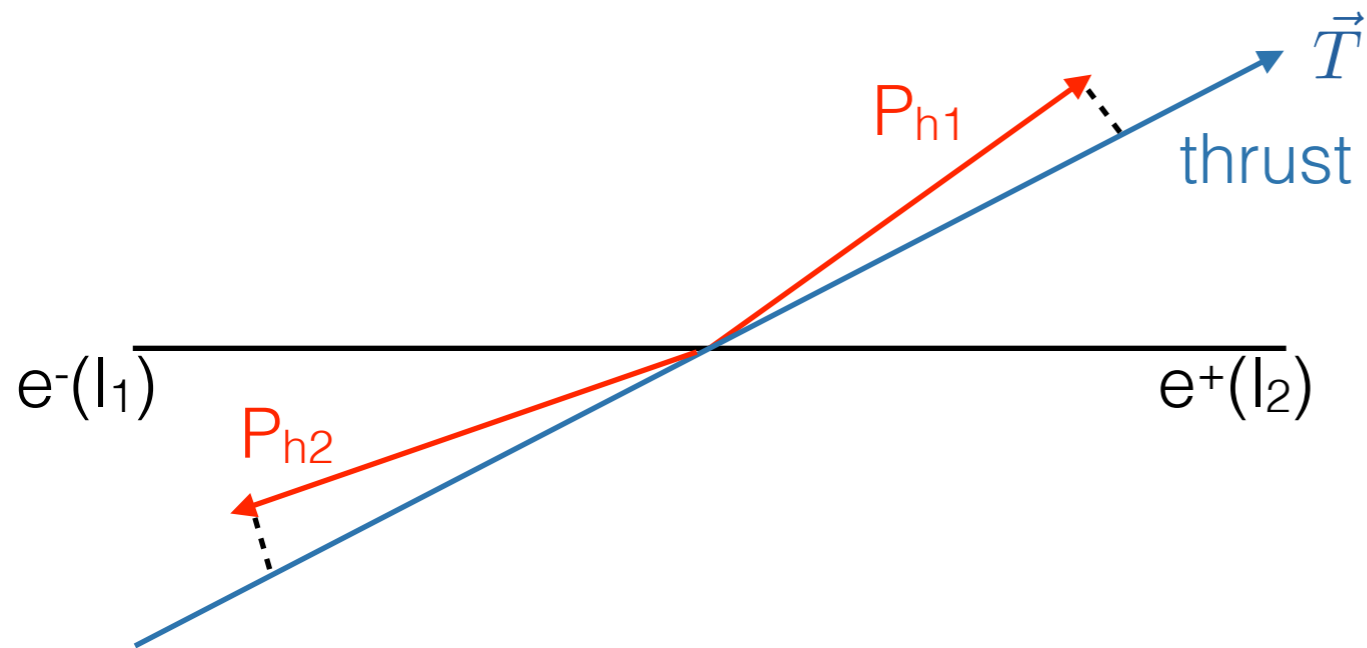


Hemisphere determination in back-to-back hadron production in e^+e^- annihilation

Charlotte Van Hulse, University of the Basque Country

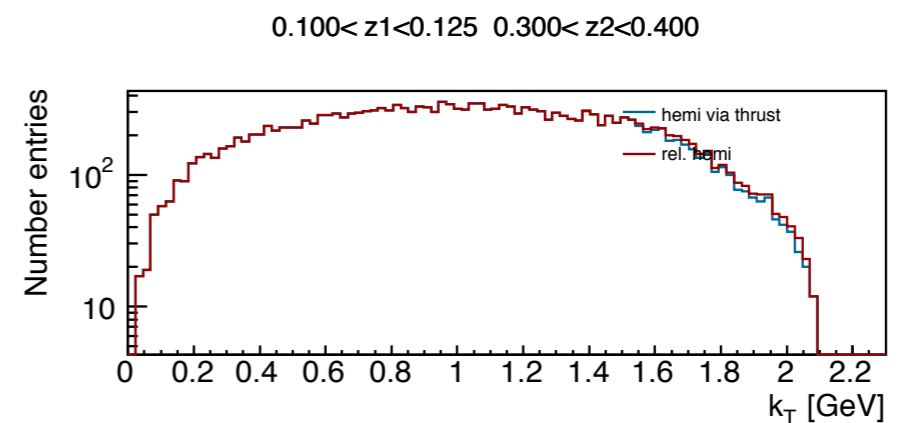
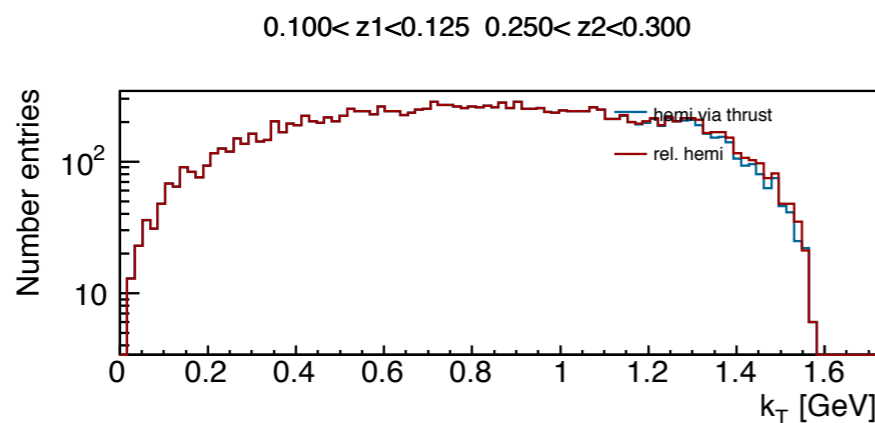
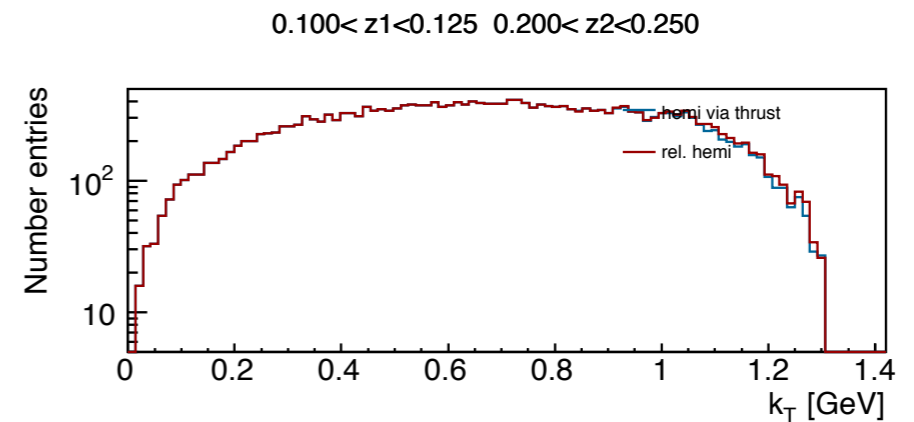
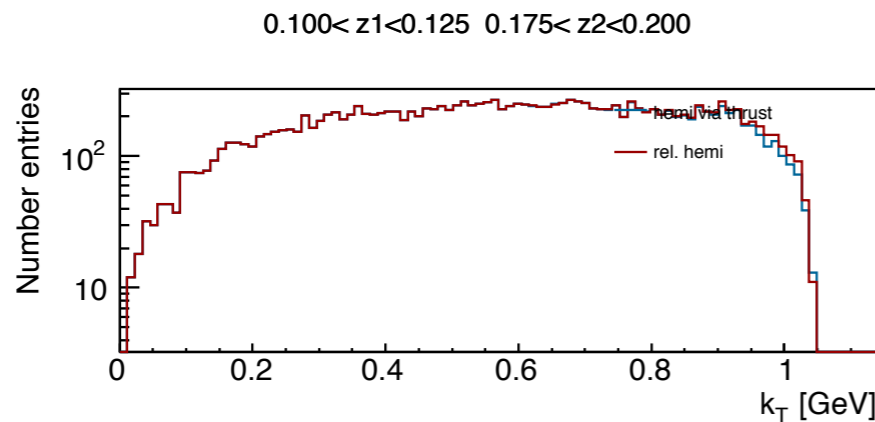
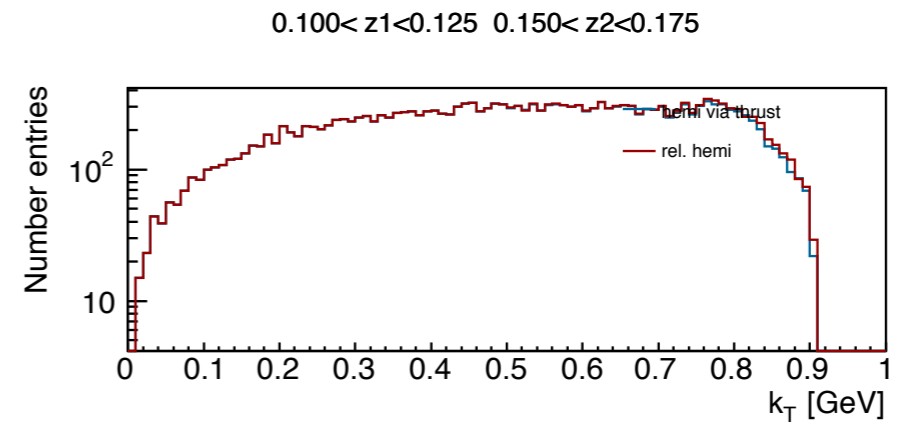
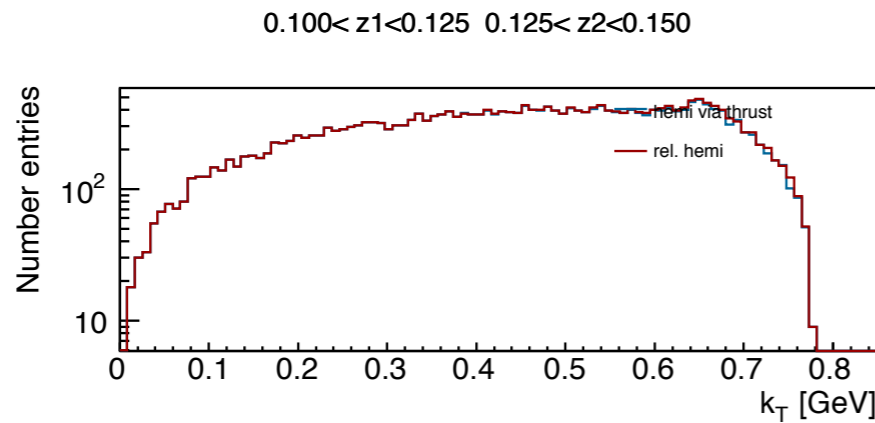
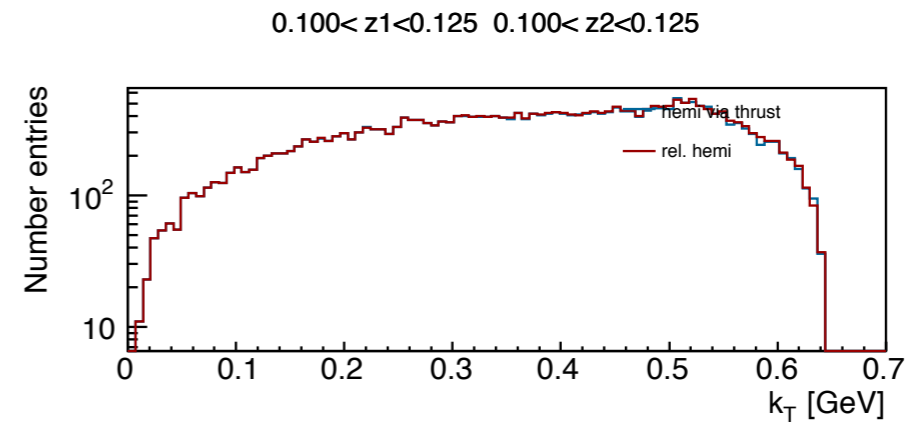
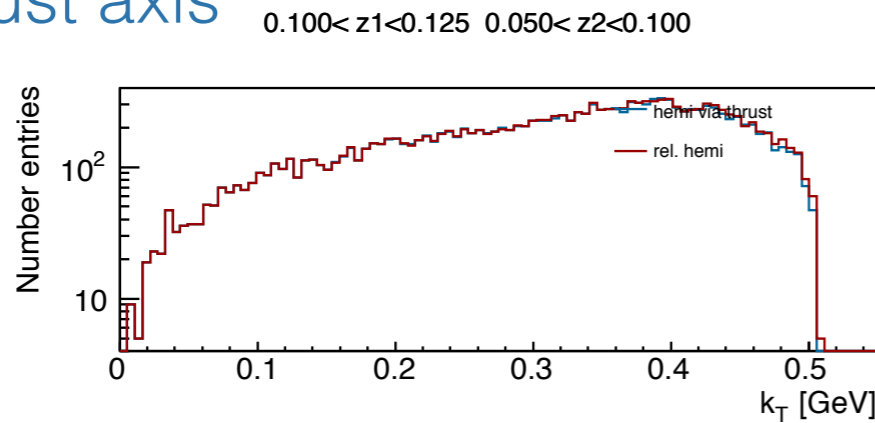


- Hemisphere:
 - relative orientation of both hadrons: $\vec{P}_1 \cdot \vec{P}_2 < 0$
 - use thrust axis: $(\vec{P}_{h1} \cdot \vec{T}) \cdot (\vec{P}_{h2} \cdot \vec{T}) < 0$
- Plots with and without thrust value cut of $T > 0.8$
- Four momentum product: $P_{h1} \cdot P_{h2}$

- Hemisphere:
 - relative orientation of both hadrons
 - use thrust axis

Reconstructed Belle Monte Carlo

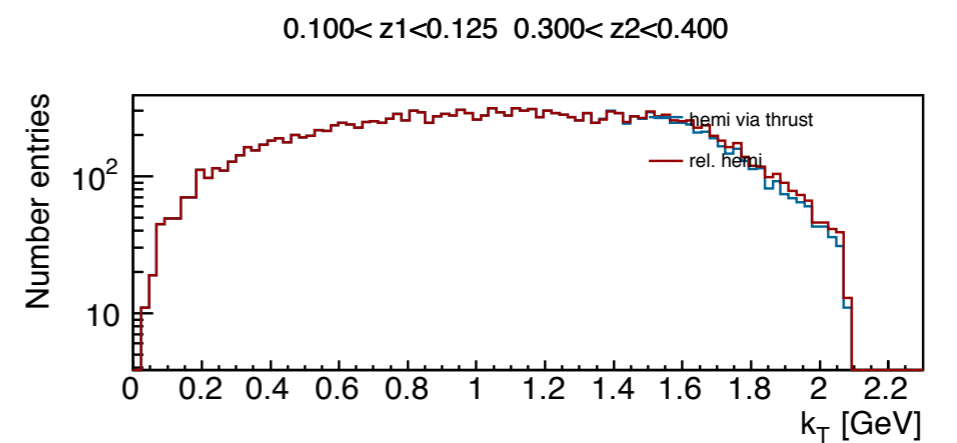
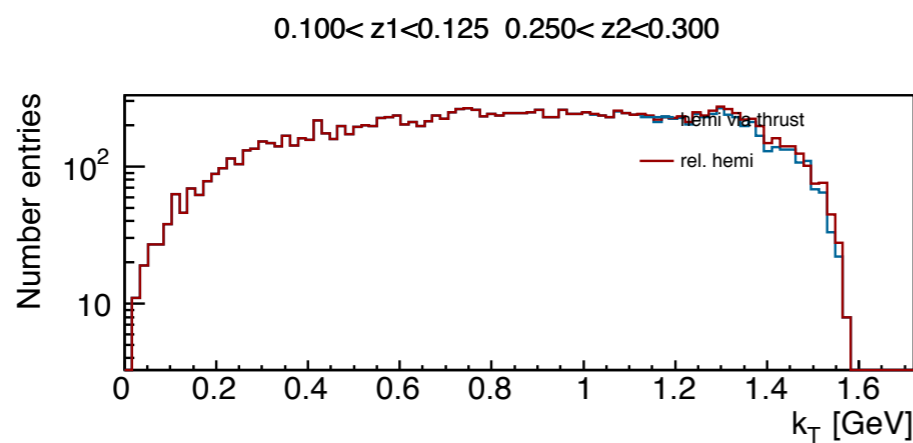
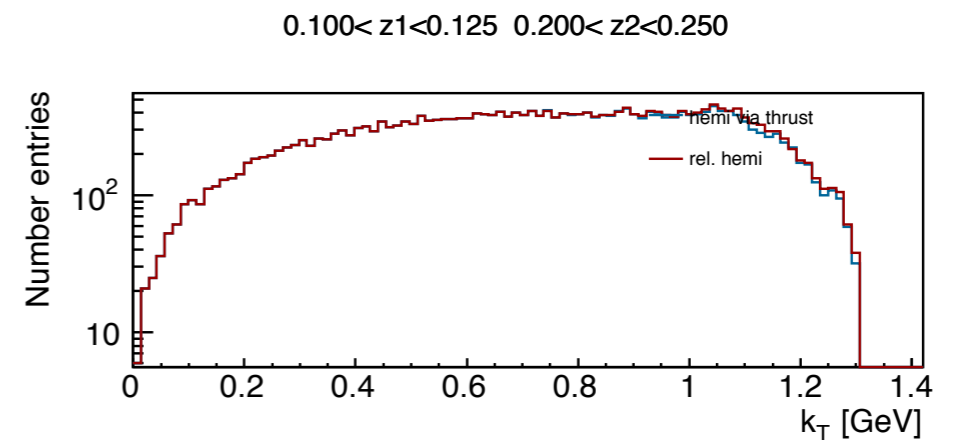
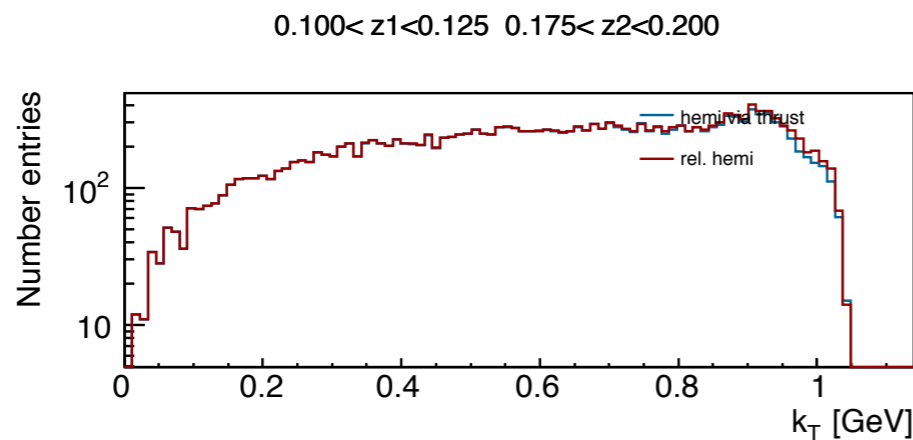
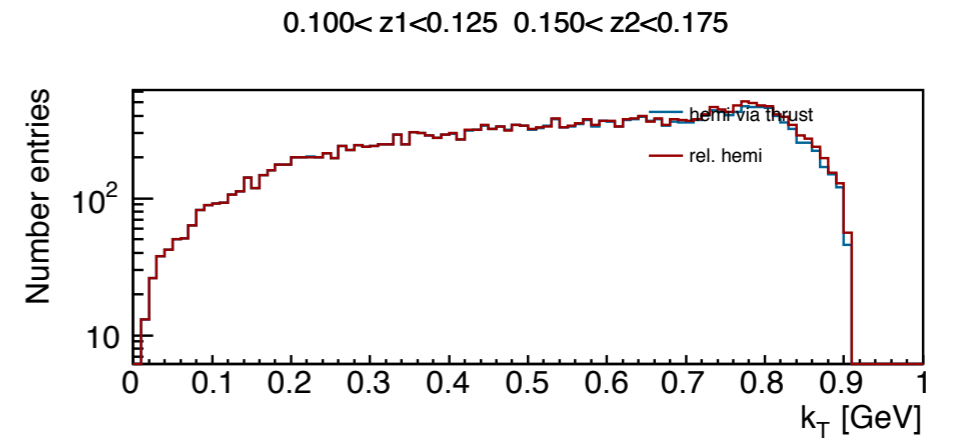
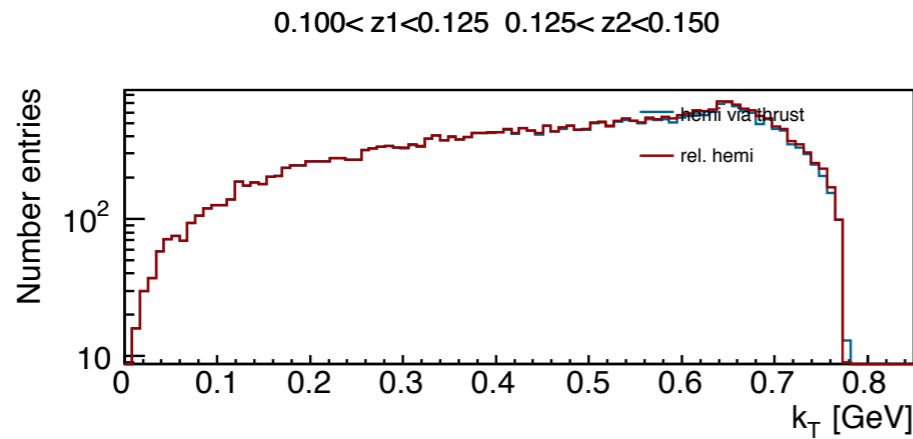
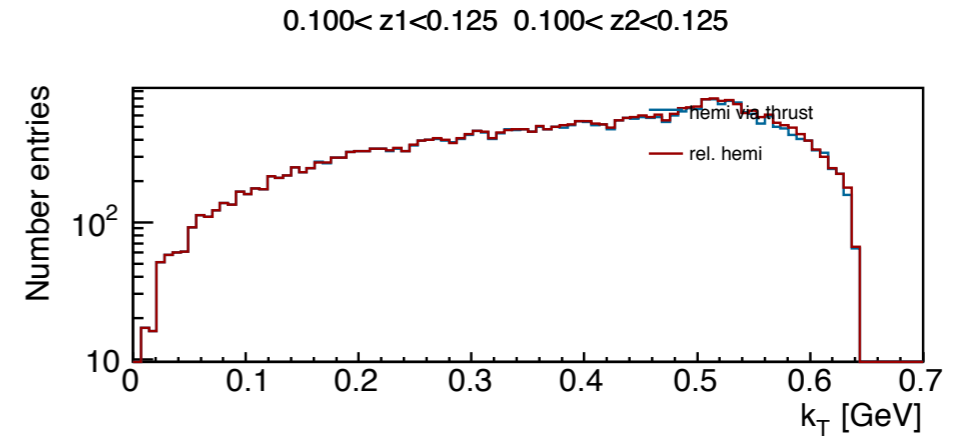
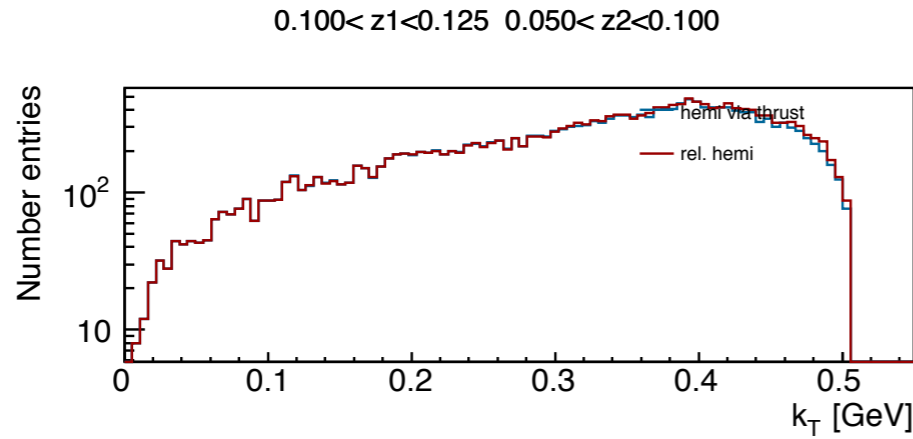
$T > 0.8$



- Hemisphere:
 - relative orientation of both hadrons
 - use thrust axis

No cut
 $T > 0.8$

Reconstructed Belle Monte Carlo

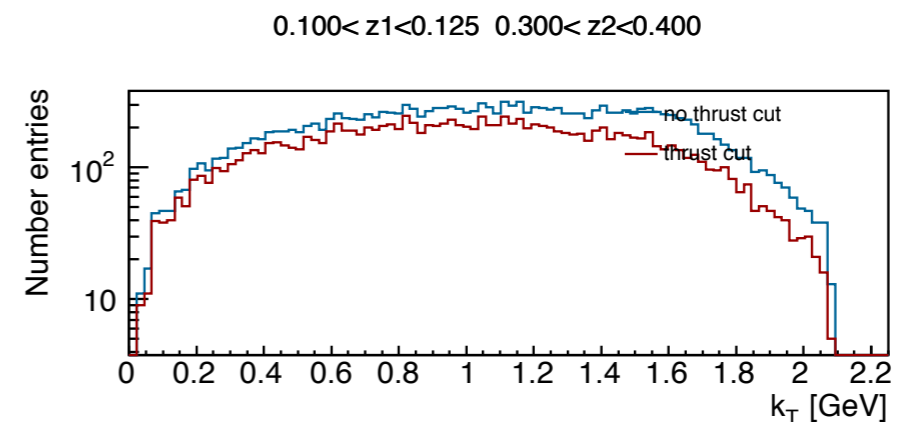
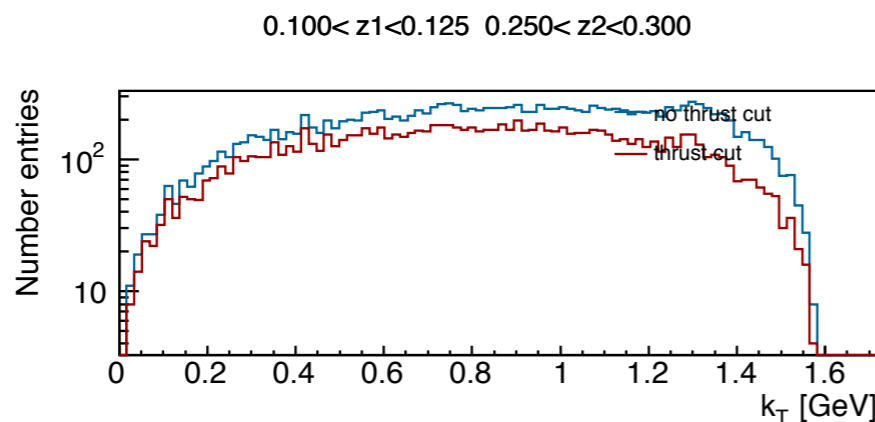
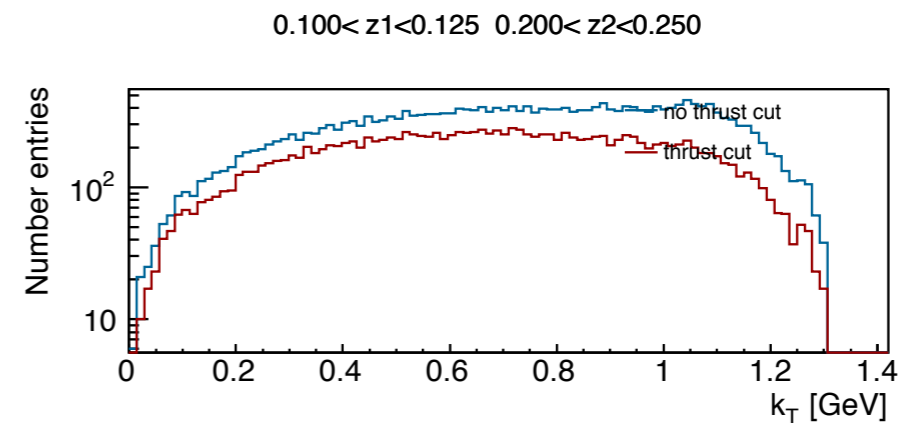
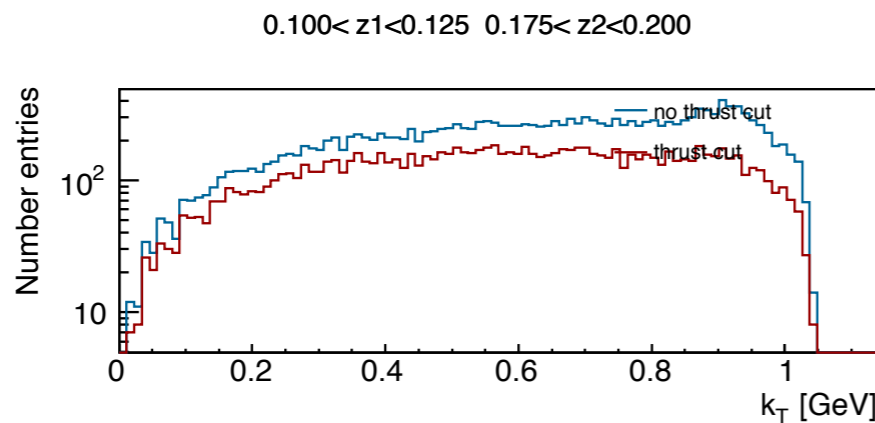
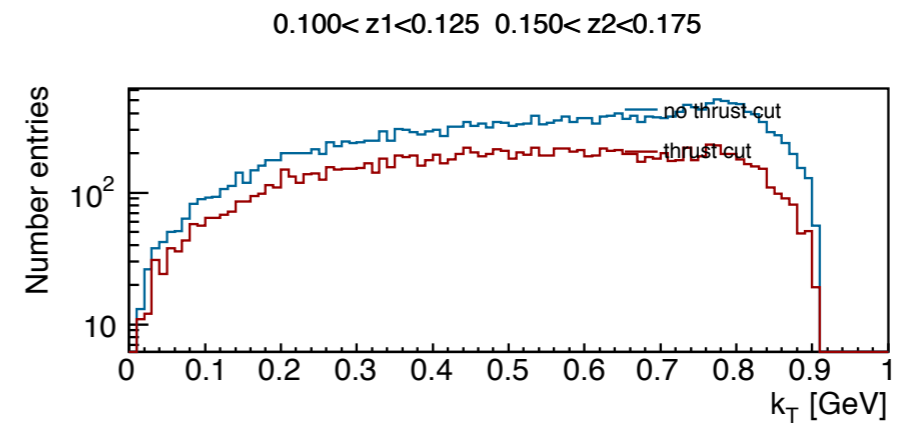
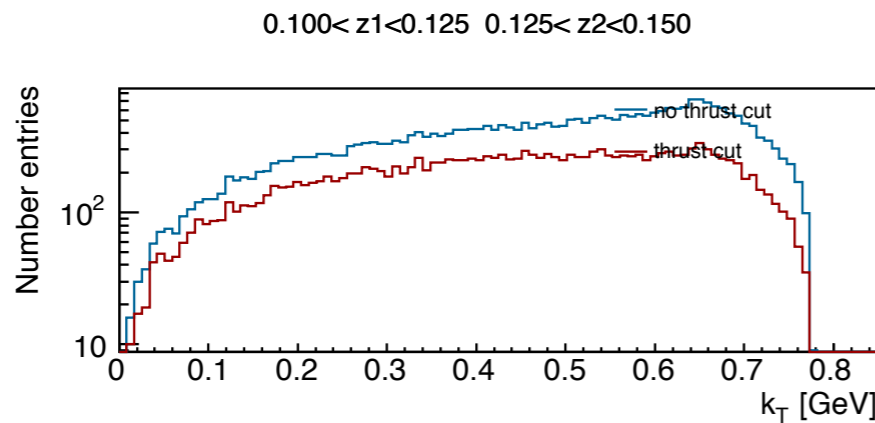
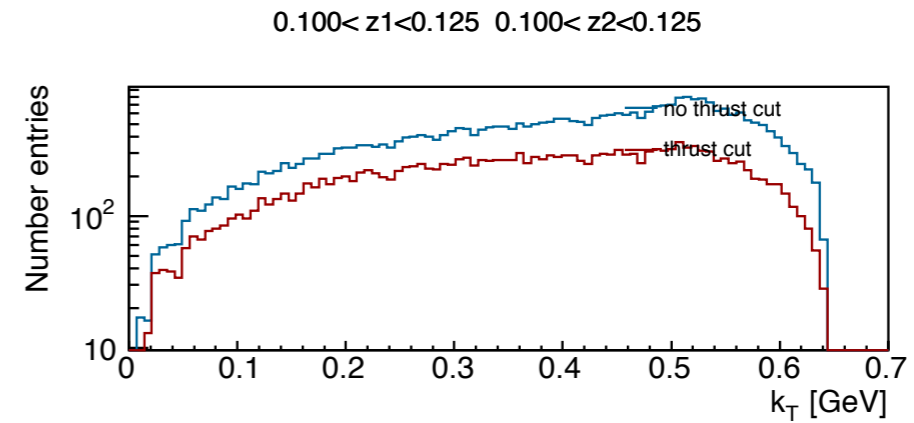
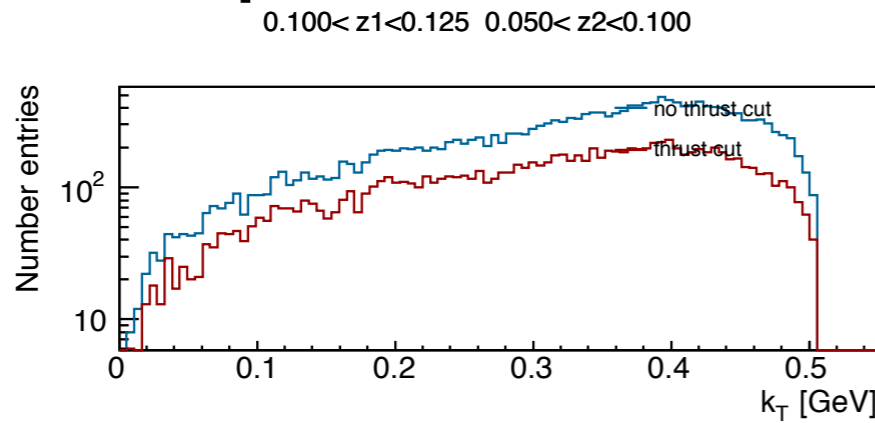


Comparison w & w/o thrust cut

No cut
 $T > 0.8$

cut
 $T > 0.8$

lowest z

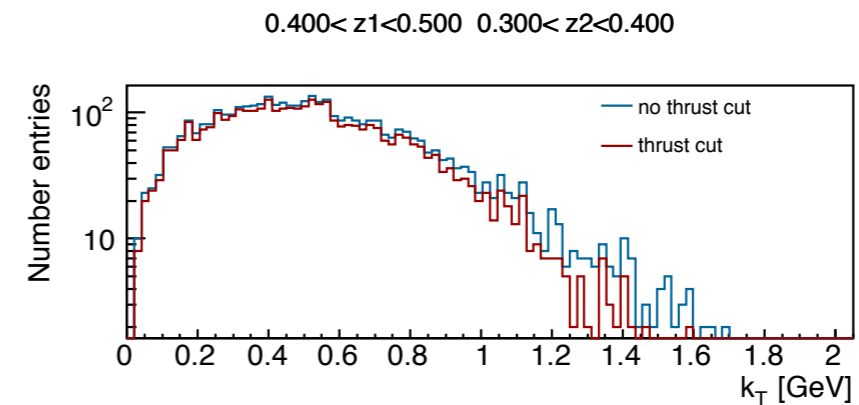
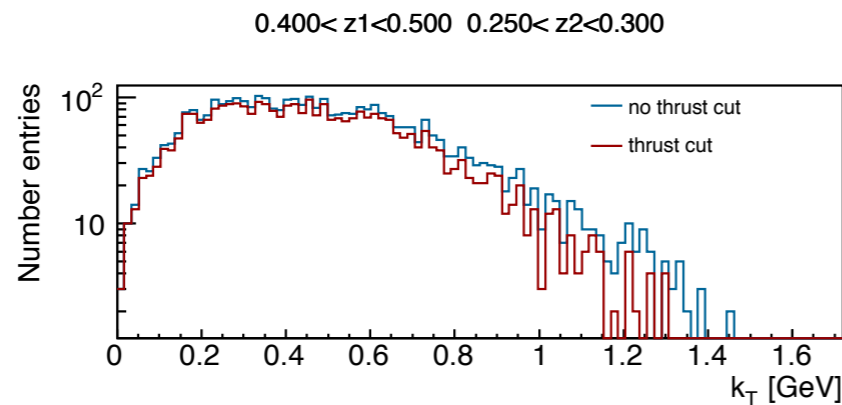
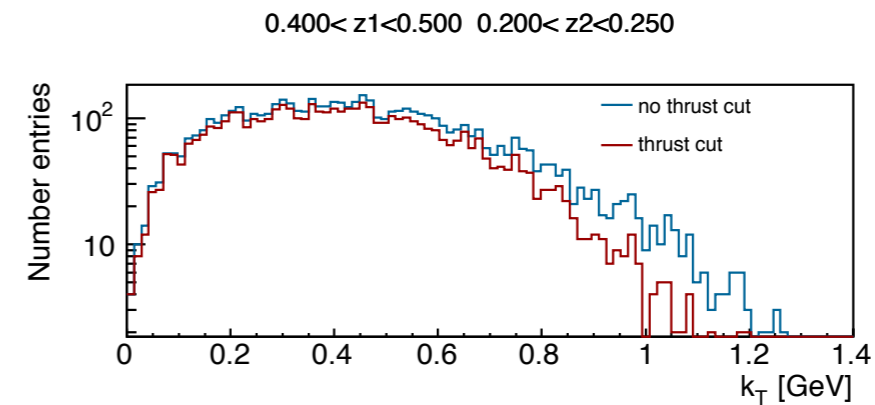
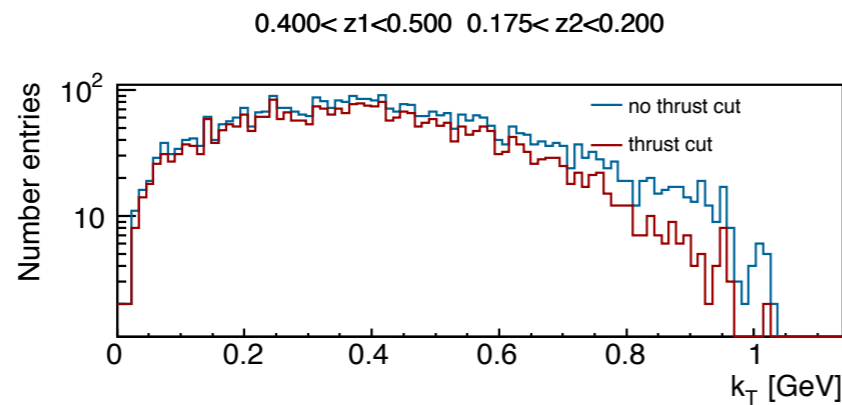
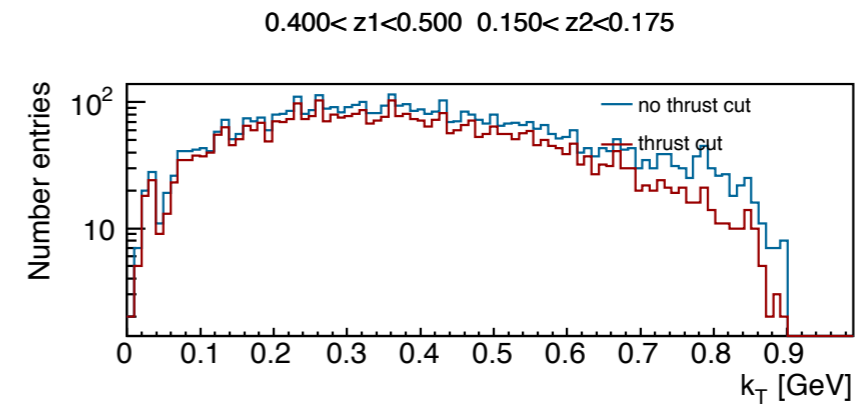
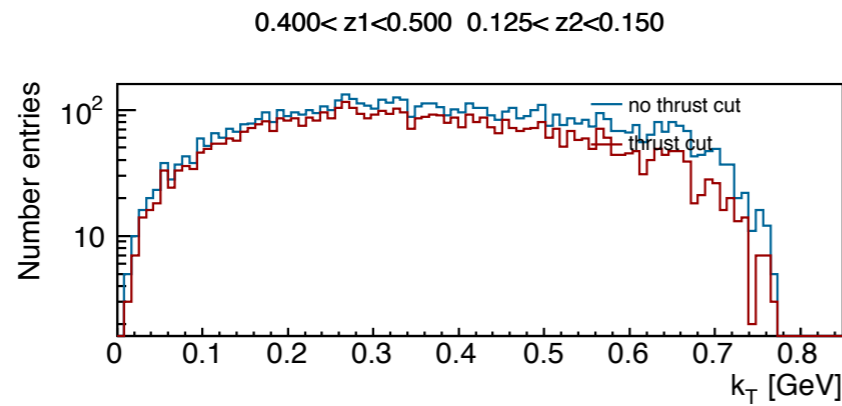
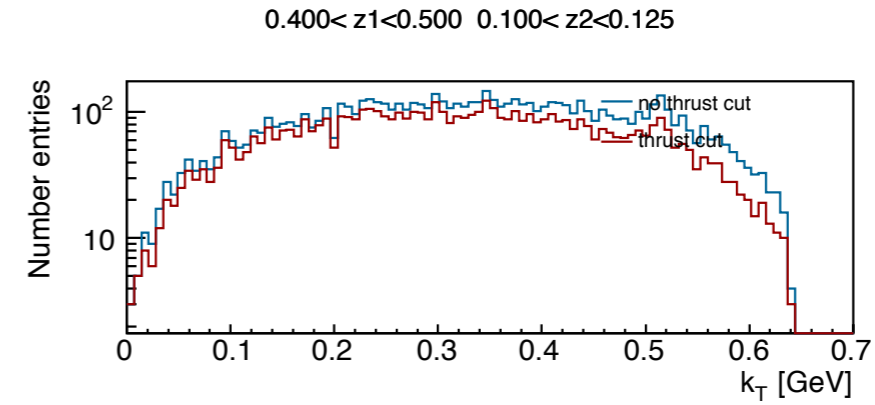
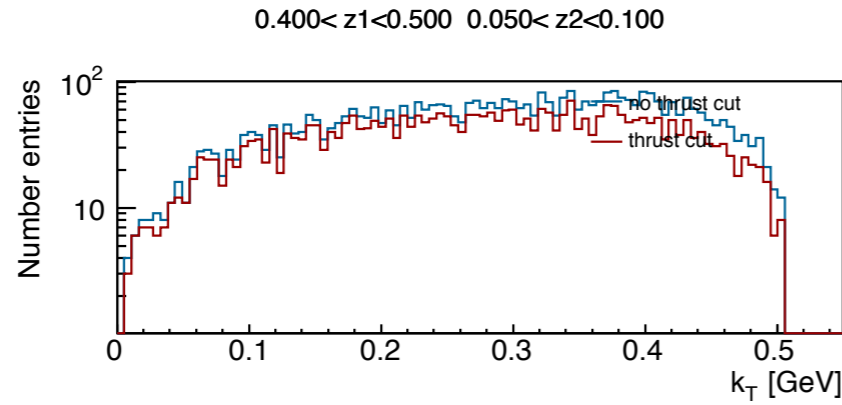


Comparison w & w/o thrust cut

No cut
 $T > 0.8$

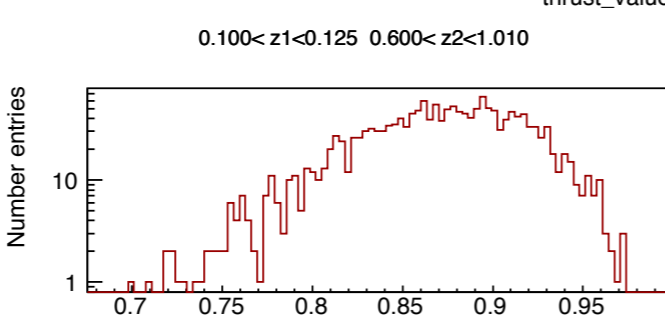
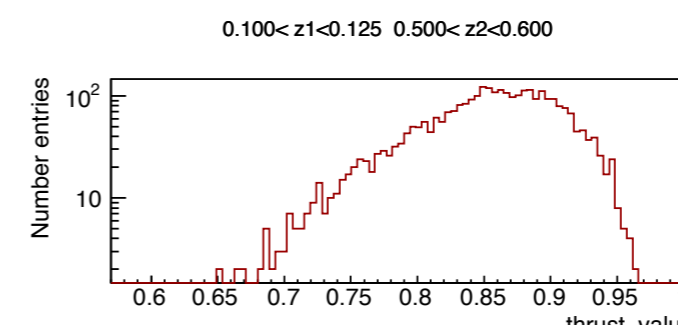
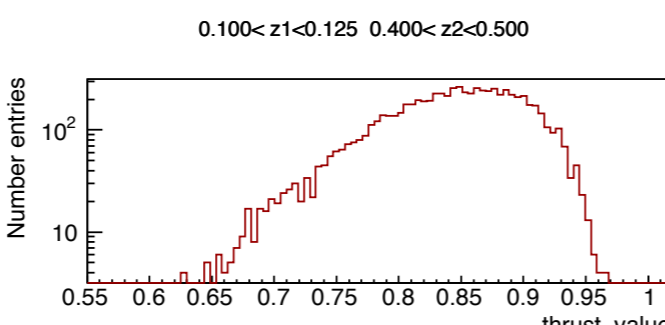
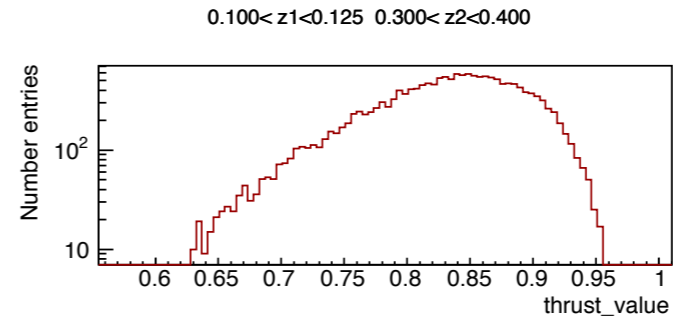
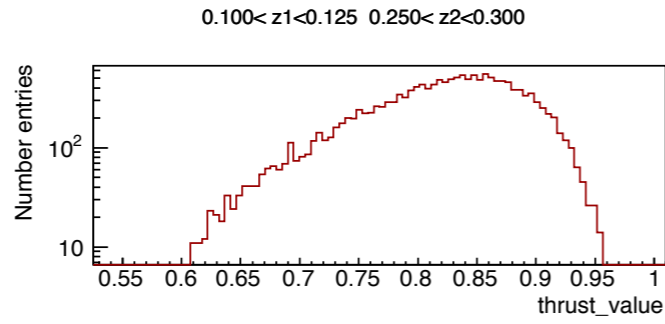
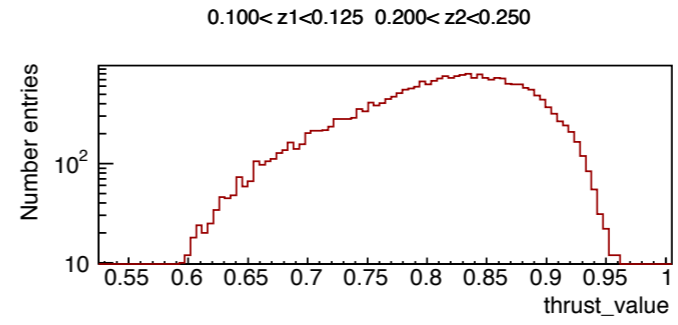
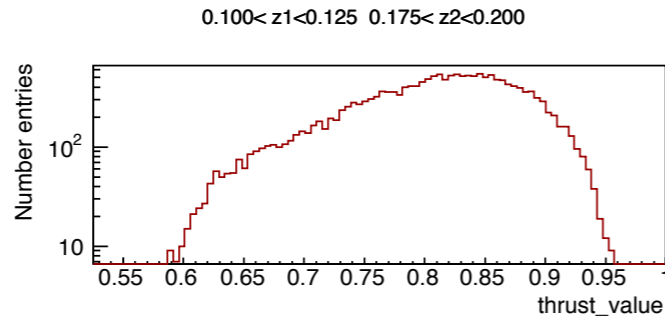
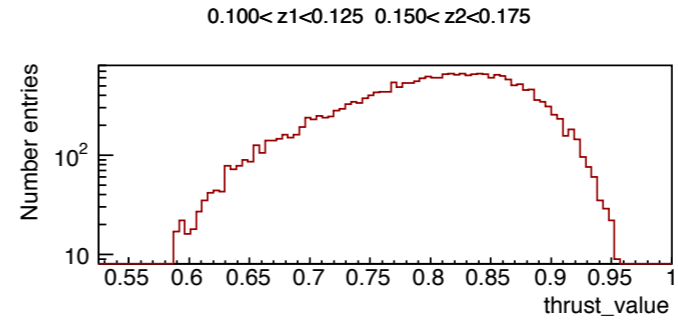
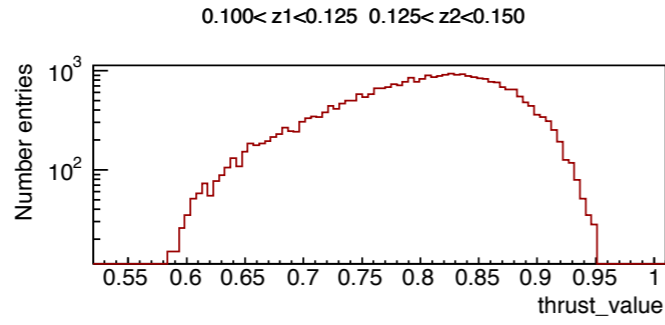
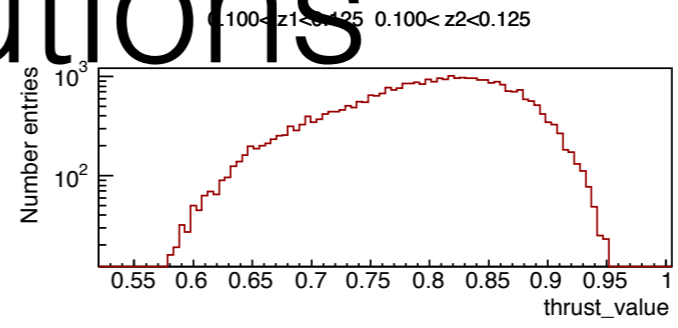
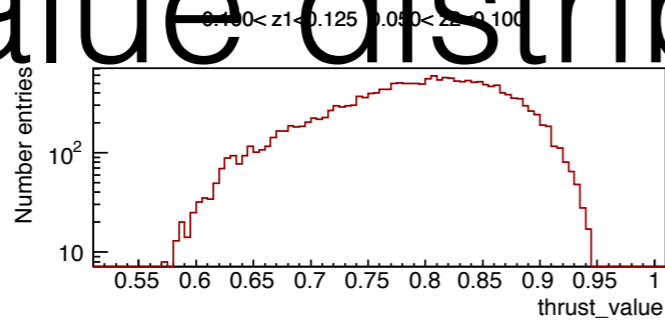
cut
 $T > 0.8$

middle z



Thrust value distributions

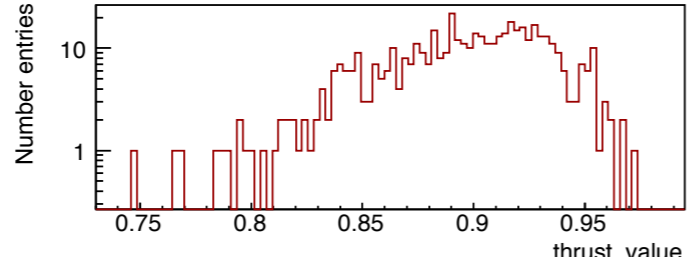
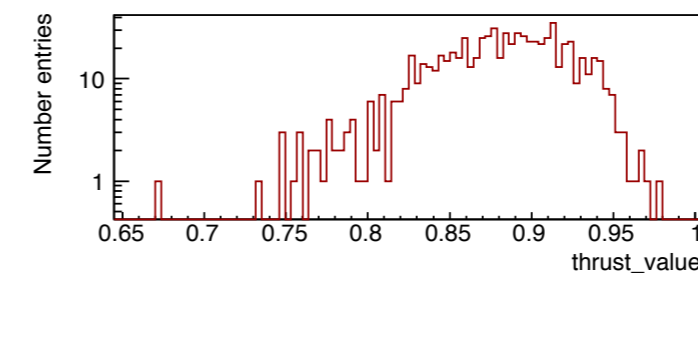
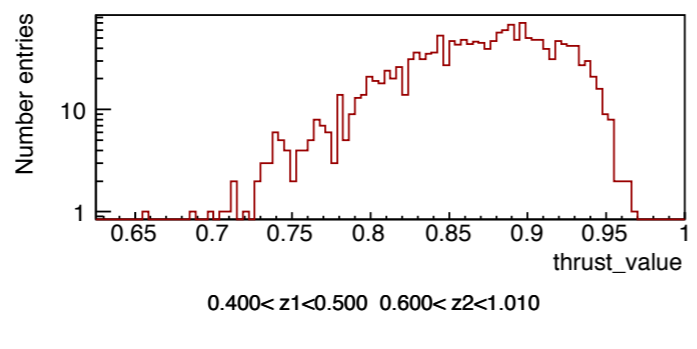
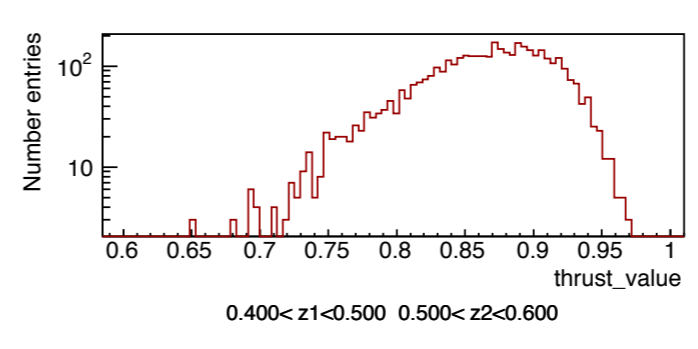
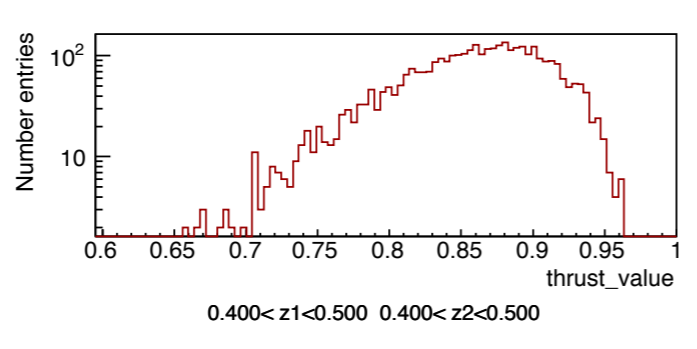
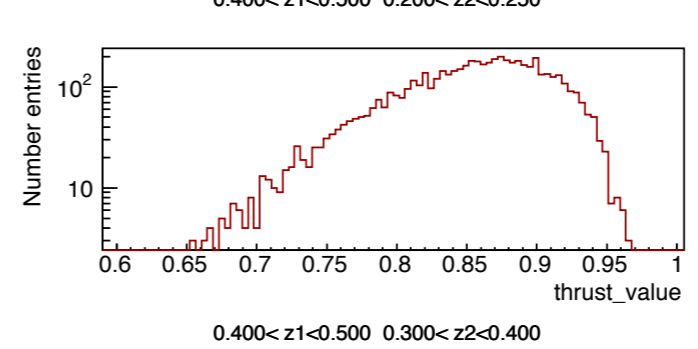
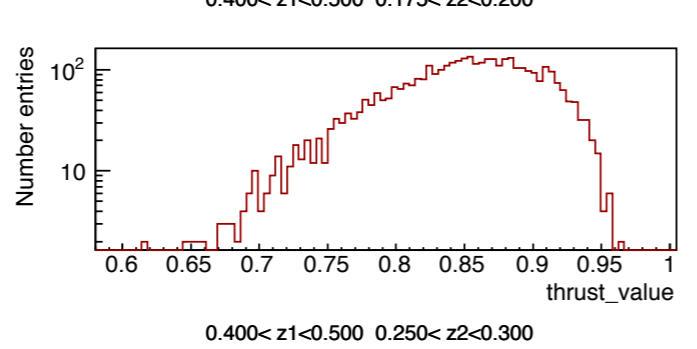
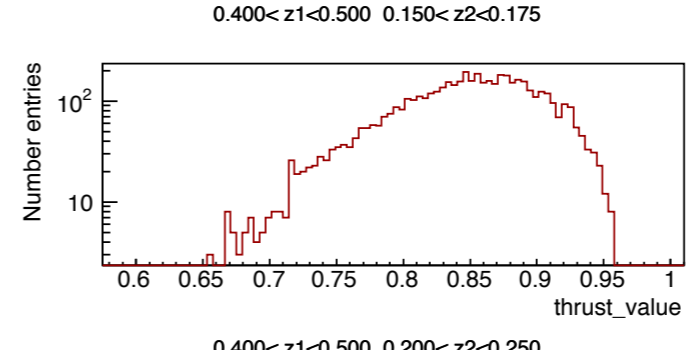
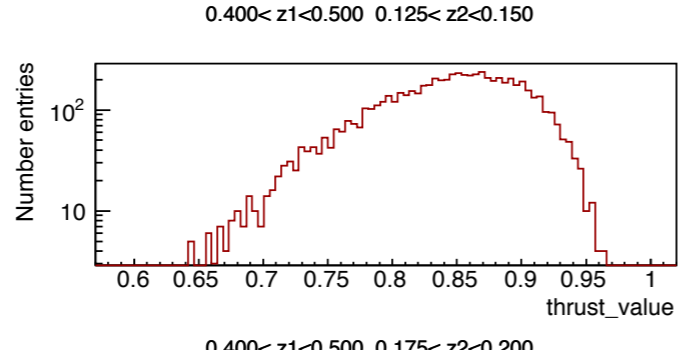
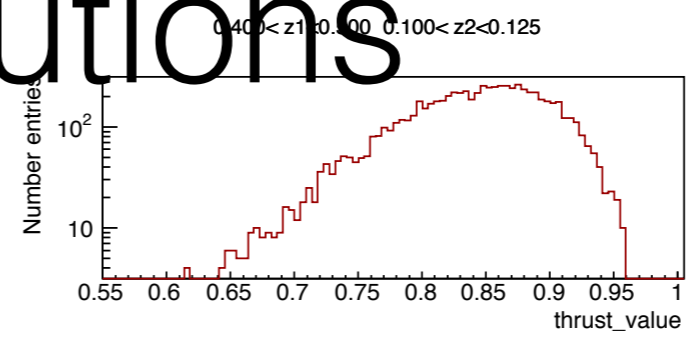
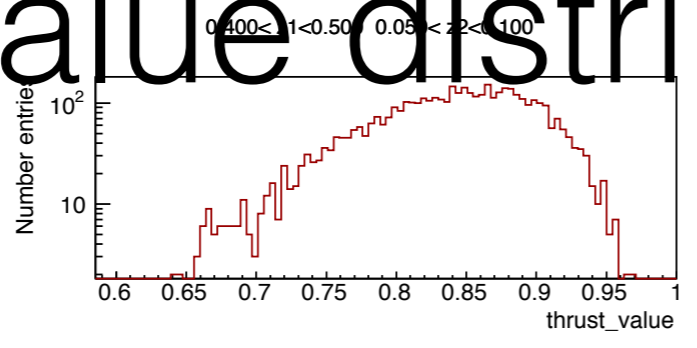
lowest z



Reconstructed Belle Monte Carlo

Thrust value distributions

middle z

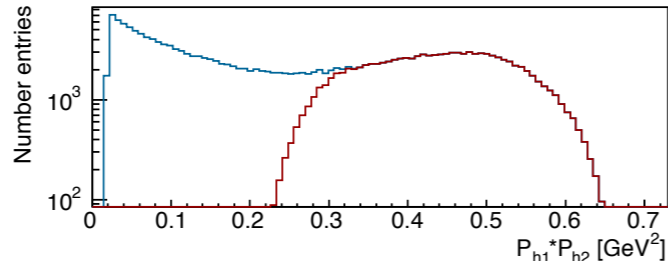


Reconstructed Belle Monte Carlo

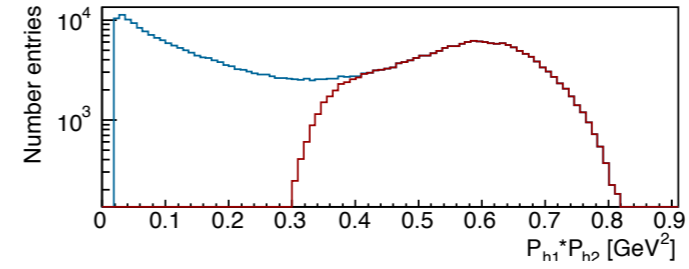
Four-momentum product

lowest z

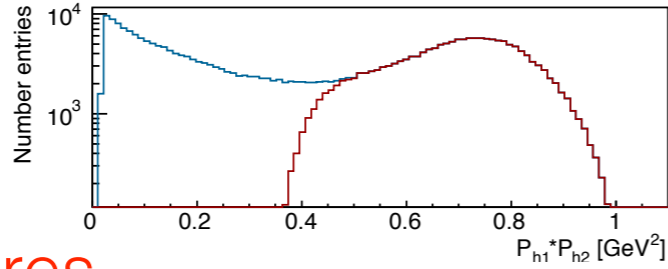
0.100 < z1 < 0.125 0.050 < z2 < 0.100



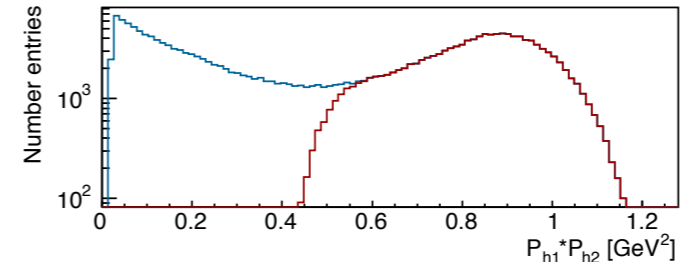
0.100 < z1 < 0.125 0.100 < z2 < 0.125



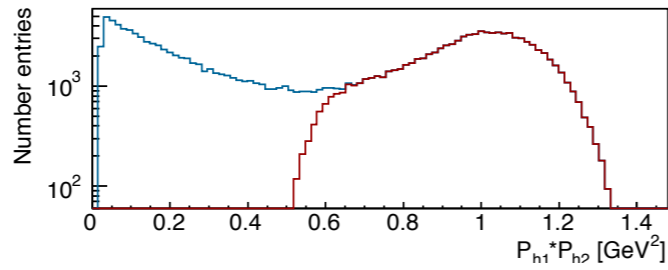
0.100 < z1 < 0.125 0.125 < z2 < 0.150



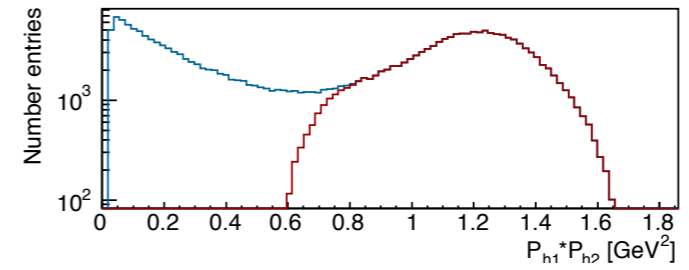
0.100 < z1 < 0.125 0.150 < z2 < 0.175



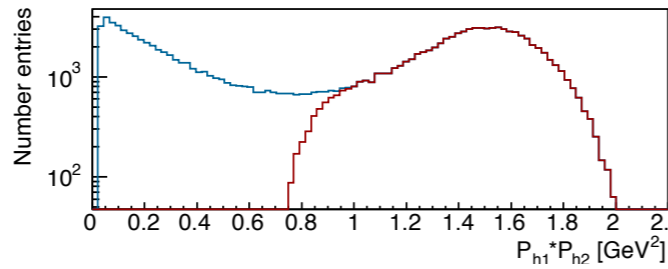
0.100 < z1 < 0.125 0.175 < z2 < 0.200



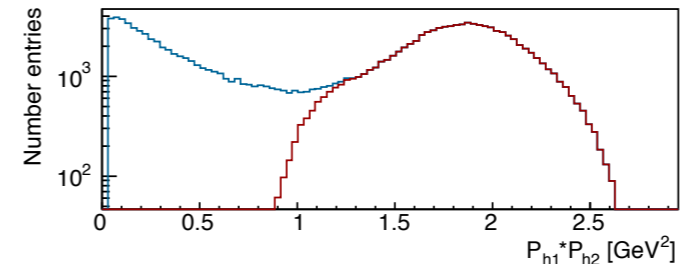
0.100 < z1 < 0.125 0.200 < z2 < 0.250



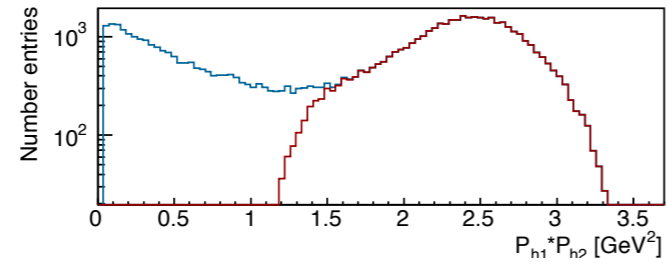
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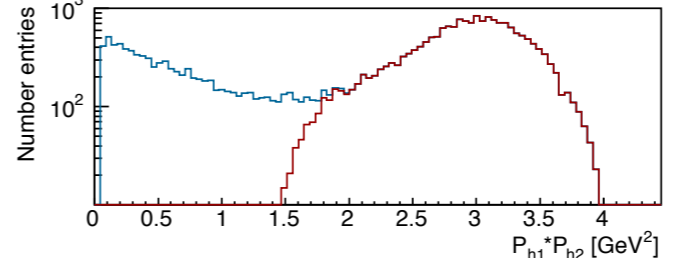
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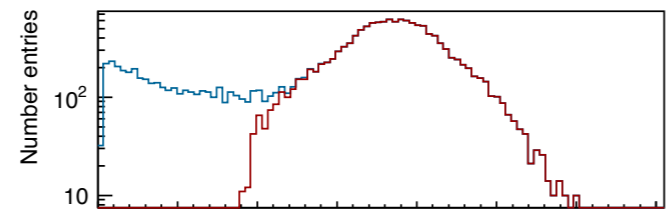
0.100 < z1 < 0.125 0.400 < z2 < 0.500



0.100 < z1 < 0.125 0.500 < z2 < 0.600



0.100 < z1 < 0.125 0.600 < z2 < 1.100



any hemisphere
opposite hemispheres

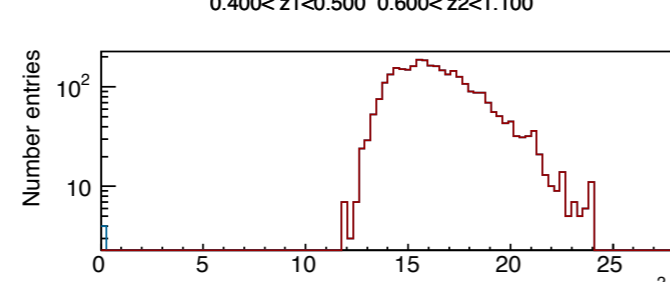
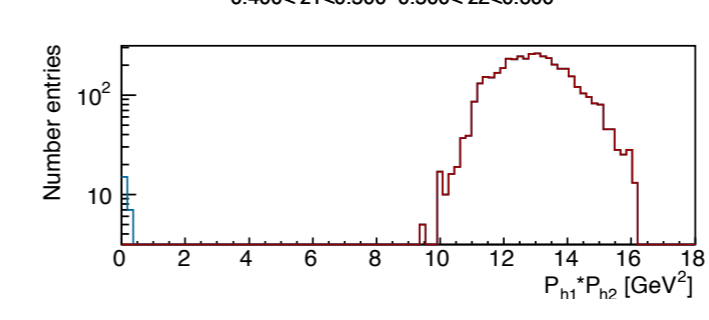
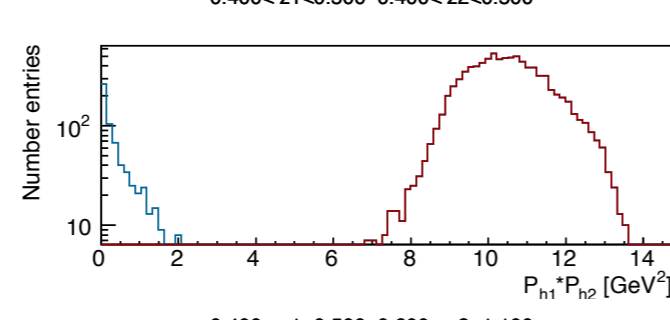
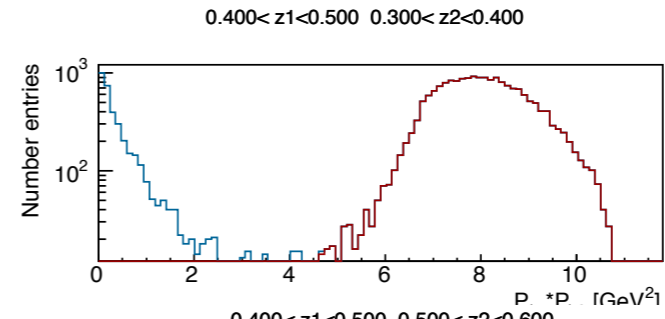
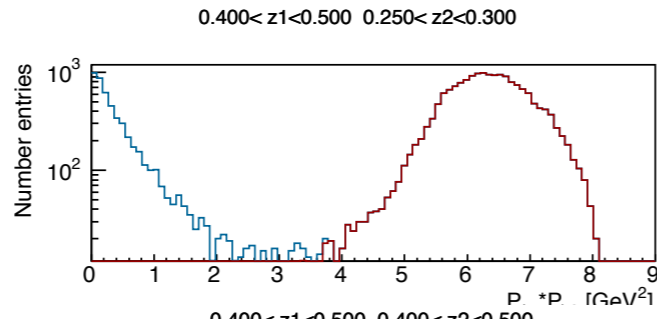
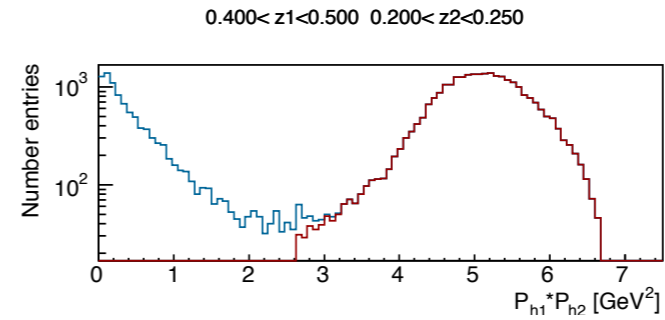
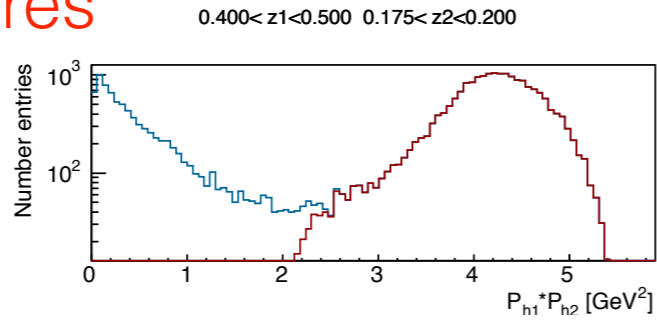
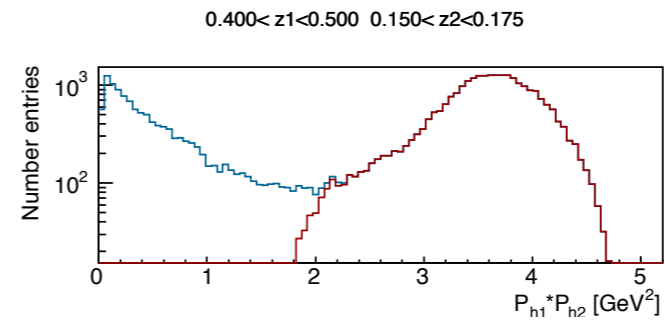
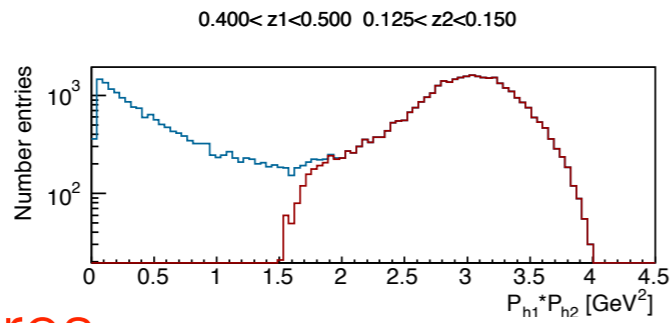
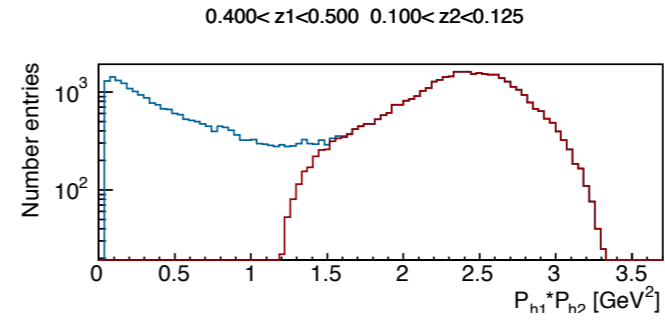
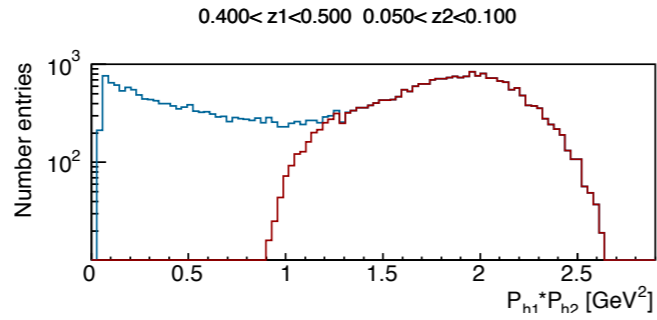
Reconstructed Belle Monte Carlo

Four-momentum product

middle z

any hemisphere

opposite hemispheres



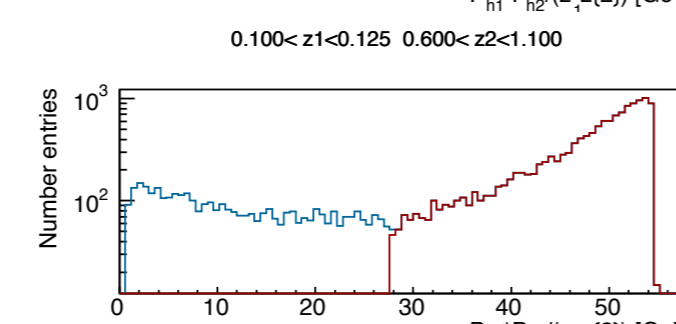
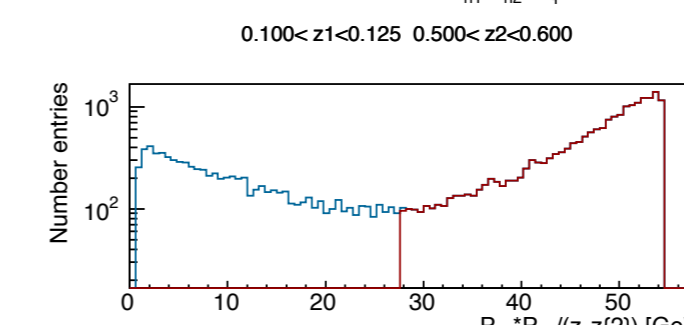
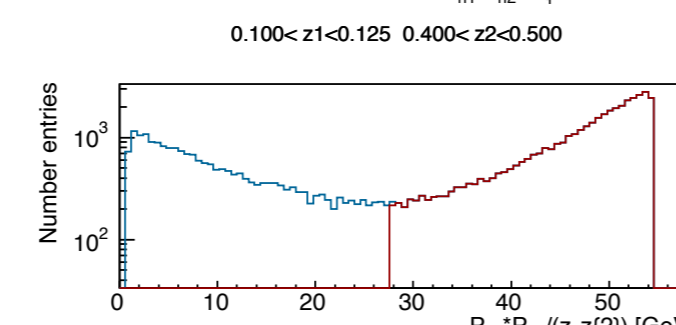
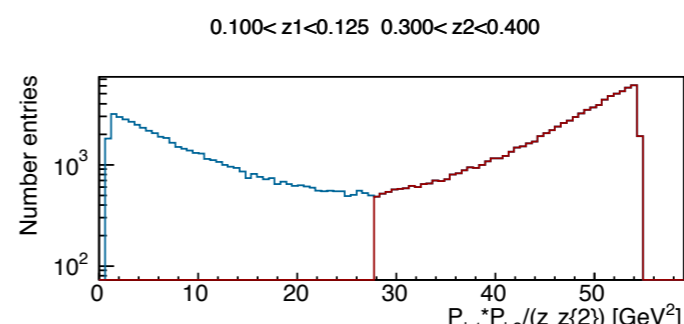
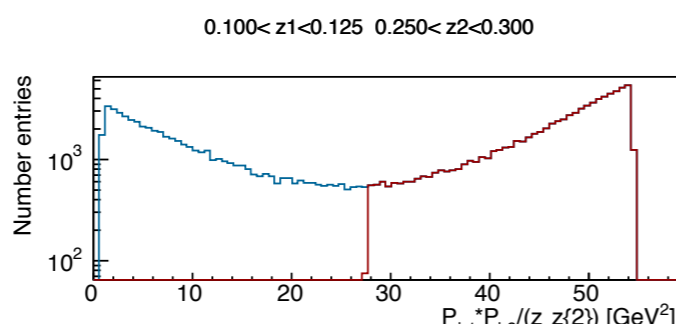
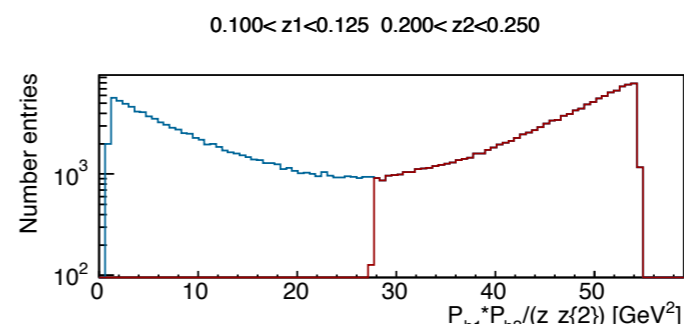
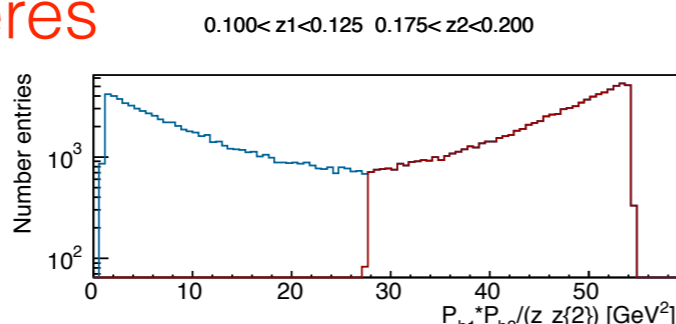
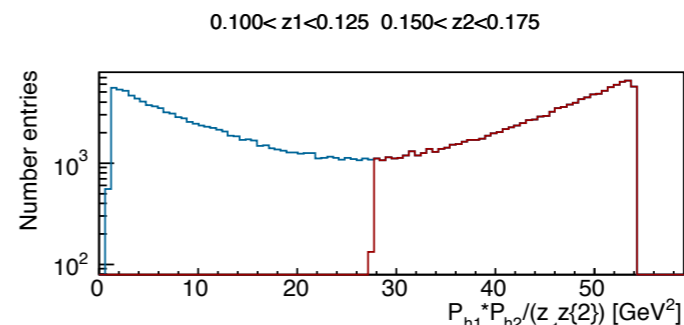
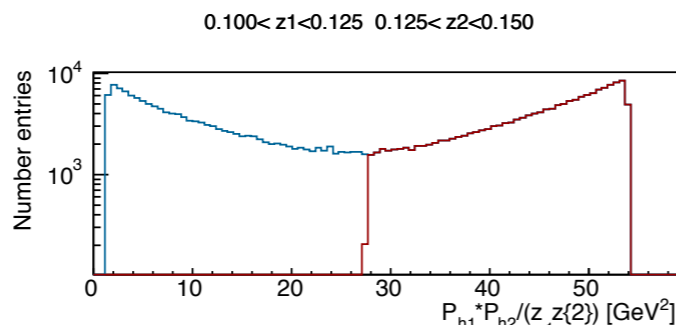
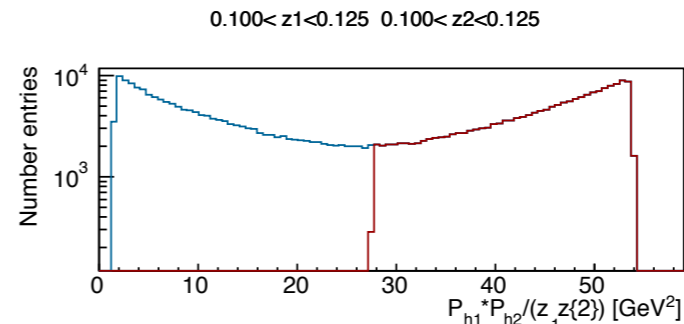
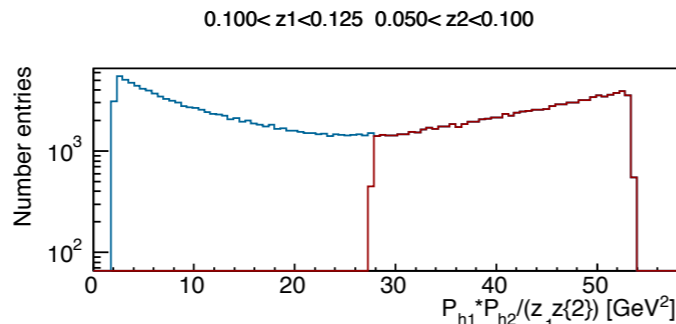
Reconstructed Belle Monte Carlo

$$\frac{P_{h1} \cdot P_{h2}}{z_1 z_2}$$

lowest z

any hemisphere

opposite hemispheres



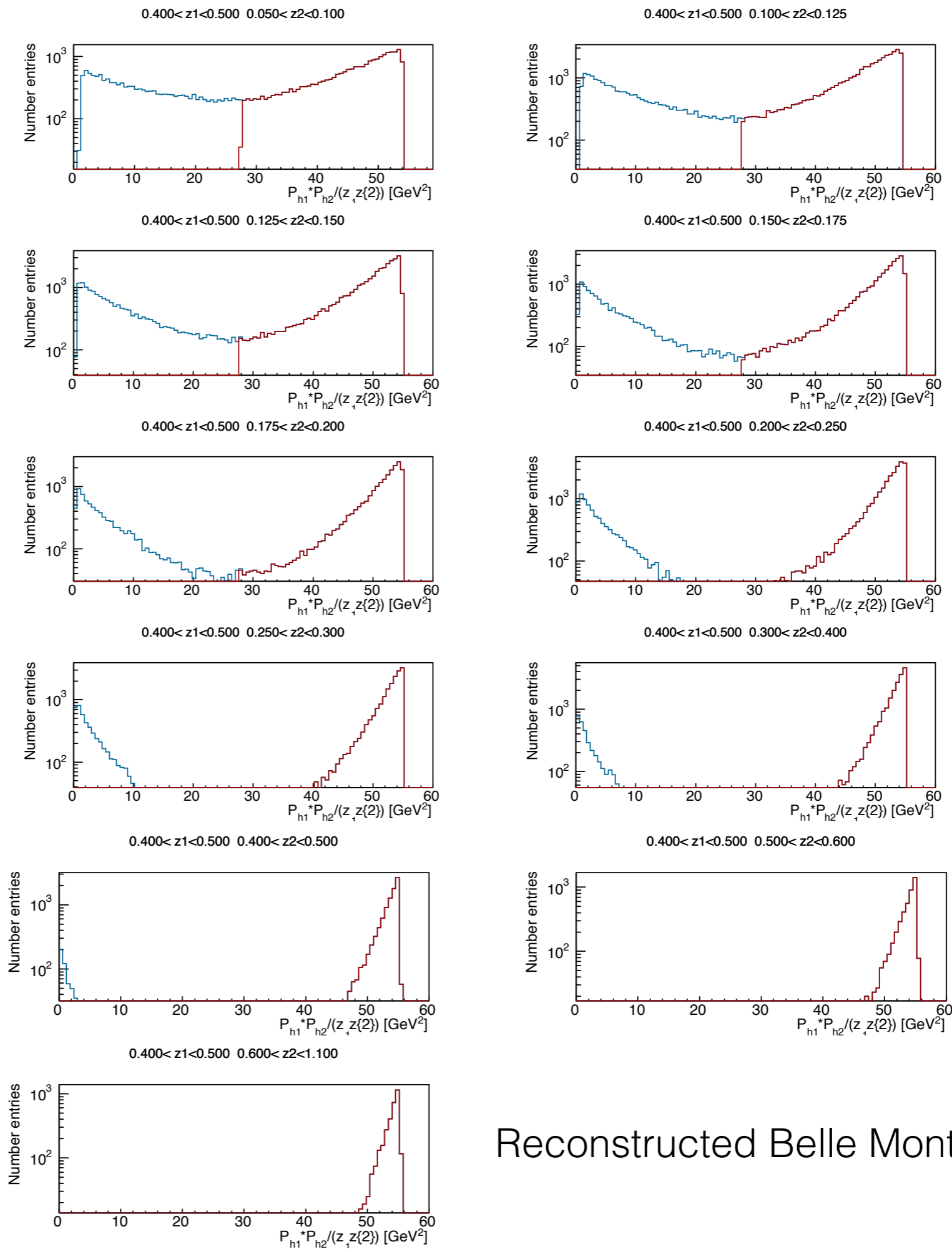
Reconstructed Belle Monte Carlo

$$\frac{P_{h1} \cdot P_{h2}}{z_1 z_2}$$

middle z

any hemisphere

opposite hemispheres



Reconstructed Belle Monte Carlo