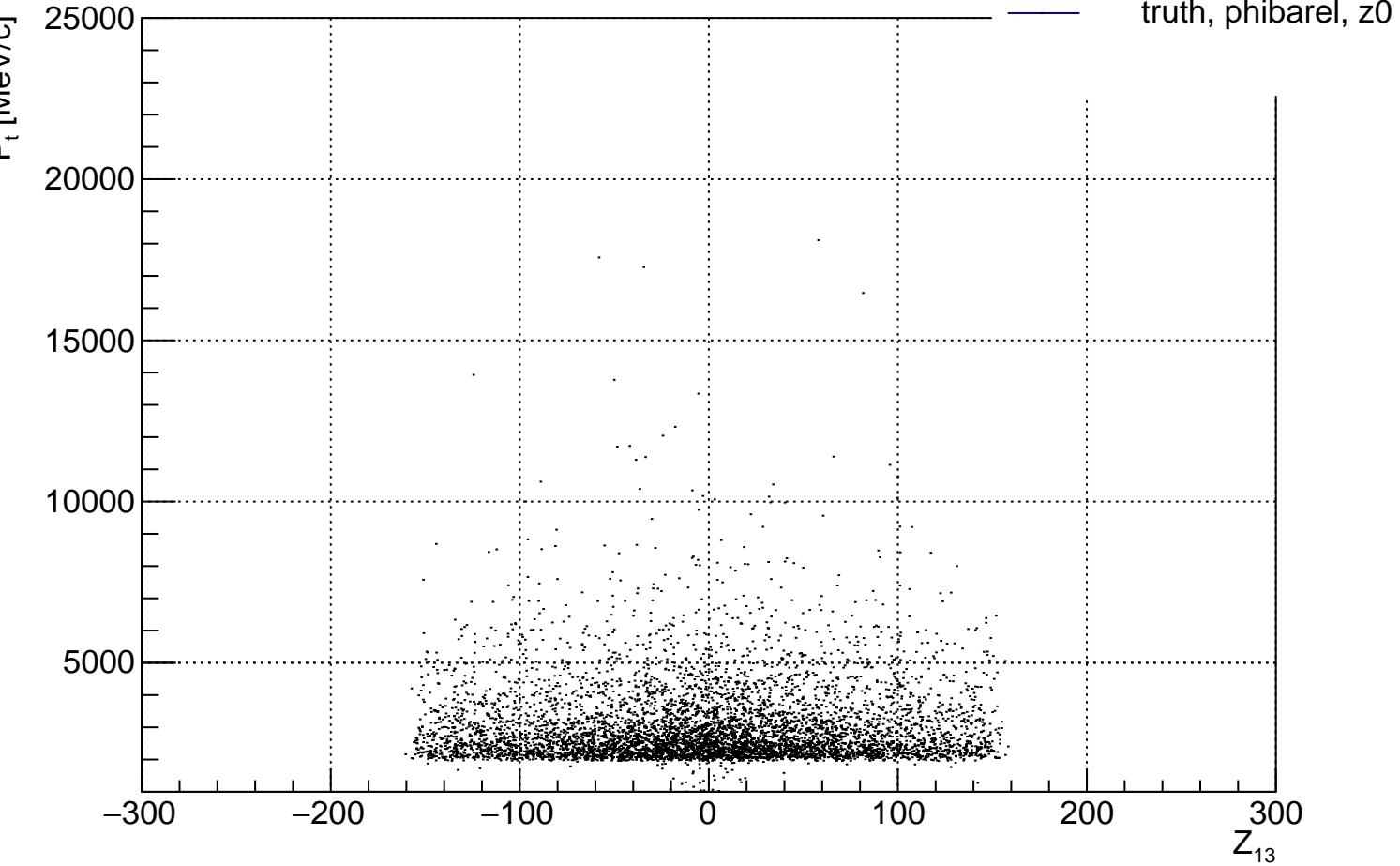
electrons, wide cut

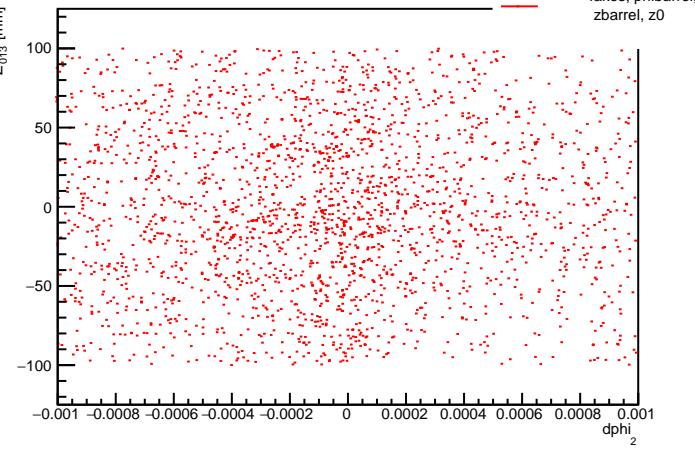
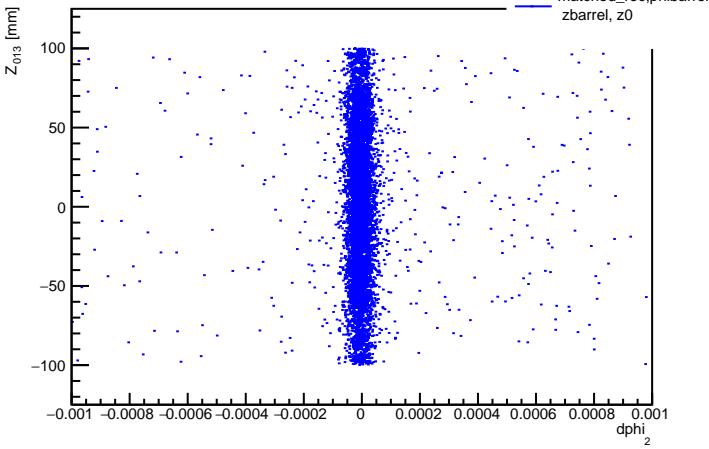
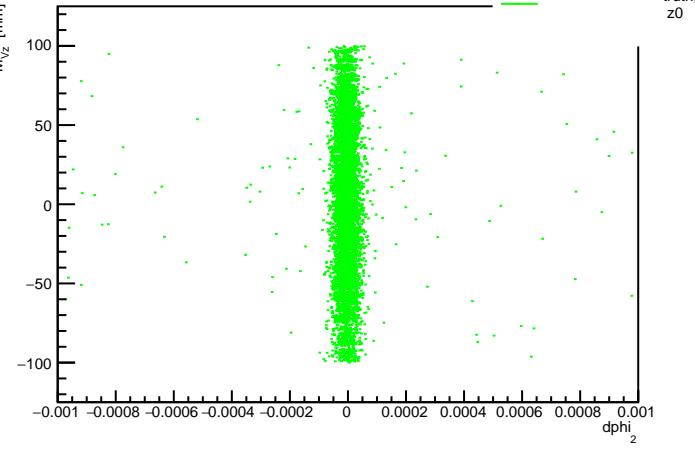
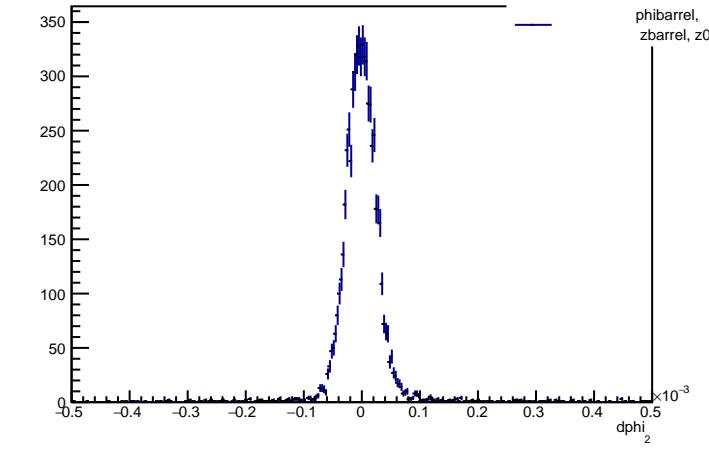
$P_{t\text{rec}}$ Vs P_t

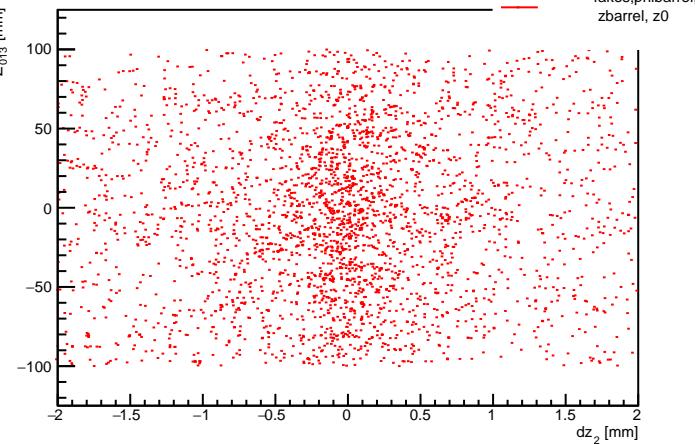
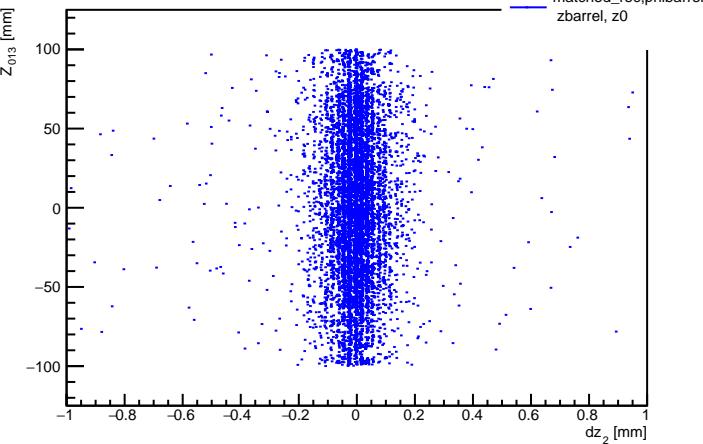
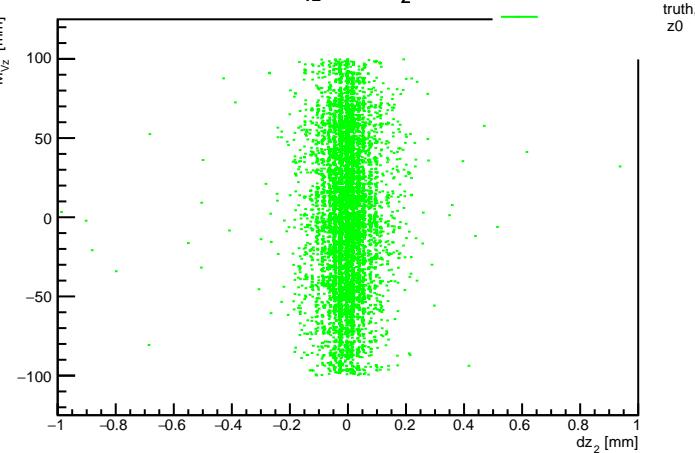
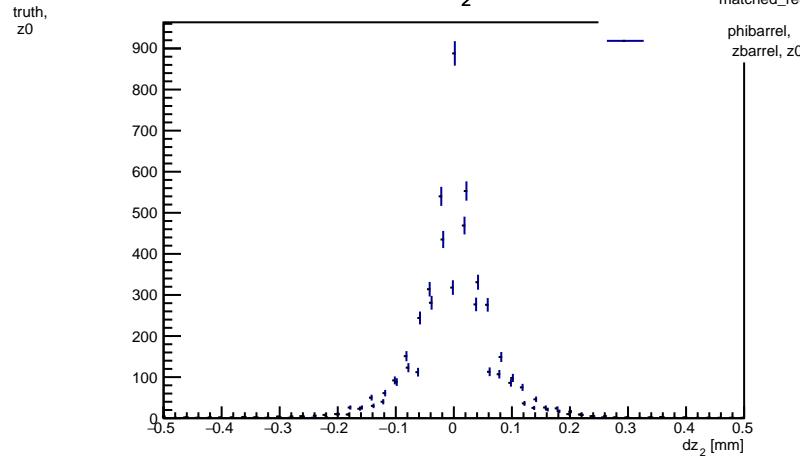


muons, wide cut

P_t Vs Z_{13}

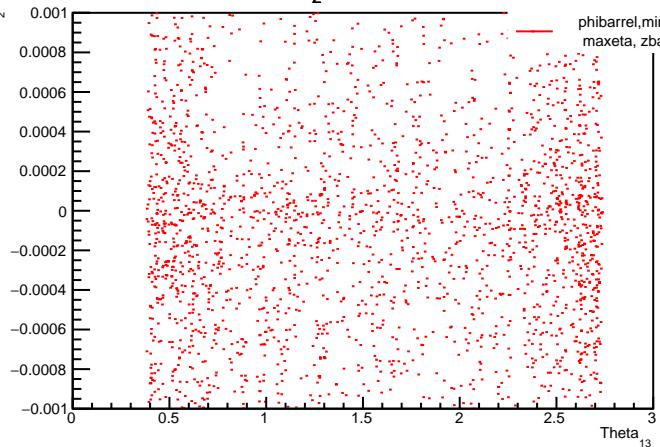


Z_{013} Vs $d\phi_i$  Z_{013} Vs $d\phi_i$  M_{vz} Vs $d\phi_i$  $d\phi_i$ 

Z_{013} Vs dz_2  Z_{013} Vs dz_2  M_{vz} Vs dz_2  dz_2 

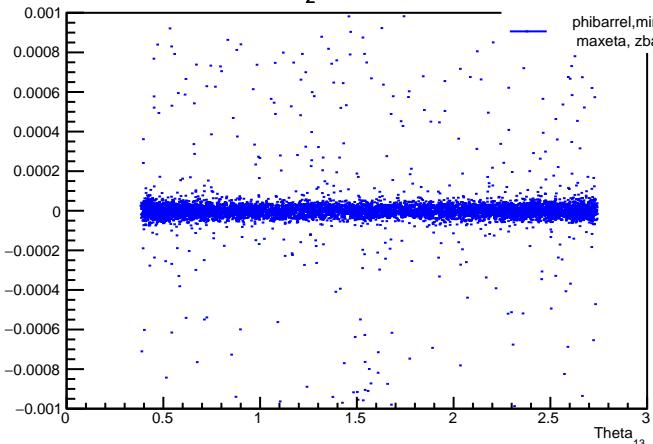
dphi₂ Vs Theta₁₃

fakes



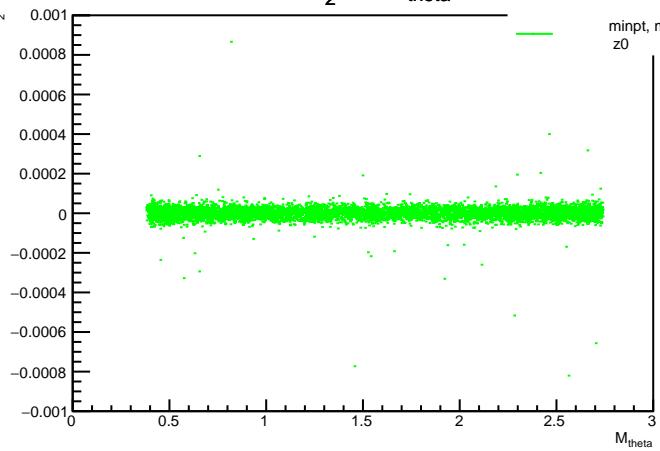
dphi₂ Vs Theta₁₃

matched_rec



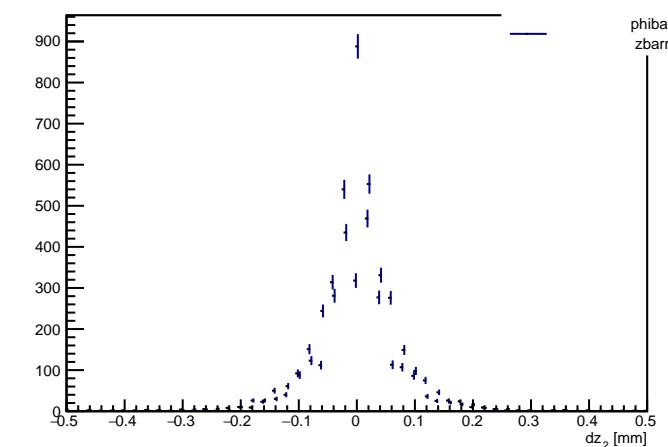
dphi₂ Vs M_{theta}

truth

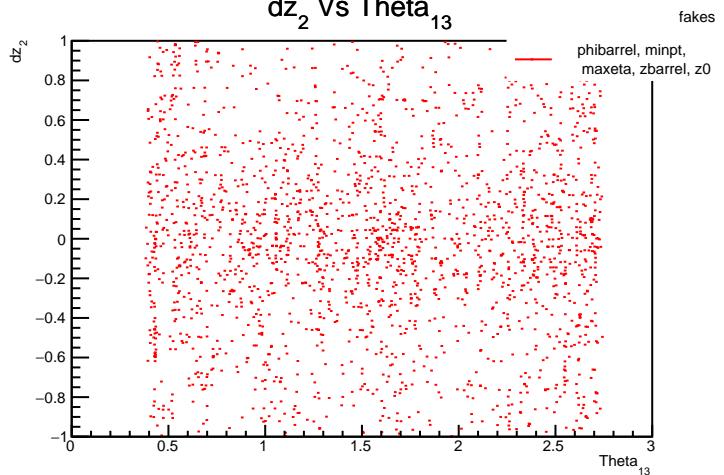


dz₂

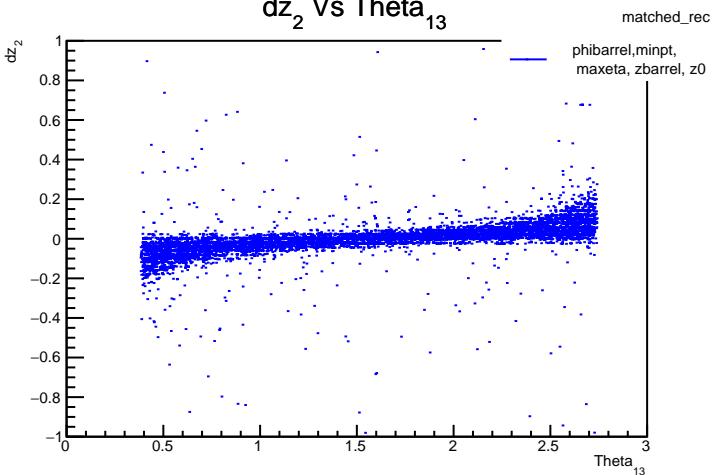
matched_rec



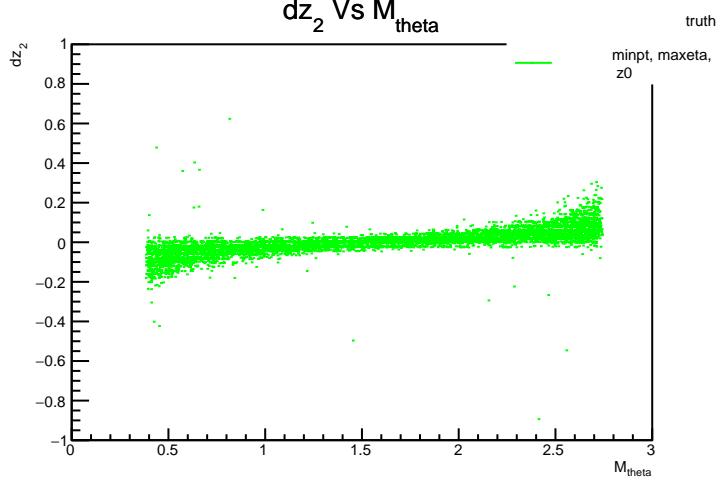
dz_2 Vs Θ_{13}



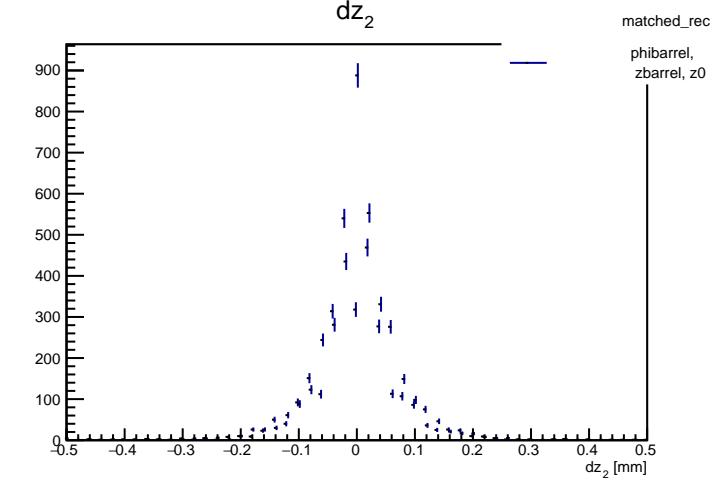
dz_2 Vs Θ_{13}



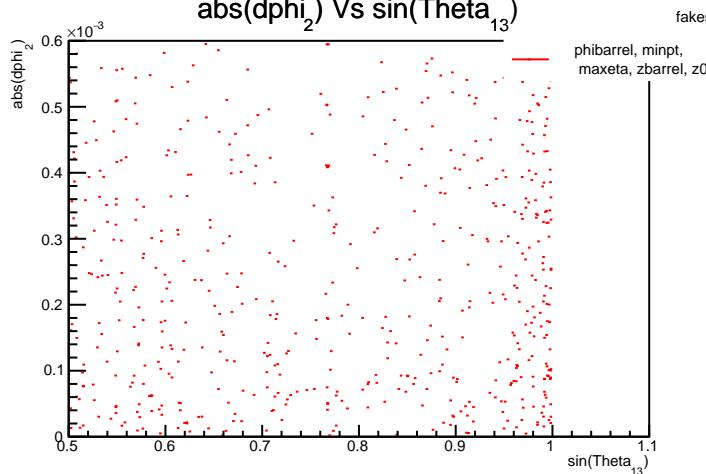
dz_2 Vs M_{θ}



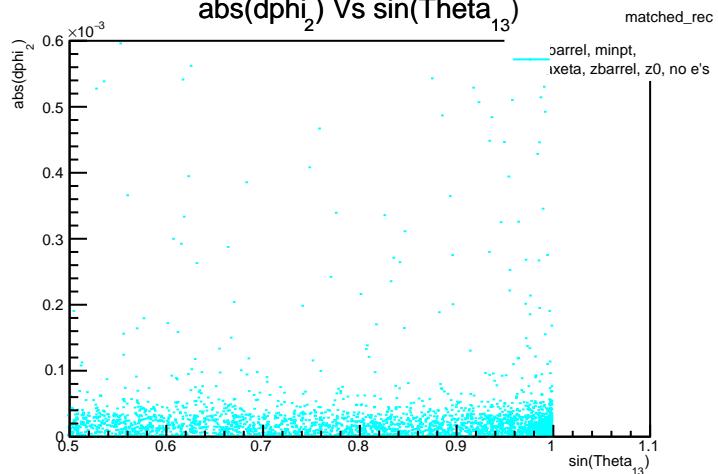
dz_2



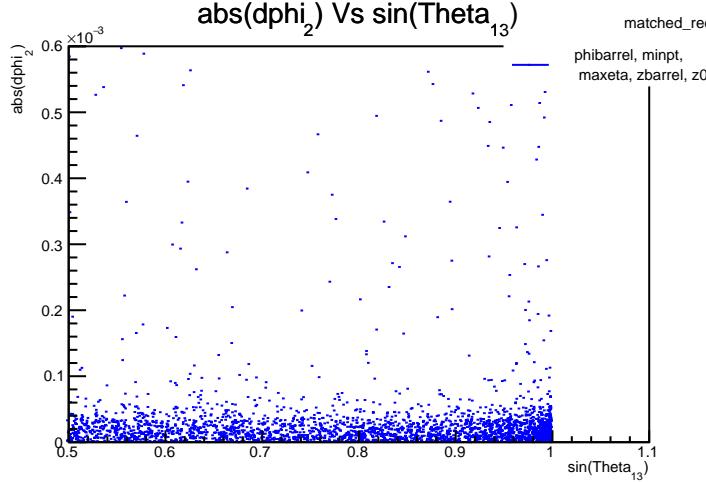
$\text{abs}(\text{dphi}_2)$ Vs $\sin(\Theta_{13})$



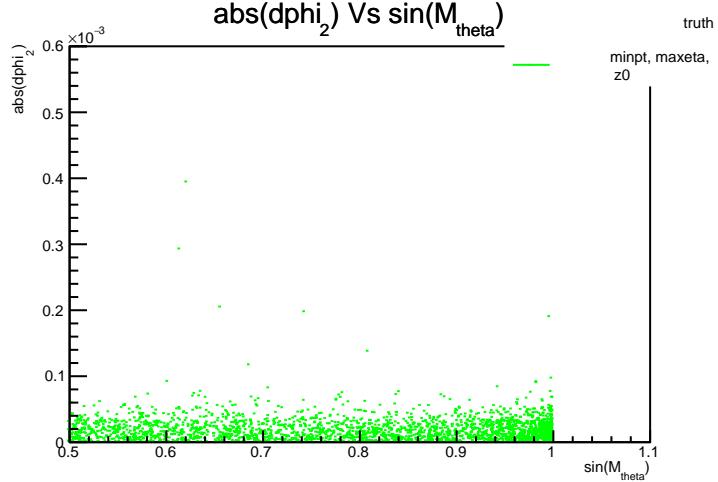
$\text{abs}(\text{dphi}_2)$ Vs $\sin(\Theta_{13})$



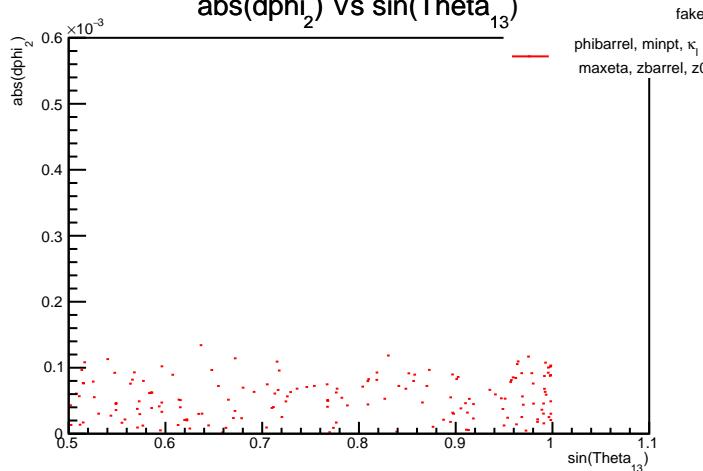
$\text{abs}(\text{dphi}_2)$ Vs $\sin(\Theta_{13})$



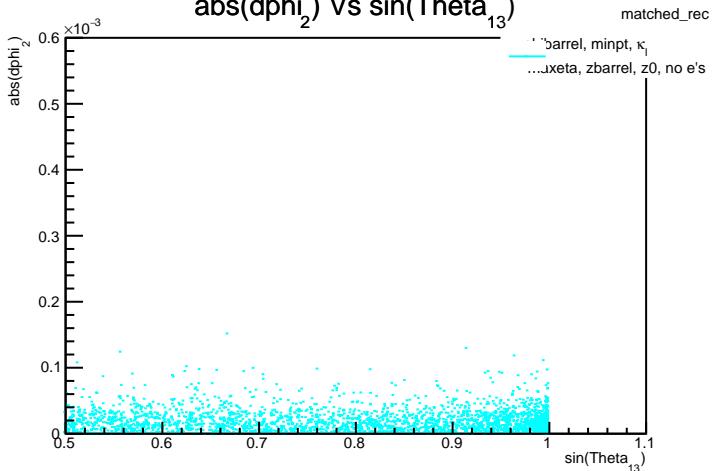
$\text{abs}(\text{dphi}_2)$ Vs $\sin(M_{\theta})$



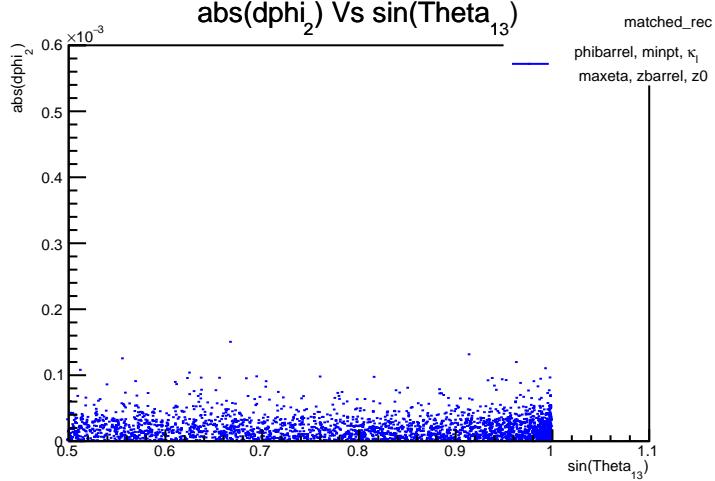
$\text{abs}(\text{dphi}_2)$ Vs $\sin(\Theta_{13})$



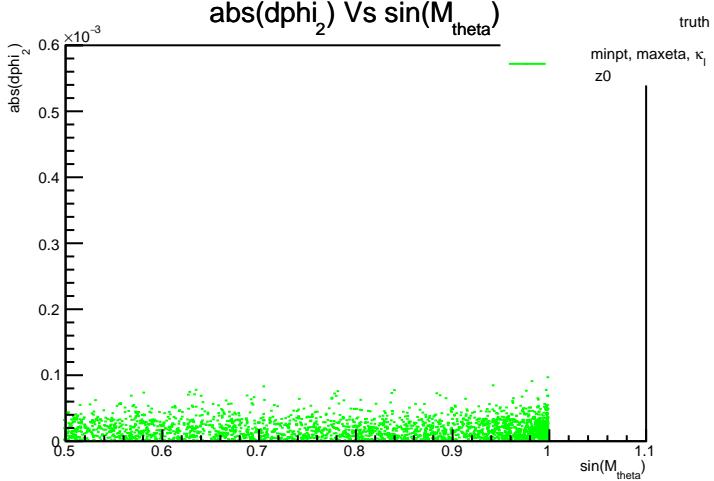
$\text{abs}(\text{dphi}_2)$ Vs $\sin(\Theta_{13})$

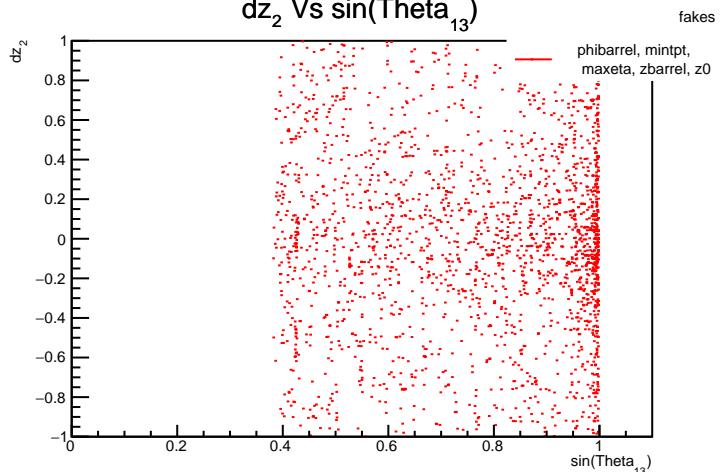
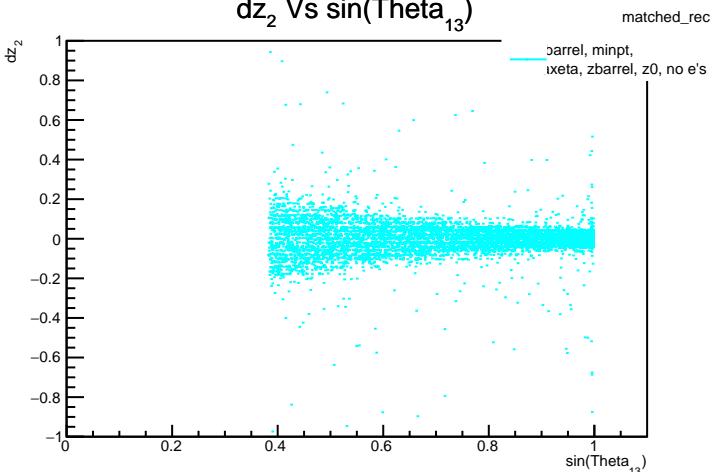
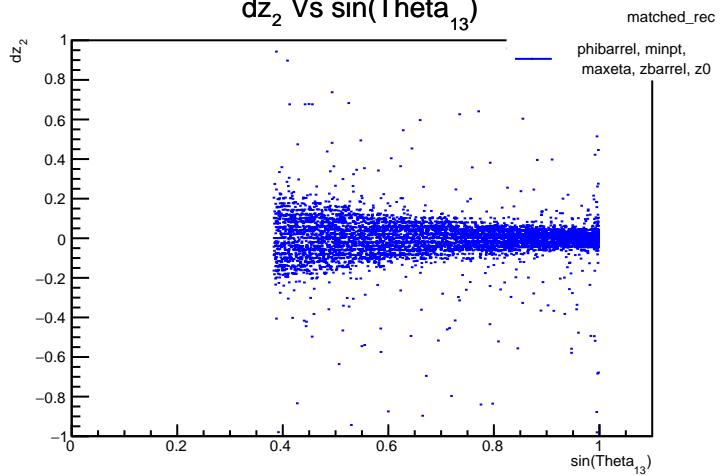
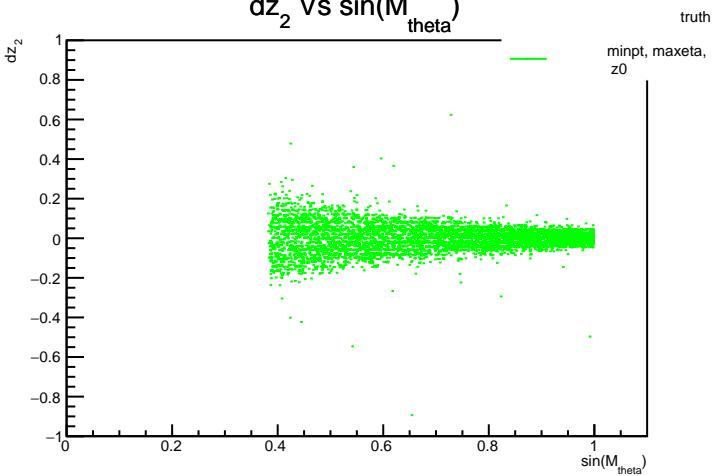


$\text{abs}(\text{dphi}_2)$ Vs $\sin(\Theta_{13})$

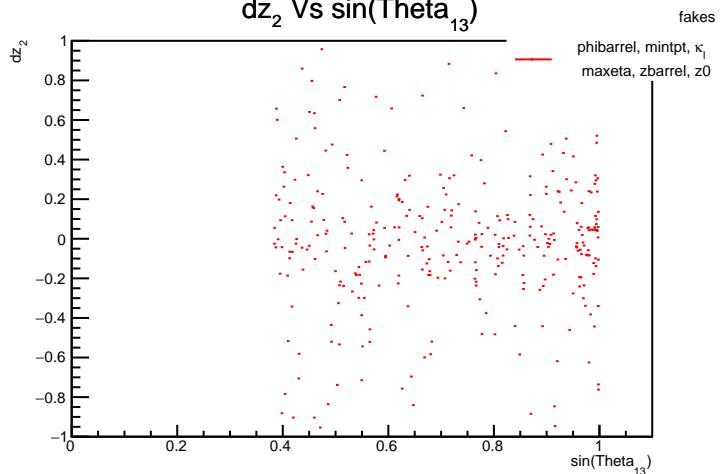


$\text{abs}(\text{dphi}_2)$ Vs $\sin(M_{\theta})$

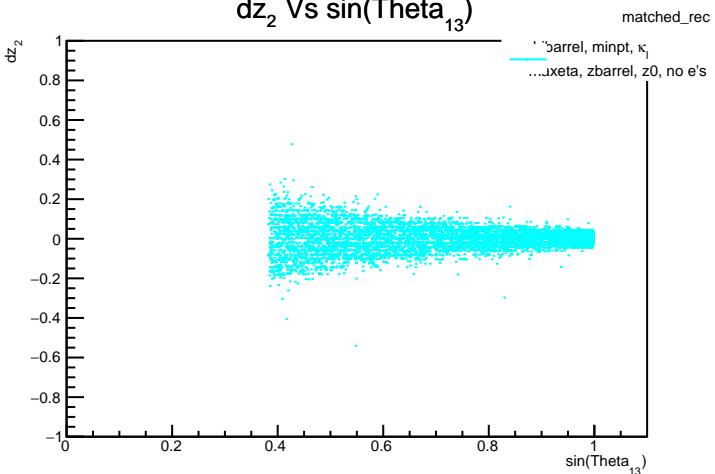


dz_2 Vs $\sin(\Theta_{13})$  dz_2 Vs $\sin(\Theta_{13})$  dz_2 Vs $\sin(\Theta_{13})$  dz_2 Vs $\sin(M_{\theta})$ 

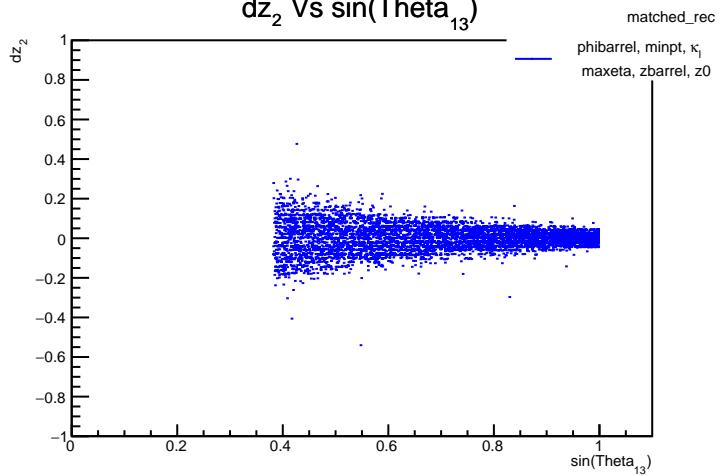
dz_2 Vs $\sin(\Theta_{13})$



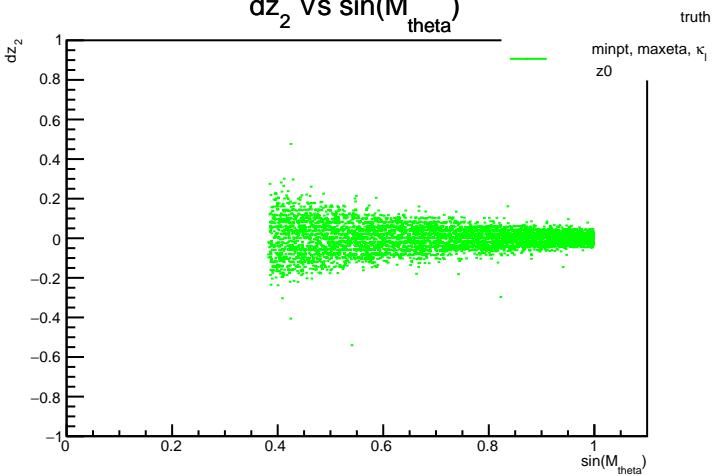
dz_2 Vs $\sin(\Theta_{13})$



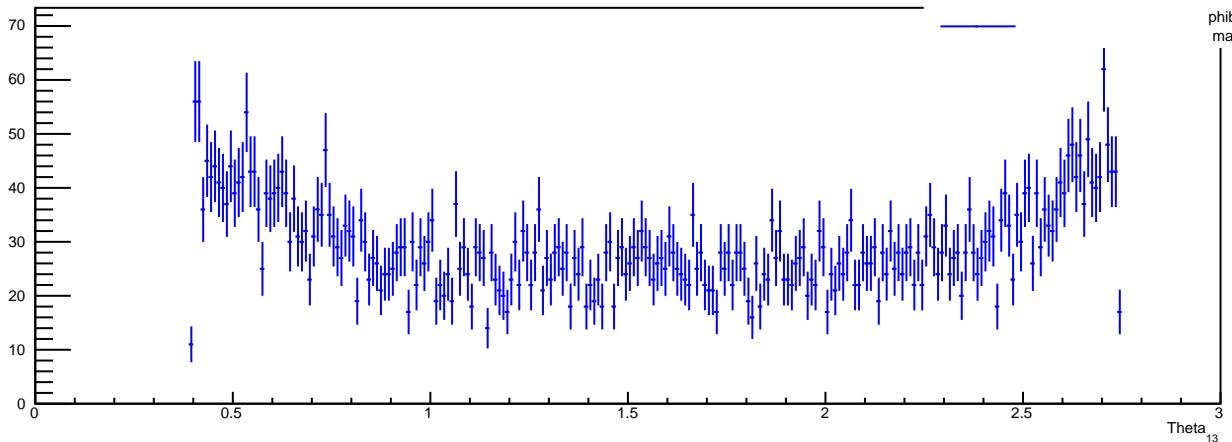
dz_2 Vs $\sin(\Theta_{13})$



dz_2 Vs $\sin(M_{\theta})$



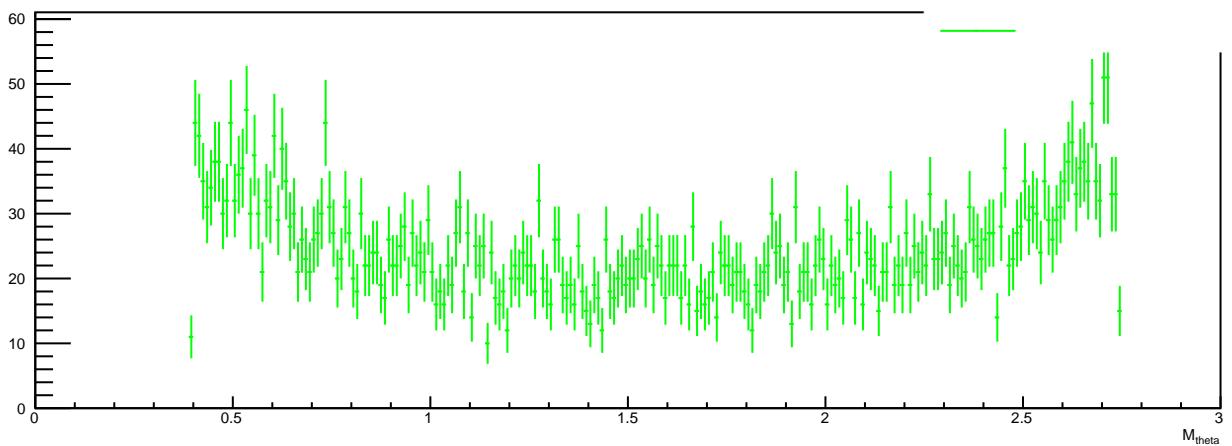
Theta₁₃



matched_rec

phibarrel,minpt,
maxeta, zbarrel, z0

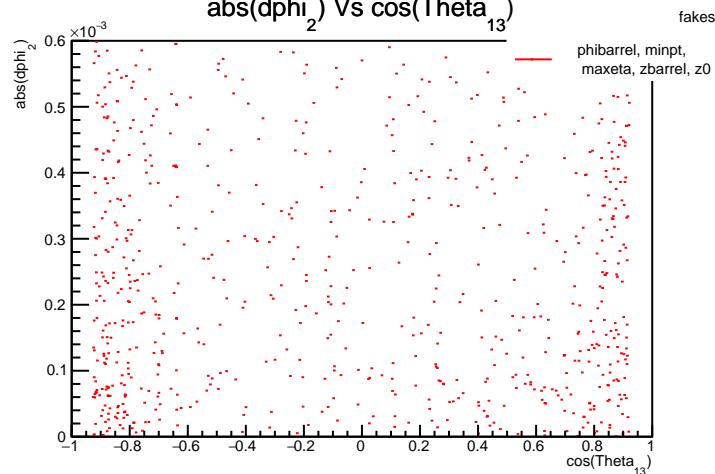
M_{theta}



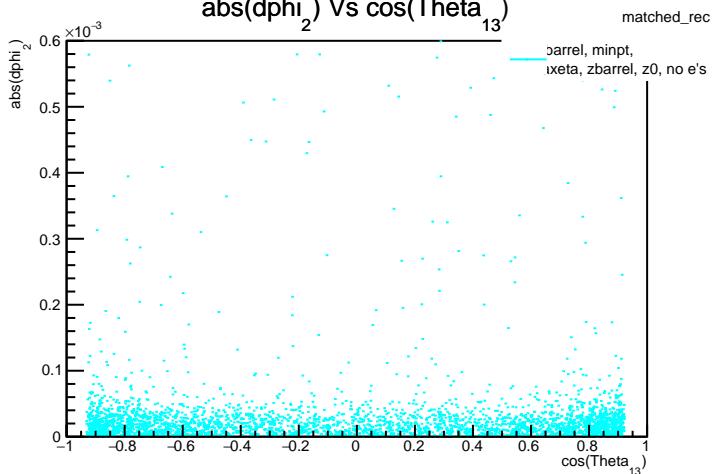
truth

minpt, maxeta,
z0

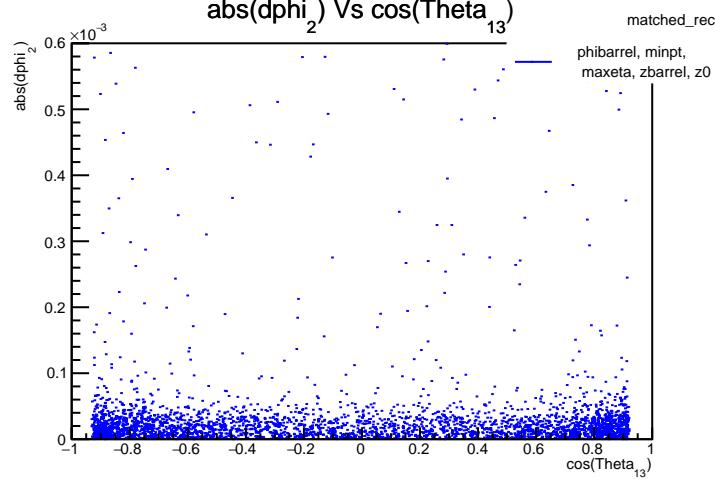
$\text{abs}(\text{dphi}_2)$ Vs $\cos(\Theta_{13})$



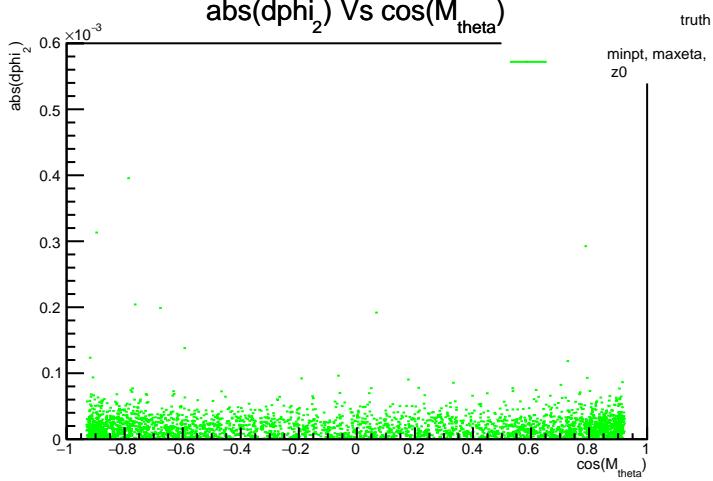
$\text{abs}(\text{dphi}_2)$ Vs $\cos(\Theta_{13})$



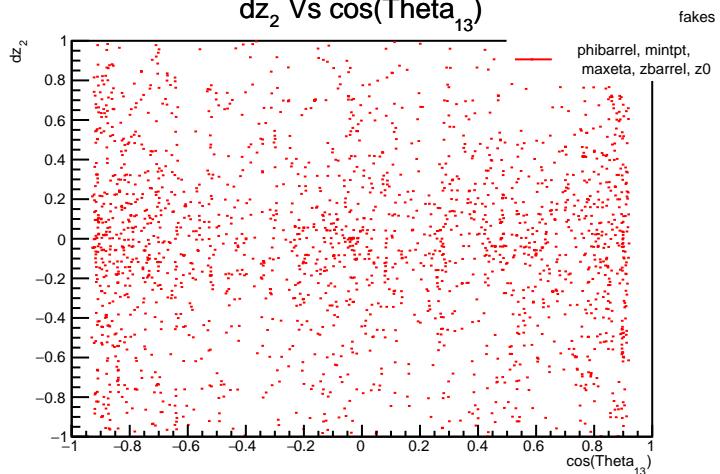
$\text{abs}(\text{dphi}_2)$ Vs $\cos(\Theta_{13})$



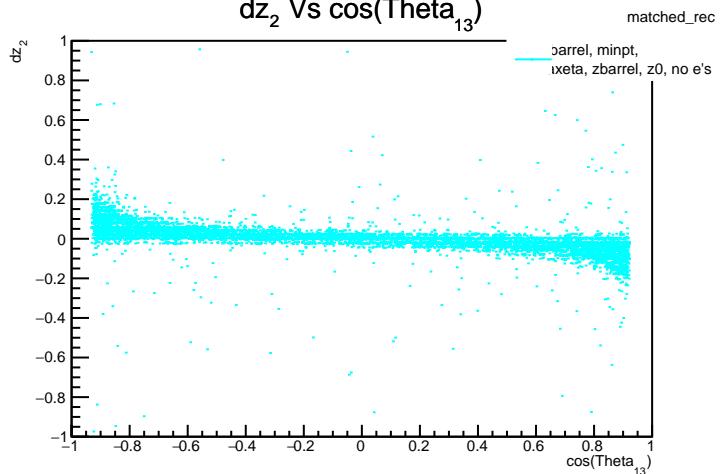
$\text{abs}(\text{dphi}_2)$ Vs $\cos(M_{\theta})$



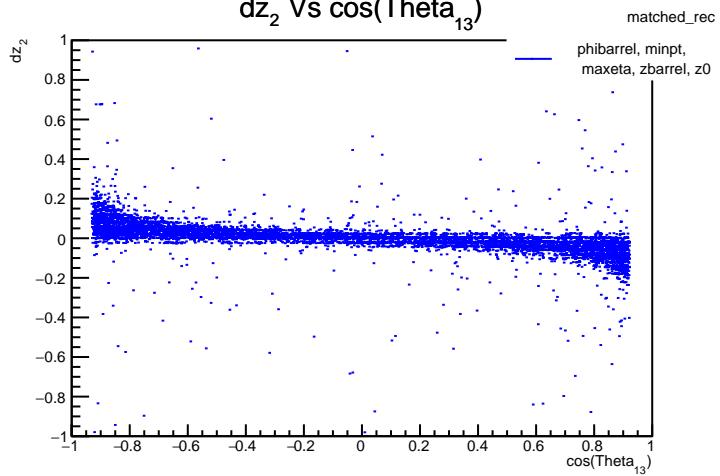
dz_2 Vs $\cos(\Theta_{13})$



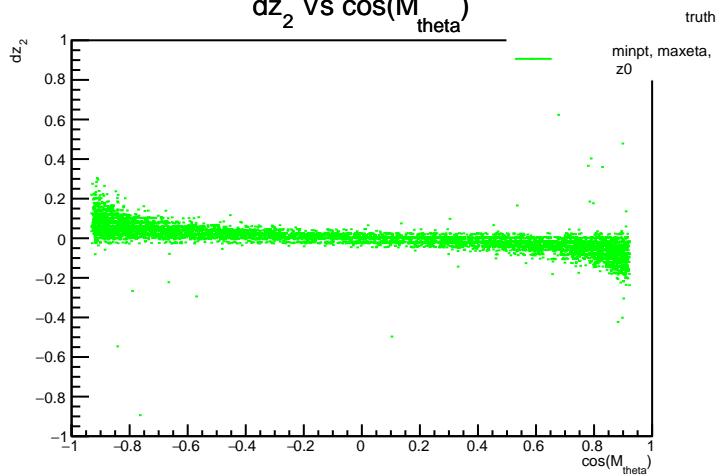
dz_2 Vs $\cos(\Theta_{13})$



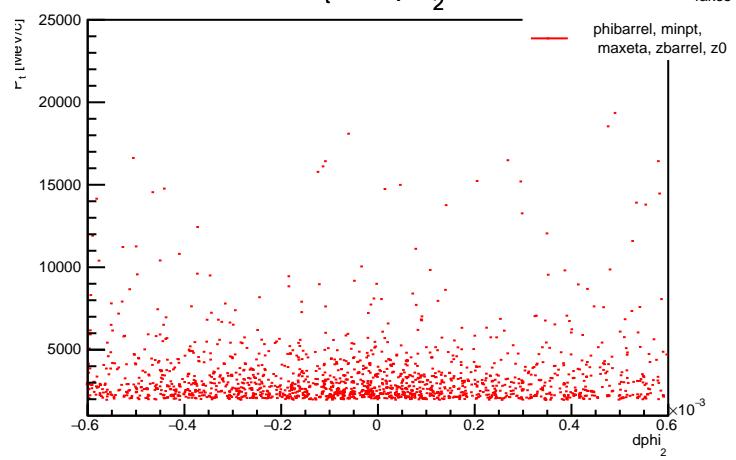
dz_2 Vs $\cos(\Theta_{13})$



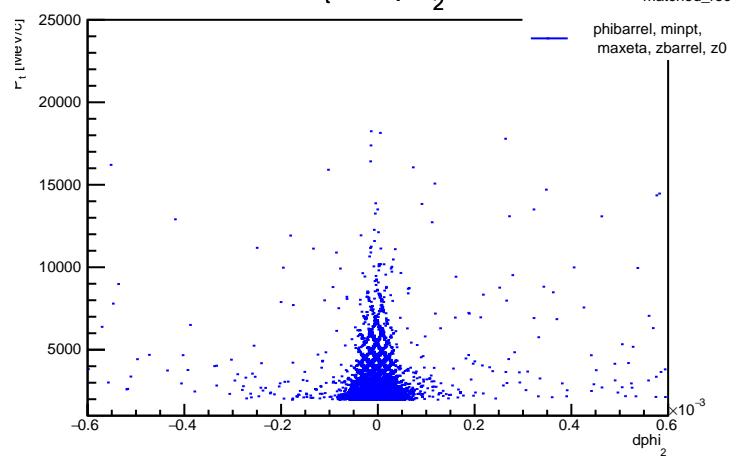
dz_2 Vs $\cos(M_{\theta})$



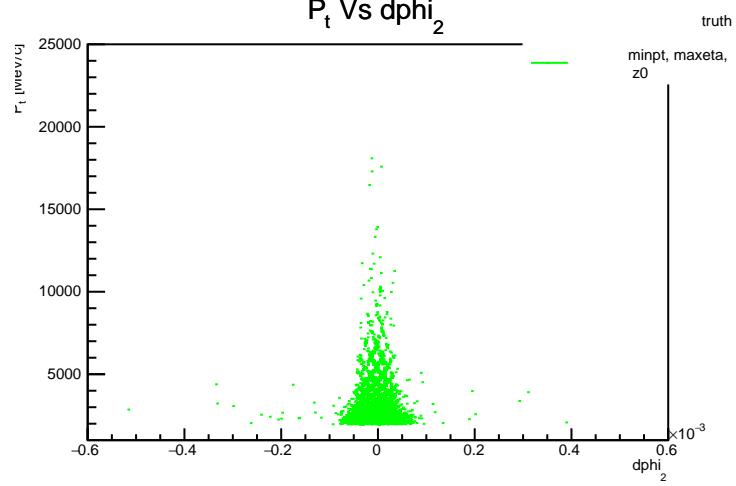
P_t Vs $d\phi_{\bar{2}}$



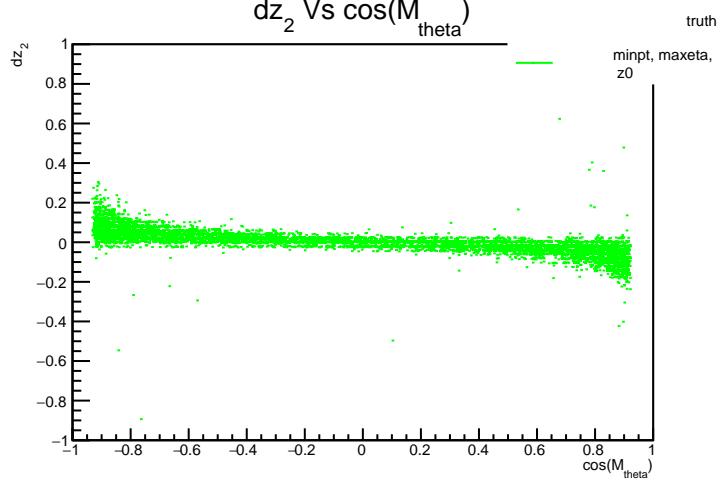
P_t Vs $d\phi_{\bar{2}}$



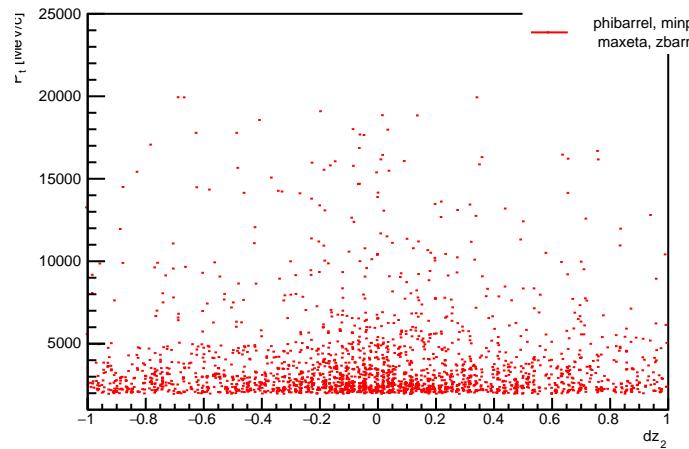
P_t Vs $d\phi_{\bar{2}}$



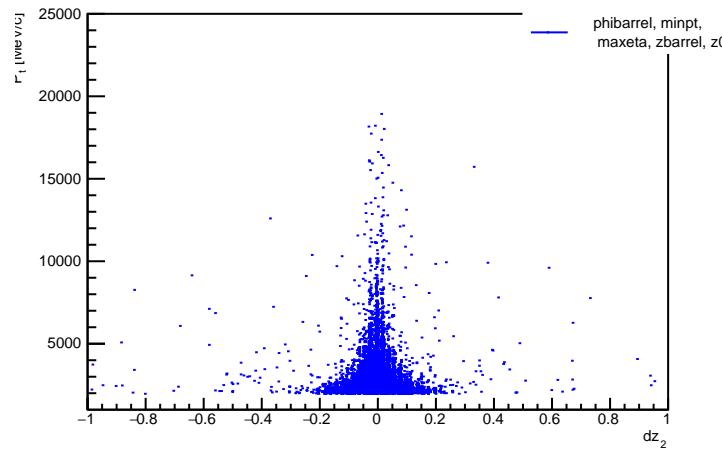
$dz_{\bar{2}}$ Vs $\cos(M_{\theta})$



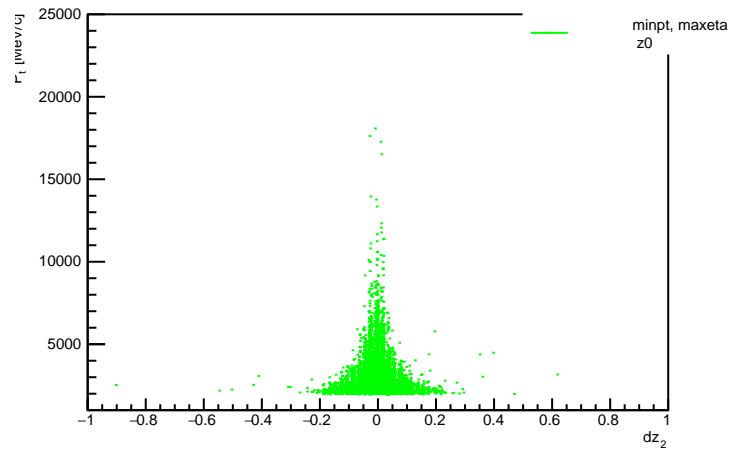
P_t Vs dz_2



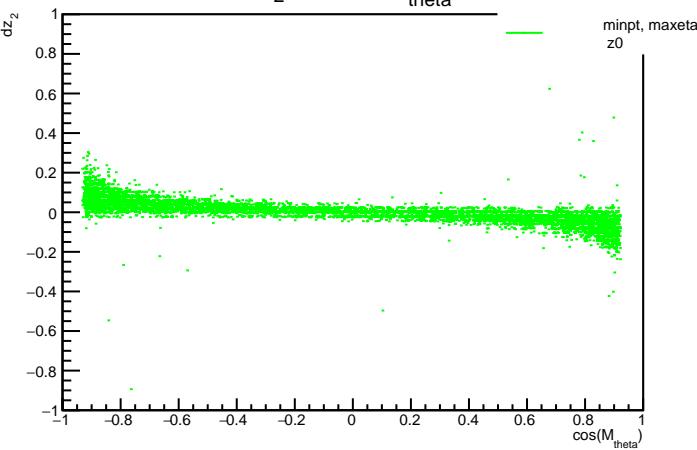
P_t Vs dz_2

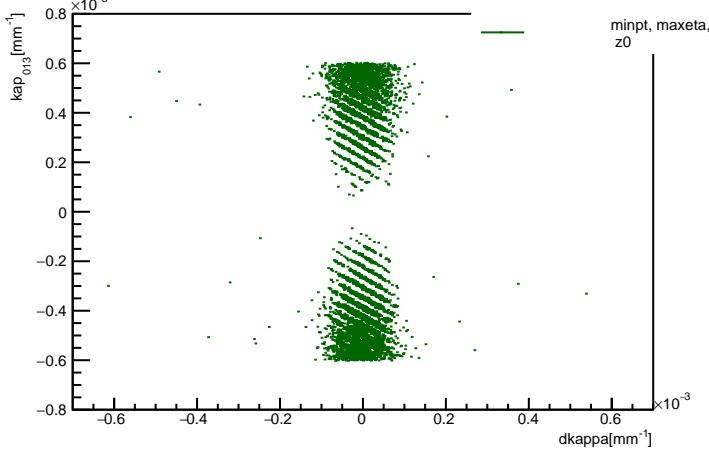
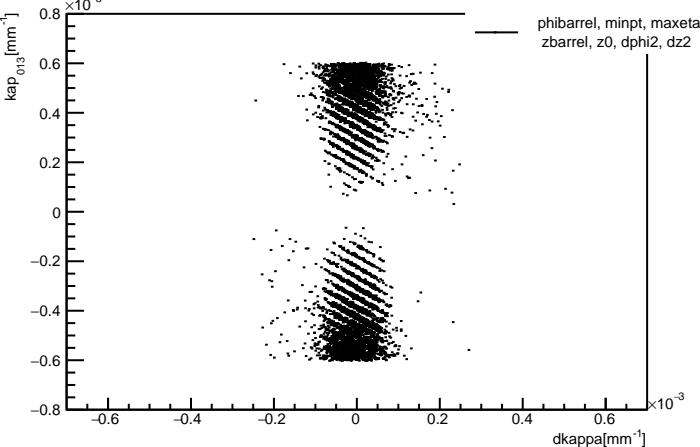
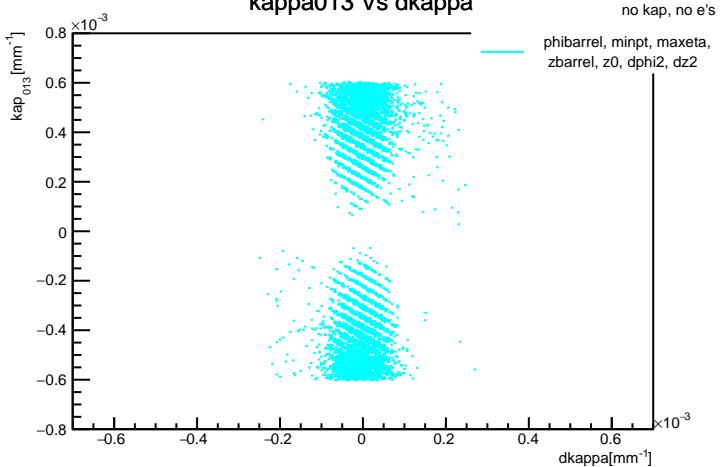


P_t Vs dz_2

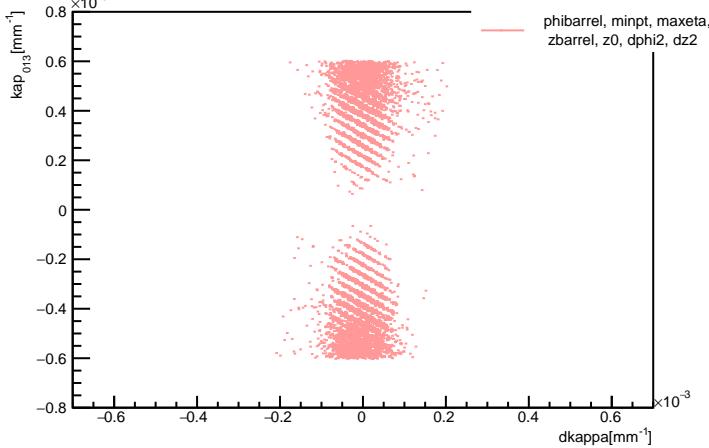


dz_2 Vs $\cos(M_{\text{theta}})$

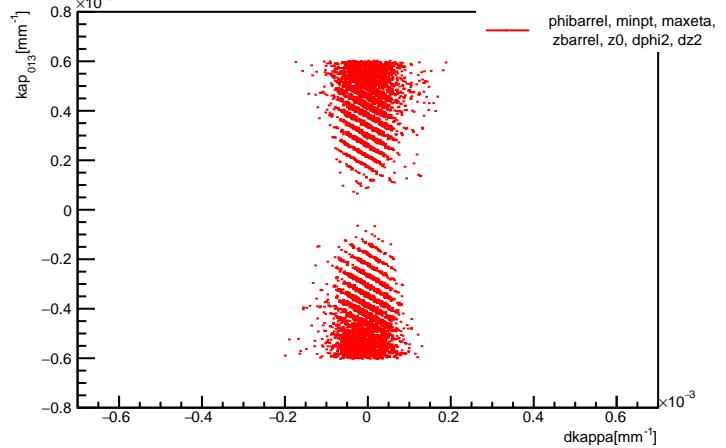


kappa013 Vs dkappa**kappa013 Vs dkappa****kappa013 Vs dkappa**

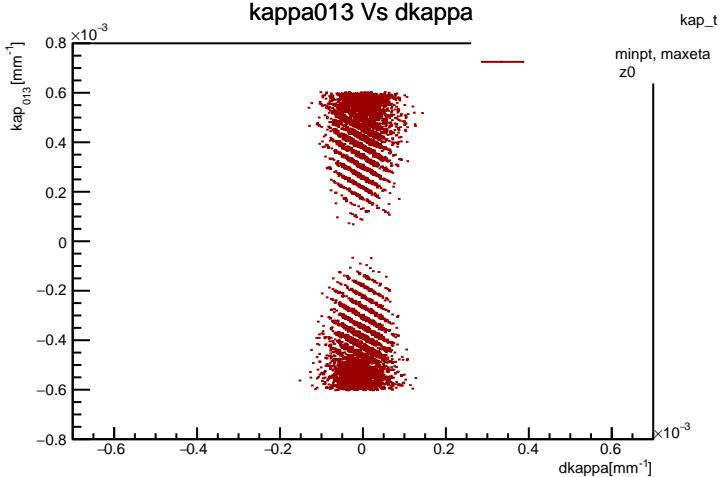
kappa013 Vs dkappa



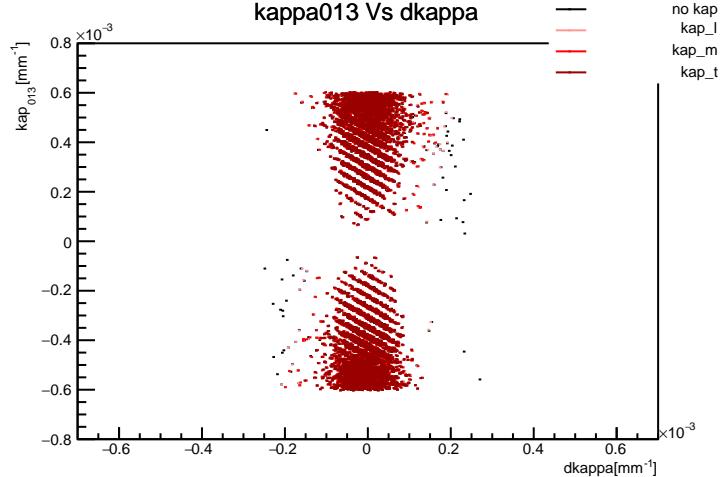
kappa013 Vs dkappa



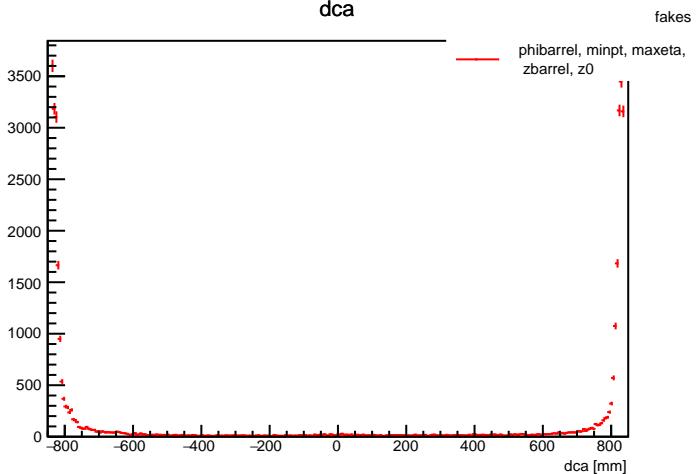
kappa013 Vs dkappa



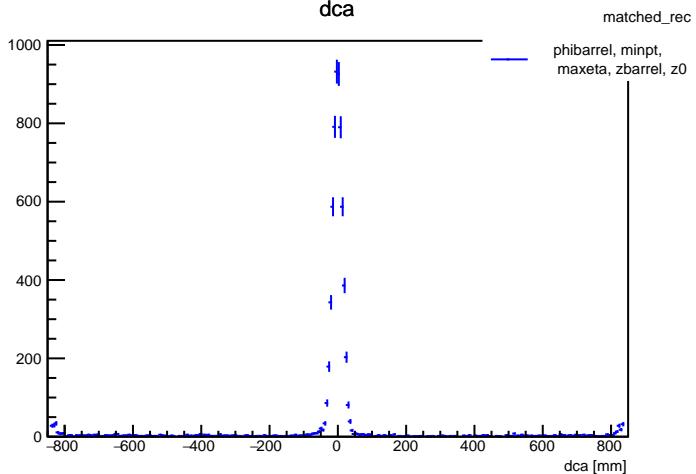
kappa013 Vs dkappa



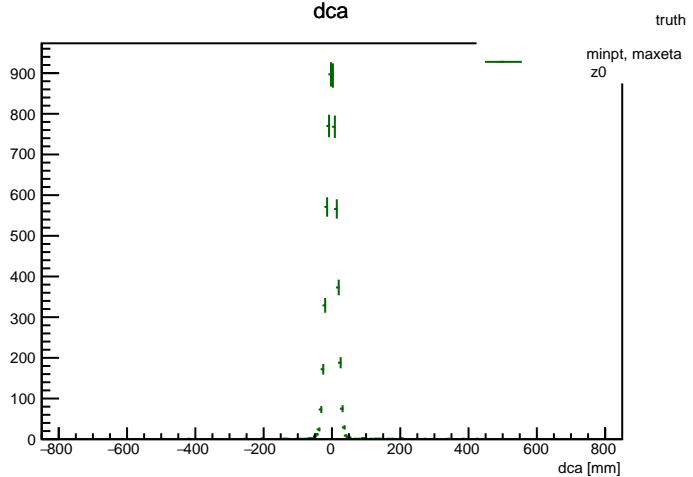
dca



dca

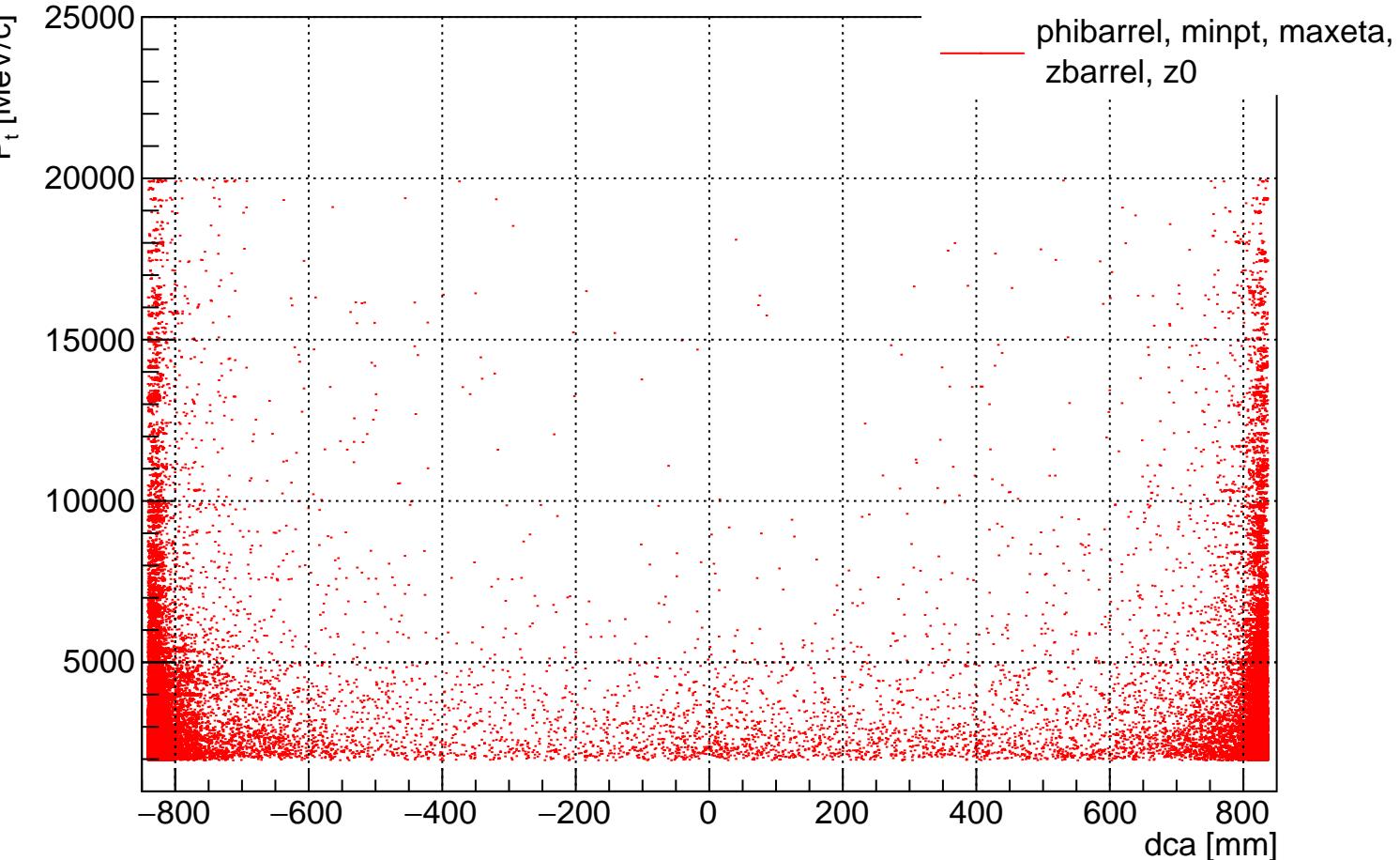


dca

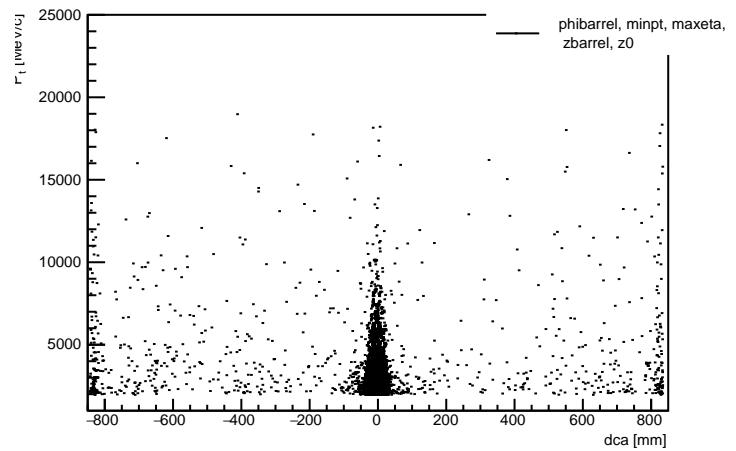


P_t Vs dca

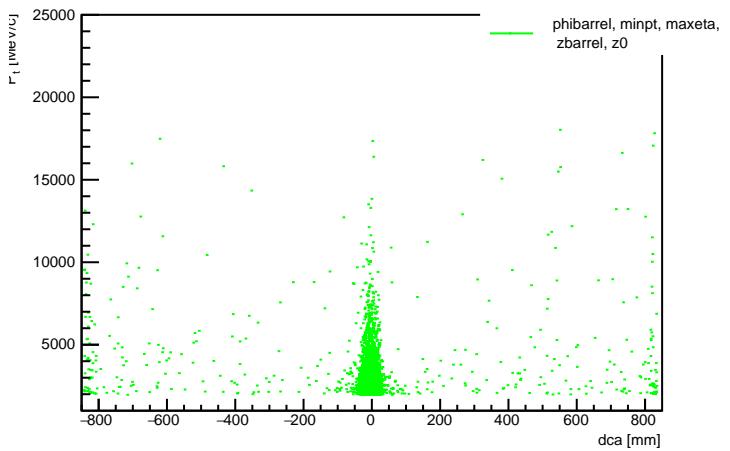
fakes



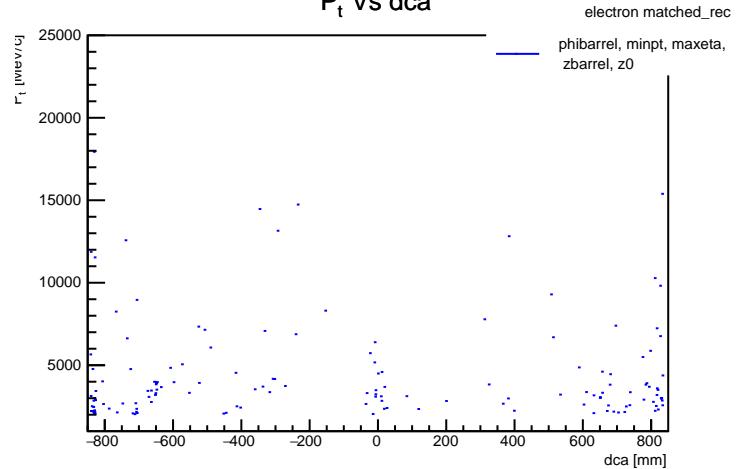
P_t Vs dca



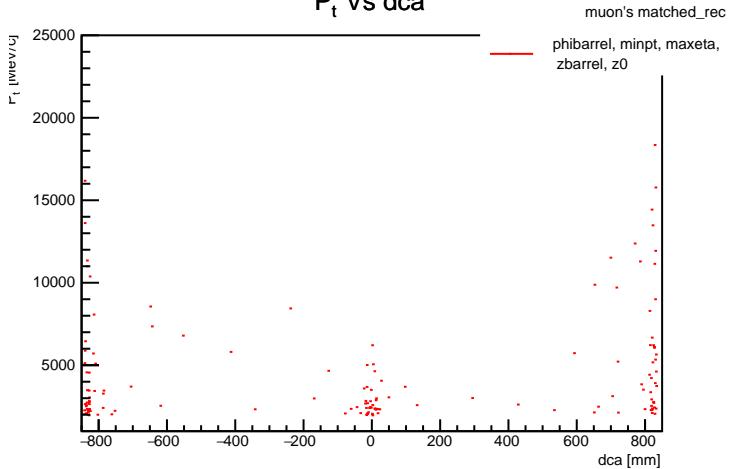
P_t Vs dca



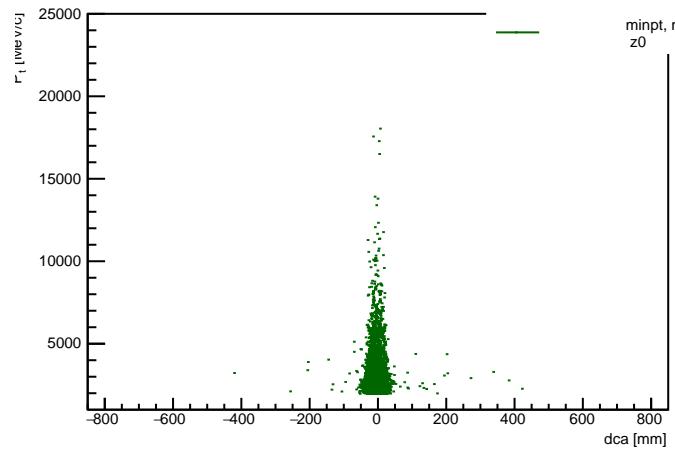
P_t Vs dca



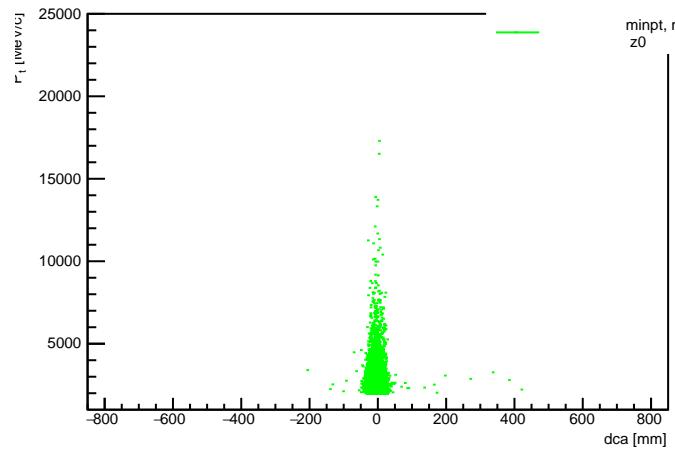
P_t Vs dca



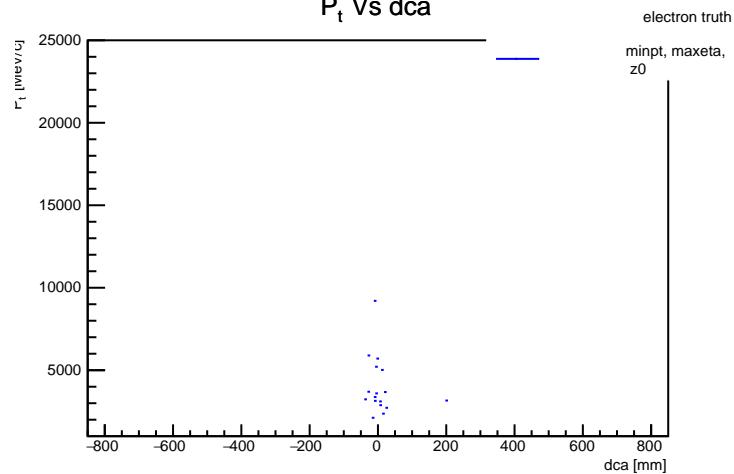
P_t Vs dca



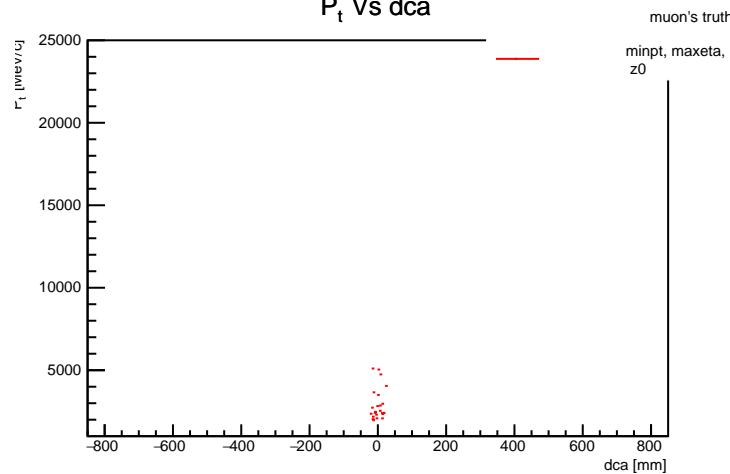
P_t Vs dca



P_t Vs dca



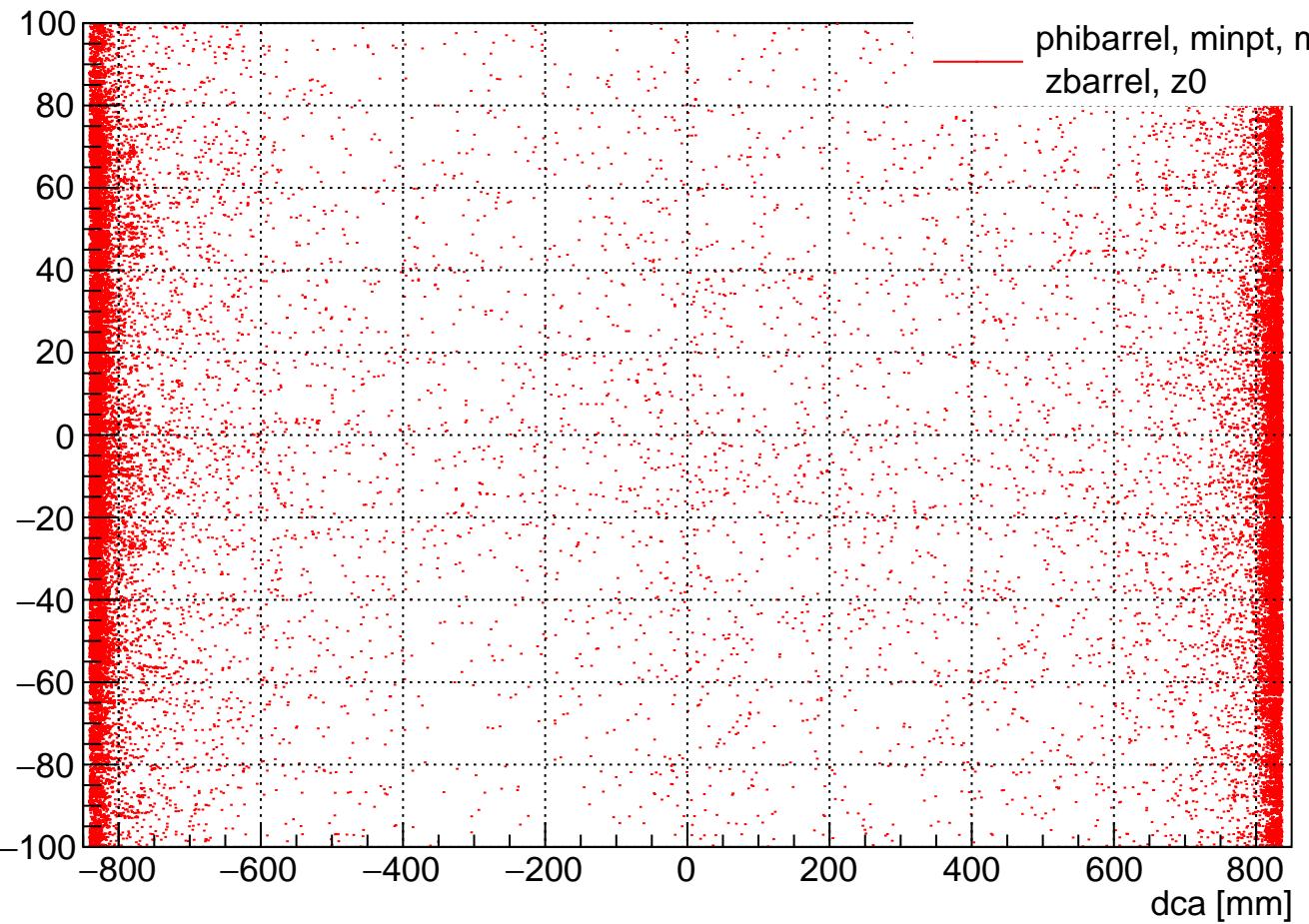
P_t Vs dca



Z_0 Vs dca

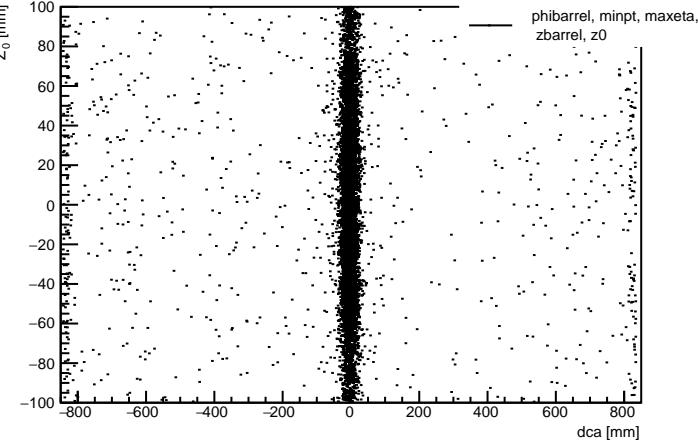
fakes

Z_0 [mm]



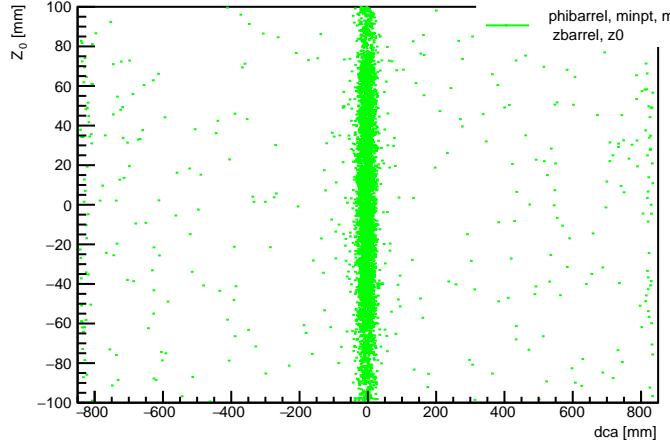
Z_0 Vs dca

all matched_rec



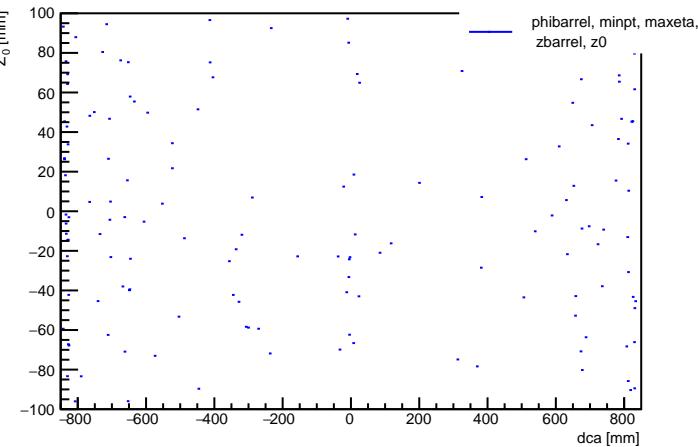
Z_0 Vs dca

pion matched_rec



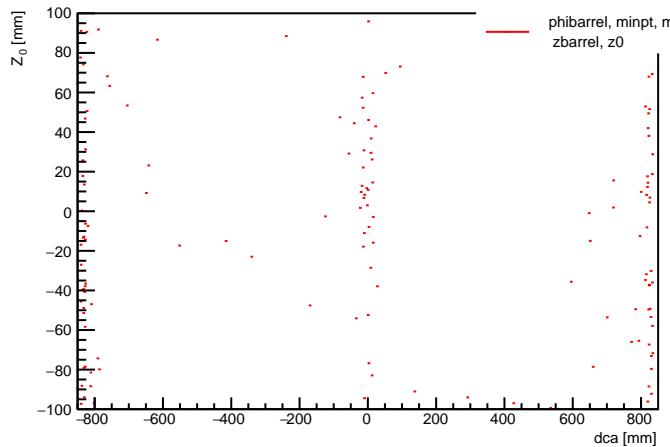
Z_0 Vs dca

electron matched_rec



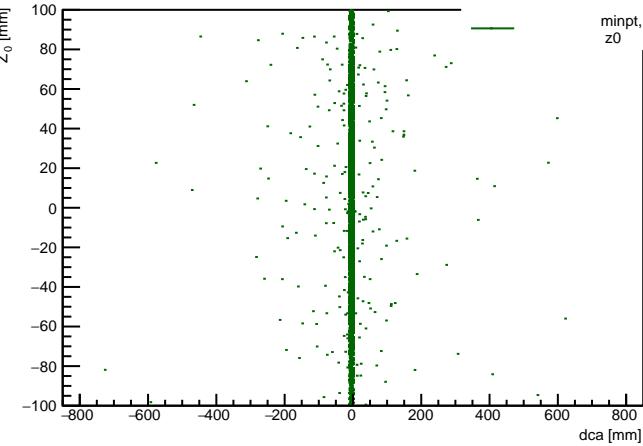
Z_0 Vs dca

muon's matched_rec



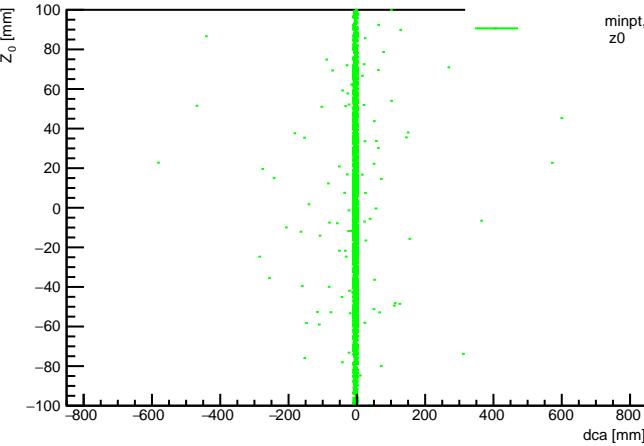
Z_0 Vs dca

all truth



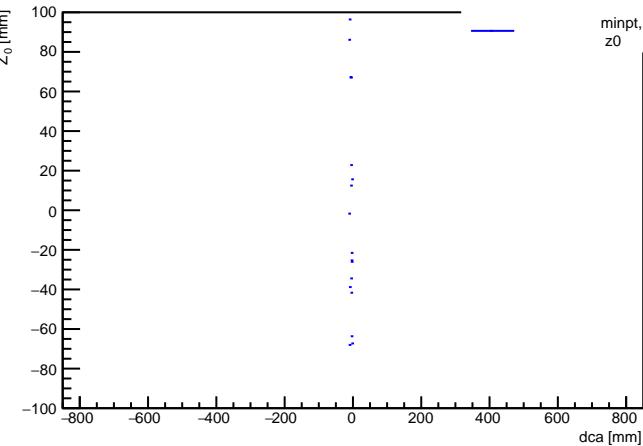
Z_0 Vs dca

pion truth



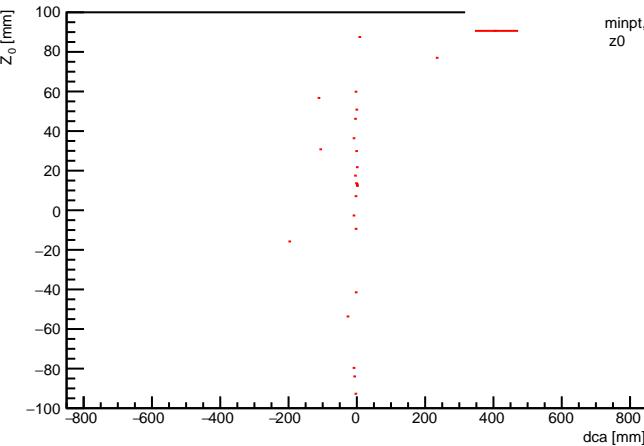
Z_0 Vs dca

electron truth



Z_0 Vs dca

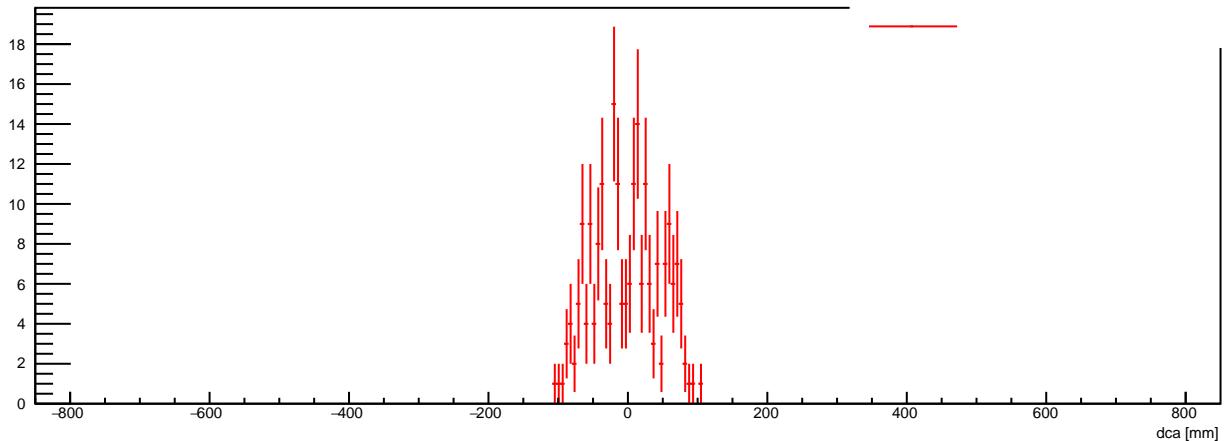
muon's truth



minpt, maxeta,
 z_0

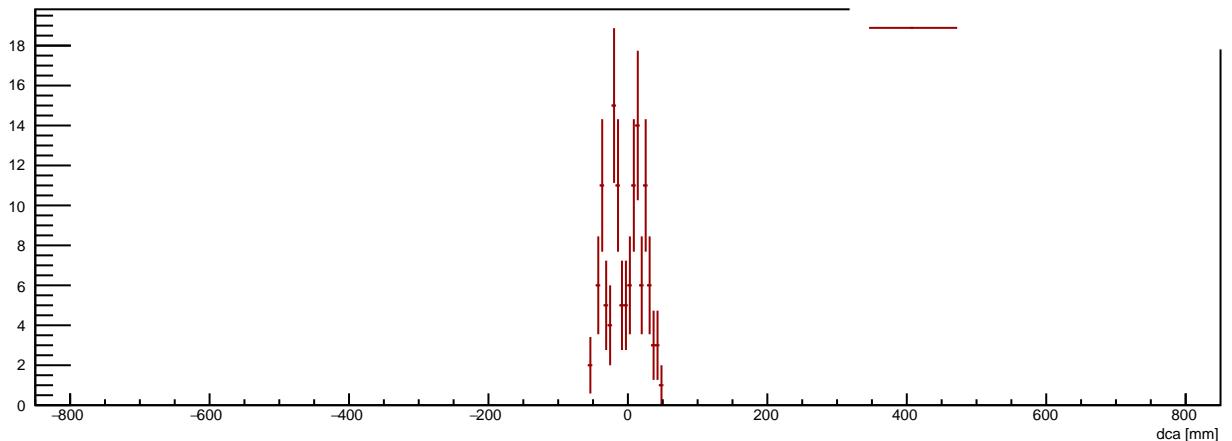
dca

fakes

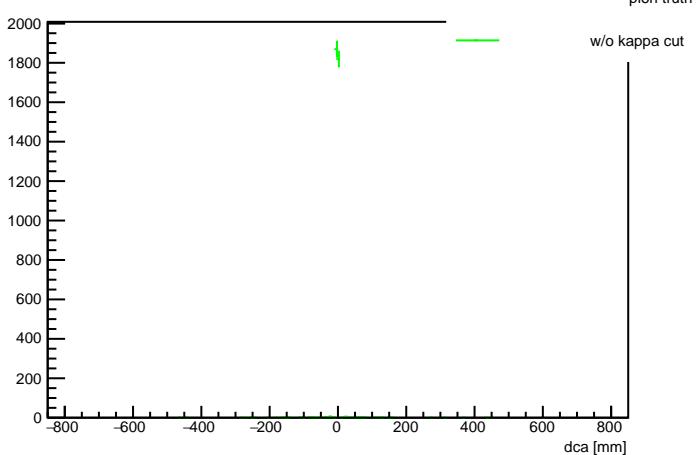


dca

fakes



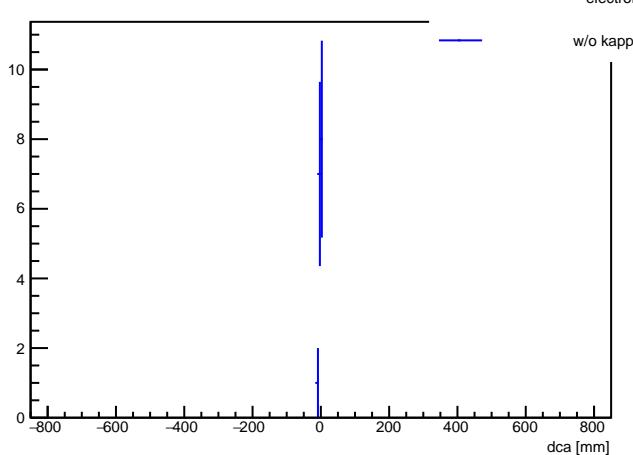
dca



pion truth

w/o kappa cut

dca

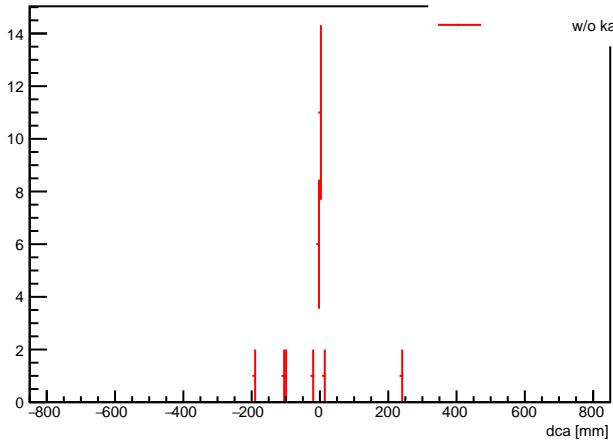


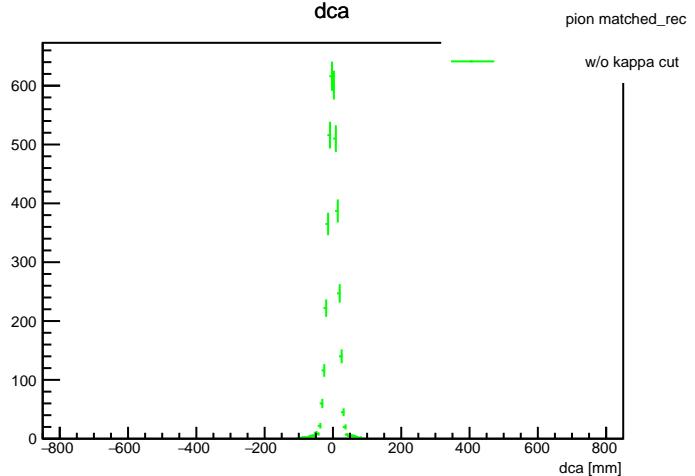
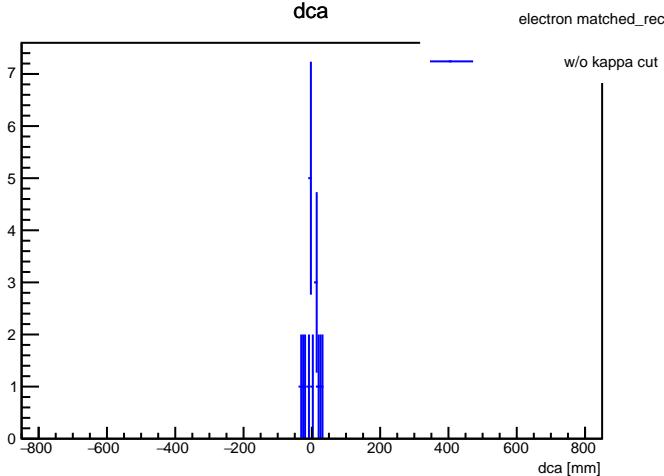
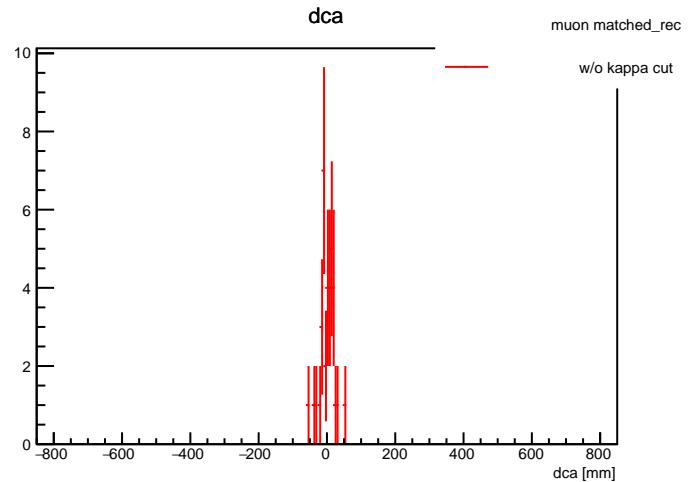
electron truth

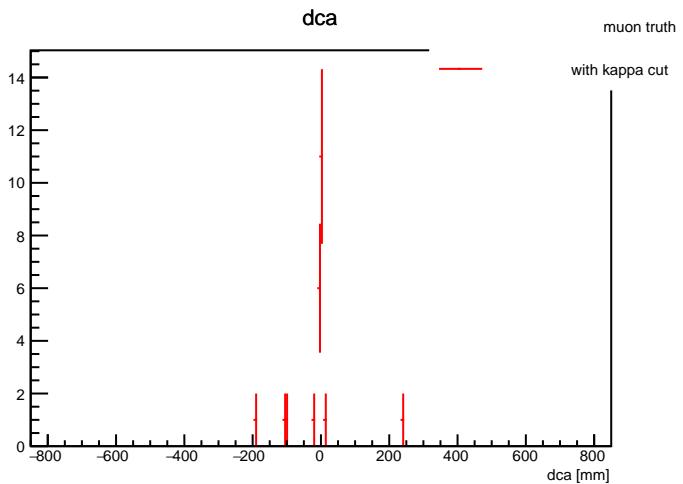
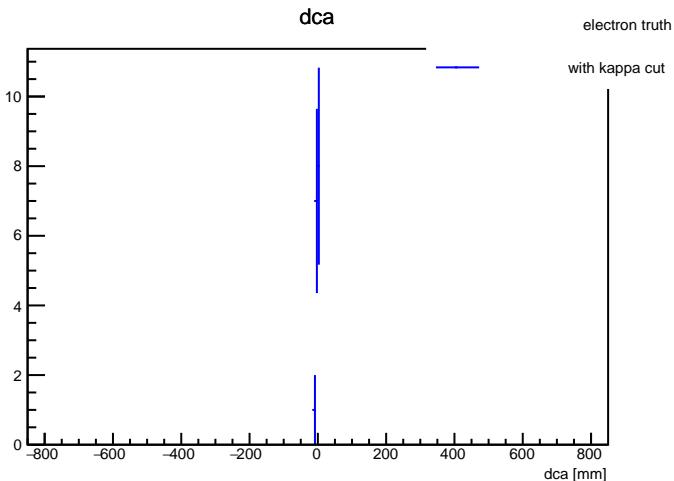
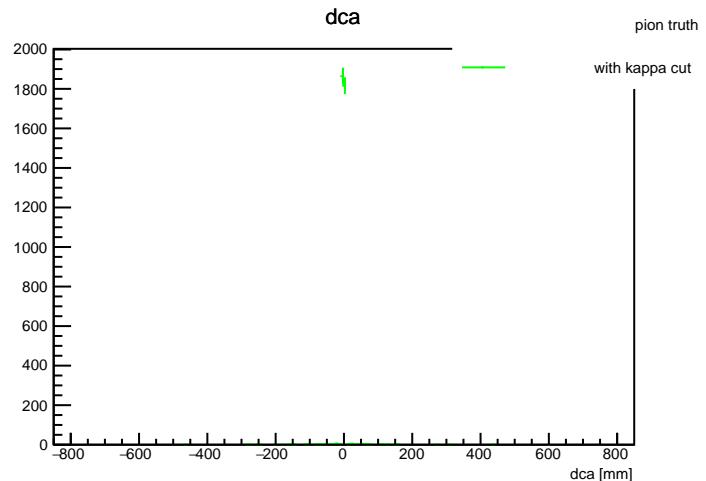
muon truth

w/o kappa cut

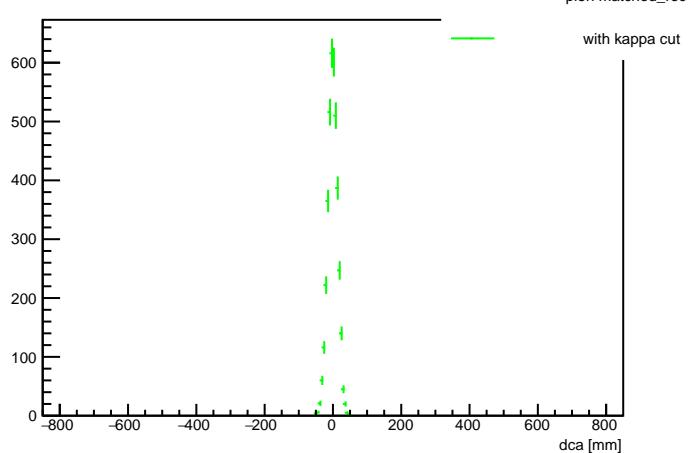
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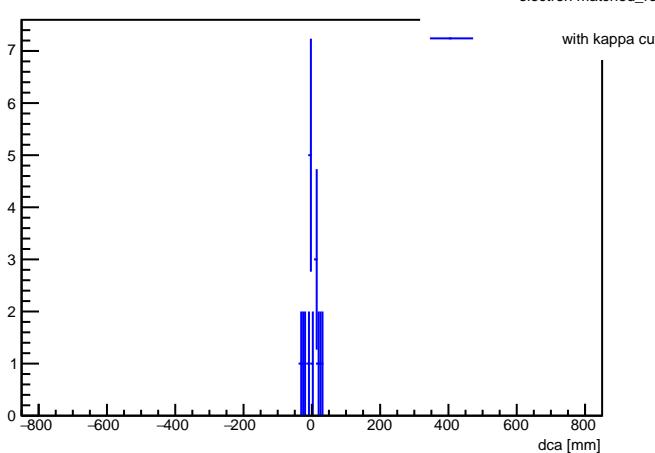
dca**dca****dca**



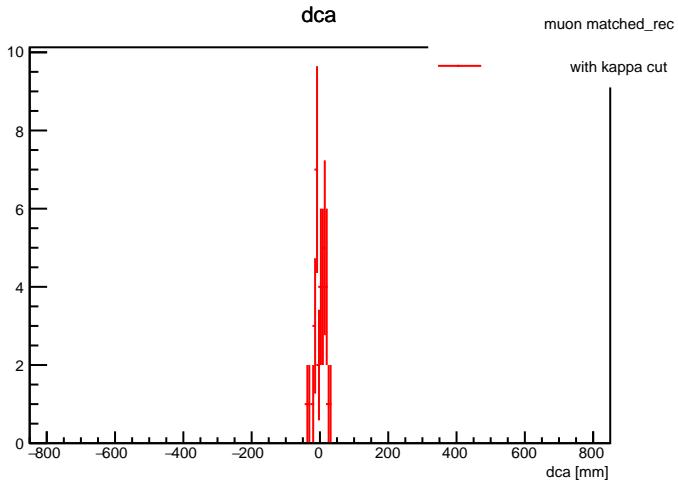
dca



dca

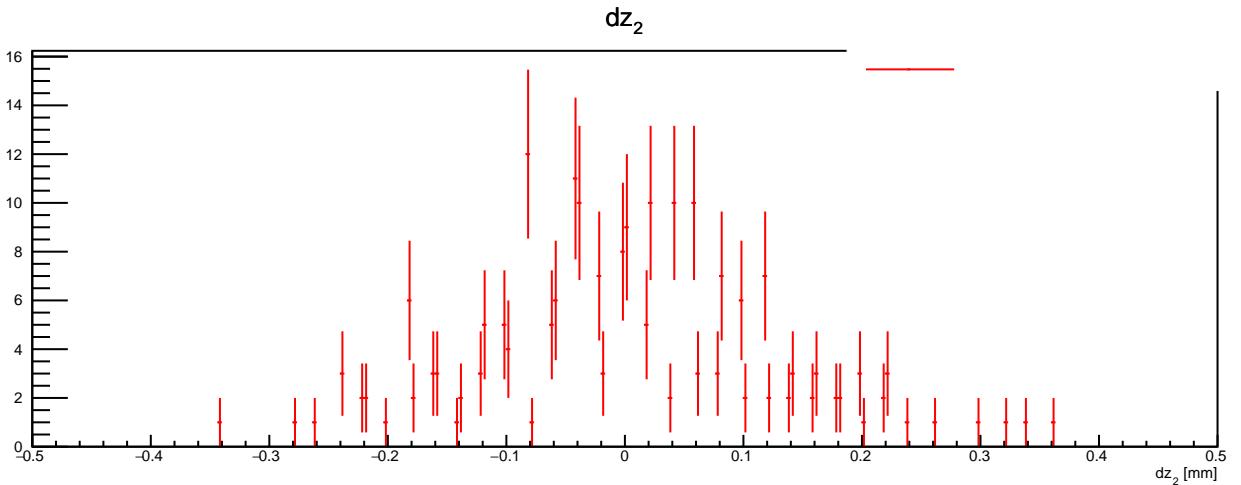


dca



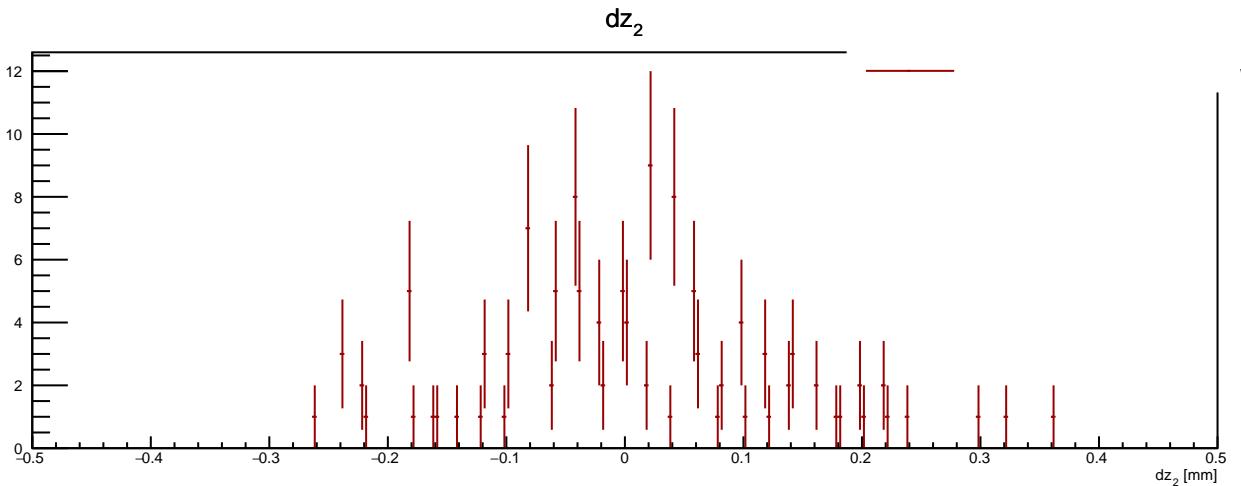
fakes

w/o kappa cut



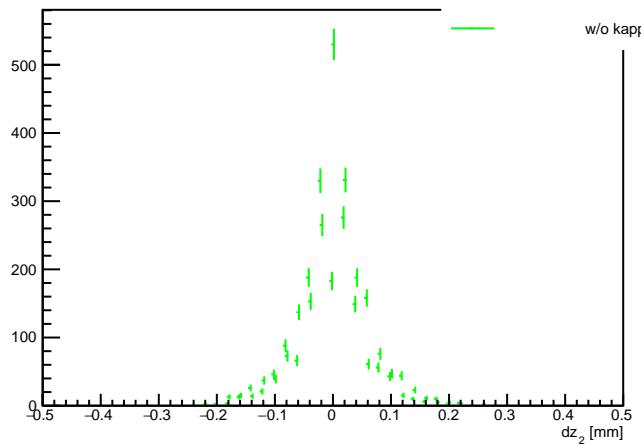
fakes

with kappa cut

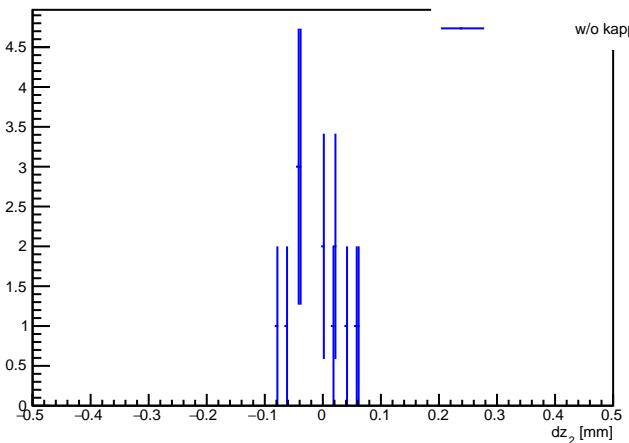


dz_2

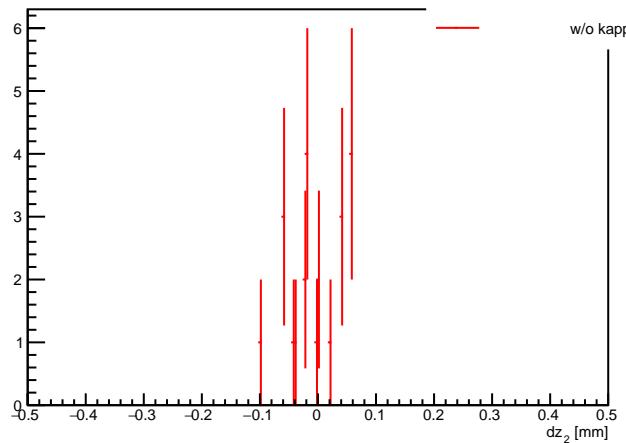
pion truth

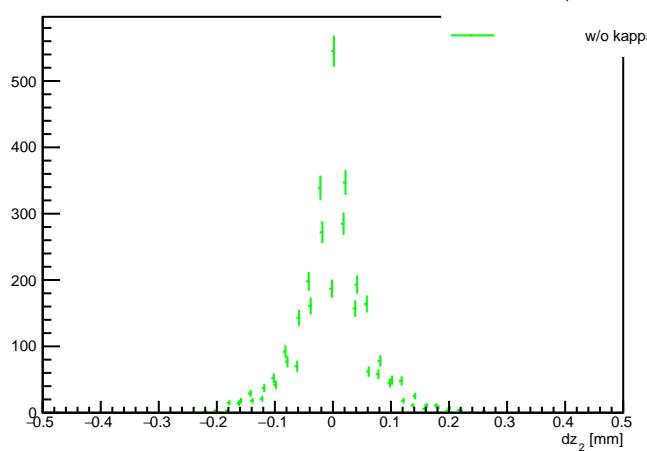
 dz_2

electron truth

 dz_2

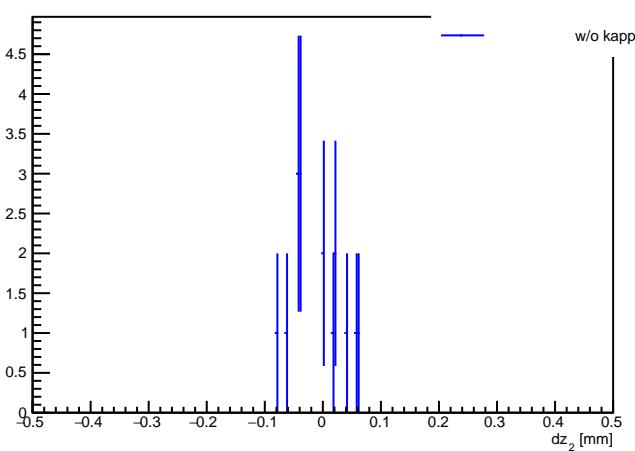
muon truth



dz_2 

pion matched_rec

w/o kappa cut

 dz_2 

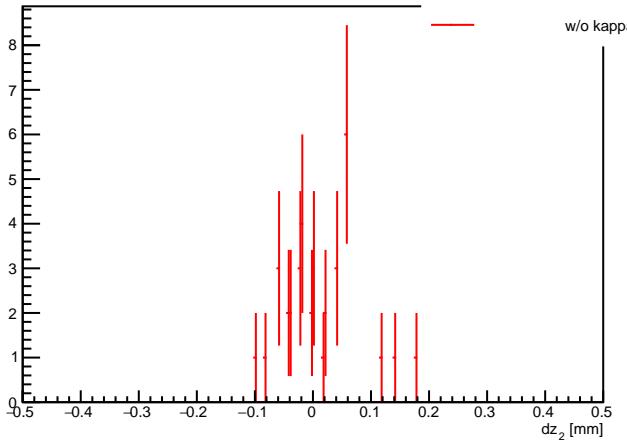
electron matched_rec

w/o kappa cut

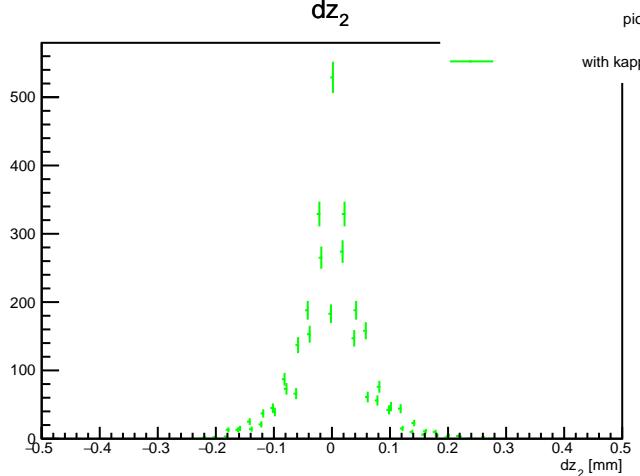
 dz_2

muon matched_rec

w/o kappa cut



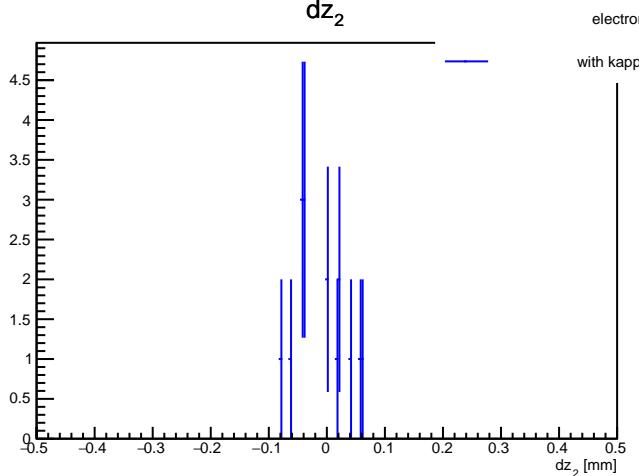
dz_2



pion truth

with kappa cut

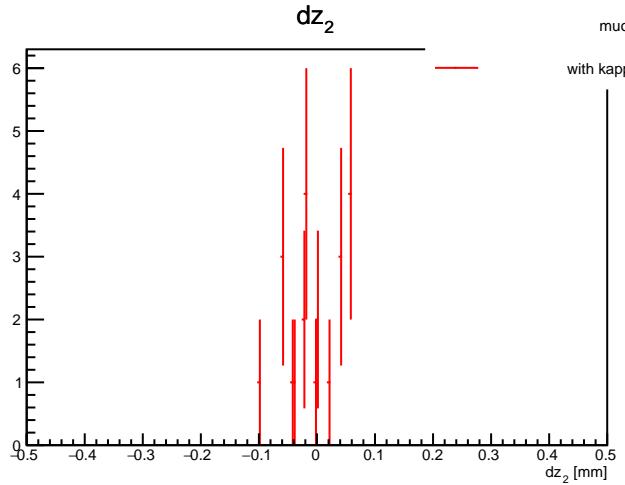
dz_2



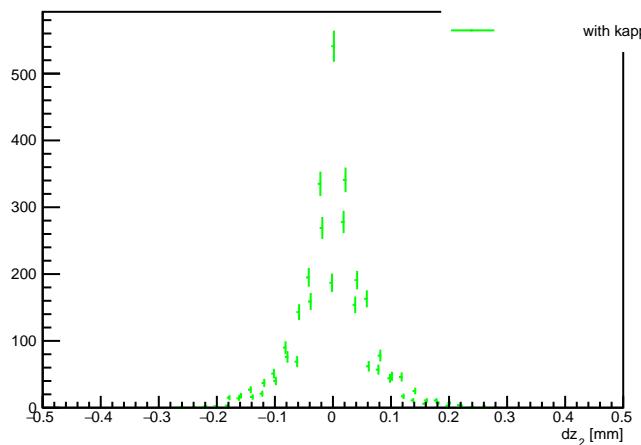
electron truth

muon truth

with kappa cut



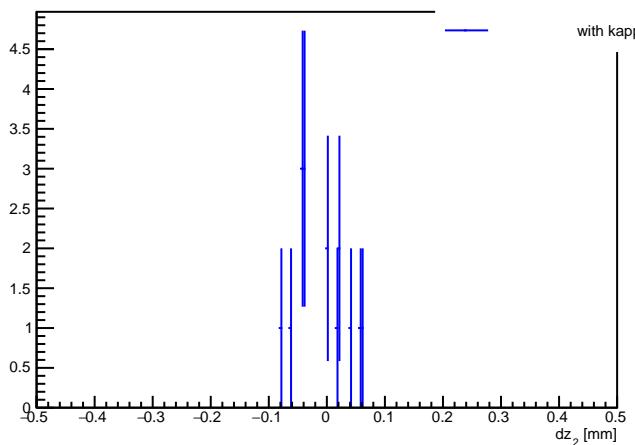
dz_2



pion matched_rec

with kappa cut

dz_2



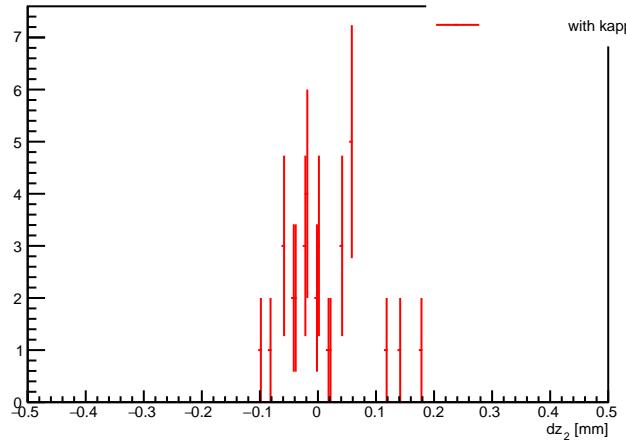
electron matched_rec

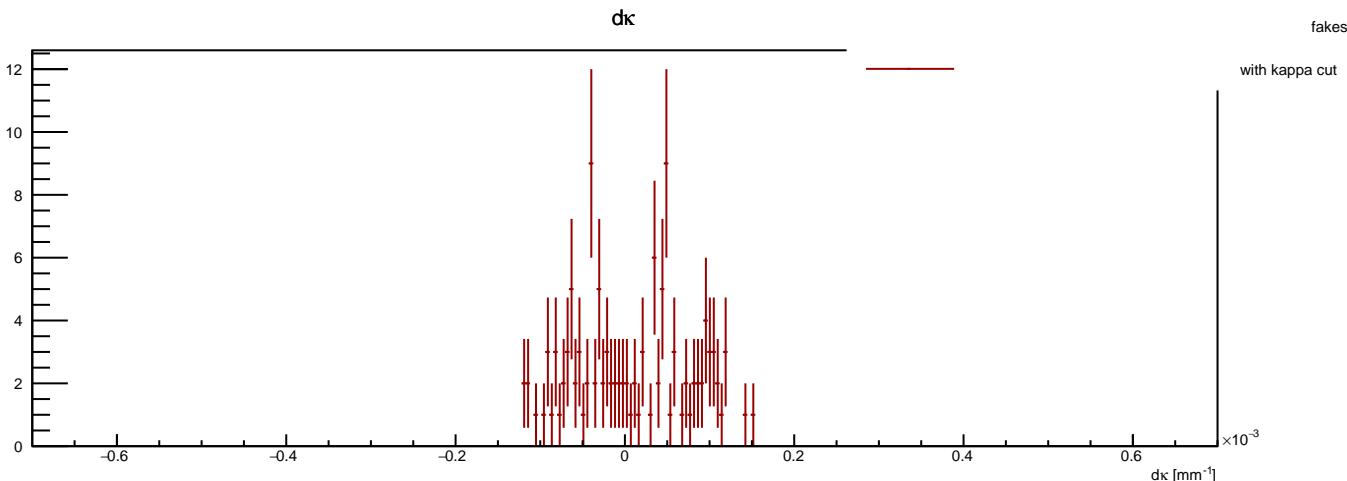
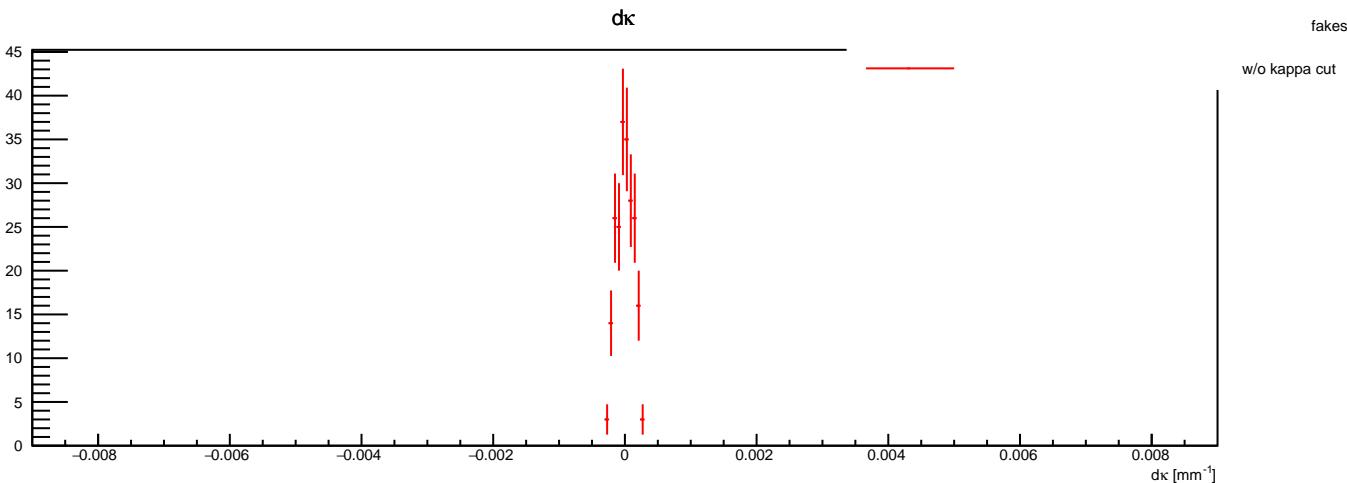
with kappa cut

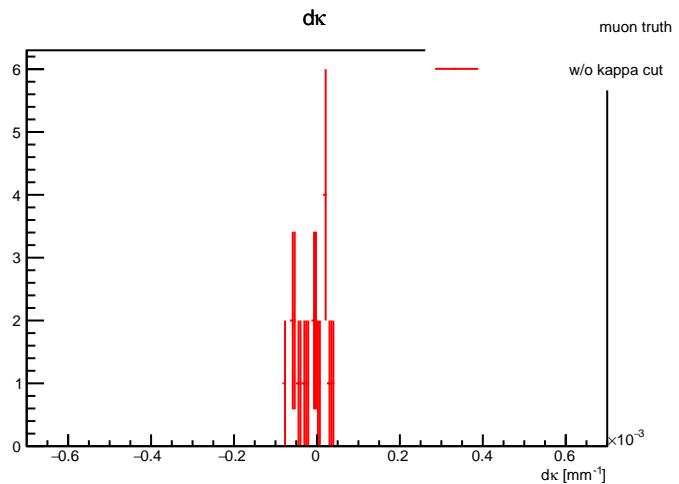
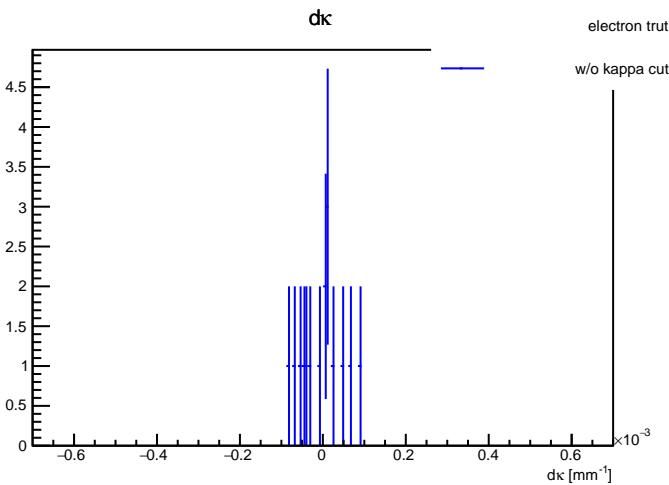
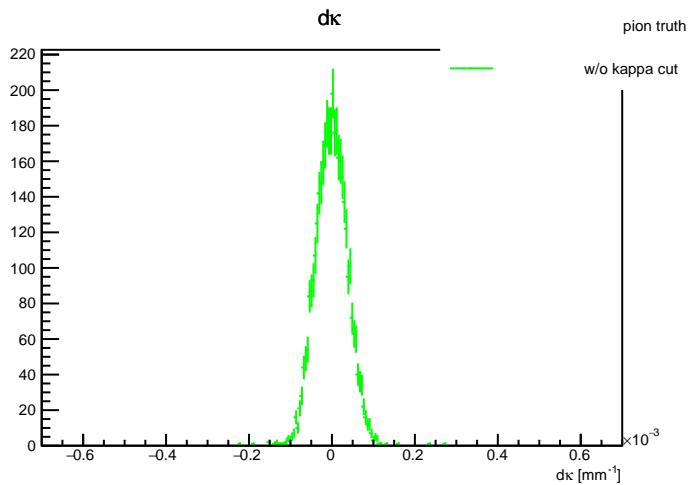
dz_2

muon matched_rec

with kappa cut

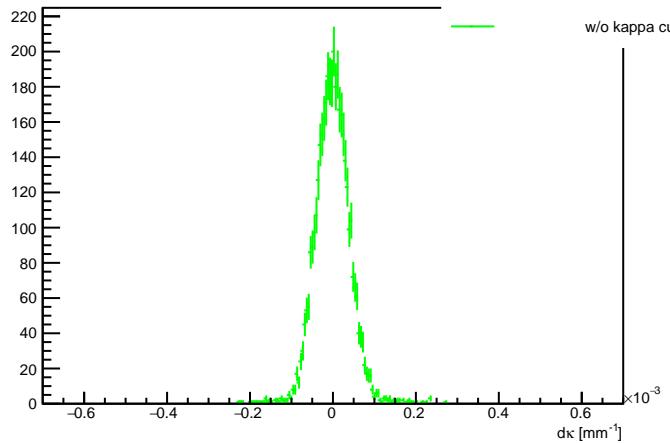






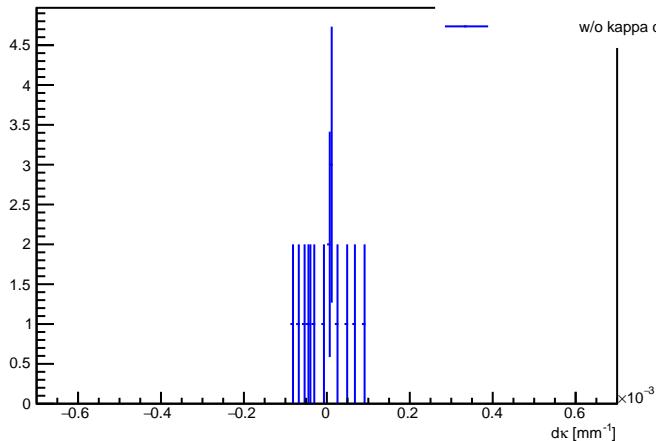
dk

pion matched_rec



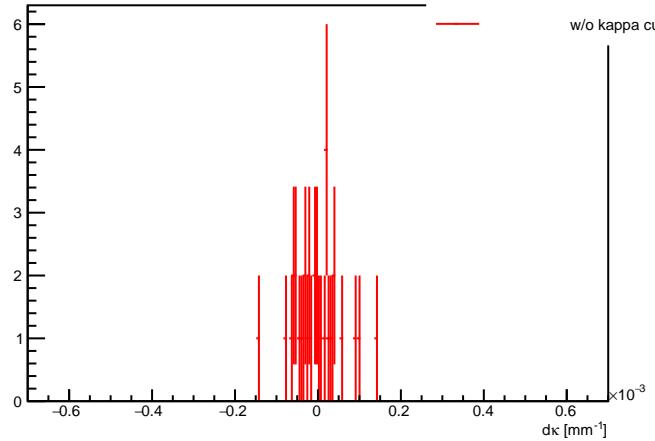
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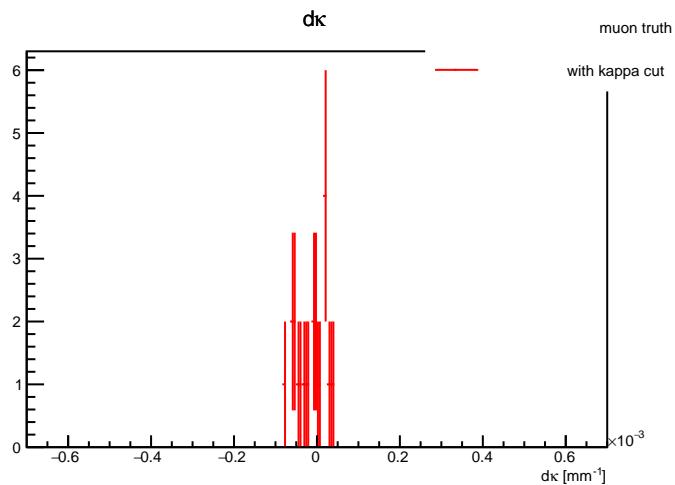
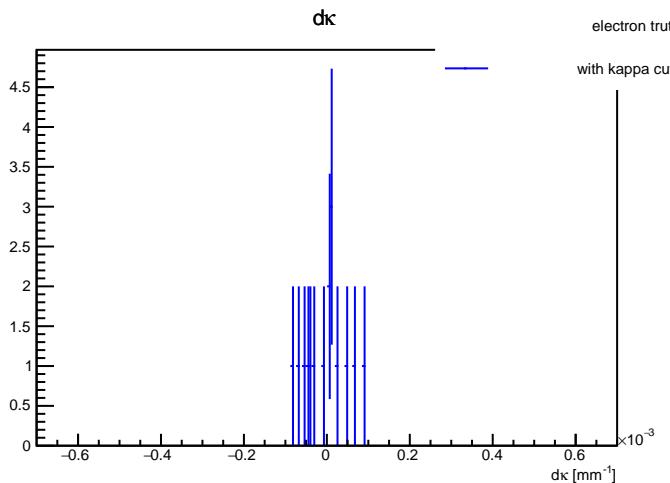
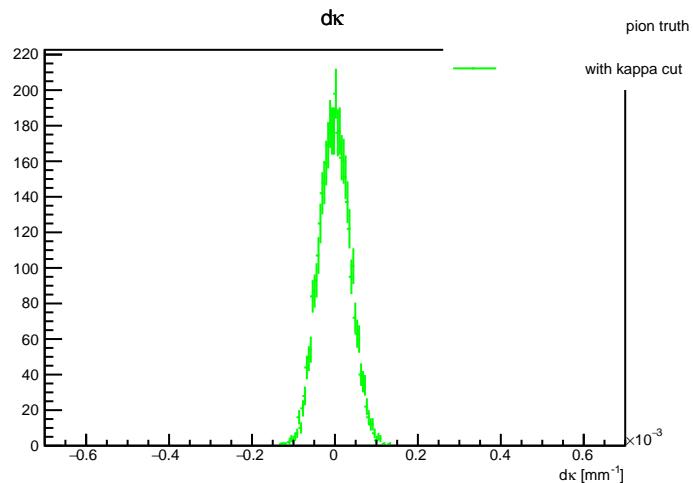
electron matched_rec



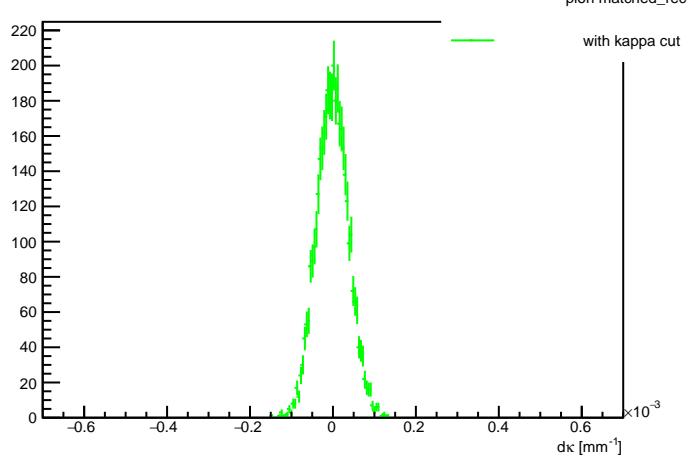
dk

muon matched_rec





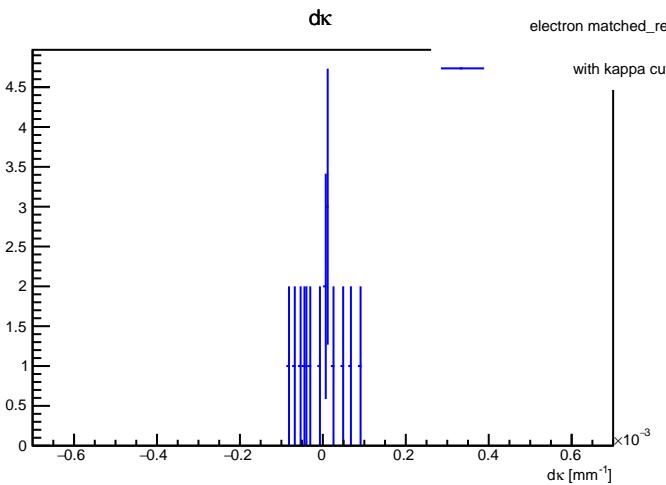
dk



pion matched_rec

with kappa cut

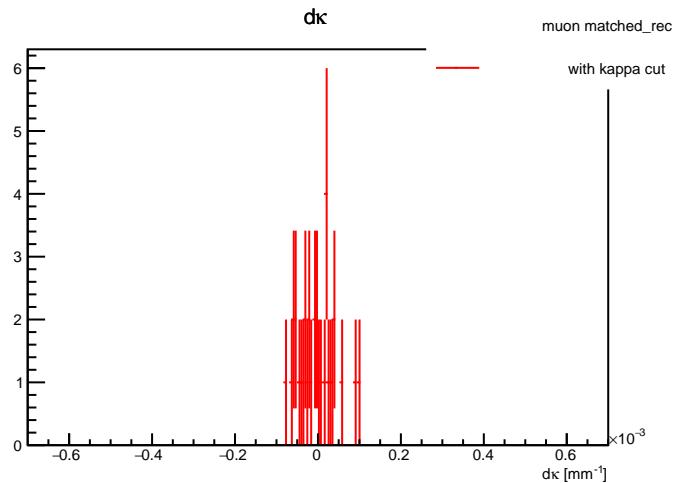
dk



electron matched_rec

with kappa cut

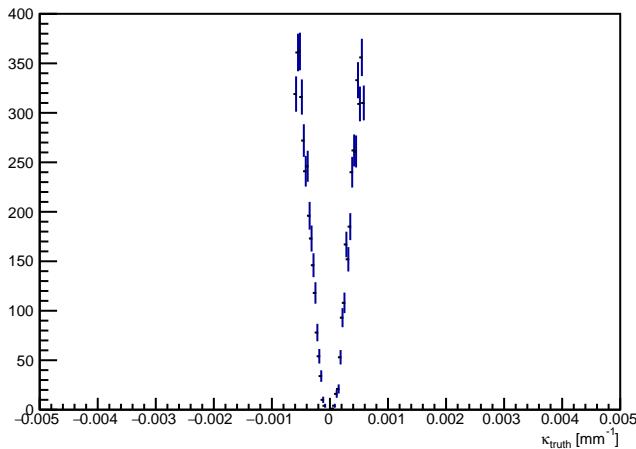
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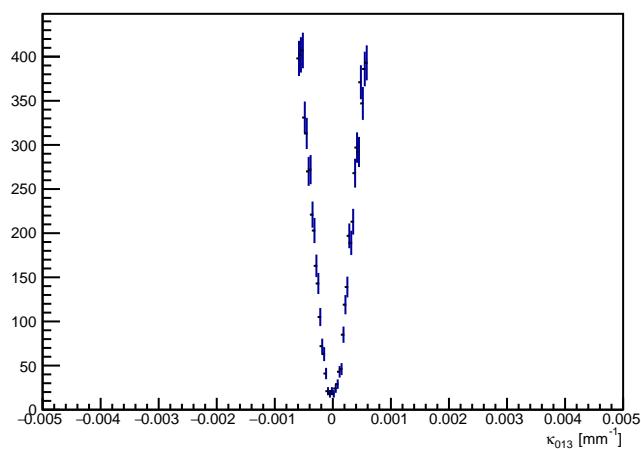
muon matched_rec

with kappa cut

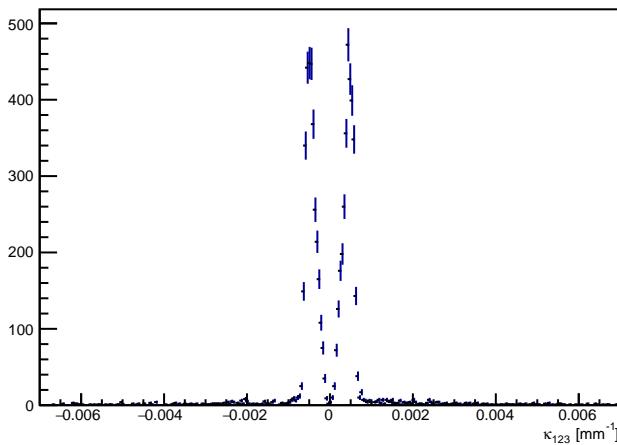
kappa truth



kappa rec with bml constraint

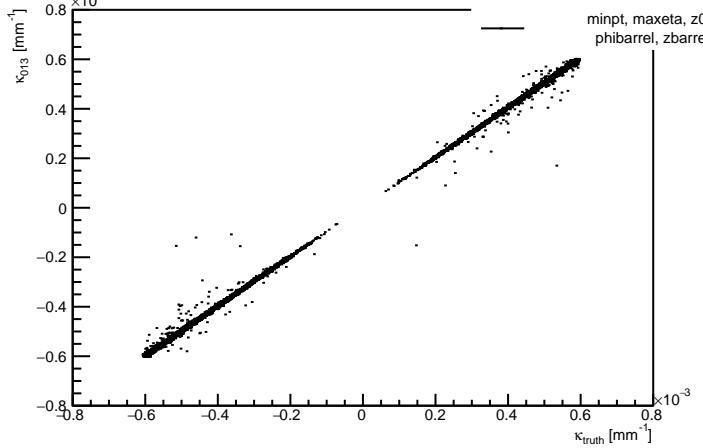


kappa rec w/o bml constraint

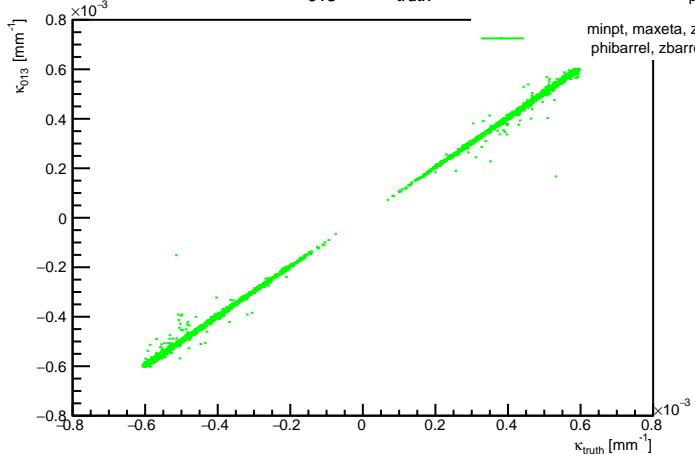


κ_{013} Vs κ_{truth}

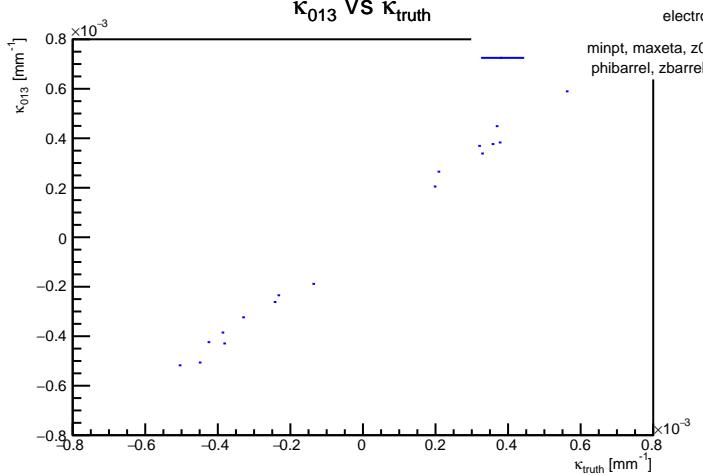
all

 κ_{013} Vs κ_{truth}

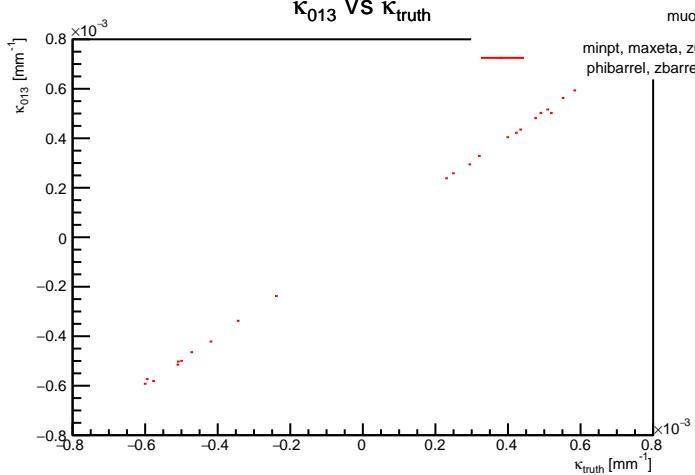
pion

minpt, maxeta, z0,
phibarrel, zbarrel κ_{013} Vs κ_{truth}

electron

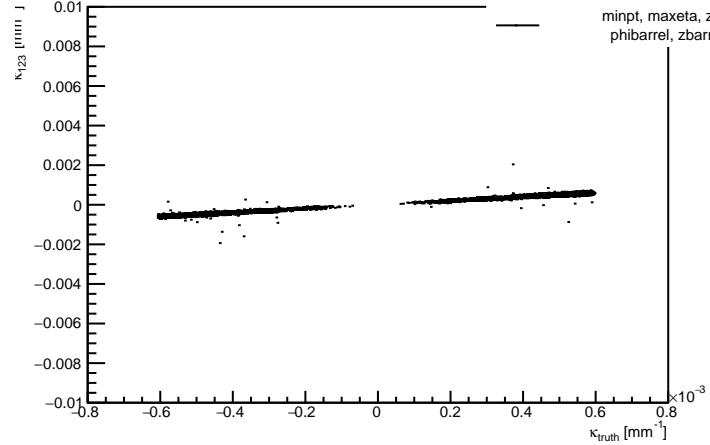
minpt, maxeta, z0,
phibarrel, zbarrel κ_{013} Vs κ_{truth}

muon's

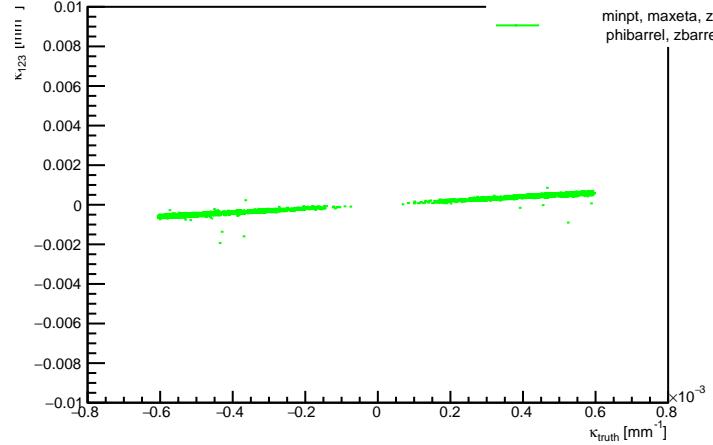
minpt, maxeta, z0,
phibarrel, zbarrelminpt, maxeta, z0,
phibarrel, zbarrel

κ_{123} Vs κ_{truth}

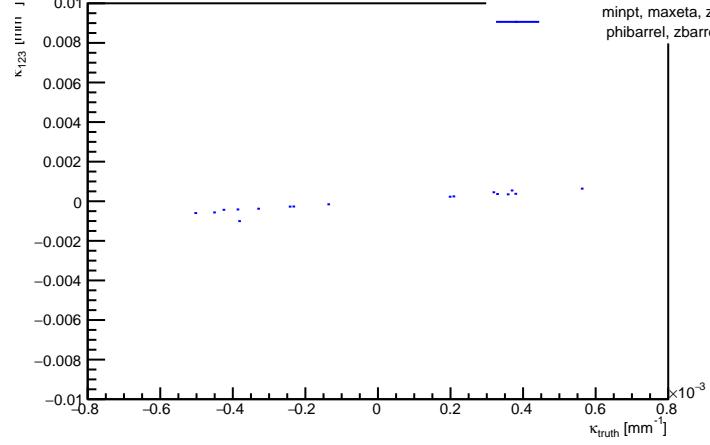
all

 κ_{123} Vs κ_{truth}

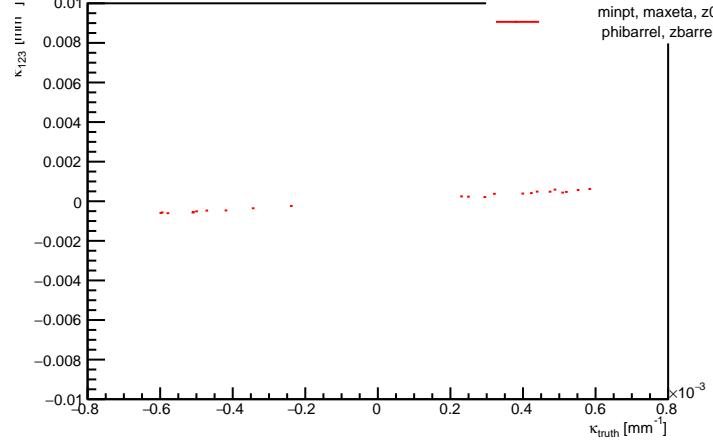
pion

 κ_{123} Vs κ_{truth}

electron

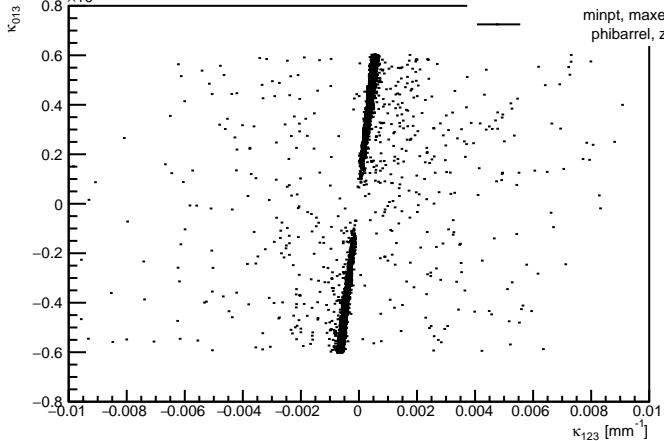
 κ_{123} Vs κ_{truth}

muon's

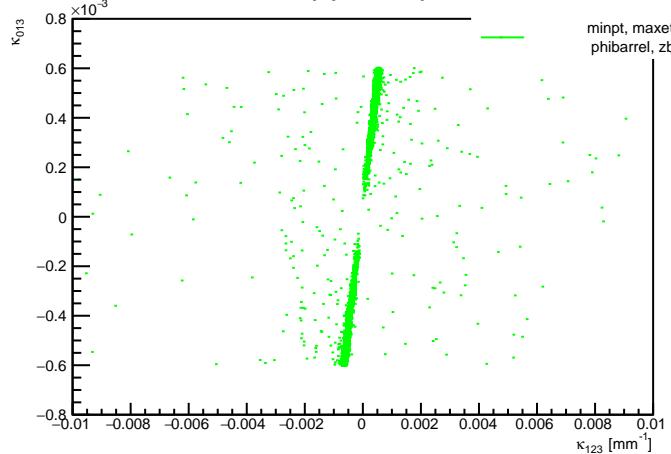


κ_{013} Vs κ_{123}

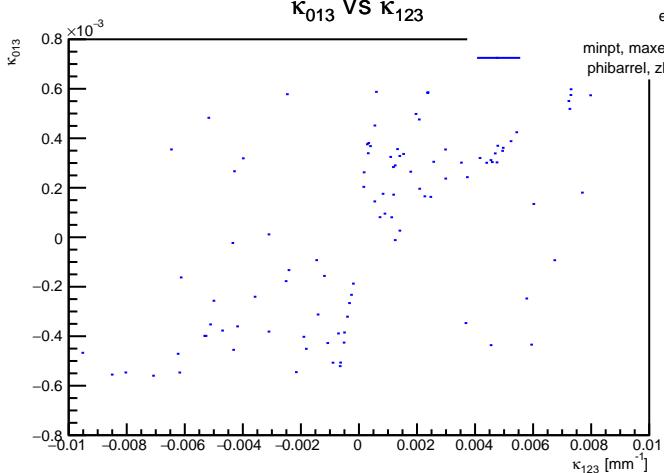
all

 κ_{013} Vs κ_{123}

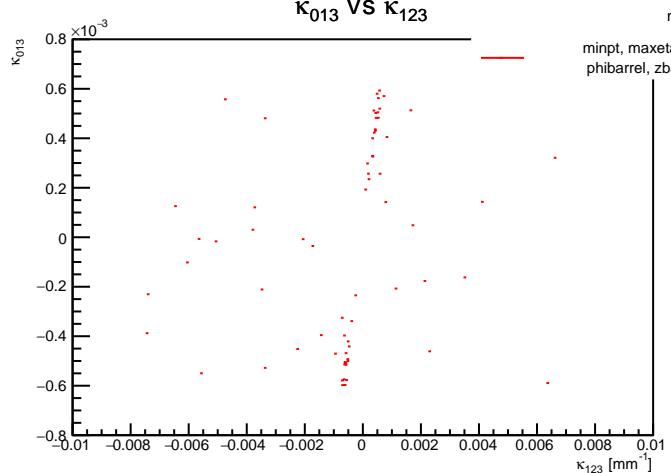
pion

 κ_{013} Vs κ_{123}

electron

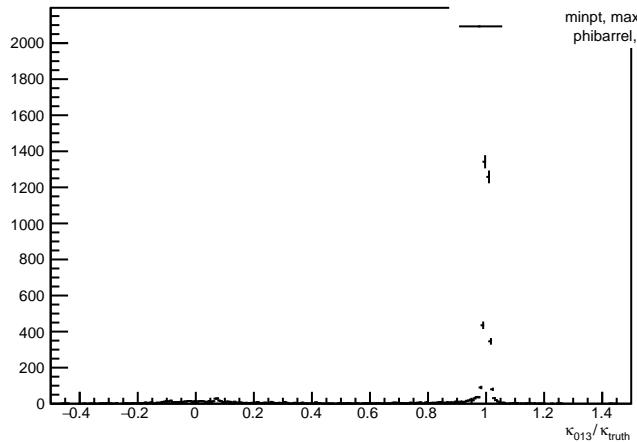
 κ_{013} Vs κ_{123}

muon's

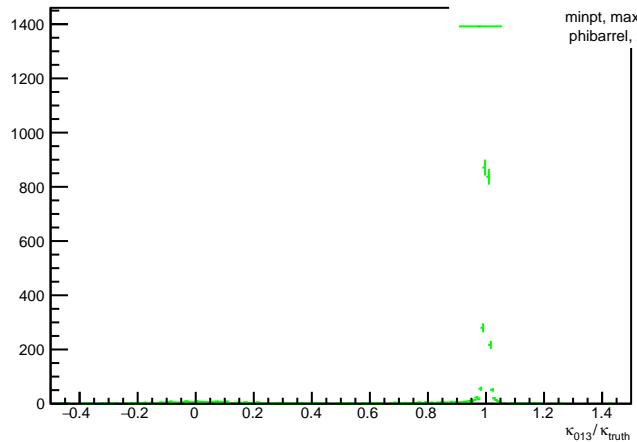


$\kappa_{013}/\kappa_{\text{truth}}$

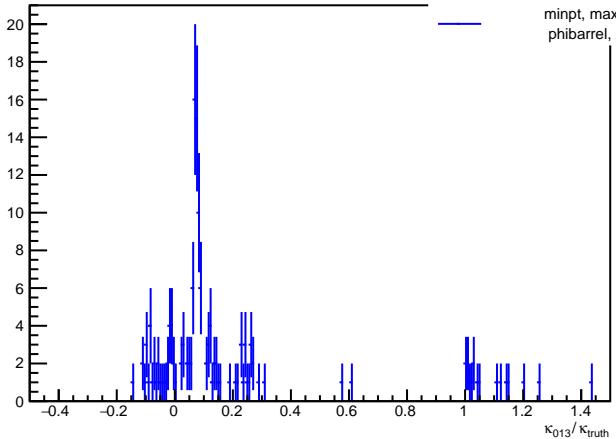
all

 $\kappa_{013}/\kappa_{\text{truth}}$

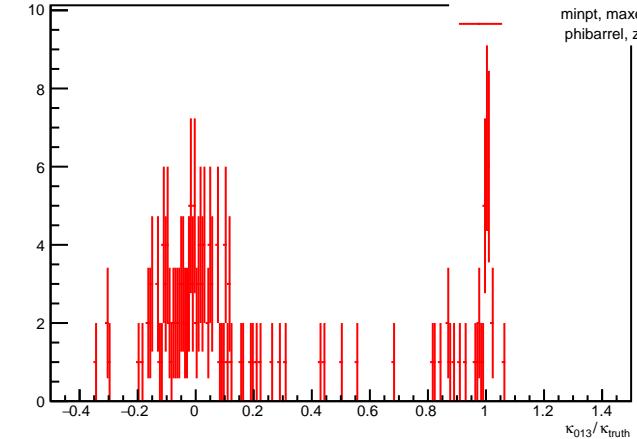
pion

 $\kappa_{013}/\kappa_{\text{truth}}$

electron

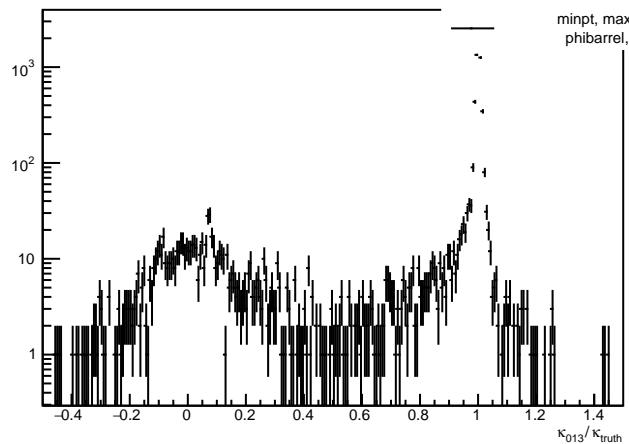
 $\kappa_{013}/\kappa_{\text{truth}}$

muon's

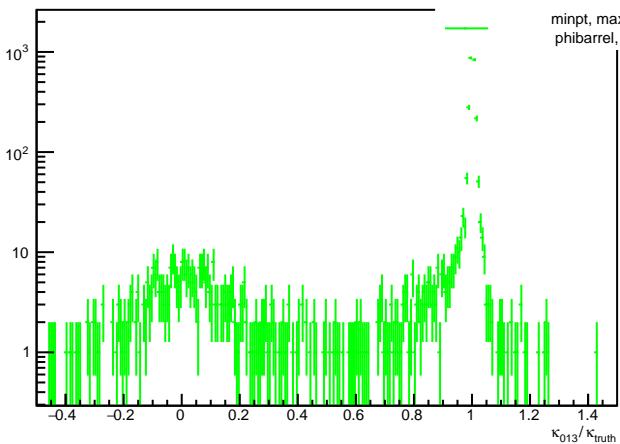


$\kappa_{013}/\kappa_{\text{truth}}$

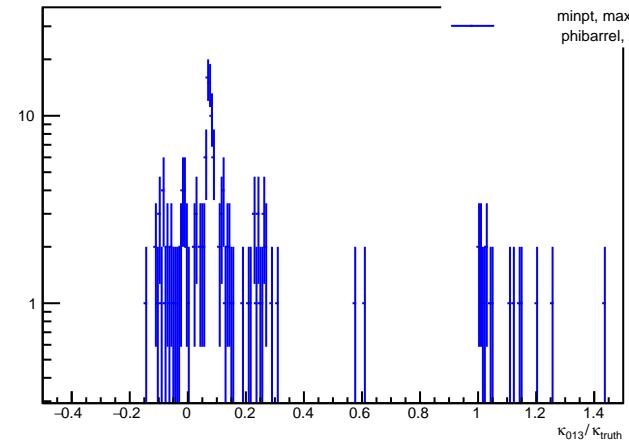
all

 $\kappa_{013}/\kappa_{\text{truth}}$

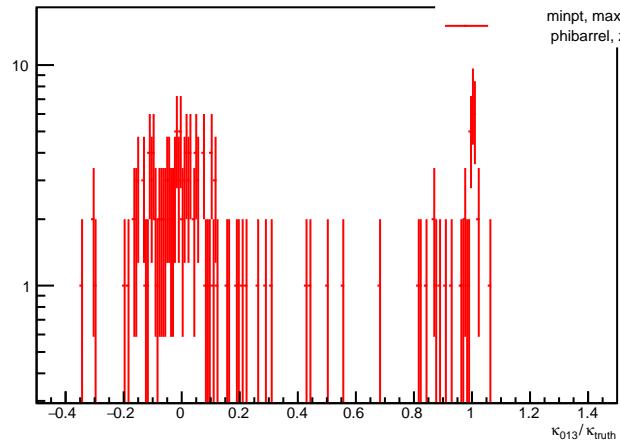
pion

 $\kappa_{013}/\kappa_{\text{truth}}$

electron

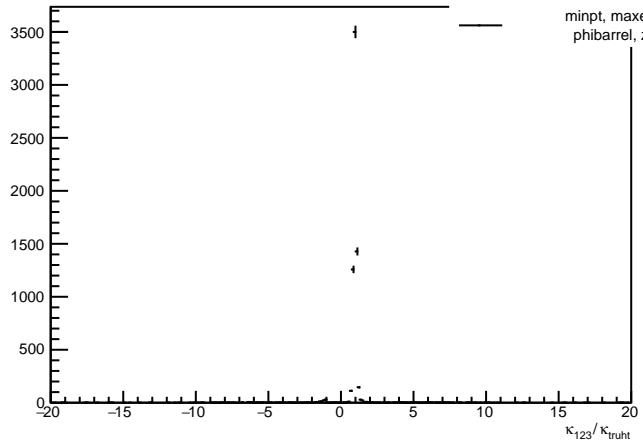
 $\kappa_{013}/\kappa_{\text{truth}}$

muon's

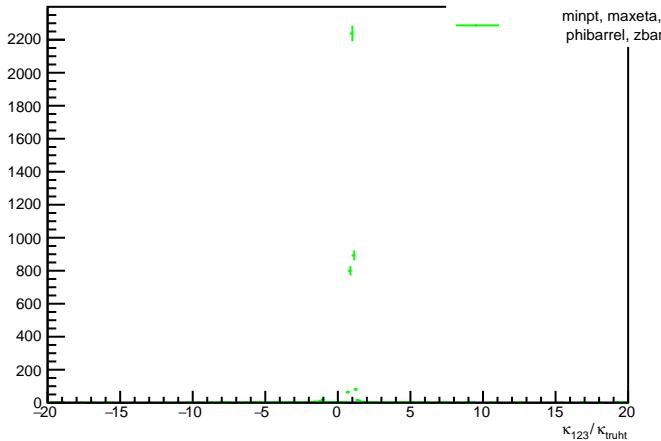


$\kappa_{123}/\kappa_{\text{truth}}$

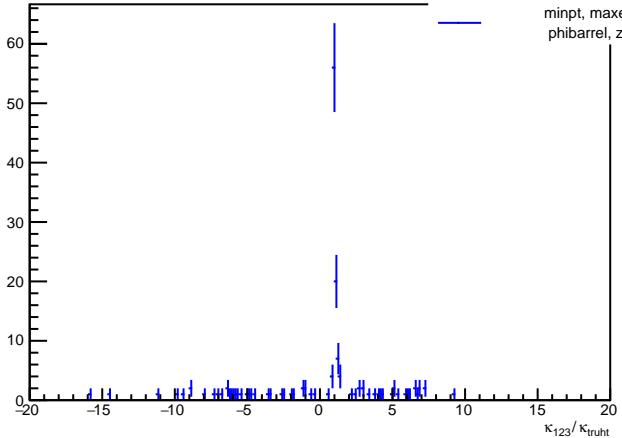
all

 $\kappa_{123}/\kappa_{\text{truth}}$

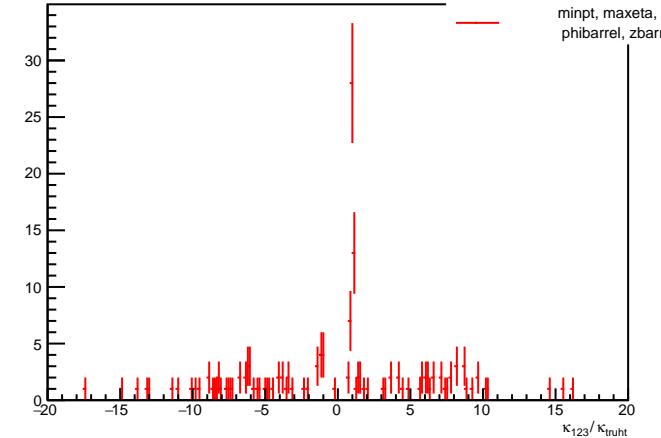
pion

 $\kappa_{123}/\kappa_{\text{truth}}$

electron

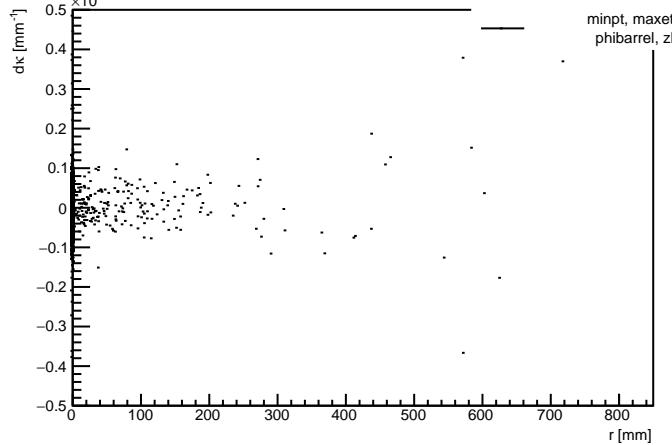
 $\kappa_{123}/\kappa_{\text{truth}}$

muon's



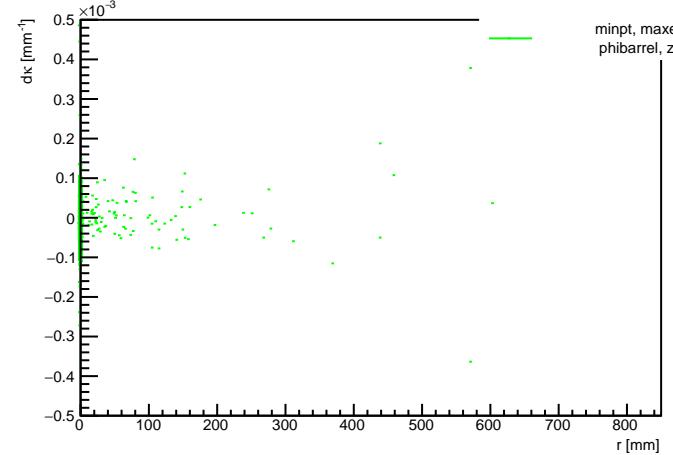
dk Vs r

all



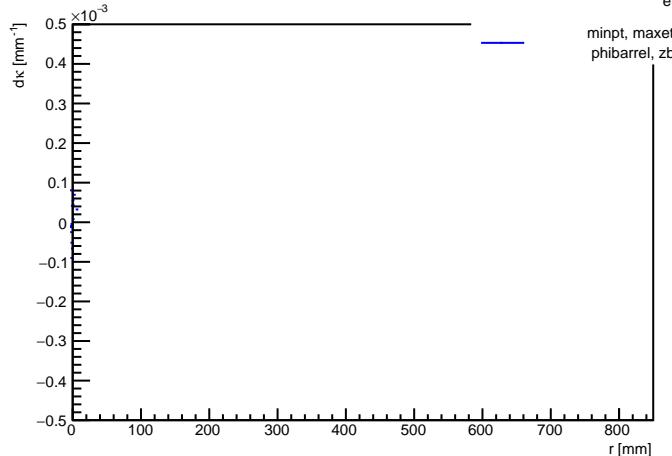
dk Vs r

pion



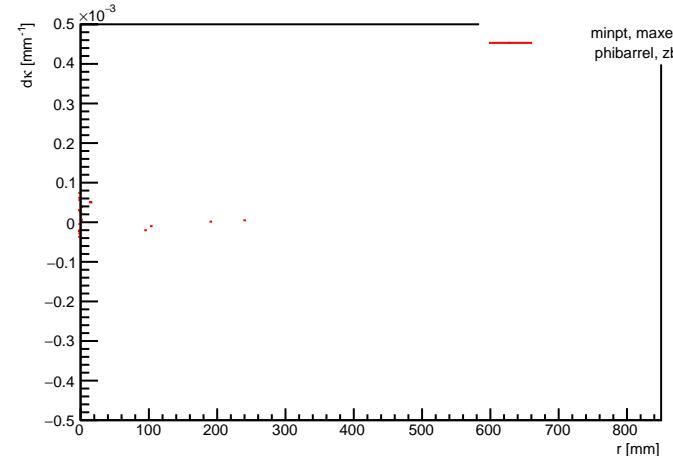
dk Vs r

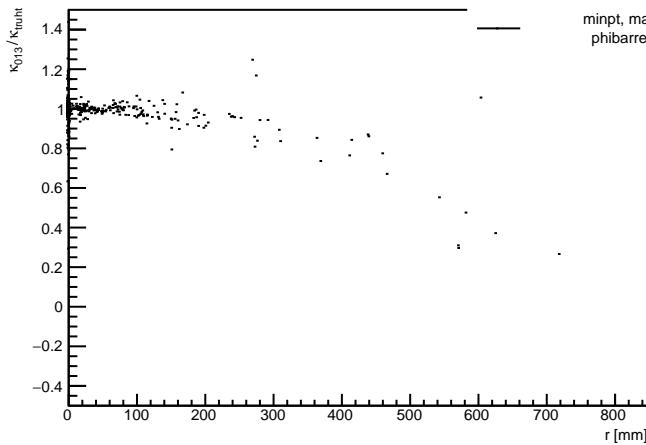
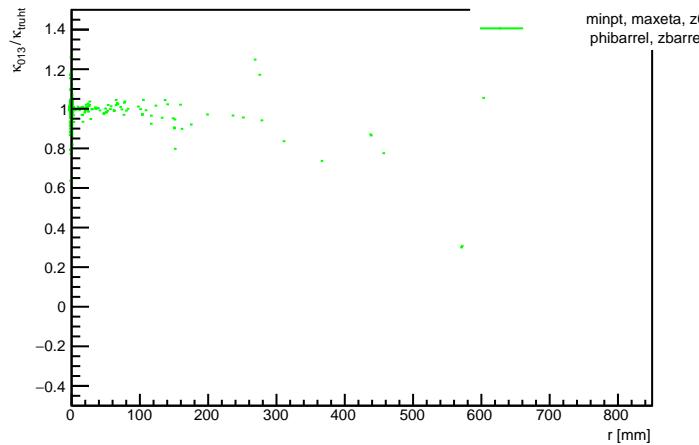
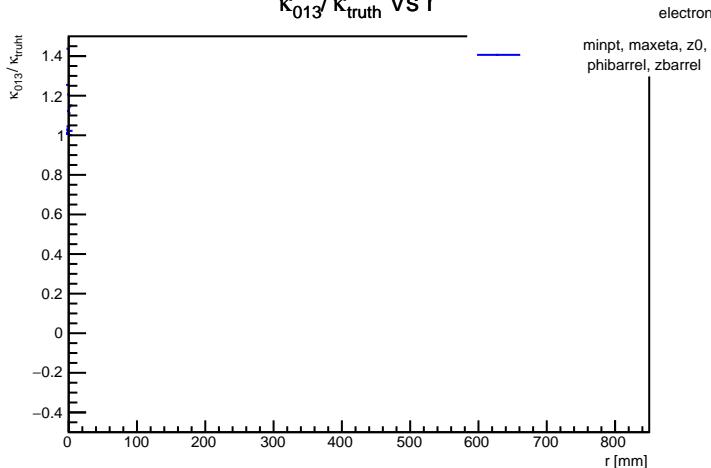
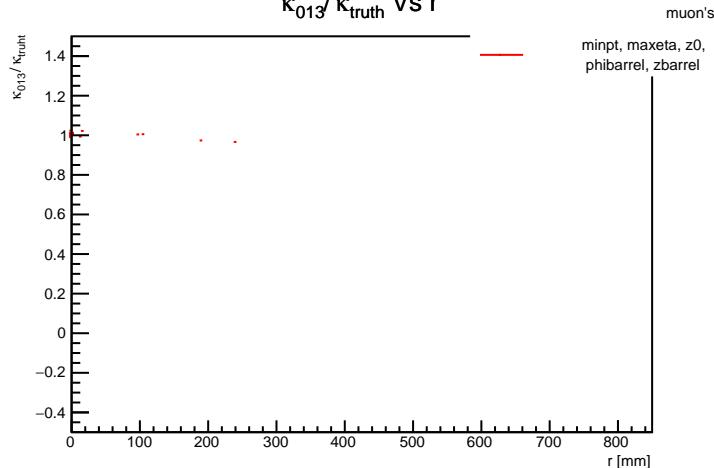
electron



dk Vs r

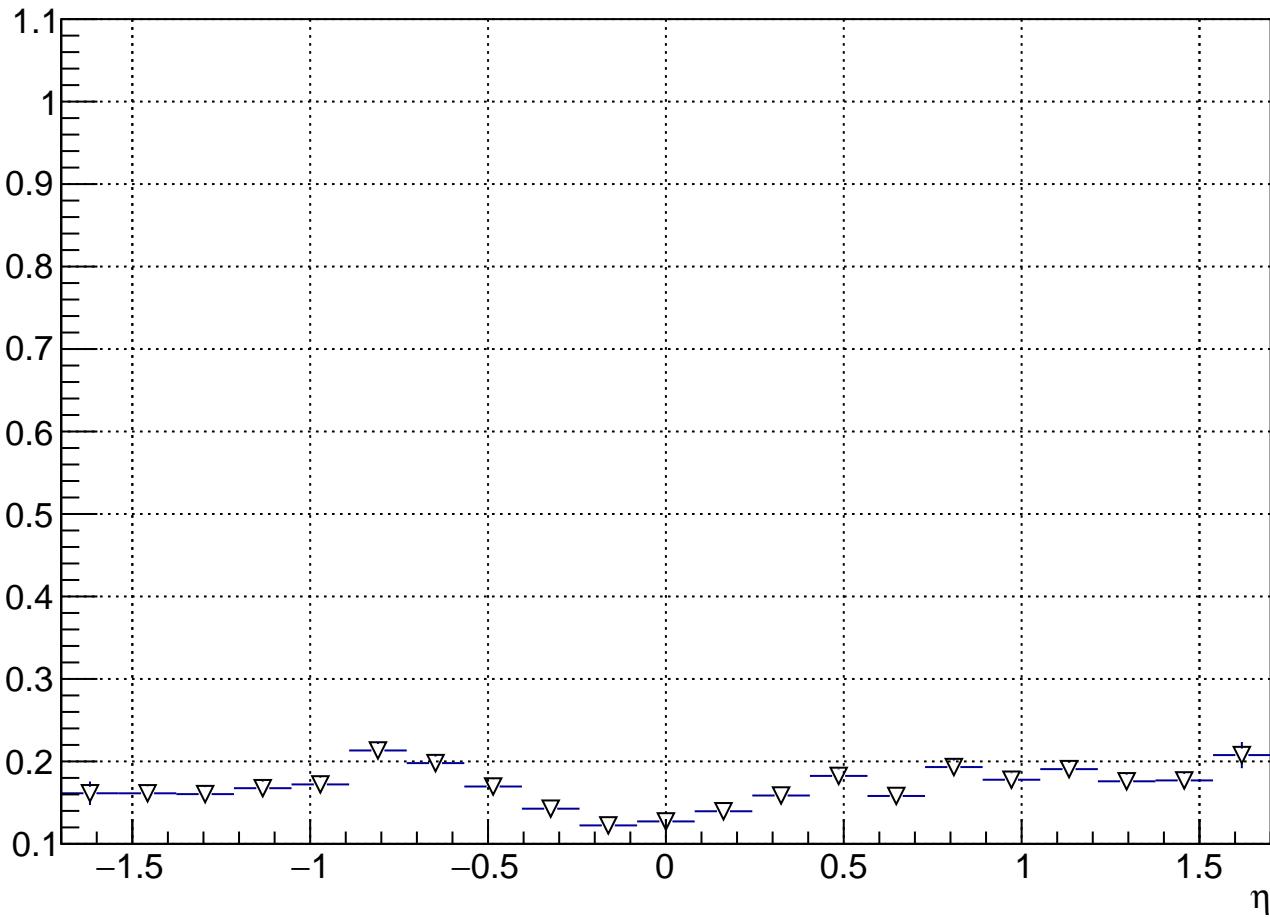
muon's



$\kappa_{013}/\kappa_{\text{truth}}$ Vs r  $\kappa_{013}/\kappa_{\text{truth}}$ Vs r  $\kappa_{013}/\kappa_{\text{truth}}$ Vs r  $\kappa_{013}/\kappa_{\text{truth}}$ Vs r 

Purity vs η

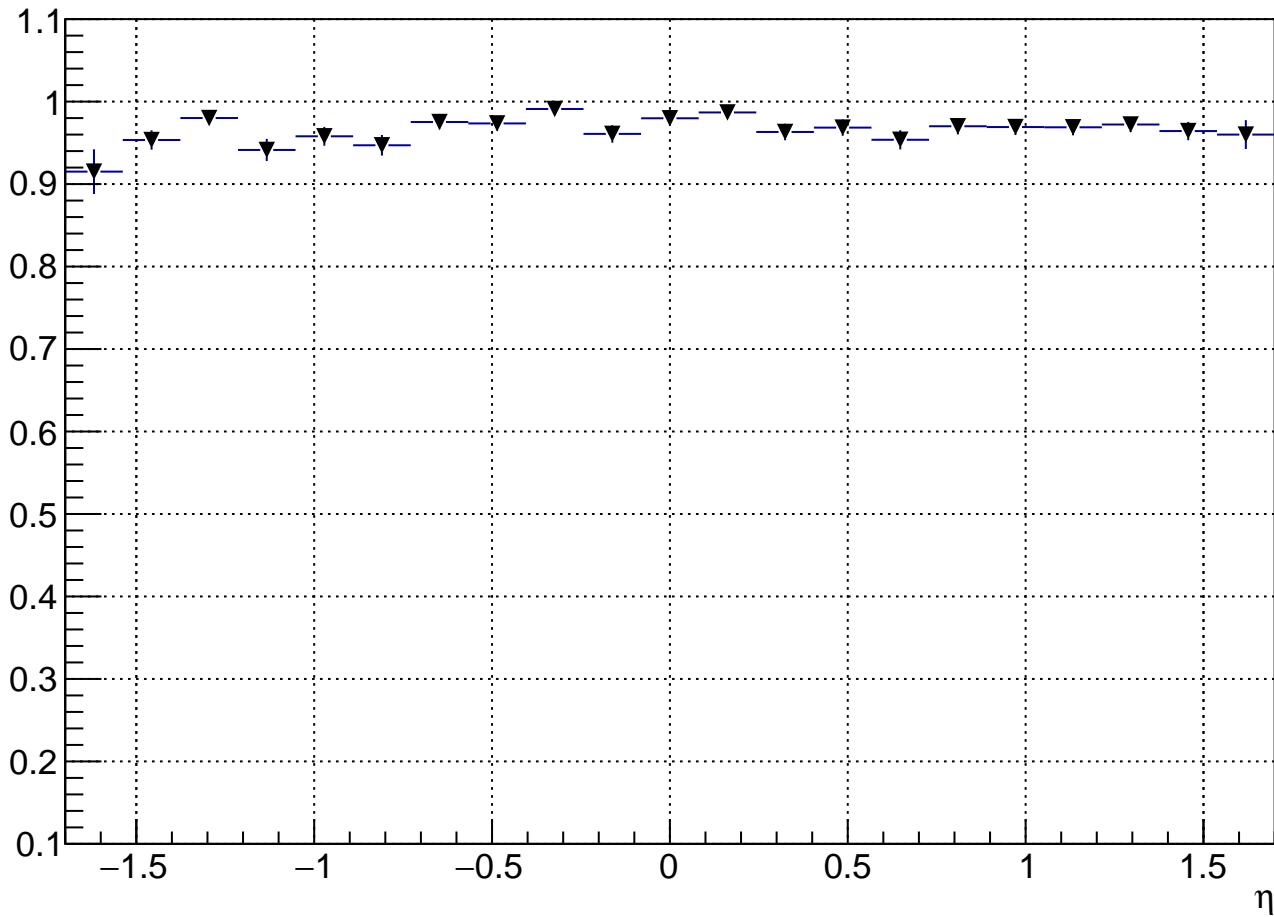
Purity



η

Purity vs η

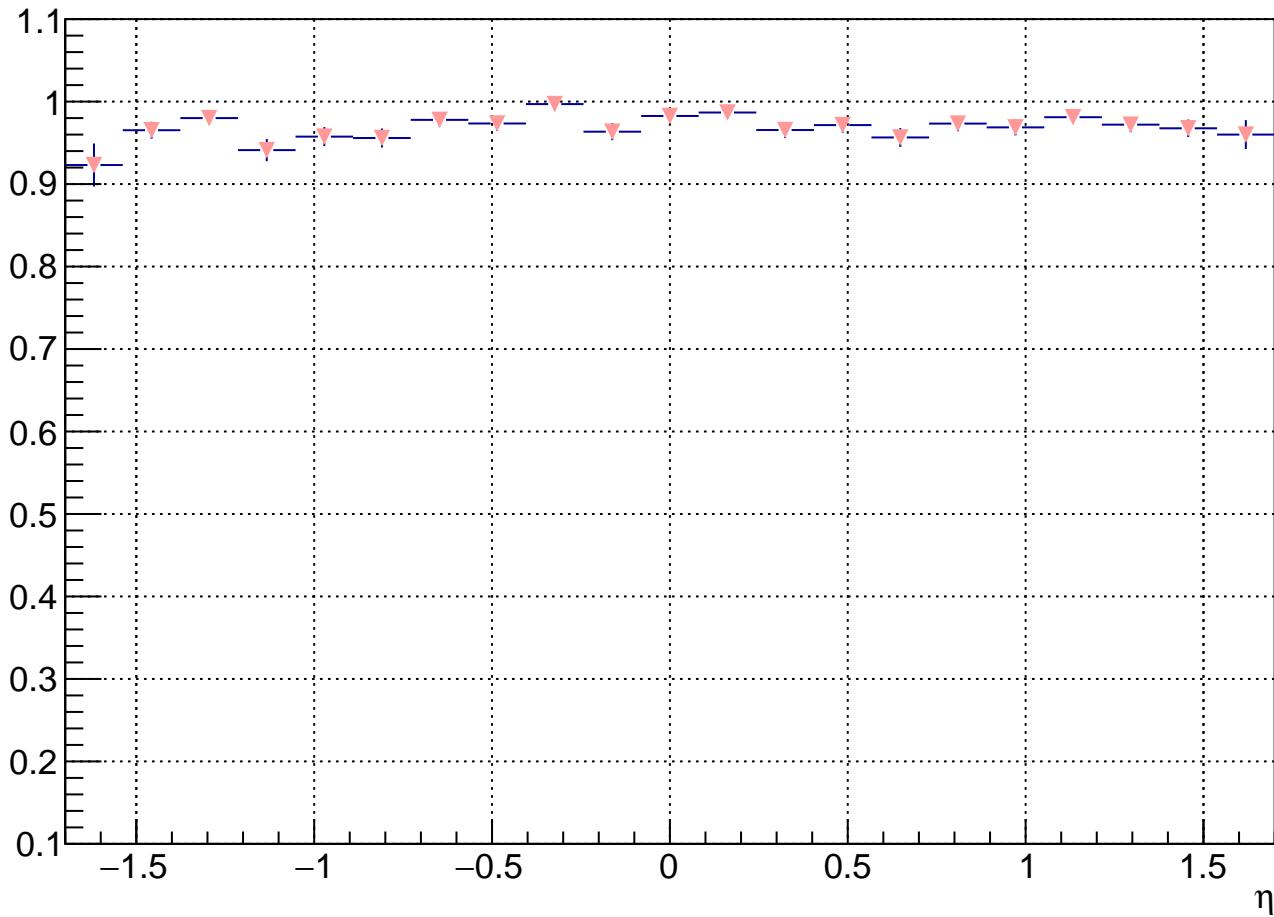
Purity



η

Purity vs η

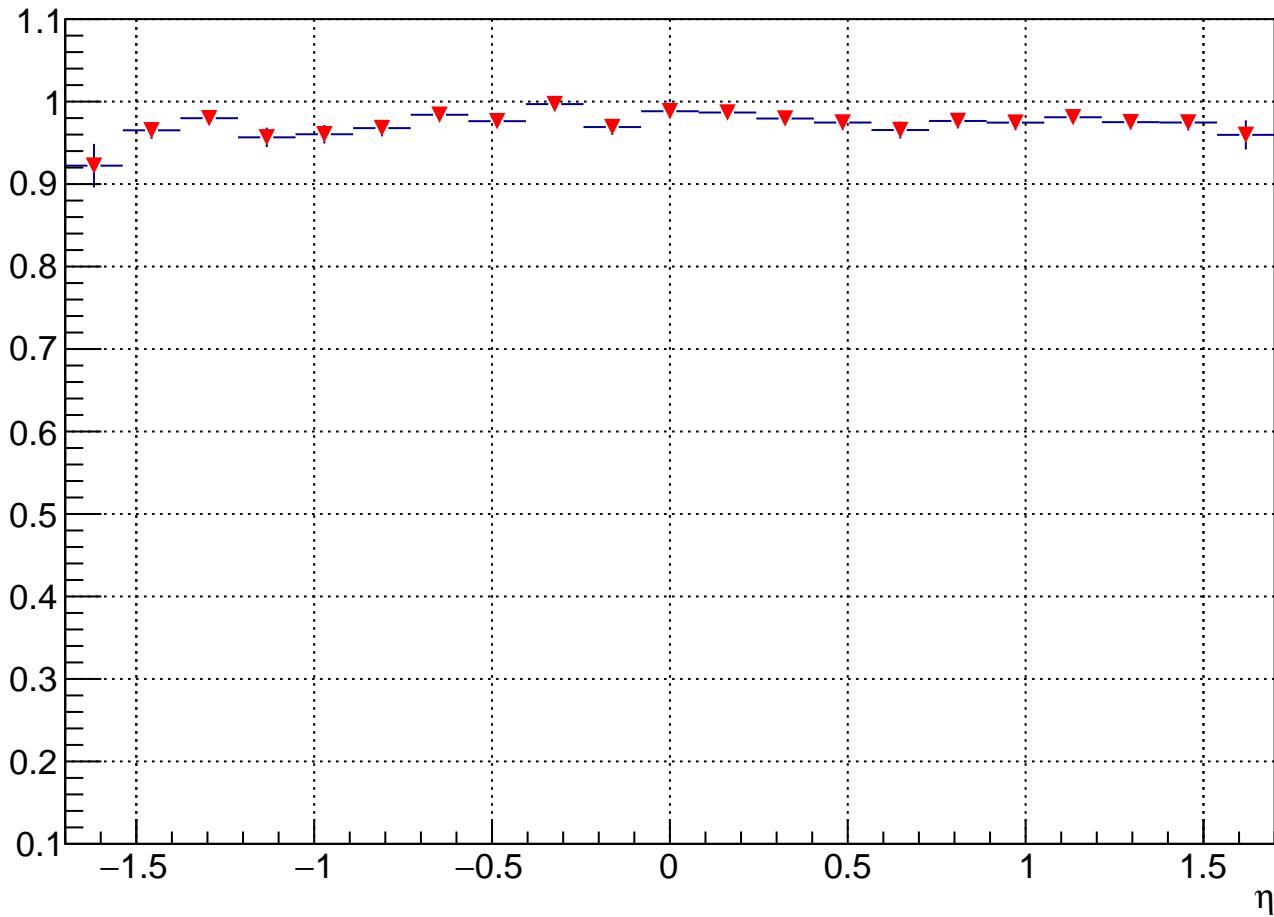
Purity



η

Purity vs η

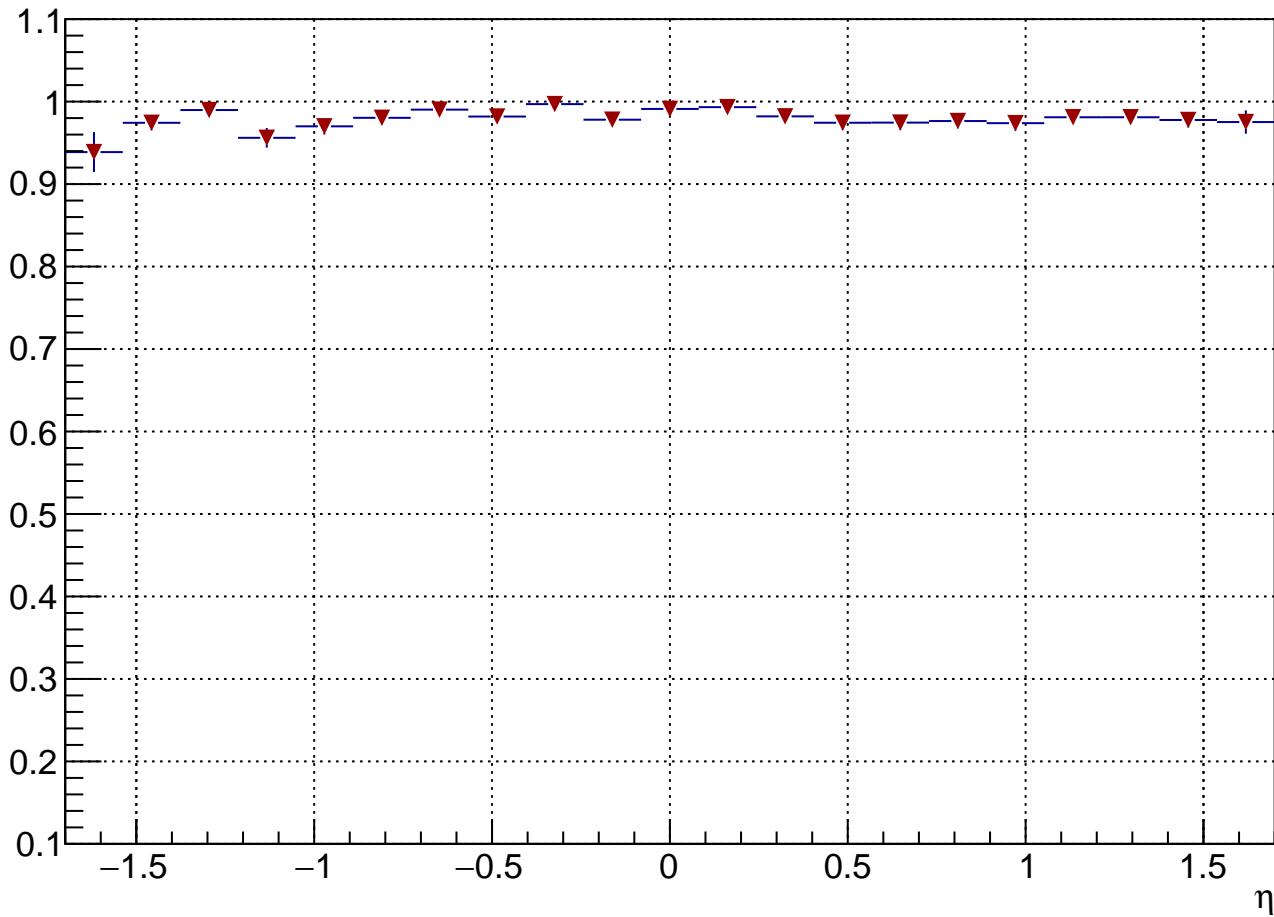
Purity



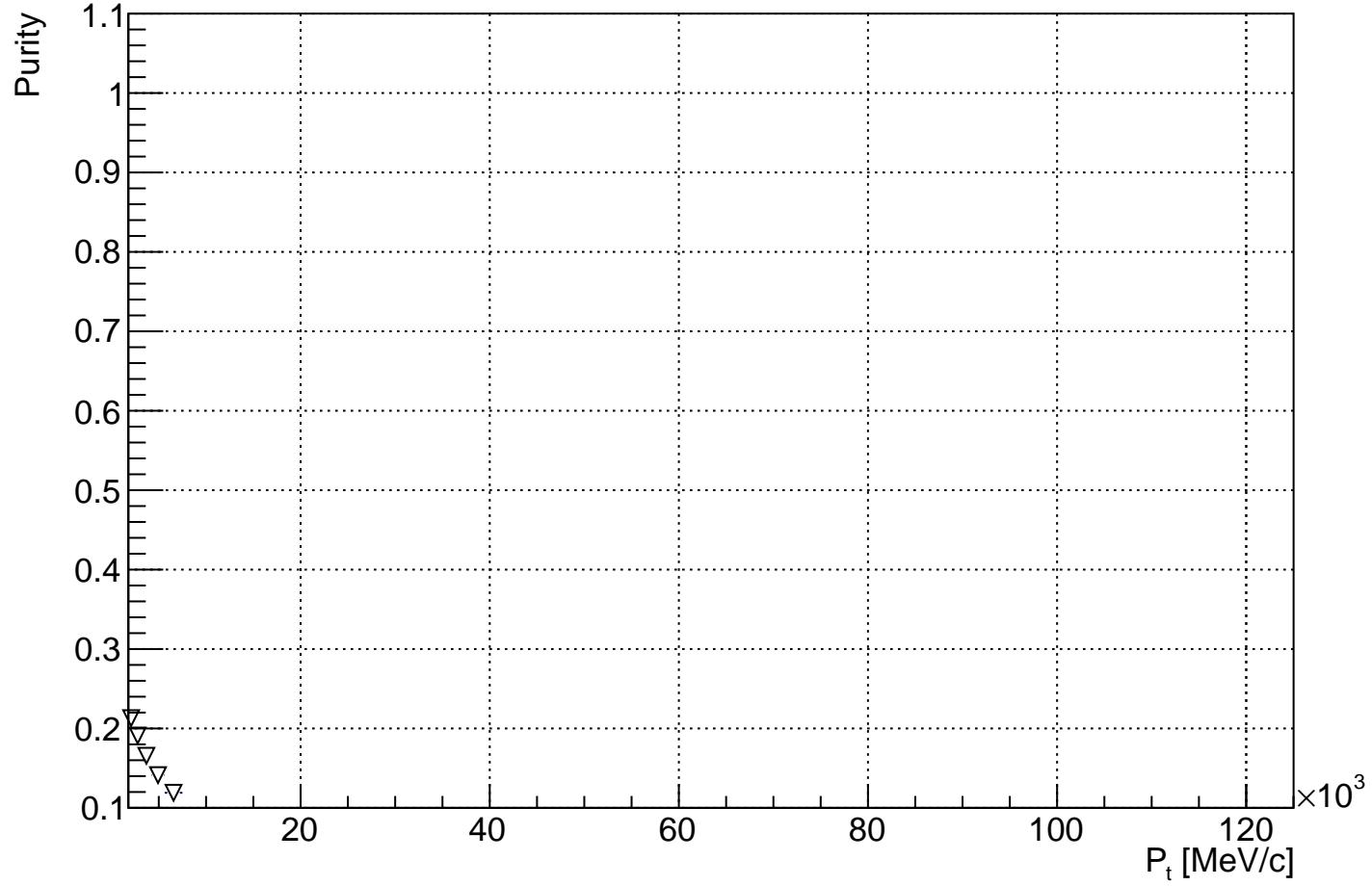
η

Purity vs η

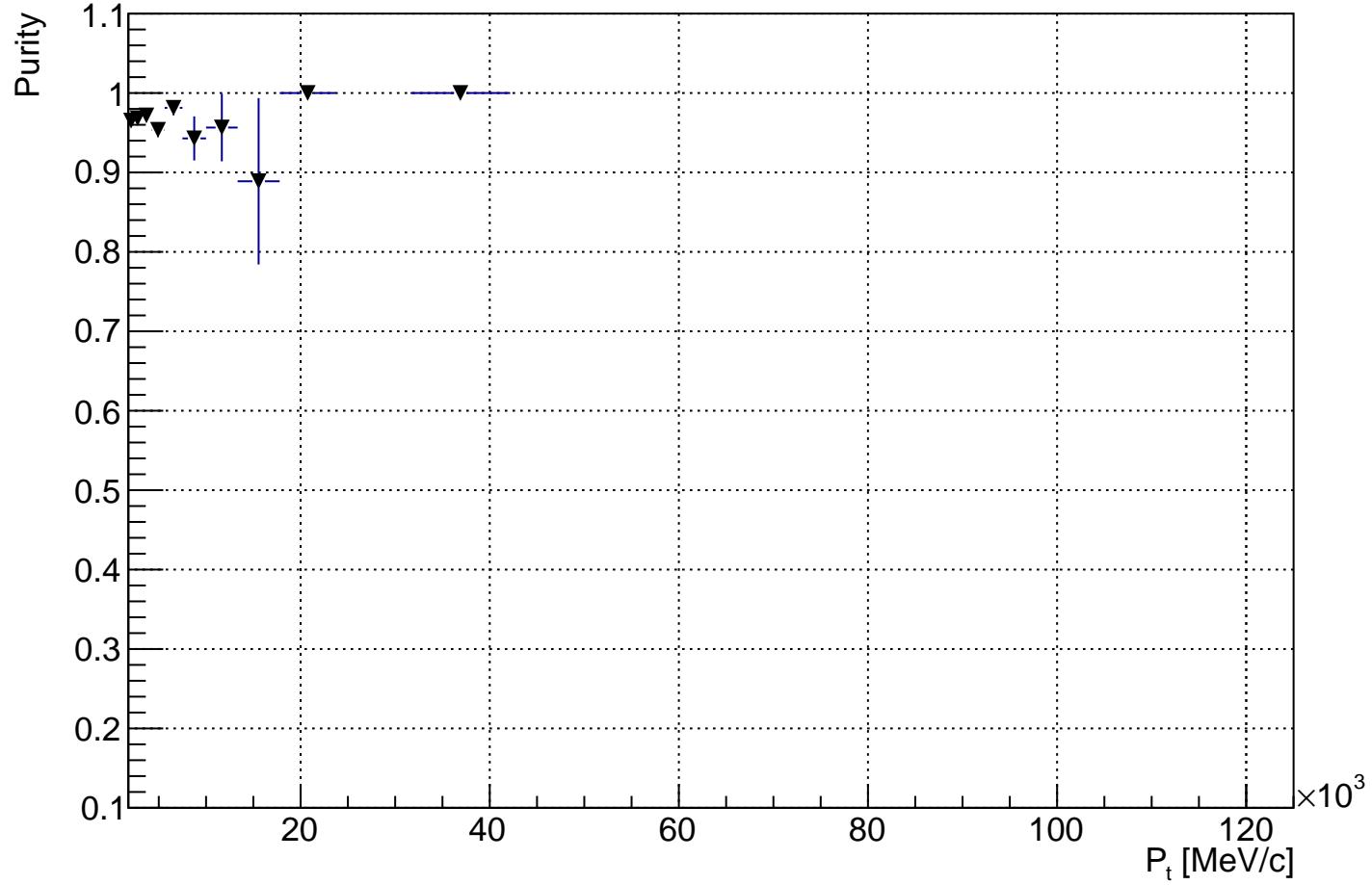
Purity



Purity vs P_t

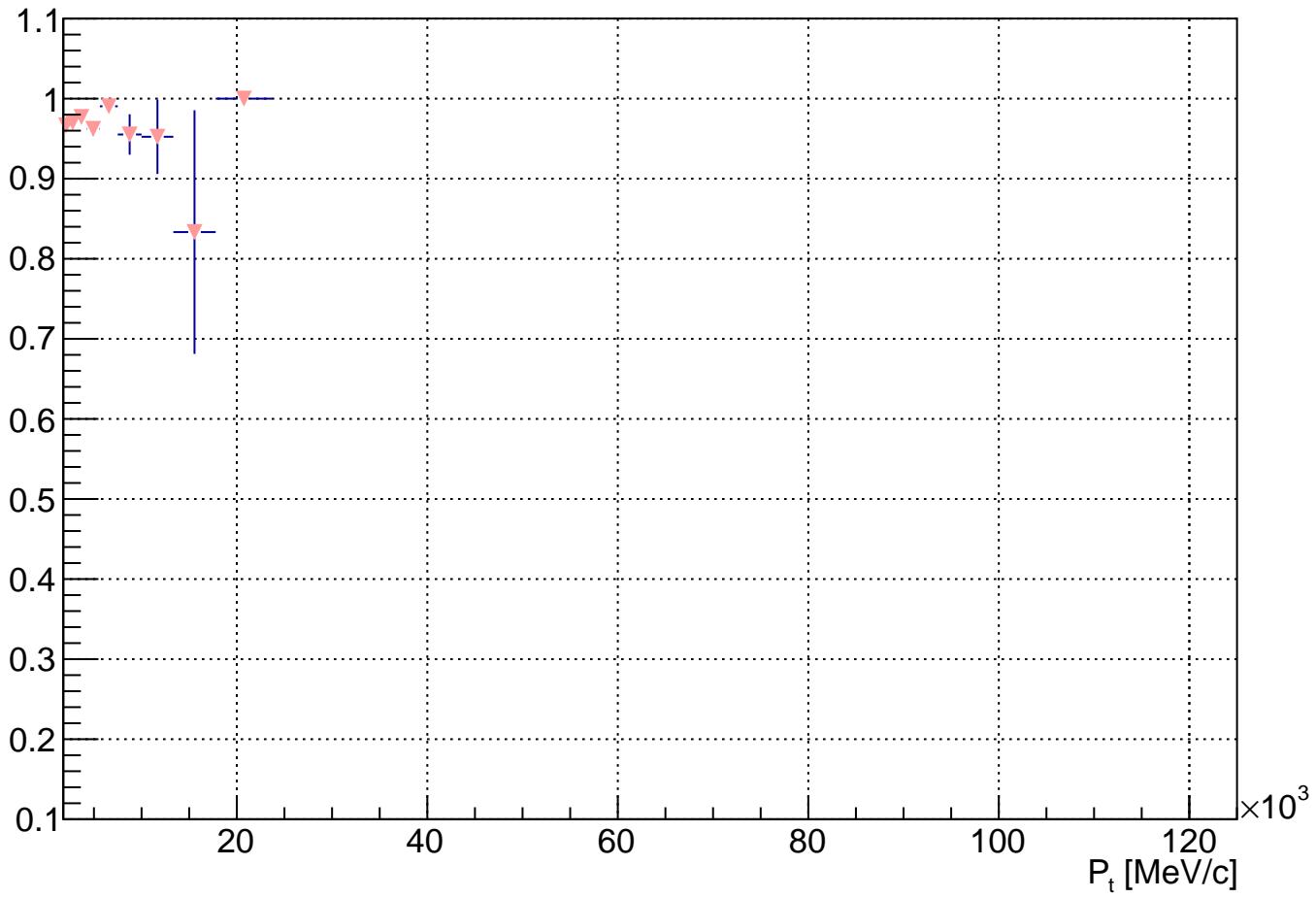


Purity vs P_t



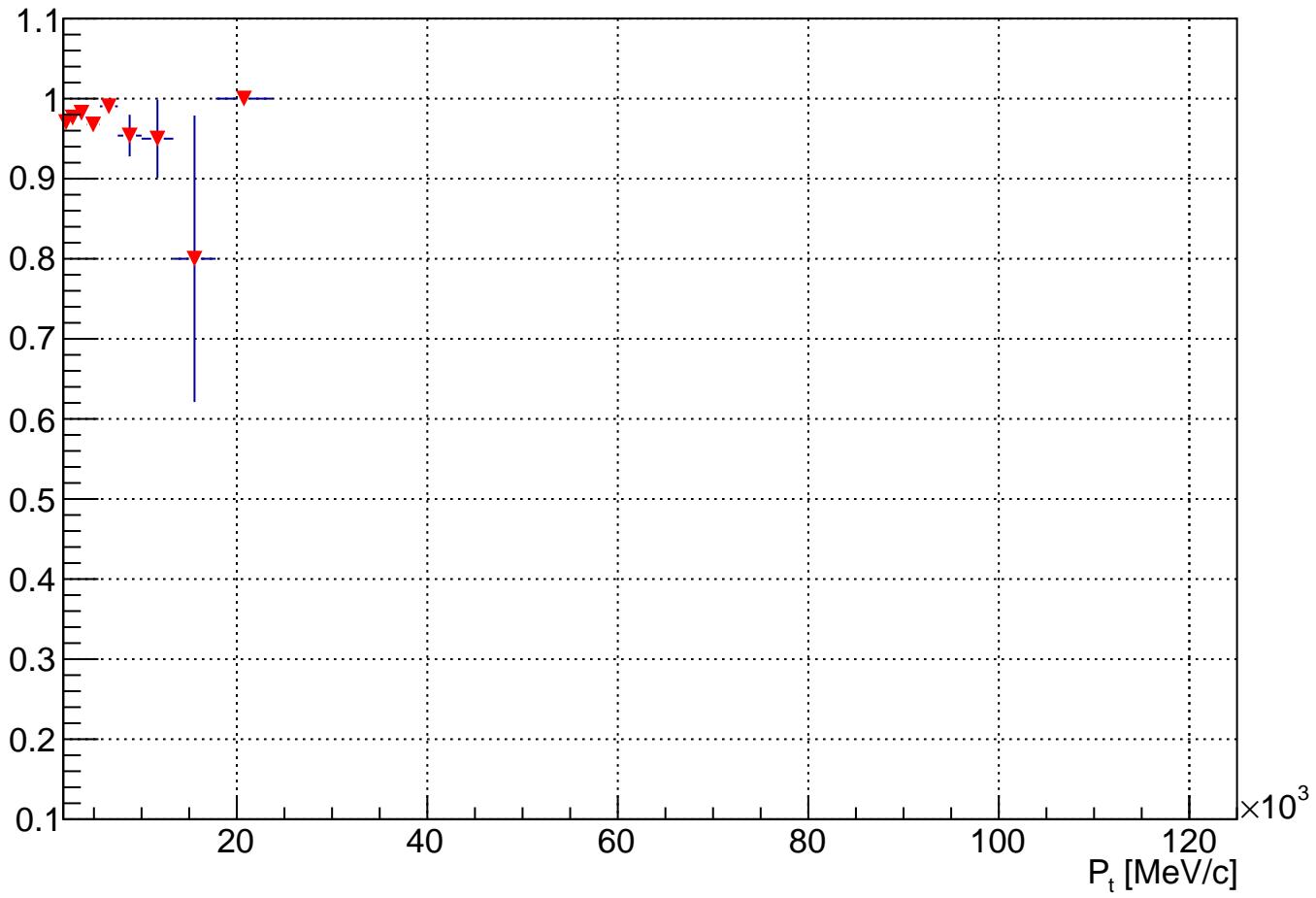
Purity vs P_t

Purity



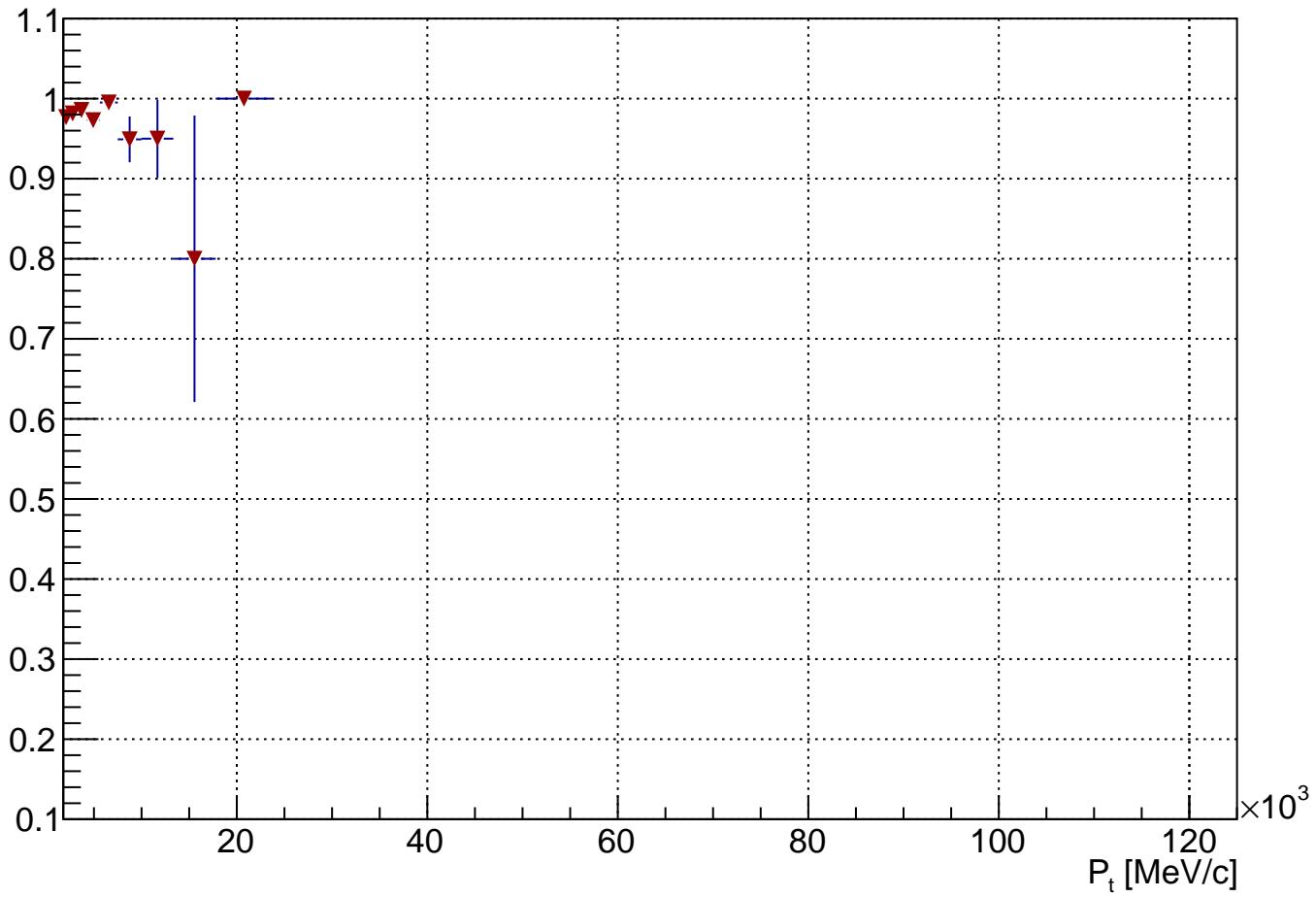
Purity vs P_t

Purity



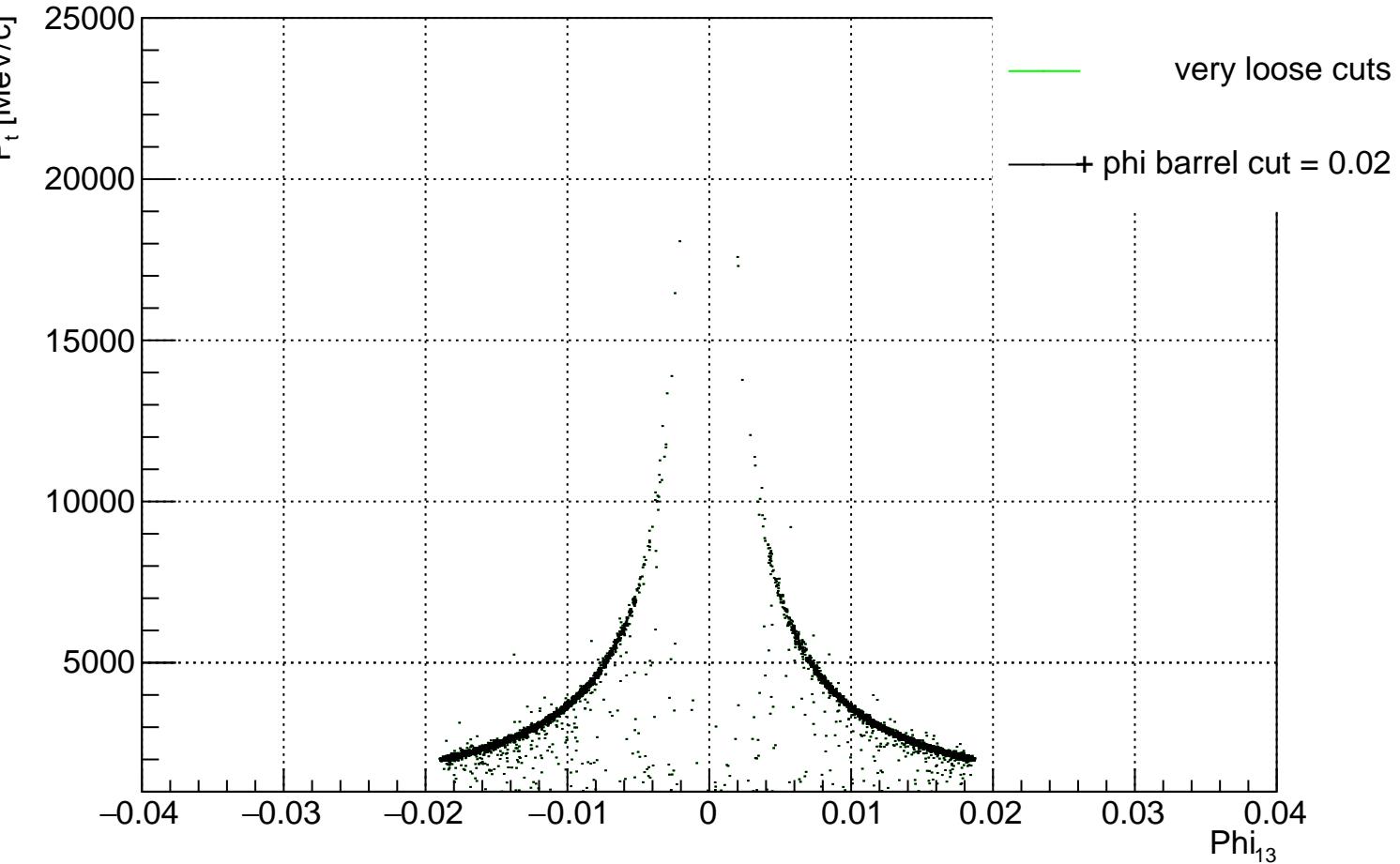
Purity vs P_t

Purity

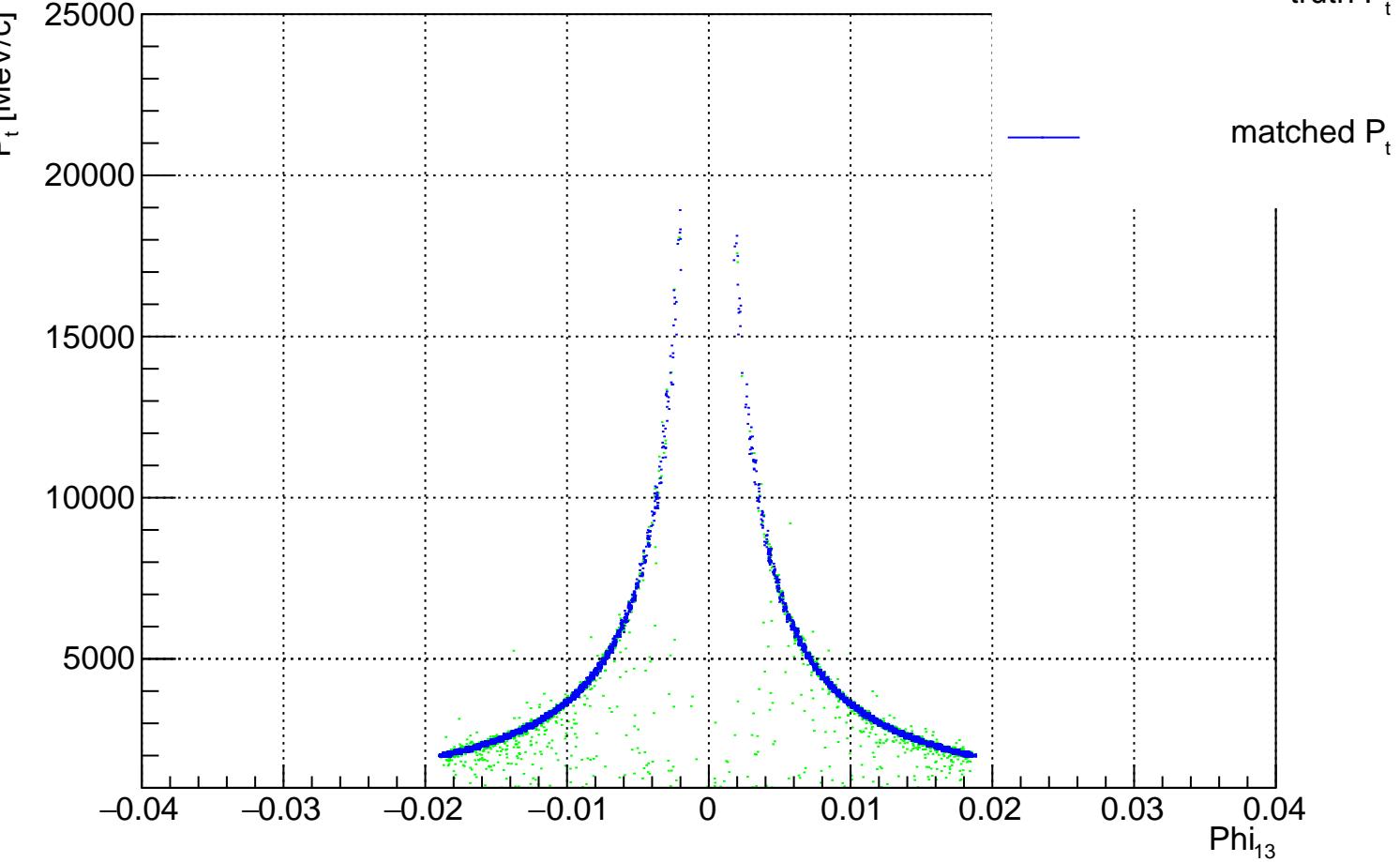


P_t Vs Φ_{13}

truth P_t

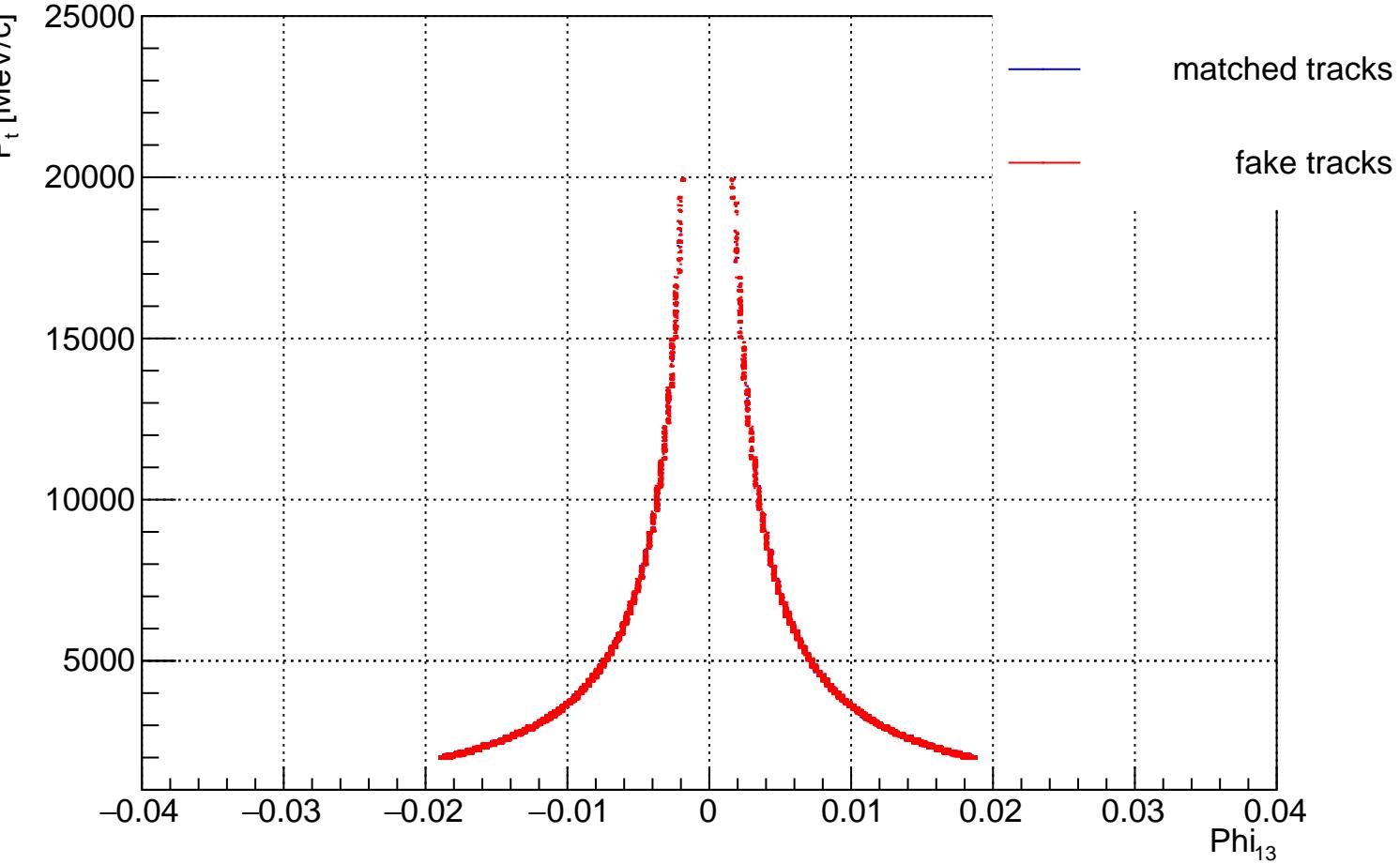


P_t Vs Φ_{13}

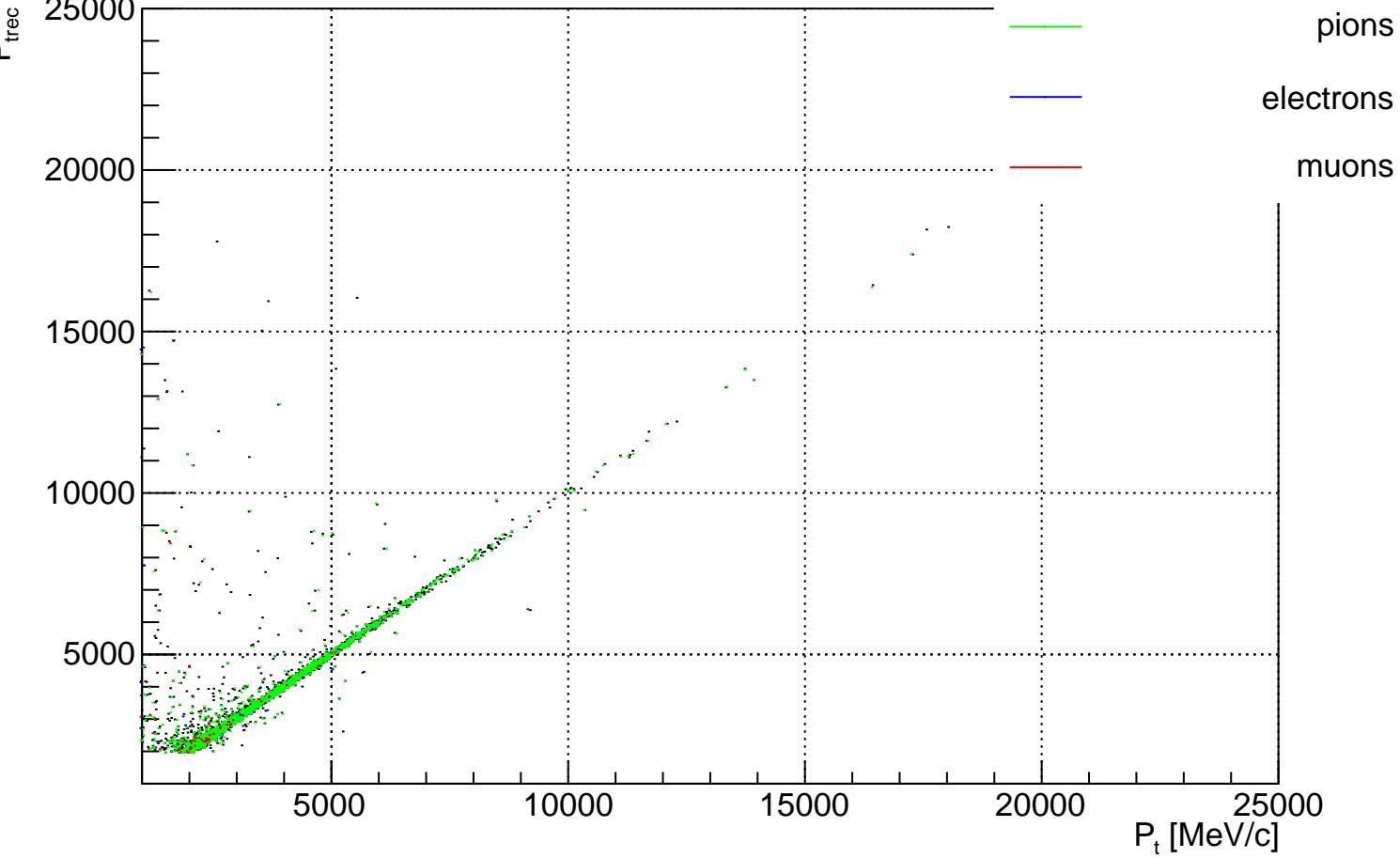


P_t Vs Φ_{13}

rec P_t

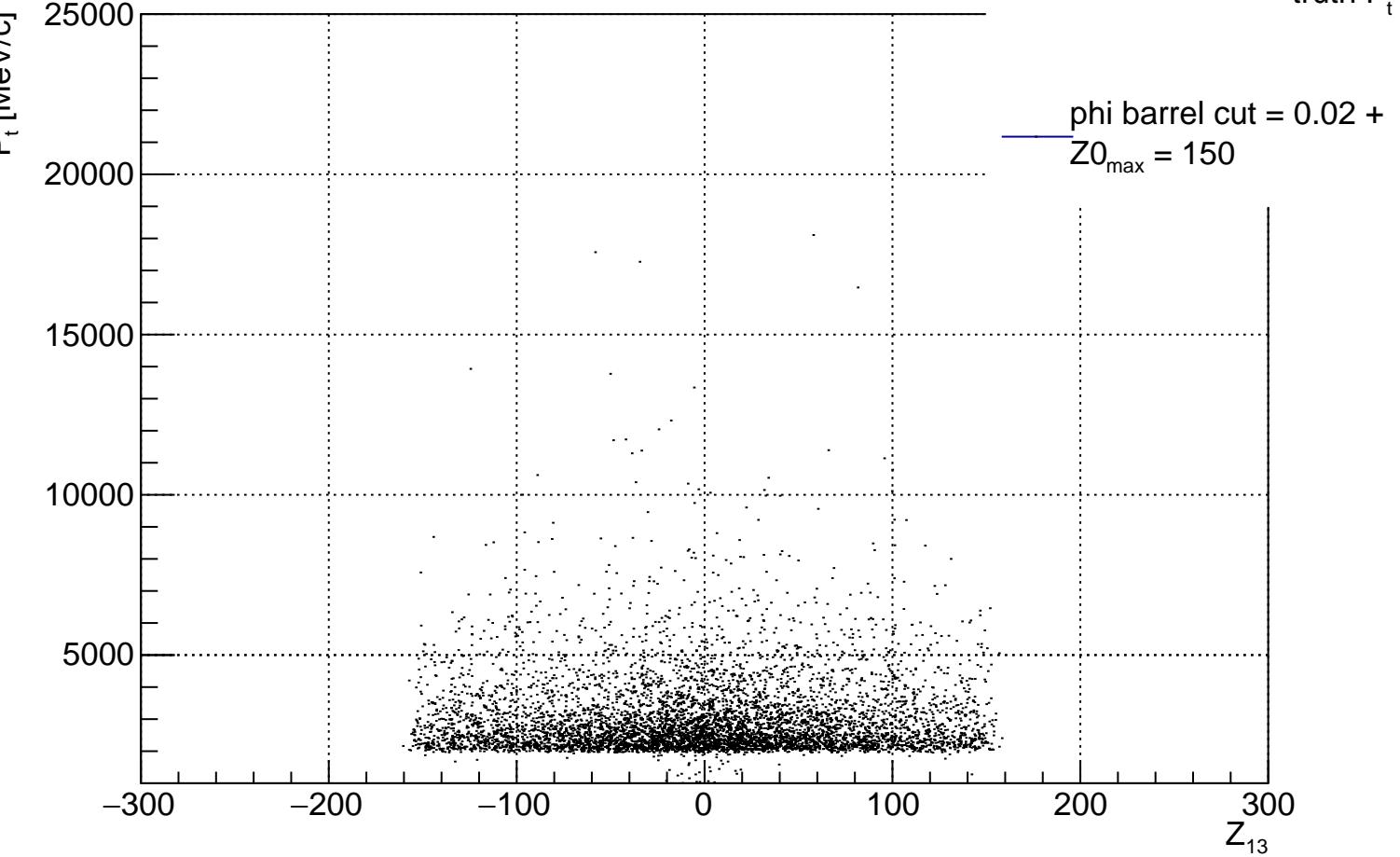


P_{trec} Vs P_t



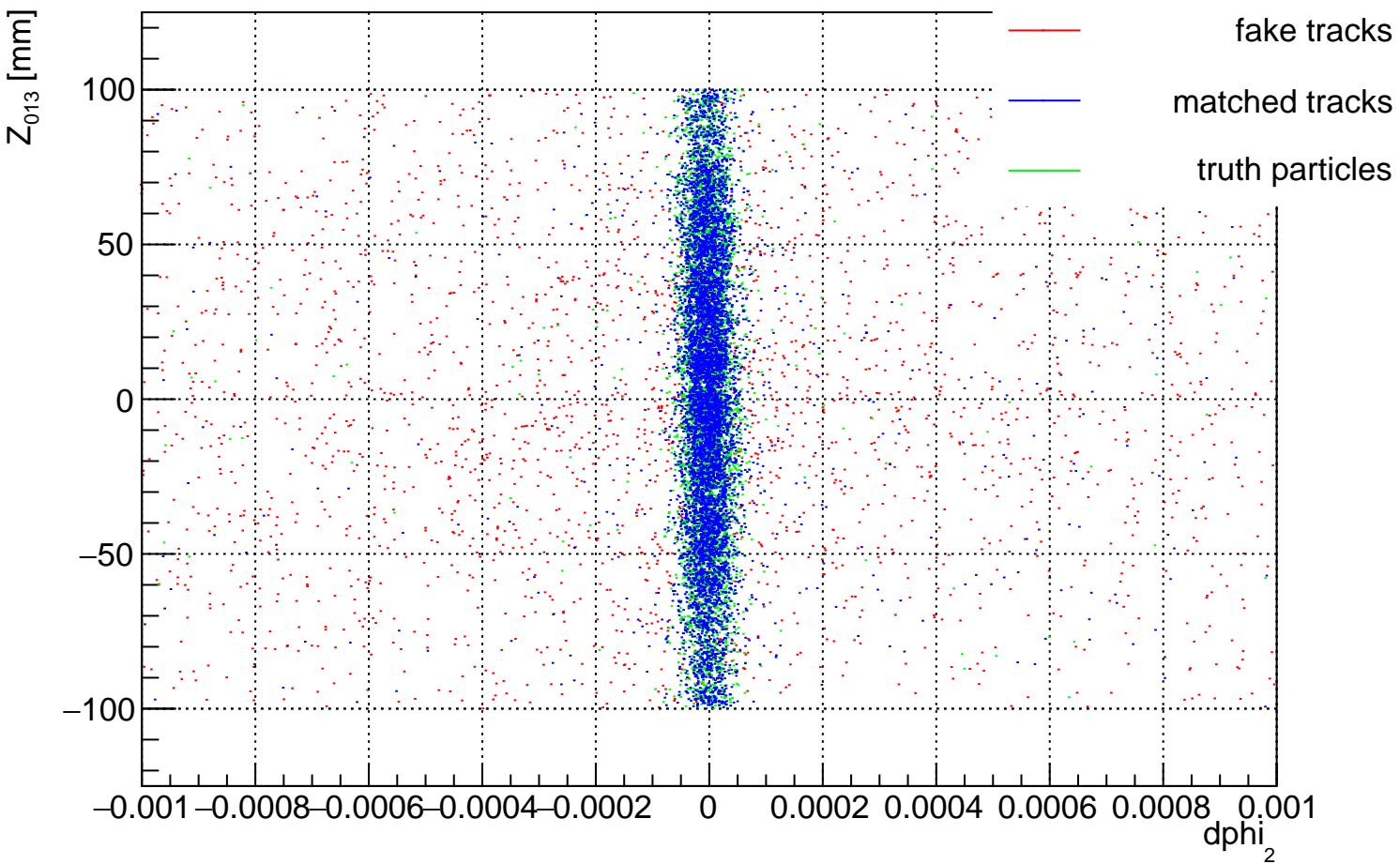
P_t Vs Z_{13}

truth P_t



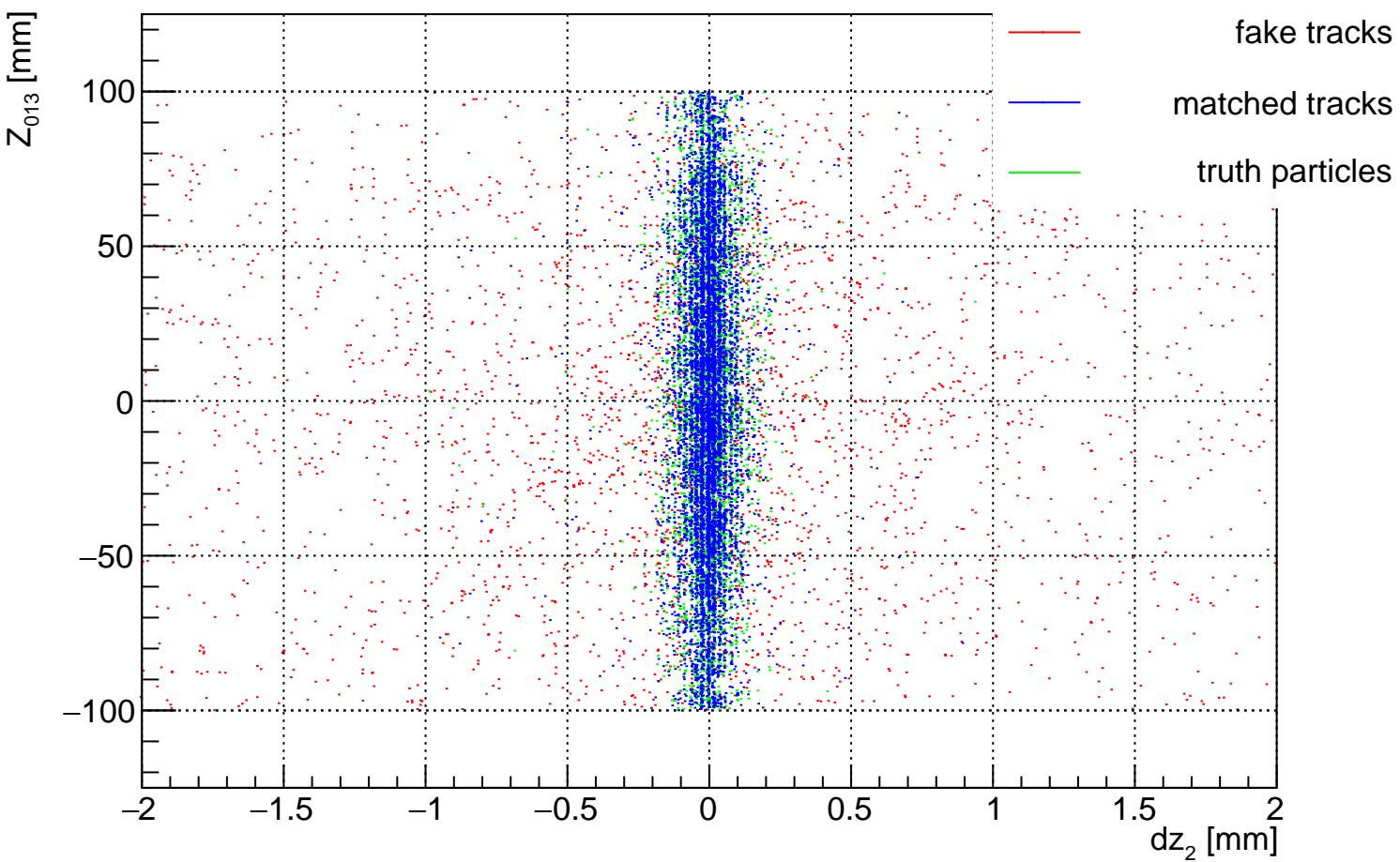
Z_{013} Vs $d\phi_2$

ϕ Barrel = 0.02 +
 $Z_{\text{barrel}} = 160 + Z_{0_{\max}} = 150$



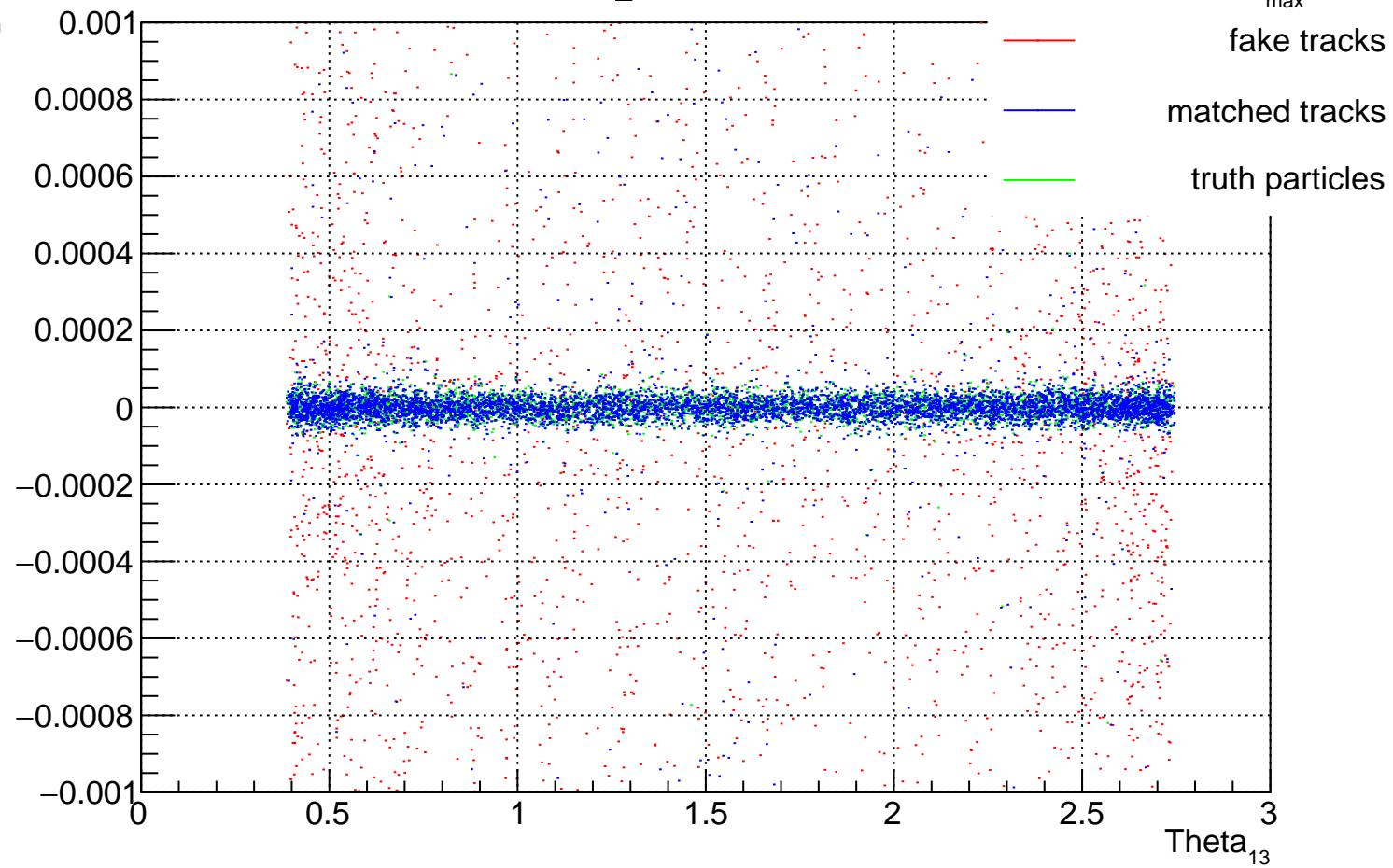
Z_{013} Vs dz_2

ϕ Barrel = 0.02 +
 $Z_{\text{barrel}} = 160 + Z_{0_{\text{max}}} = 150$



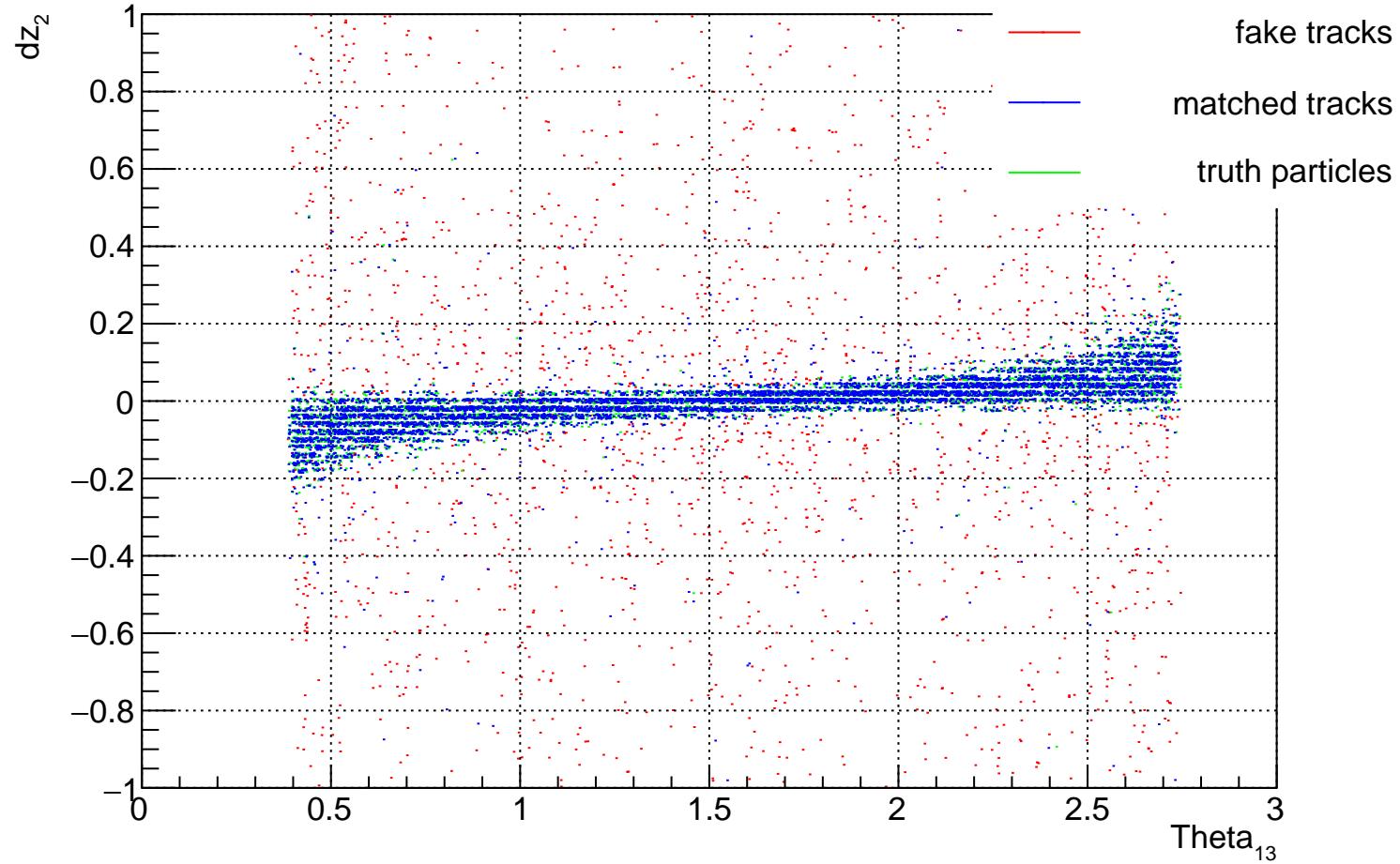
dphi₂ Vs Theta₁₃

phi Barrel = 0.02 +
Zbarrel = 160 + Z0_{max} = 150



dz_2 Vs Θ_{13}

ϕ Barrel = 0.02 +
 $Z_{\text{barrel}} = 160 + Z_0^{\text{max}} = 150$



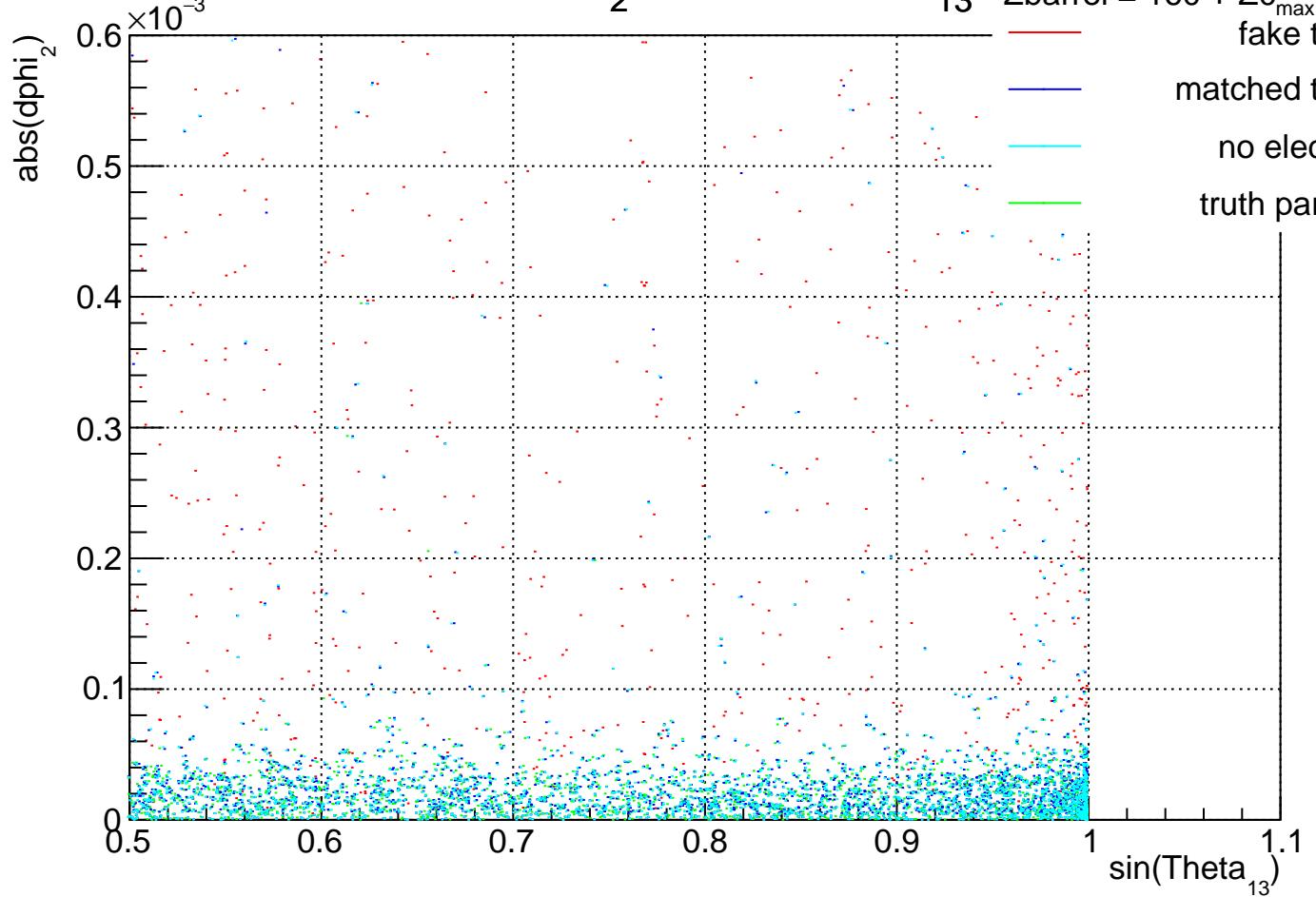
$\text{abs}(\text{dphi}_2)$ Vs $\sin(\text{Theta}_{13})$

$\text{phi Barrel} = 0.02 +$
 $\text{Zbarrel} = 160 + \text{Z0}_{\text{max}} = 150$
fake tracks

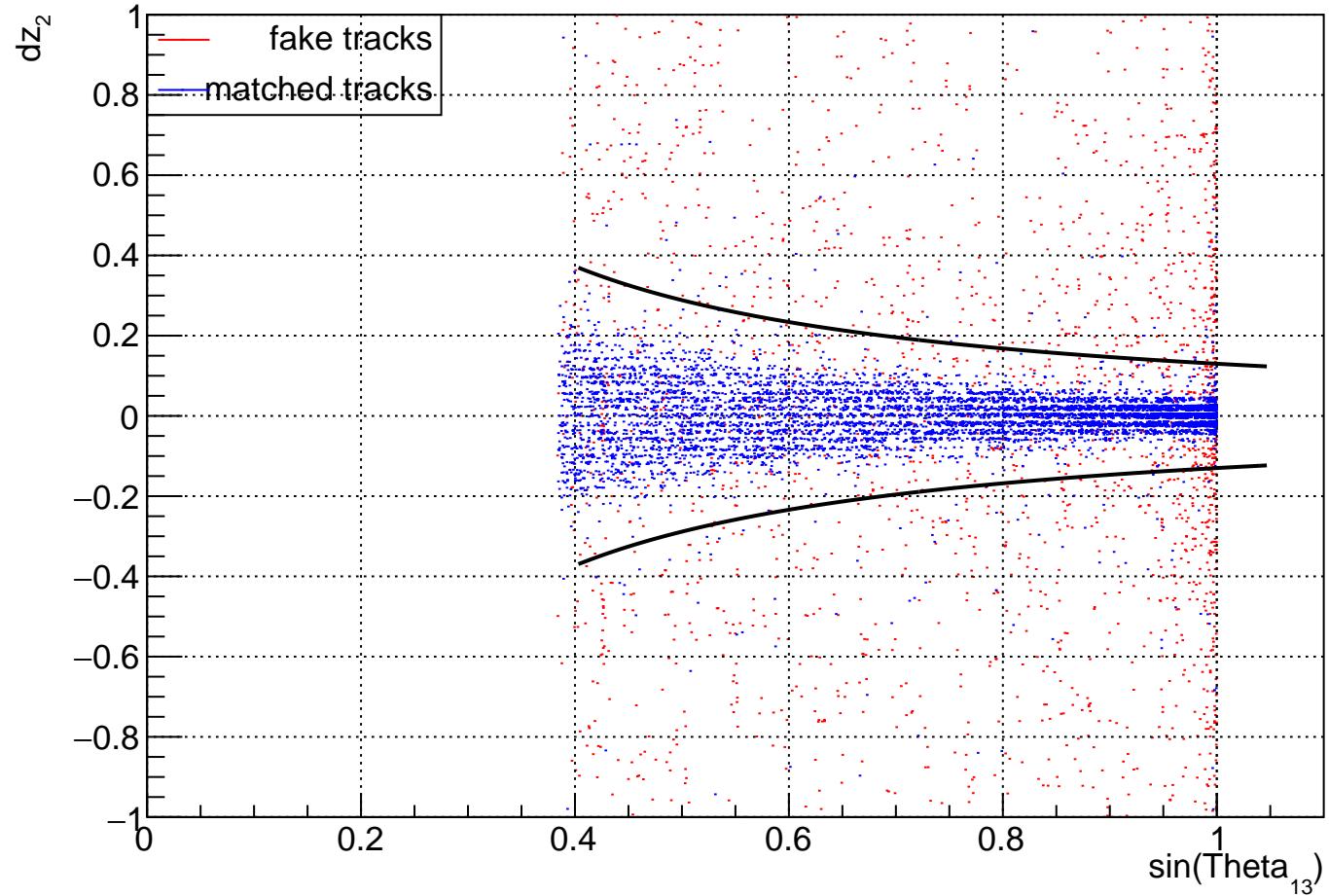
matched tracks

no electrons

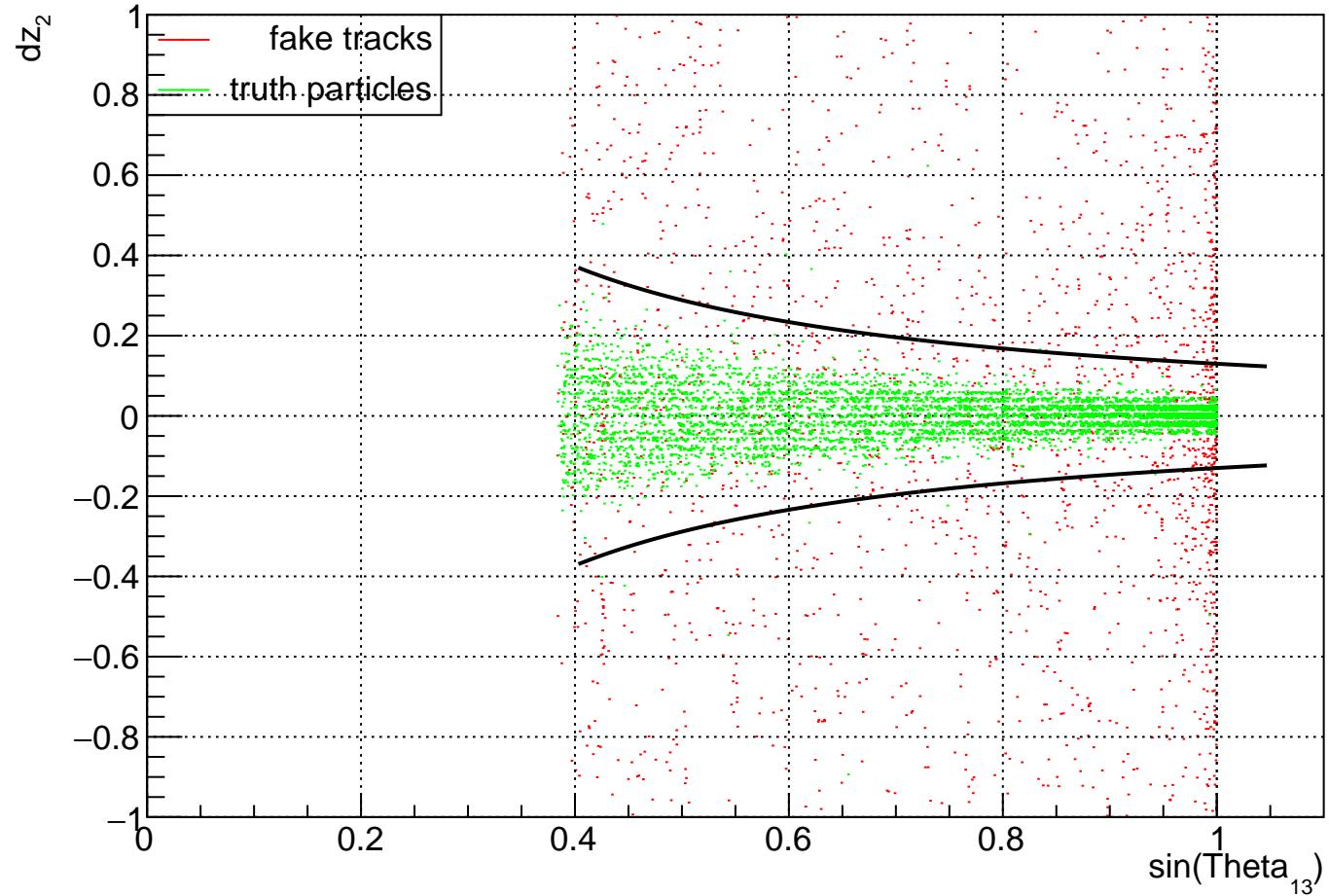
truth particles



dz_2 Vs $\sin(\Theta_{13})$

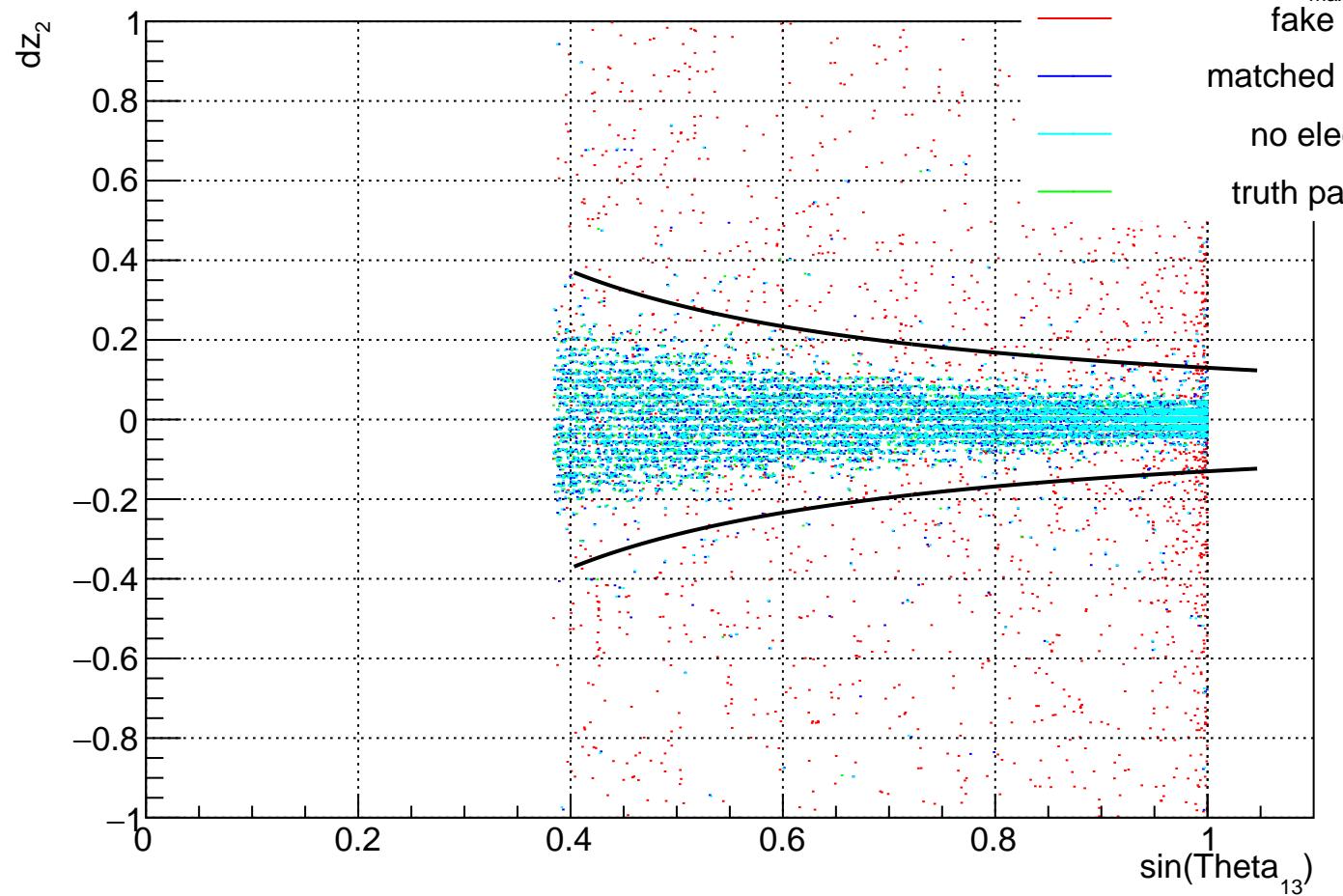


dz_2 Vs $\sin(\Theta_{13})$



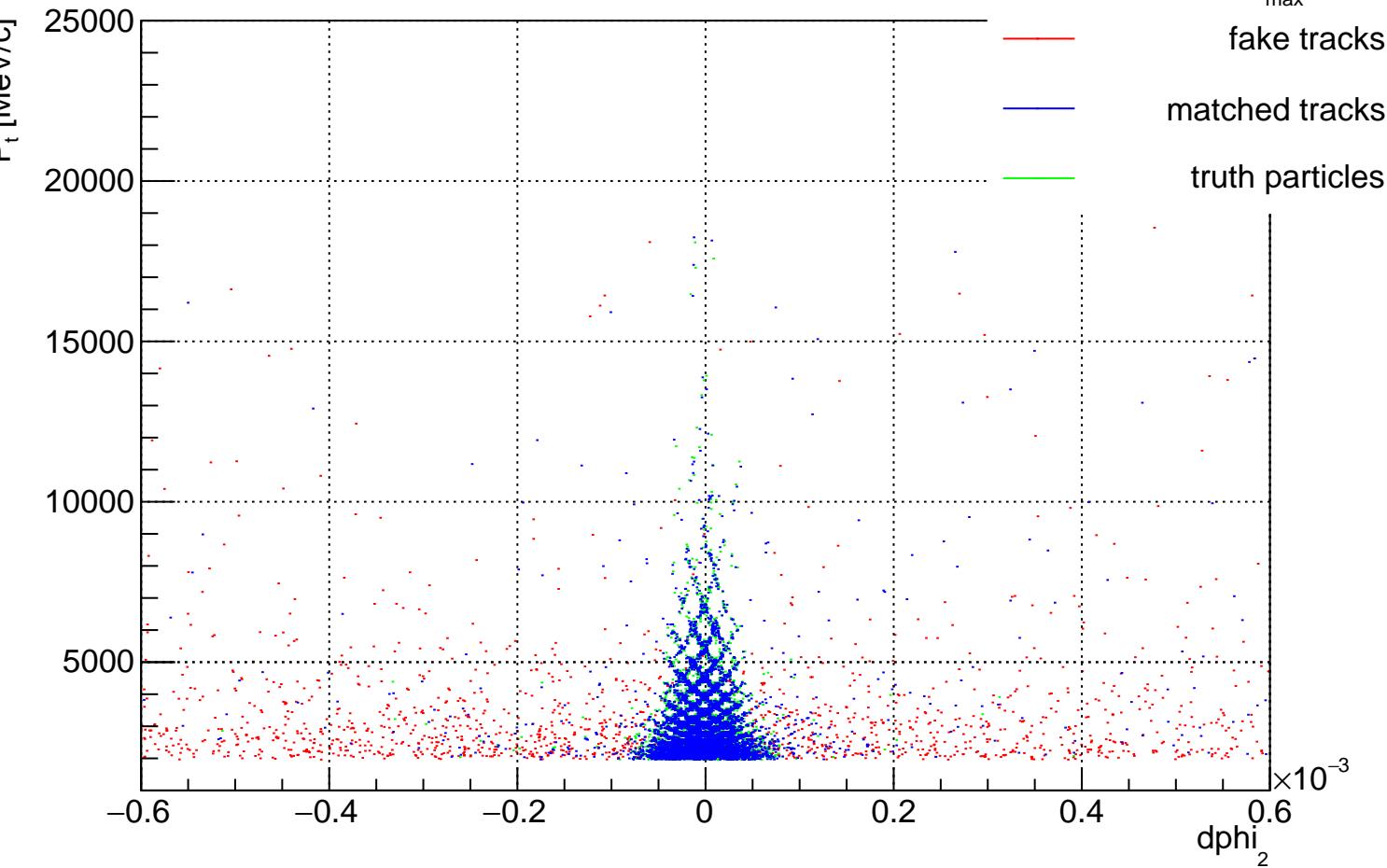
dz_2 Vs $\sin(\Theta_{13})$

phi Barrel = 0.02 +
Zbarrel = 160 + Z0_{max} = 150
fake tracks
matched tracks
no electrons
truth particles



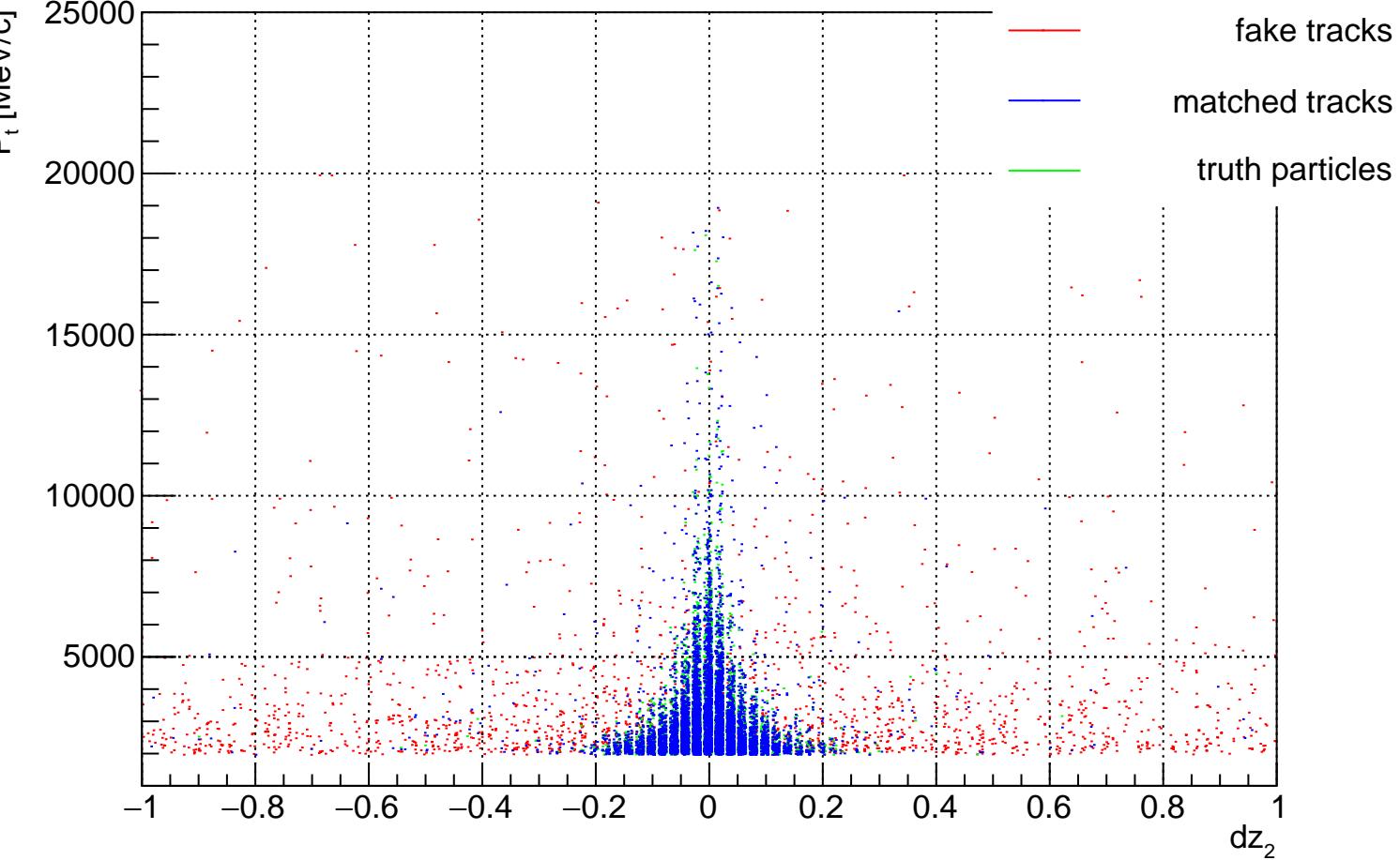
P_t Vs $d\phi_{2}$

phi Barrel = 0.02 +
Zbarrel = 160 + $Z_0_{max} = 150$



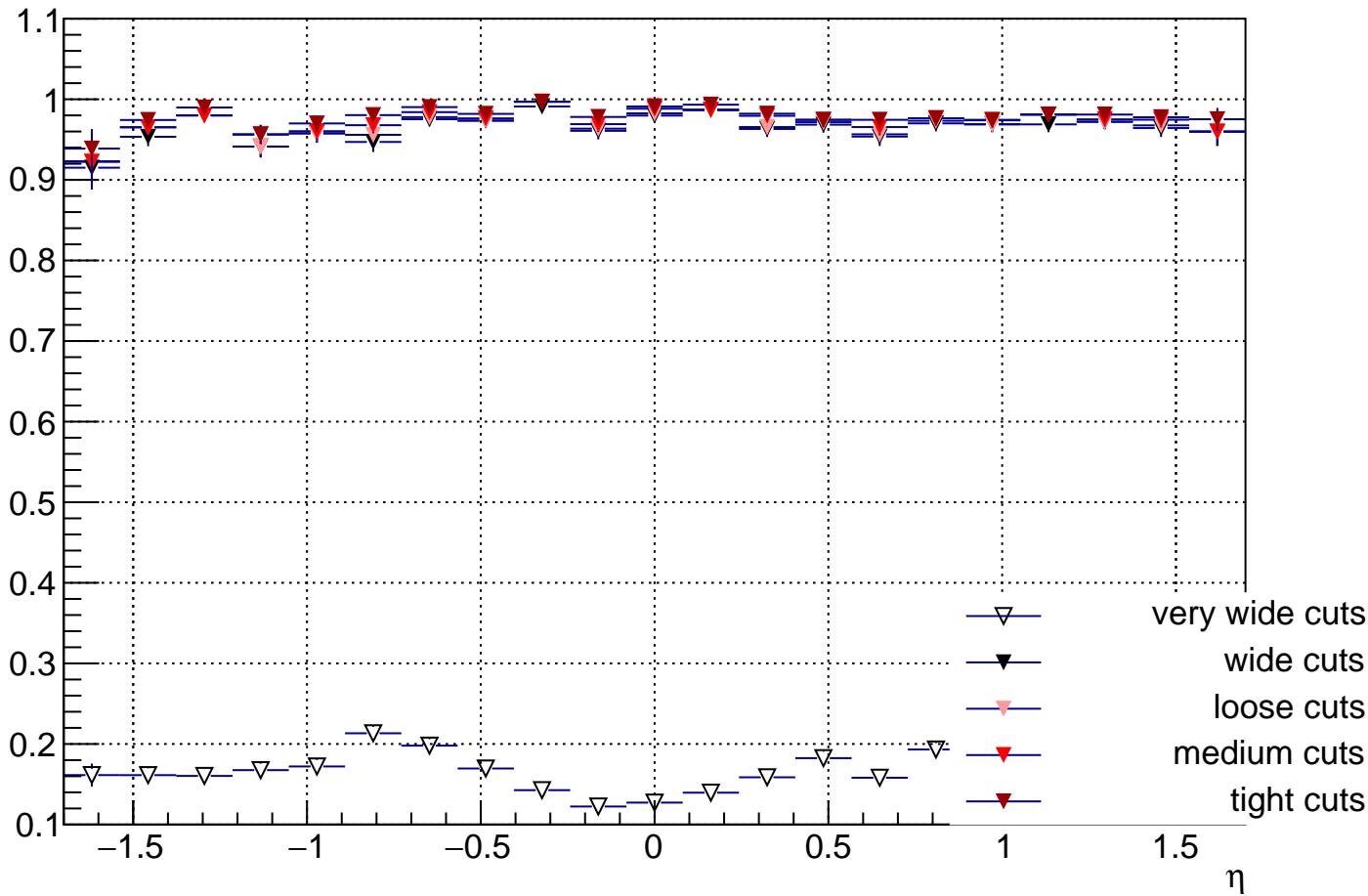
P_t Vs dz_2

phi Barrel = 0.02 +
Zbarrel = 160 + $Z_0_{max} = 150$

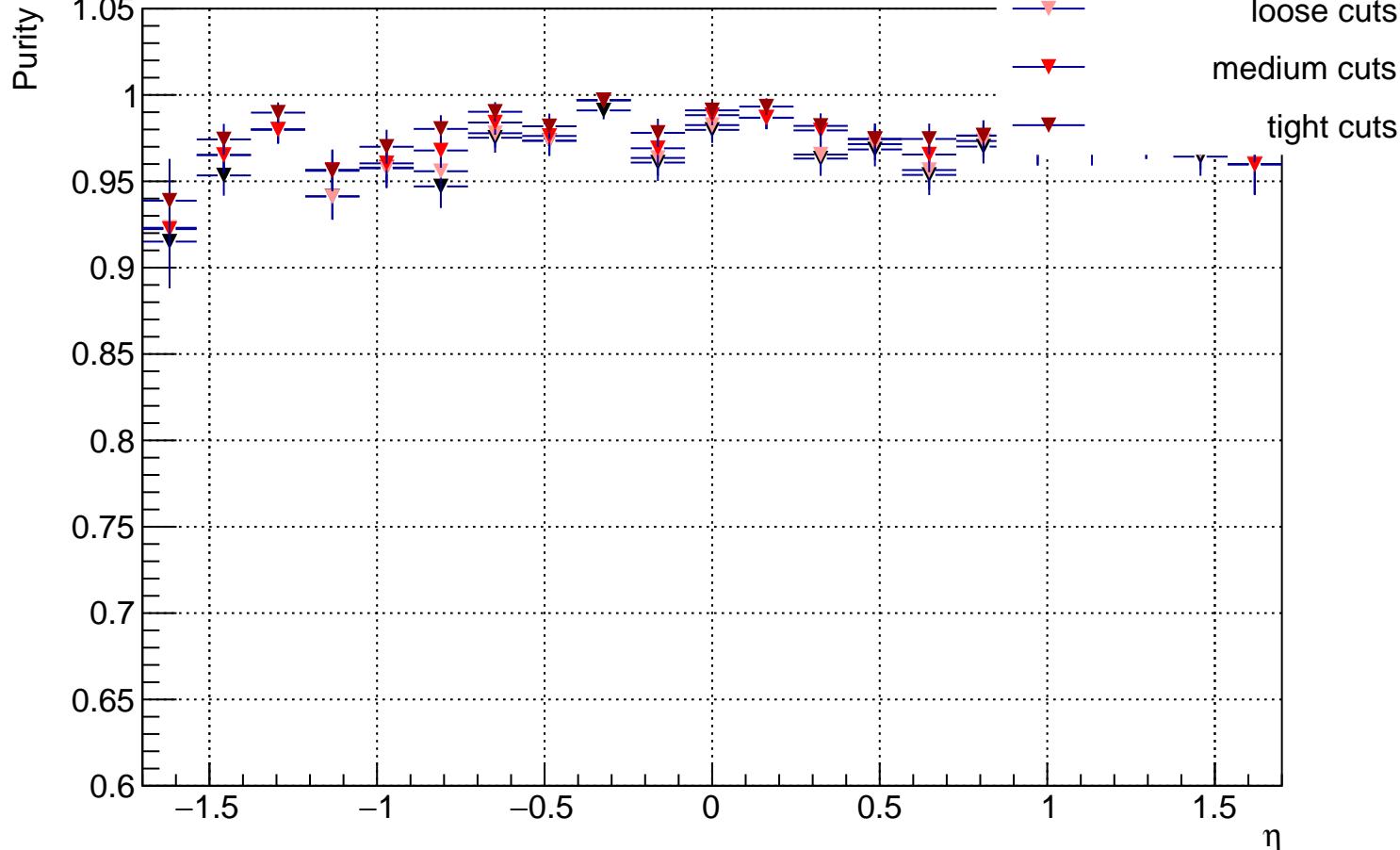


Purity vs η

Purity

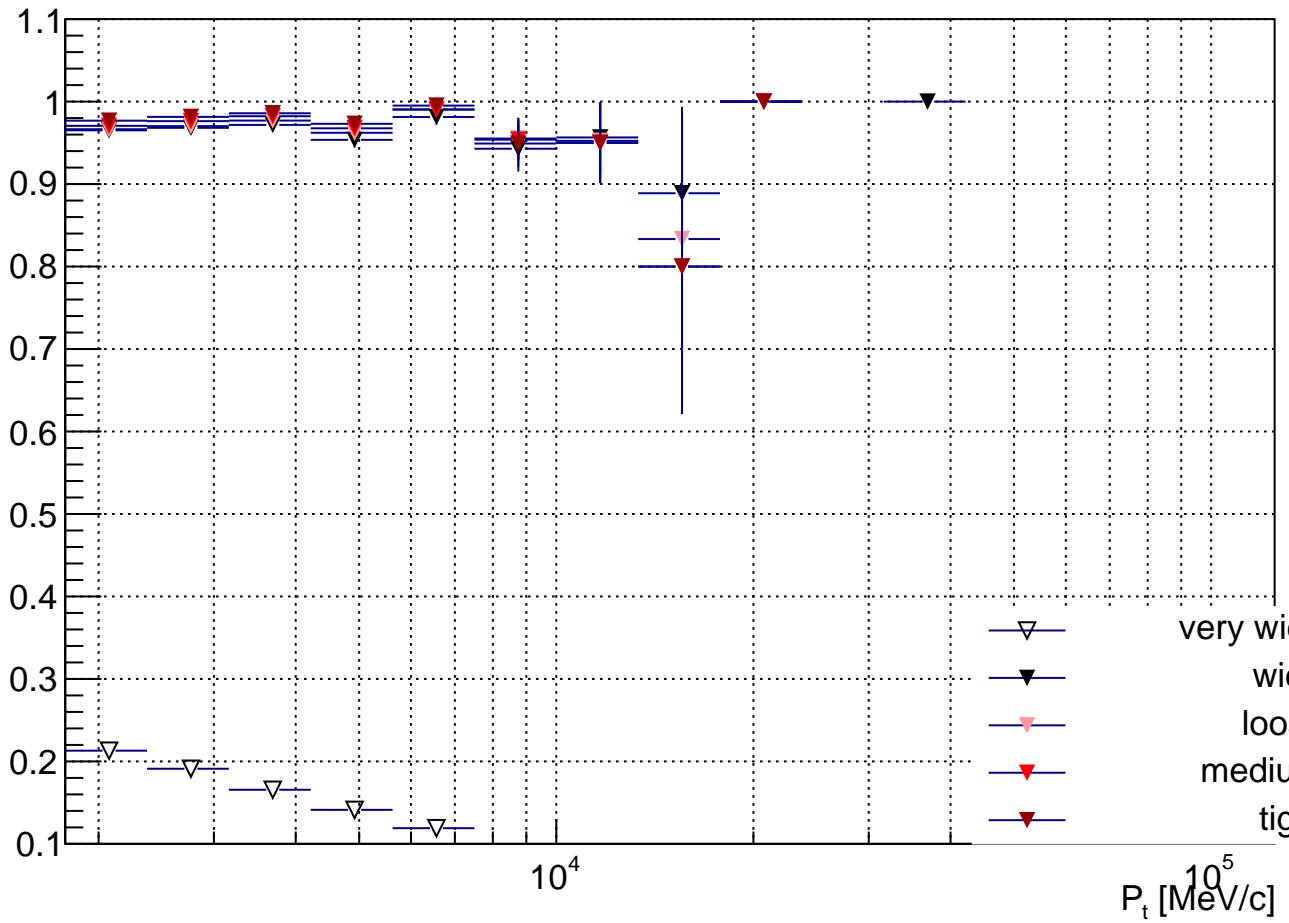


Purity vs η



Purity vs P_t

Purity



Purity vs P_t

