

Electron Reconstruction Study

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12 September 2012

Electron Particle Gun Sample

- Files:

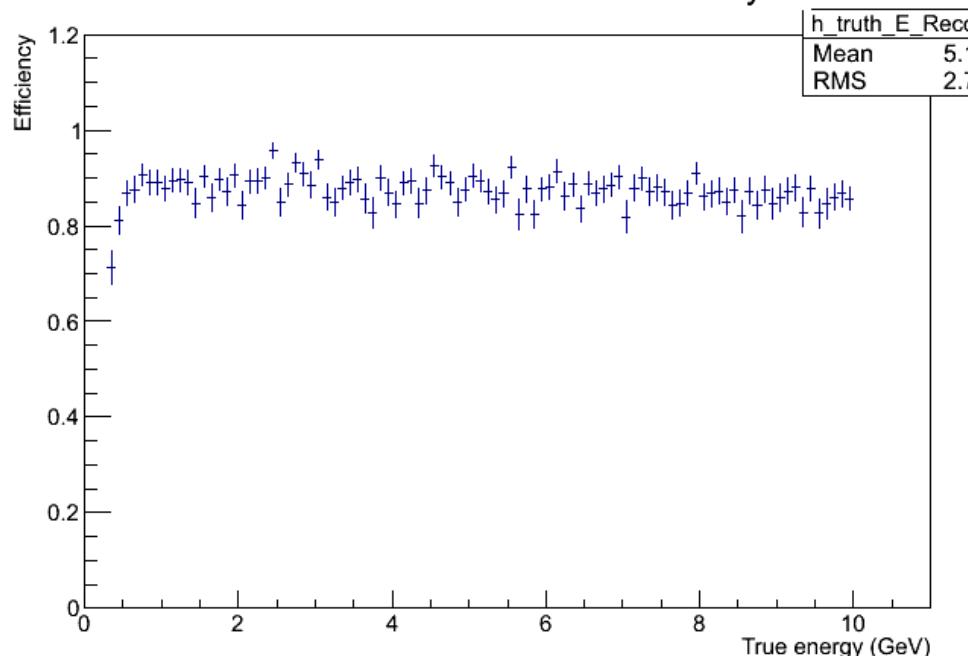
```
minerva/data/users/jwpark/mc_production_v10r2p3/grid/central_val  
ue/minerva/ana/v10r2p3/00/00/01/00/SIM_minerva_00000100_  
%04i_Ana_Tuple_v3_v10r2p3_ConeDelta50_v17.root
```

- Reconstruction Cuts

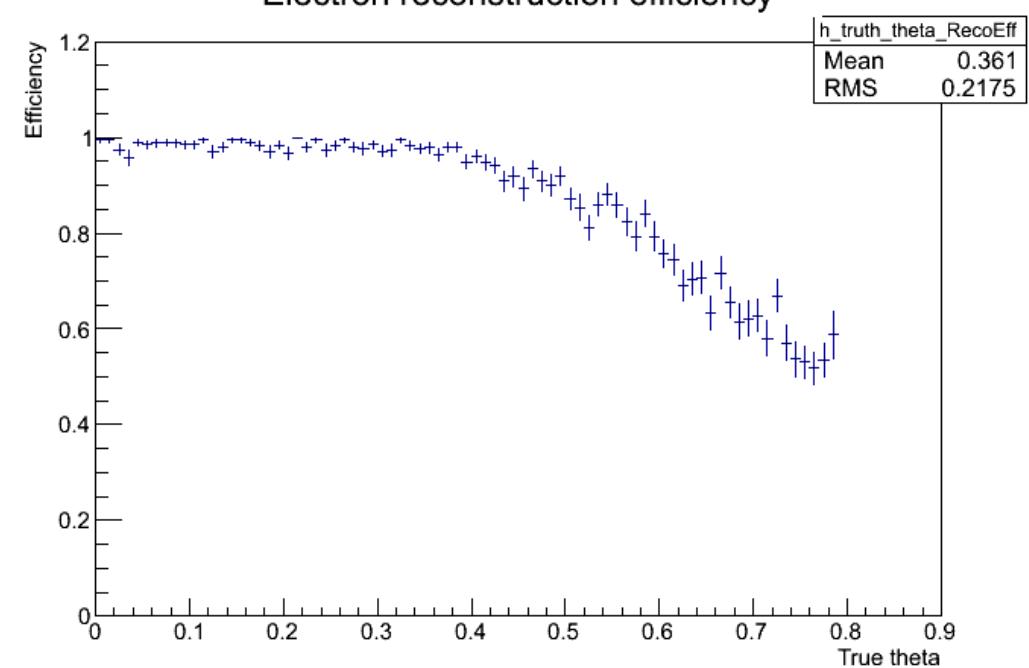
```
truth_fiducial_evt==1 && XzUzDiff>=-2 && XzUzDiff<4 &&  
XzVzDiff>=-2 && XzVzDiff<4 && chi2PerDoF>0 && (vtx_mod<=60  
&& neighborhoodEnergy/recoE_s<0.022 || vtx_mod>60 &&  
neighborhoodEnergy/recoE_s<0.042)
```

Efficiency vs True Energy/theta/vertex z

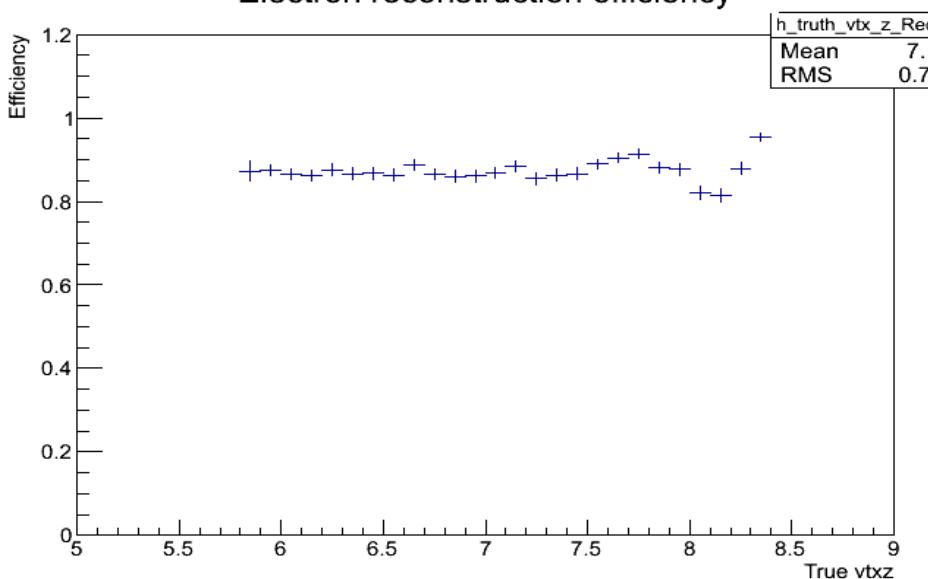
Electron reconstruction efficiency



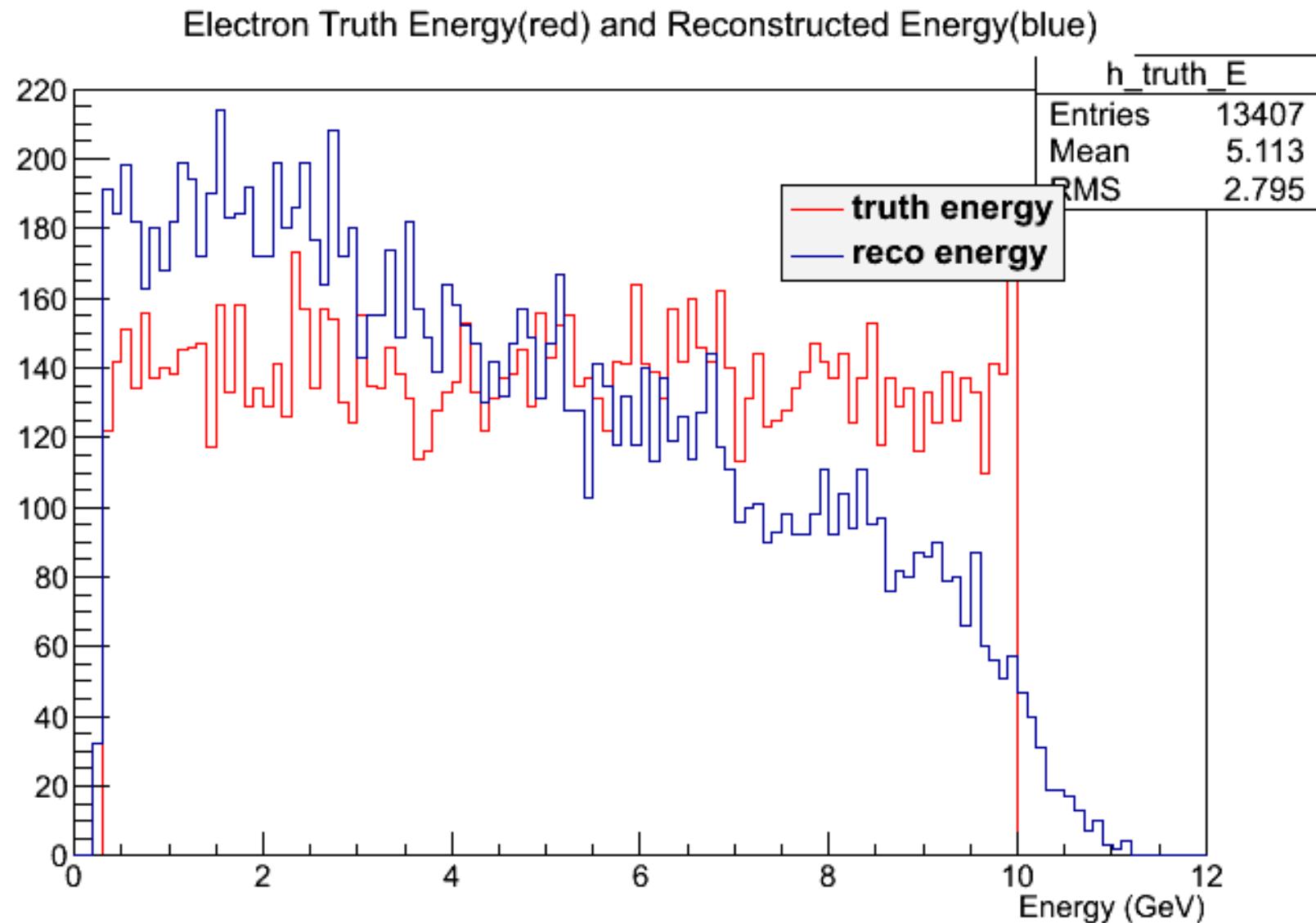
Electron reconstruction efficiency



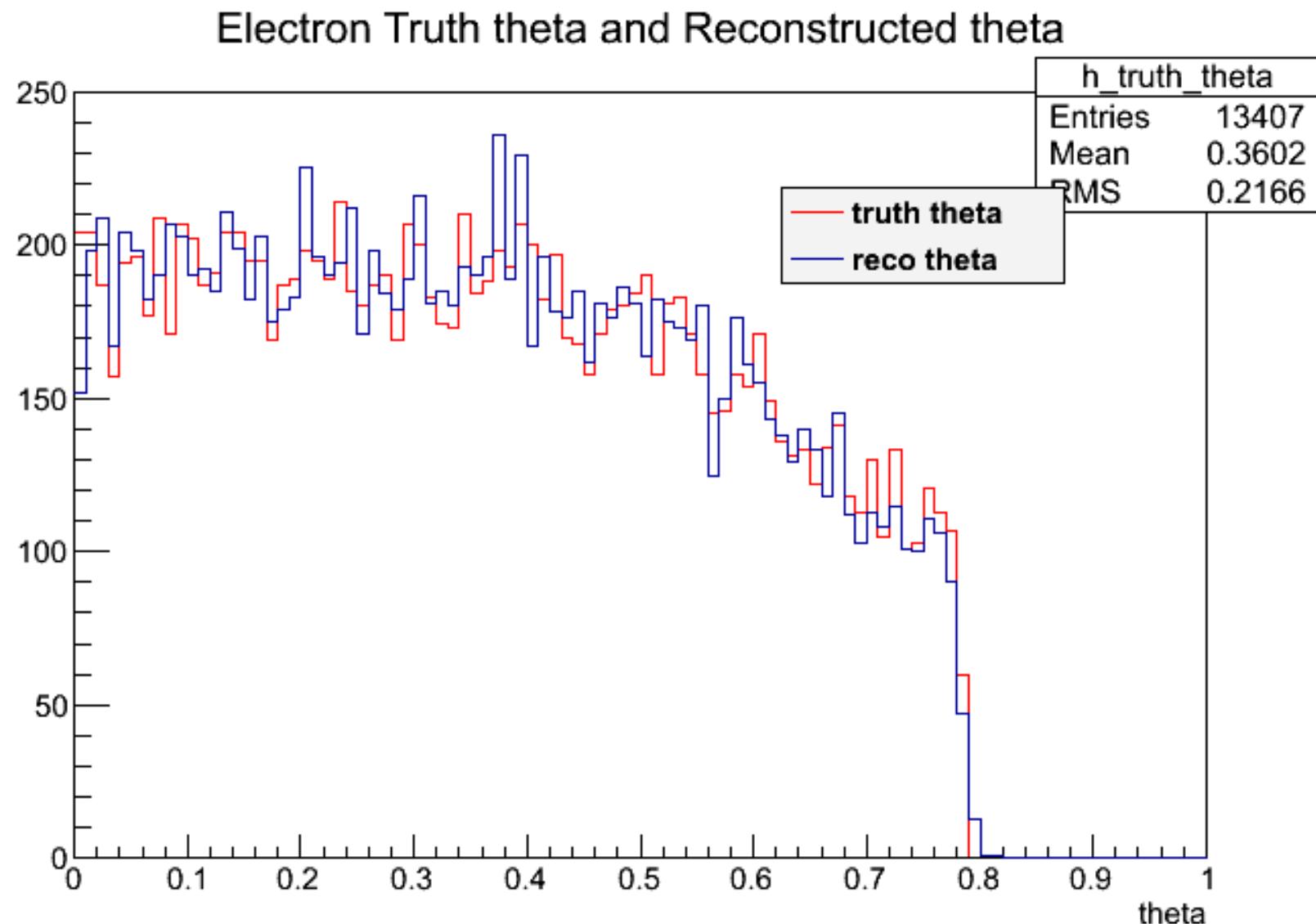
Electron reconstruction efficiency



Truth Energy and Reco Energy Spectrum

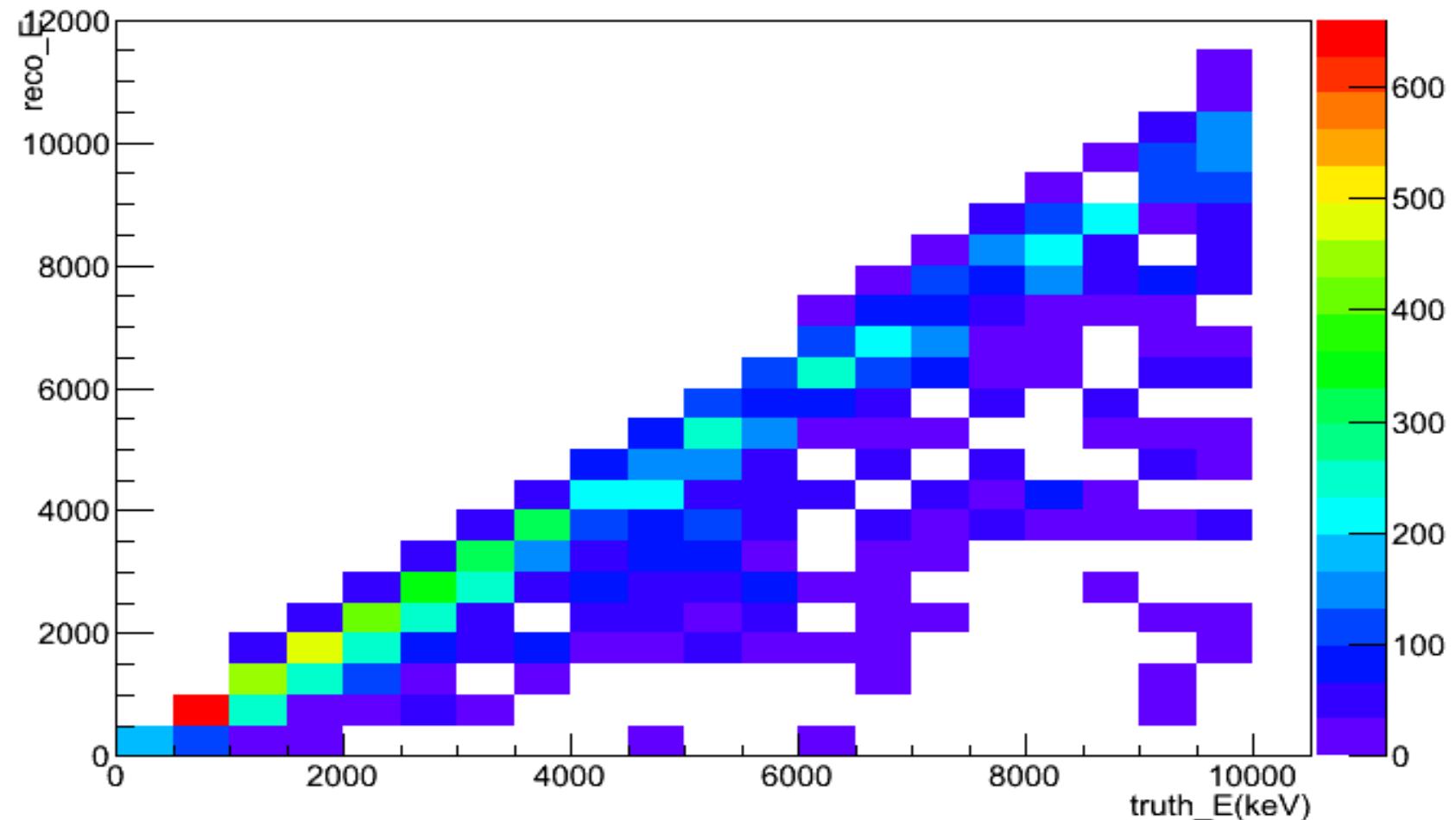


Truth Theta and Reco Theta



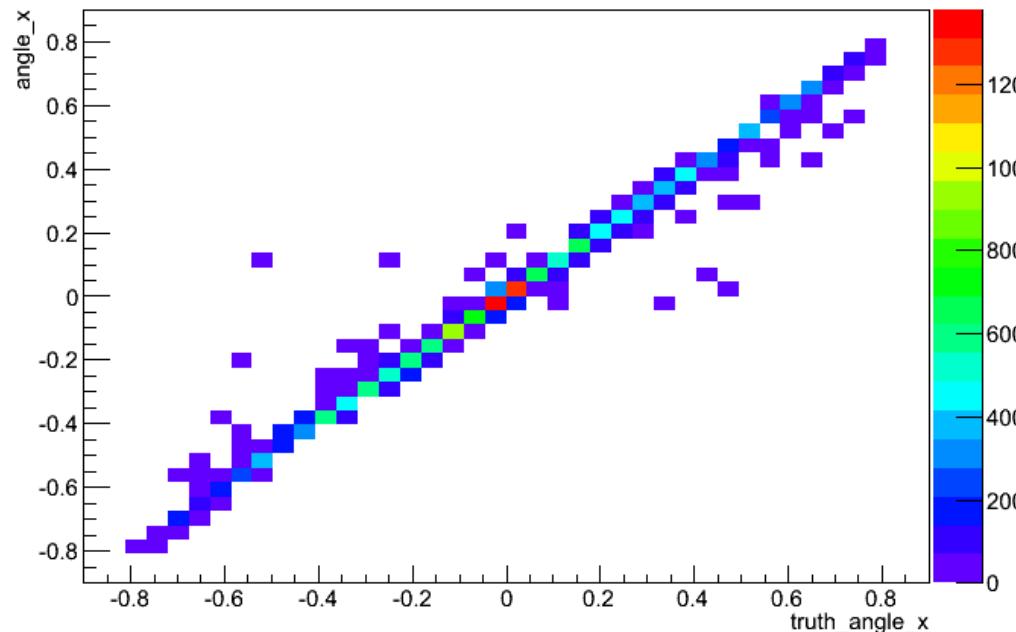
recoE_s vs truth_E

recoE vs truthE 2D plot



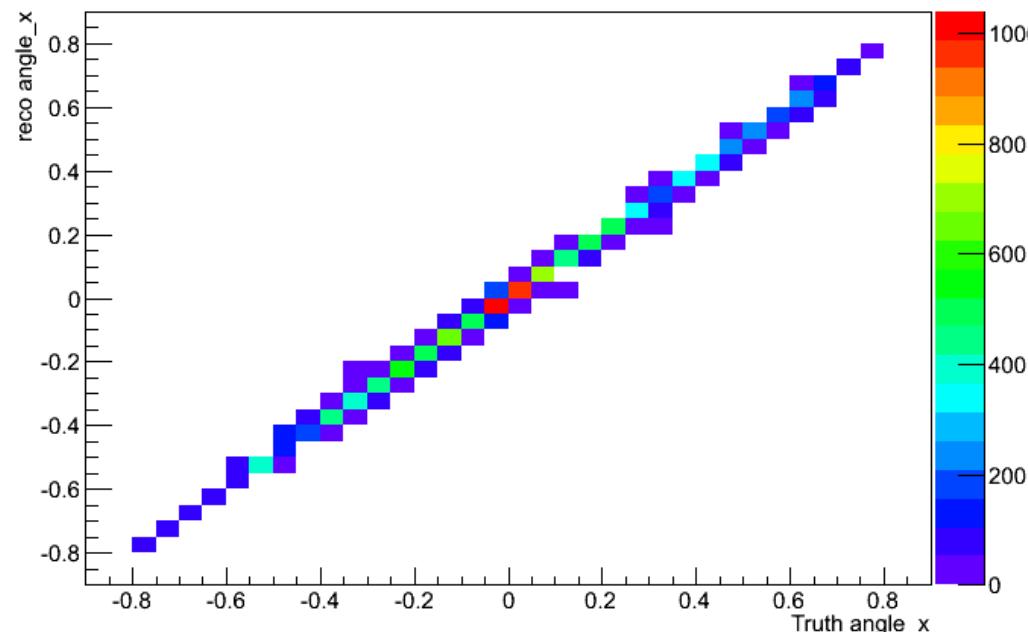
Reco angle_x vs truth_angle_x before and after reco cut

angle_x:truth_angle_x {angle_x > -10}



before

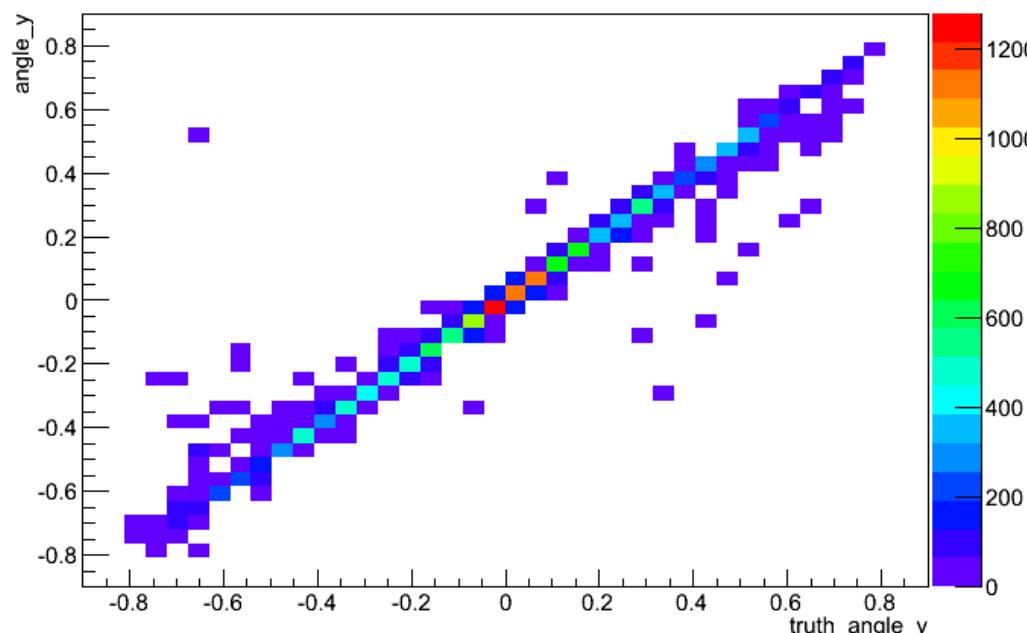
reco angle x vs truth angle x 2D plot



after

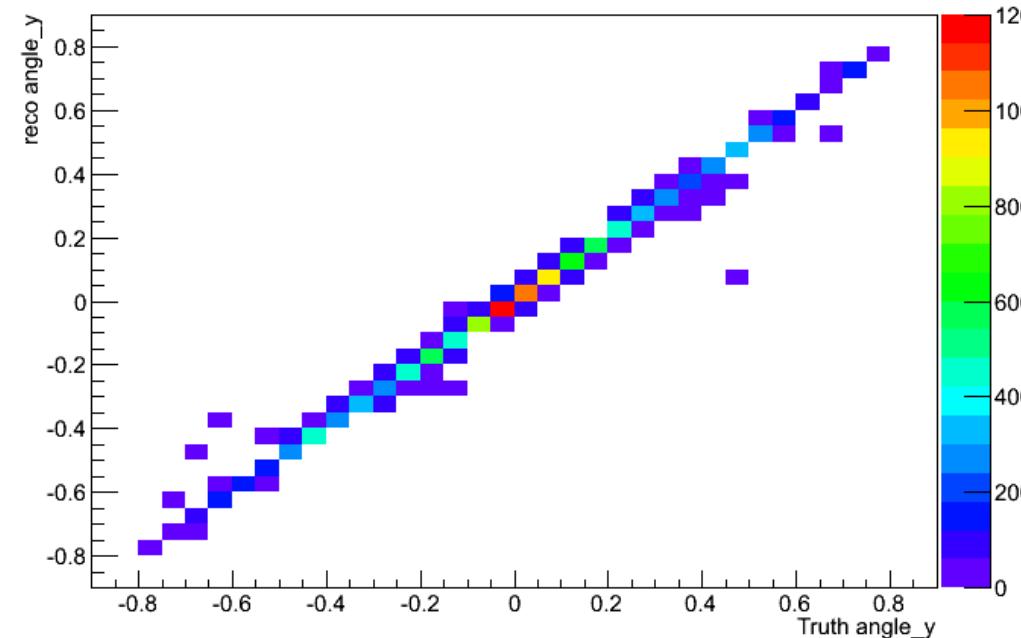
Reco angle_x vs truth_angle_x before and after reco cut

angle_y:truth_angle_y {angle_y>-10}



before

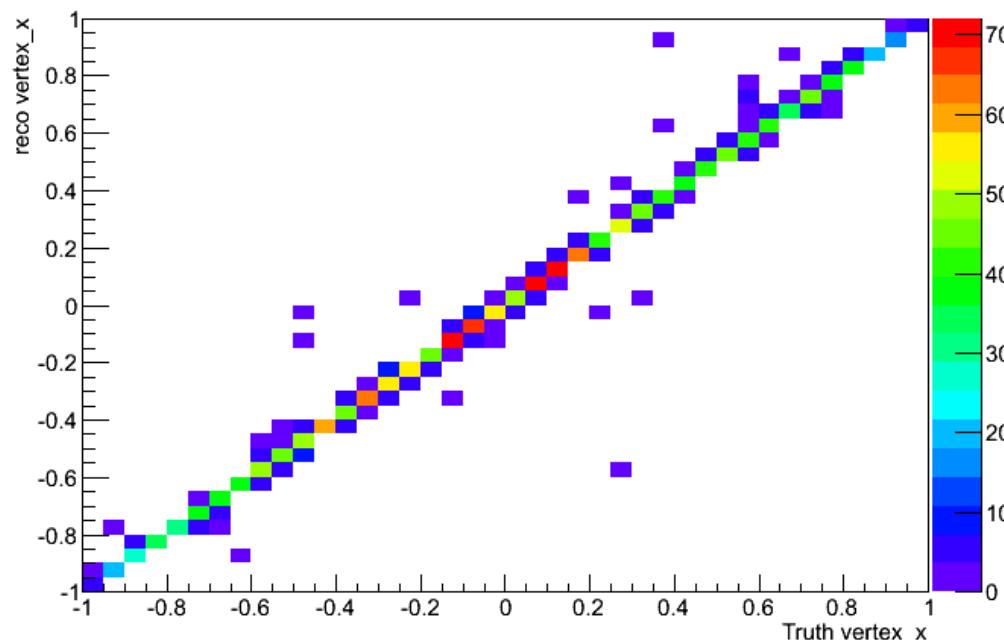
reco angle y vs truth angle y 2D plot



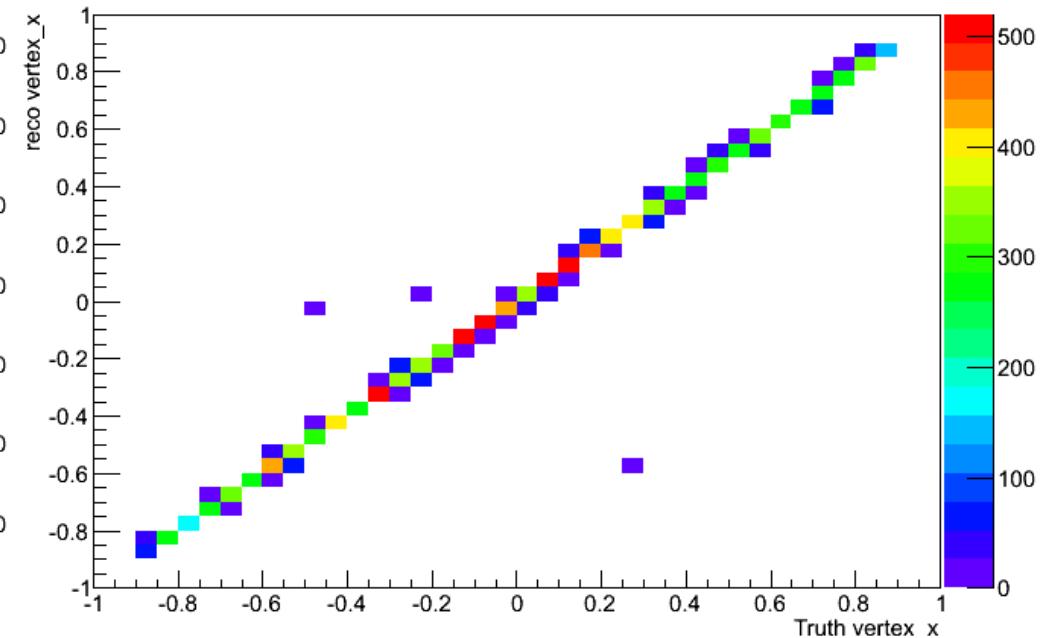
after

Reco vertex x vs truth vertex x before and after reco cut

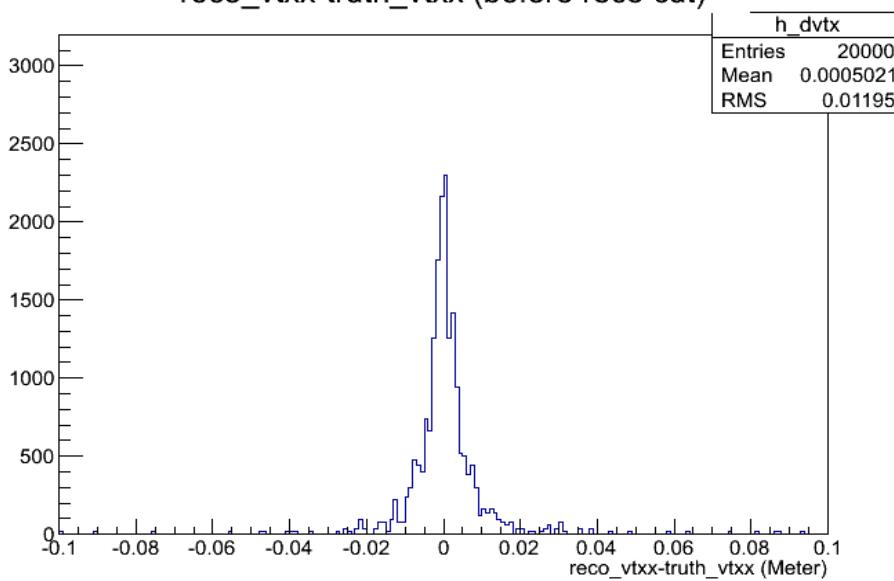
reco vertex x vs truth vertex x 2D plot(before reco cut)



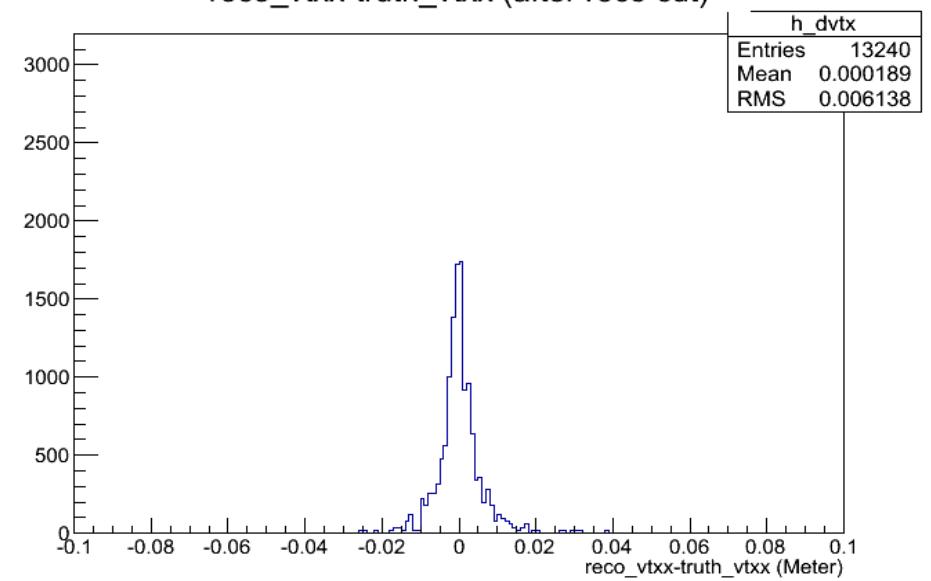
reco vertex x vs truth vertex x 2D plot



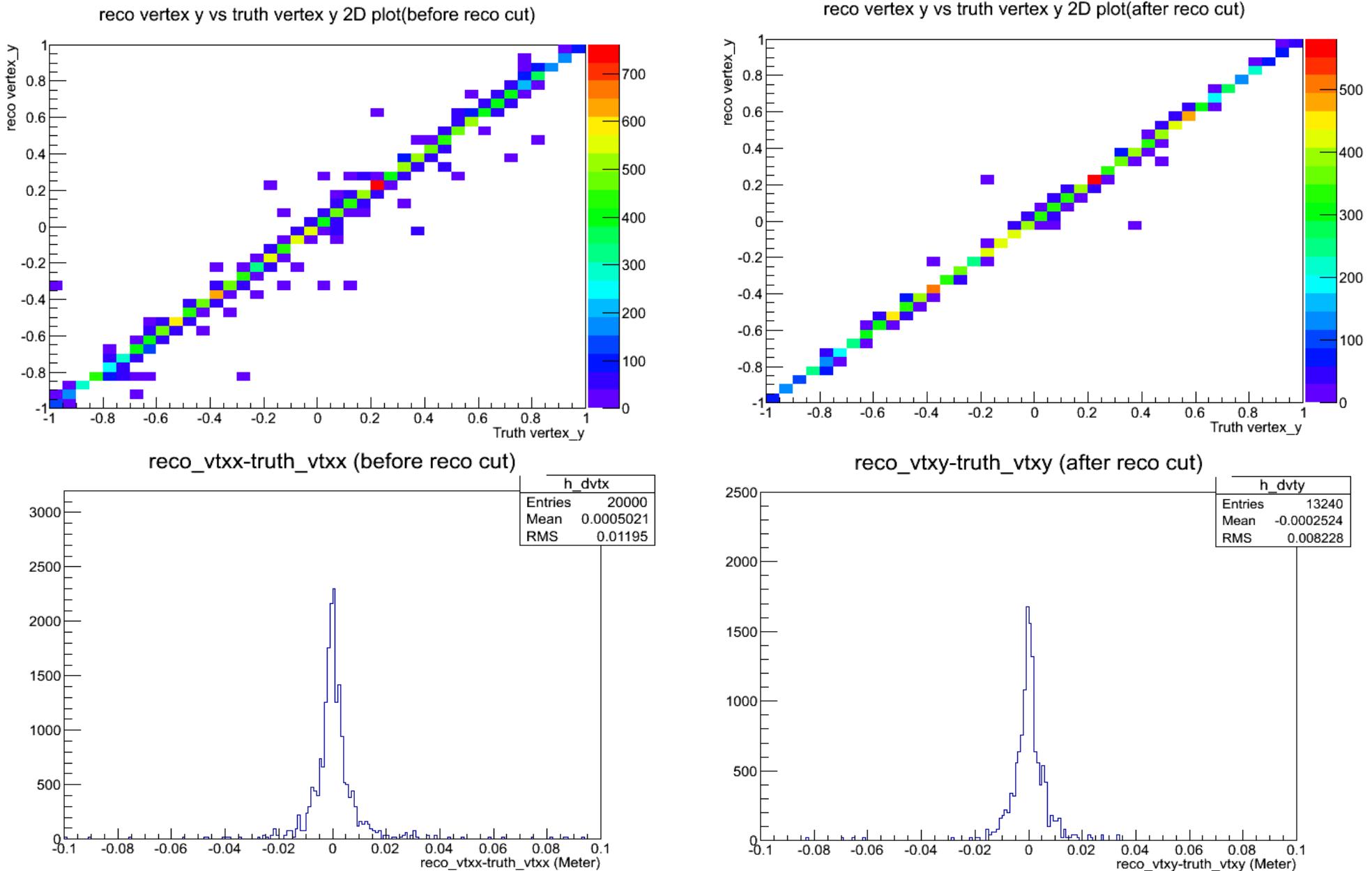
reco_vtxx-truth_vtxx (before reco cut)



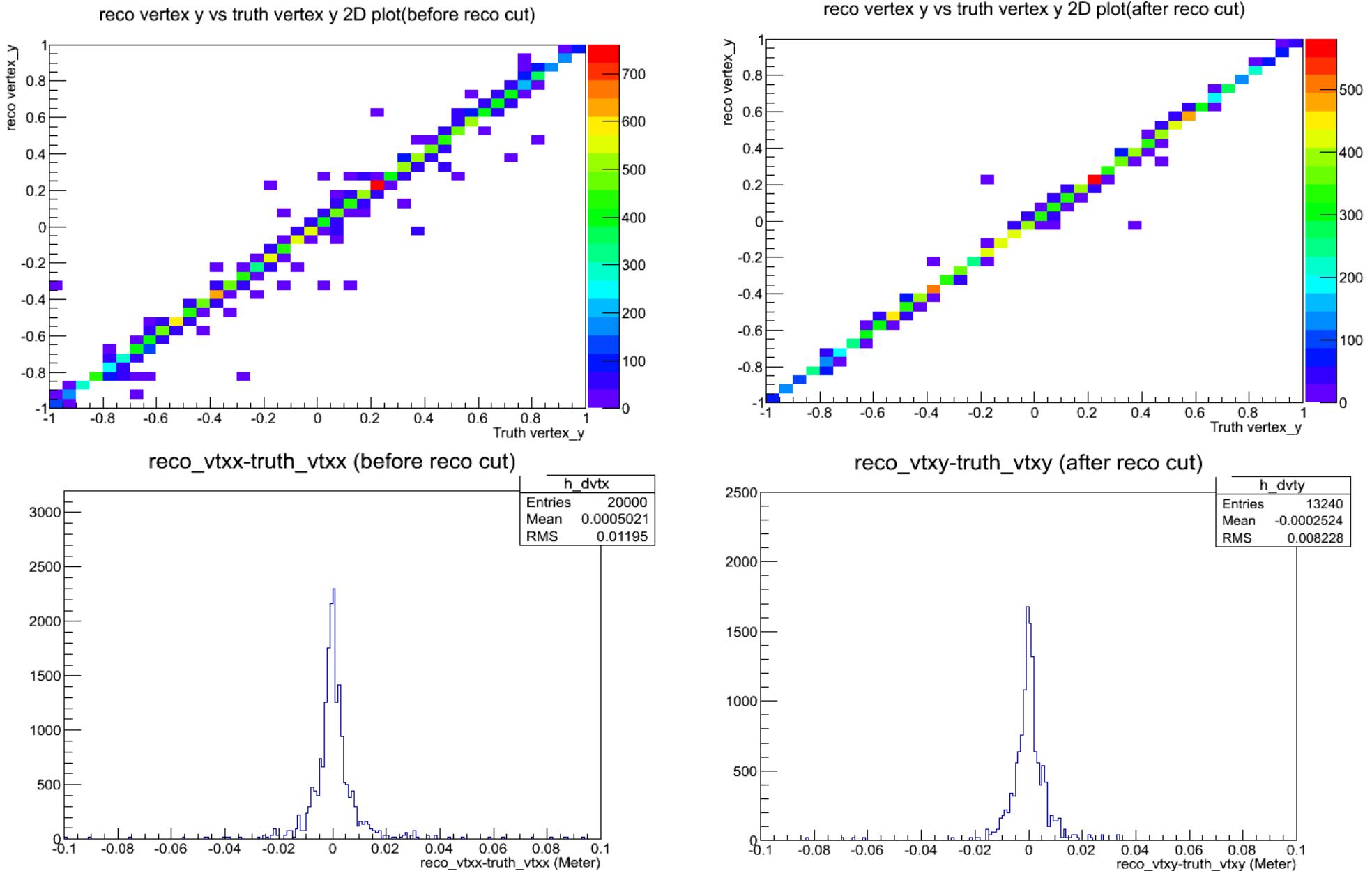
reco_vtxx-truth_vtxx (after reco cut)



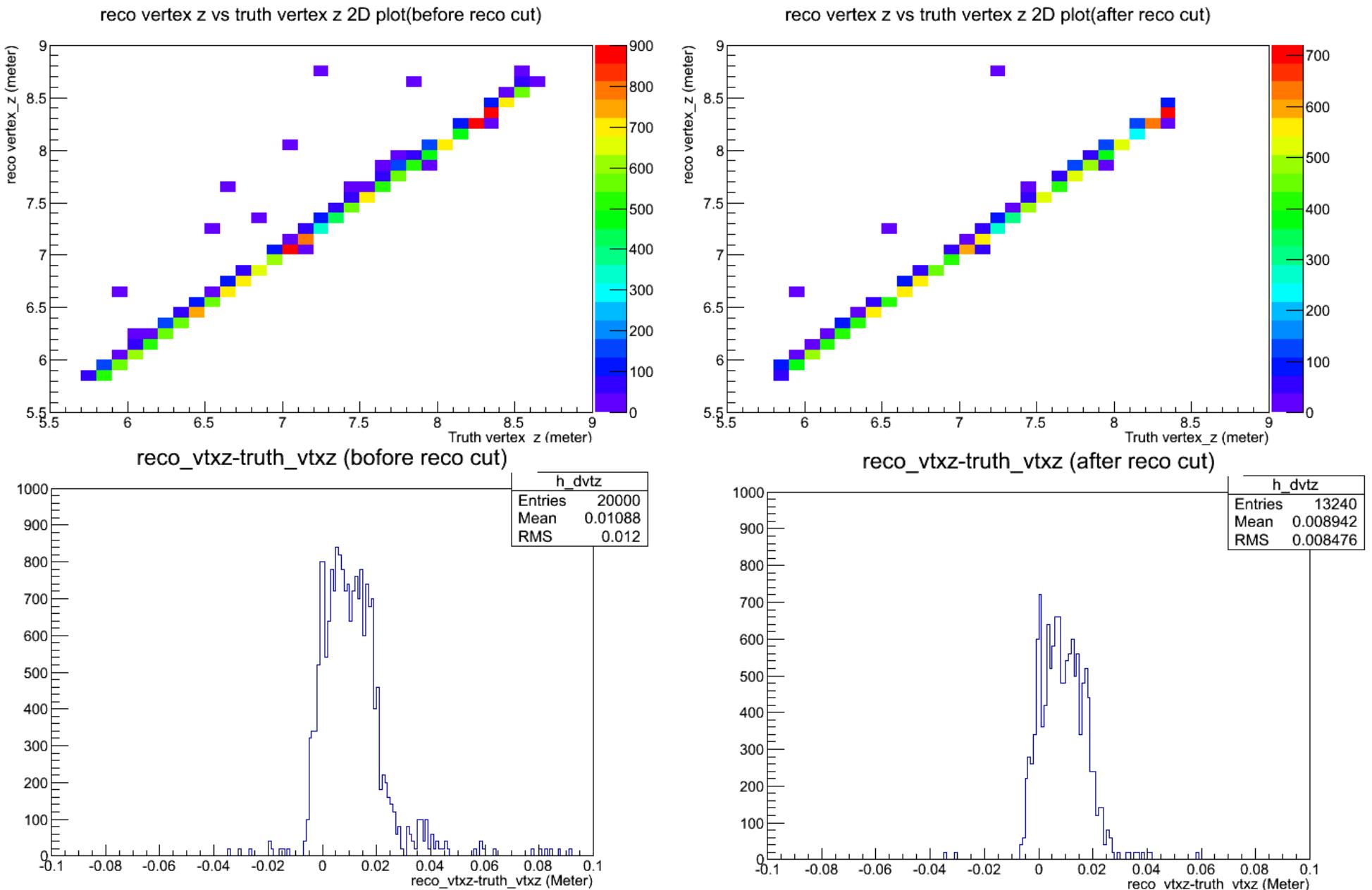
Reco vertex y vs truth vertex y before and after reco cut



Reco vertex y vs truth vertex y before and after reco cut



Reco vertex z vs truth vertex z before and after reco cut



$(\text{recoE}_s - \text{truth}_E) / \text{truth}_E$

$(\text{recoE} - \text{truth}_E) / \text{truth}_E$

