

Analysis of $\eta' \pi^0$, $\eta' \rightarrow \pi^+ \pi^- \gamma$ $\pi^0 \rightarrow \gamma \gamma$

Florida International University 2021

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Analysis of $\eta' \pi^0$, $\eta' \rightarrow \pi^+ \pi^- \gamma$ $\pi^0 \rightarrow \gamma \gamma$ Spring 2018 data

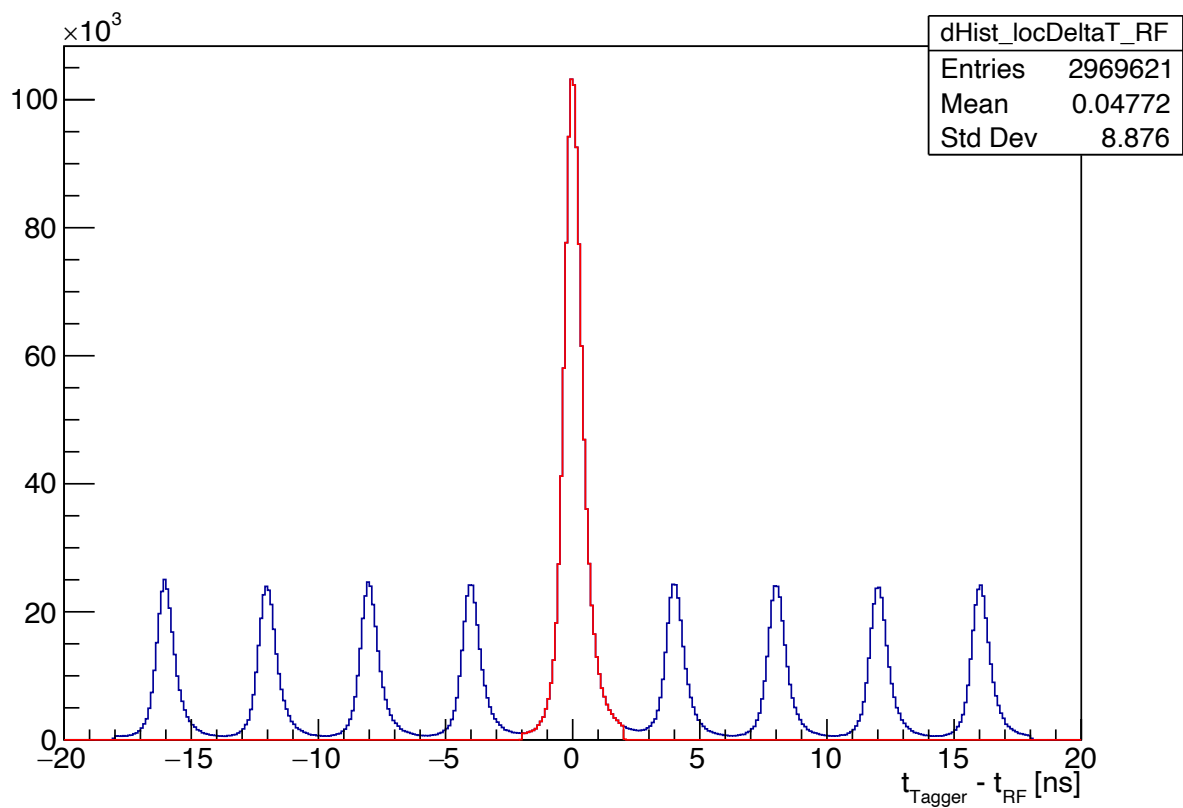
Reaction selection cuts

1. Kin. Fit. Conf. level $> 10^{-5}$
2. $|MM^2| < 0.05 \text{ (GeV/c}^2\text{)}^2$
3. FCAL showerquality > 0.5
4. $E_{\text{beam}} \text{ 8.2-2.2 GeV}$
5. $N_{\text{unused_showers}} = 0$
6. $E_{\text{unused_showers}} = 0$
7. $|E_{\text{miss}}| < 1 \text{ GeV}$
8. $p_{\text{vert}}^{\perp} < 1 \text{ cm}$ $50 \text{ cm} < p_{\text{vert}}^z < 80 \text{ cm}$
9. If combo has been used with particles in it
10. $|t_{\text{RF}} - t_{\text{Tagger}}| < 2 \text{ ns}$
11. Linear cut on Dalitz plot

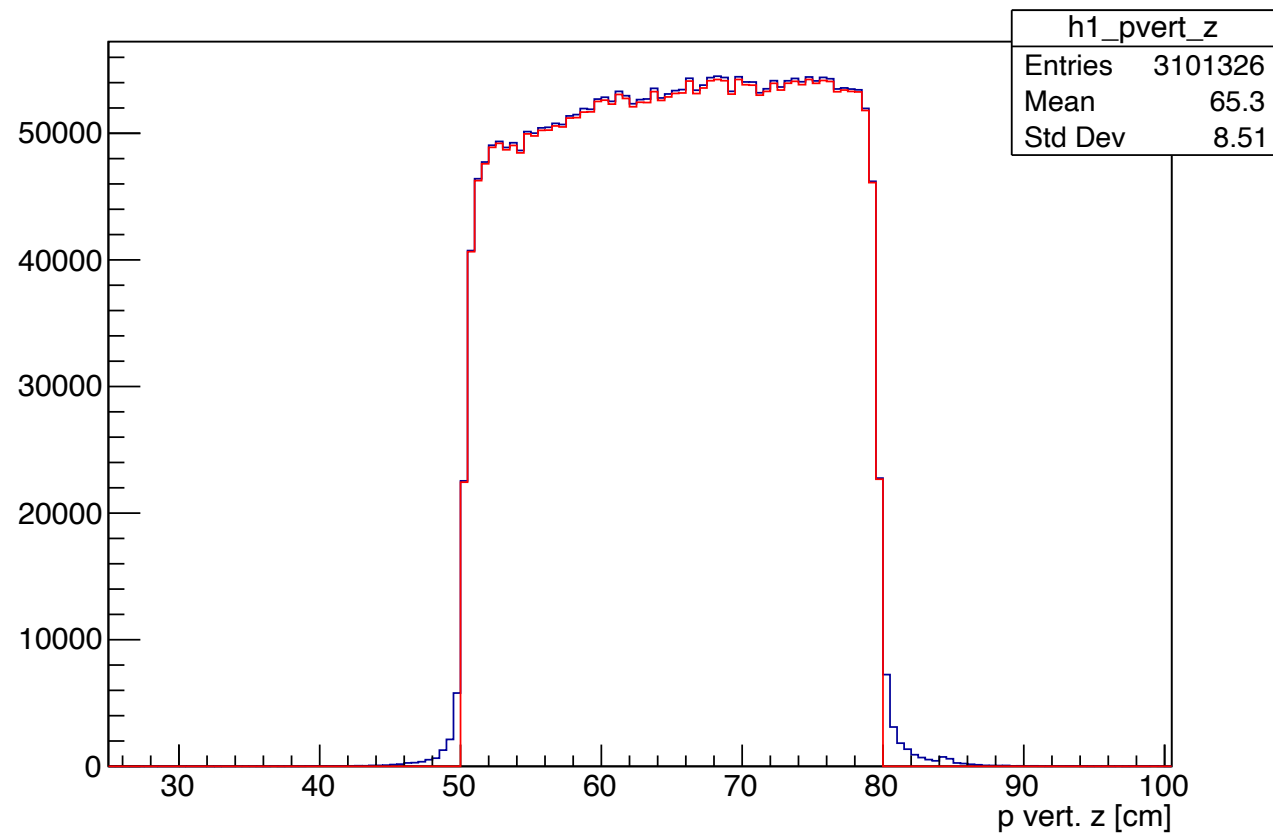
Cuts to be applied

1. t cut
2. Selecting events with one combo

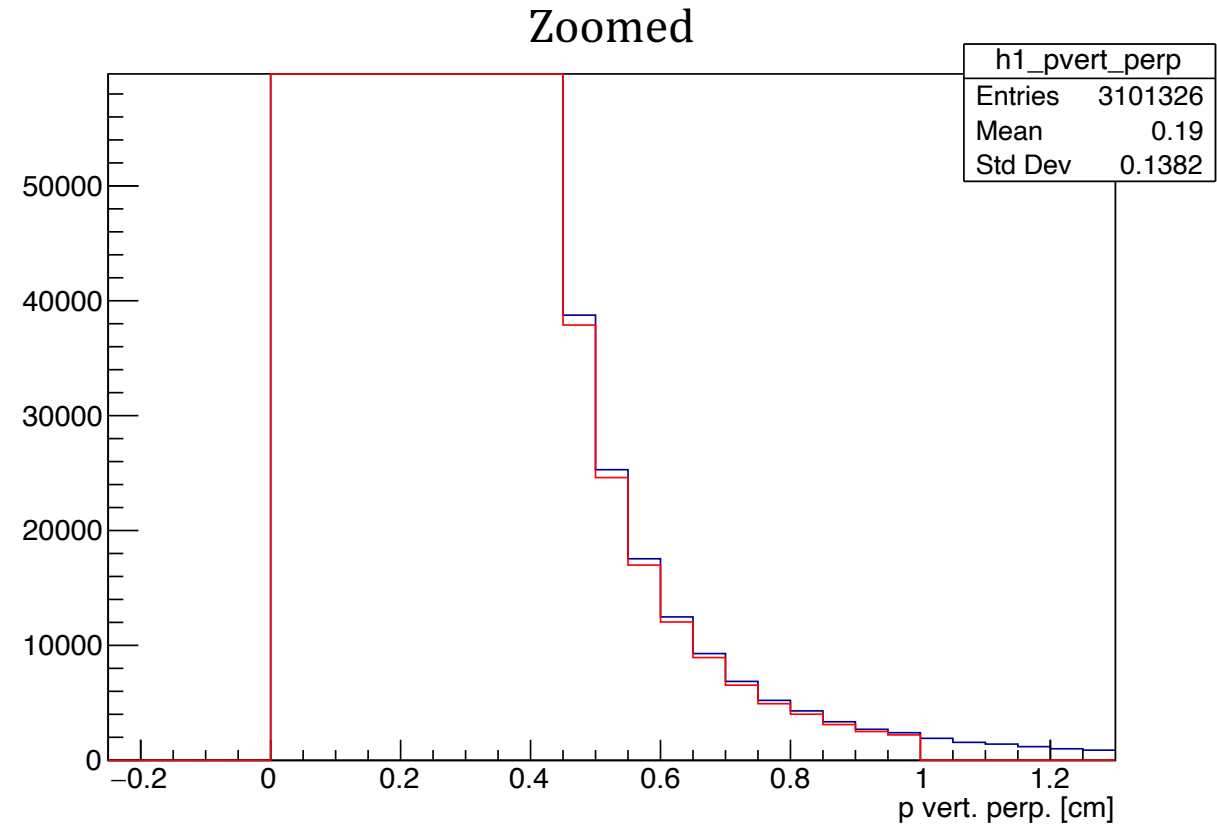
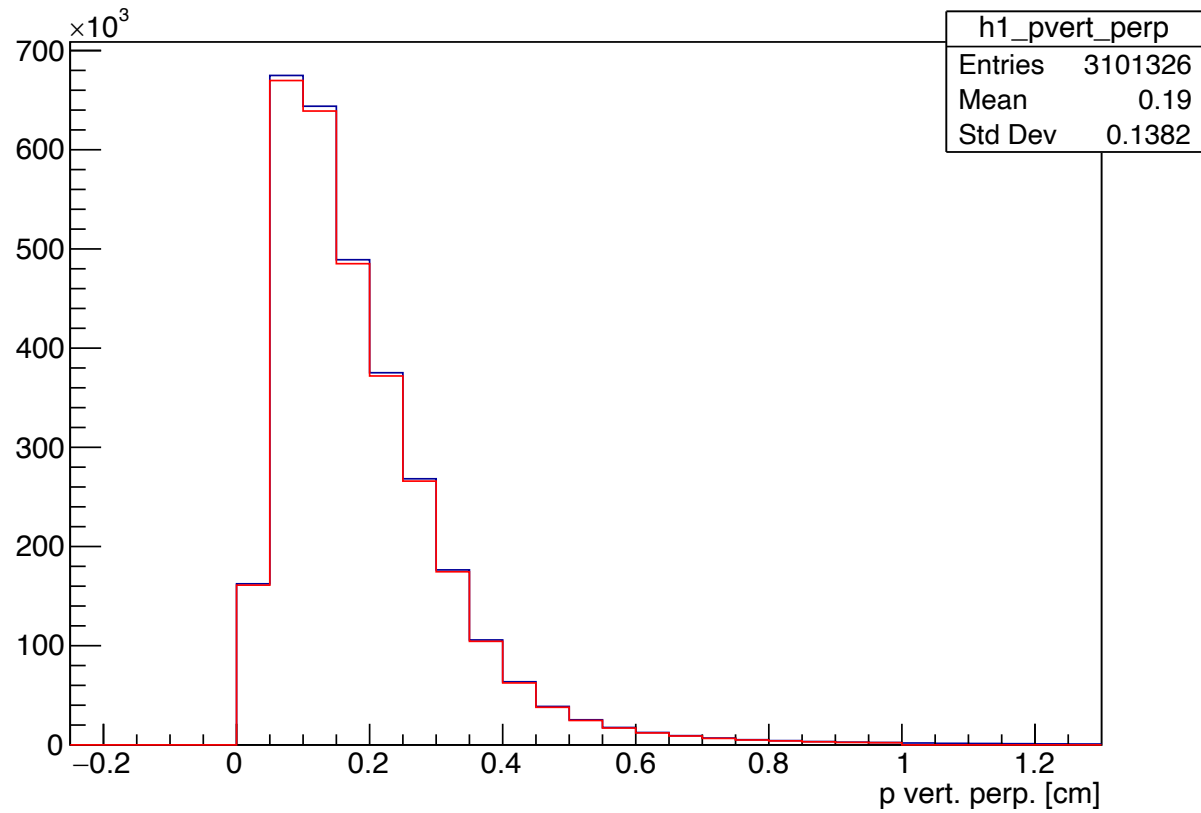
$$|t_{\text{RF}} - t_{\text{Tagger}}| < 2 \text{ ns}$$



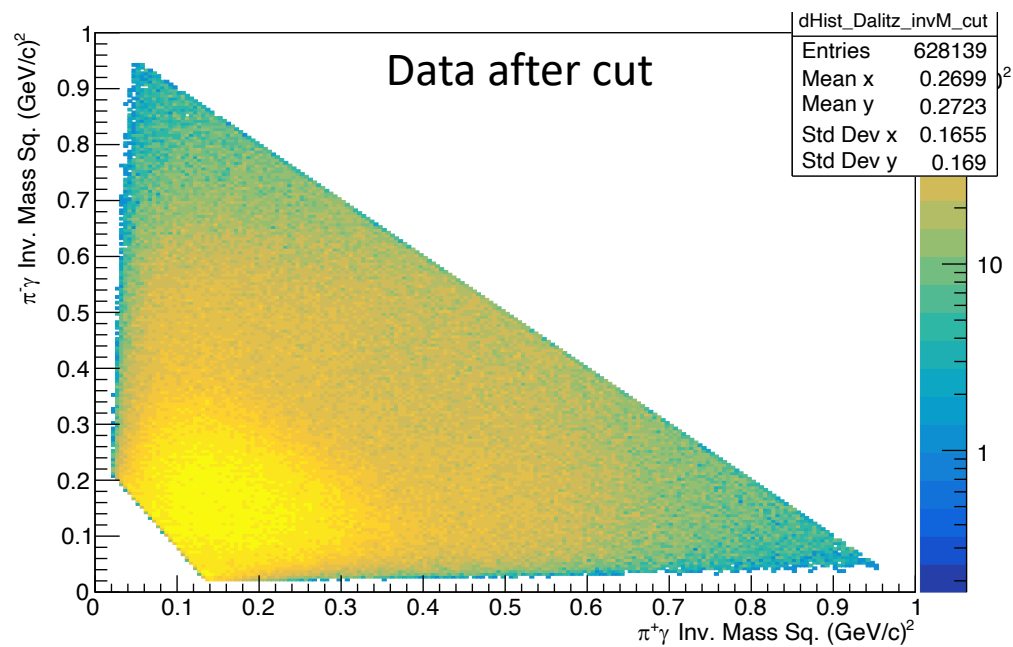
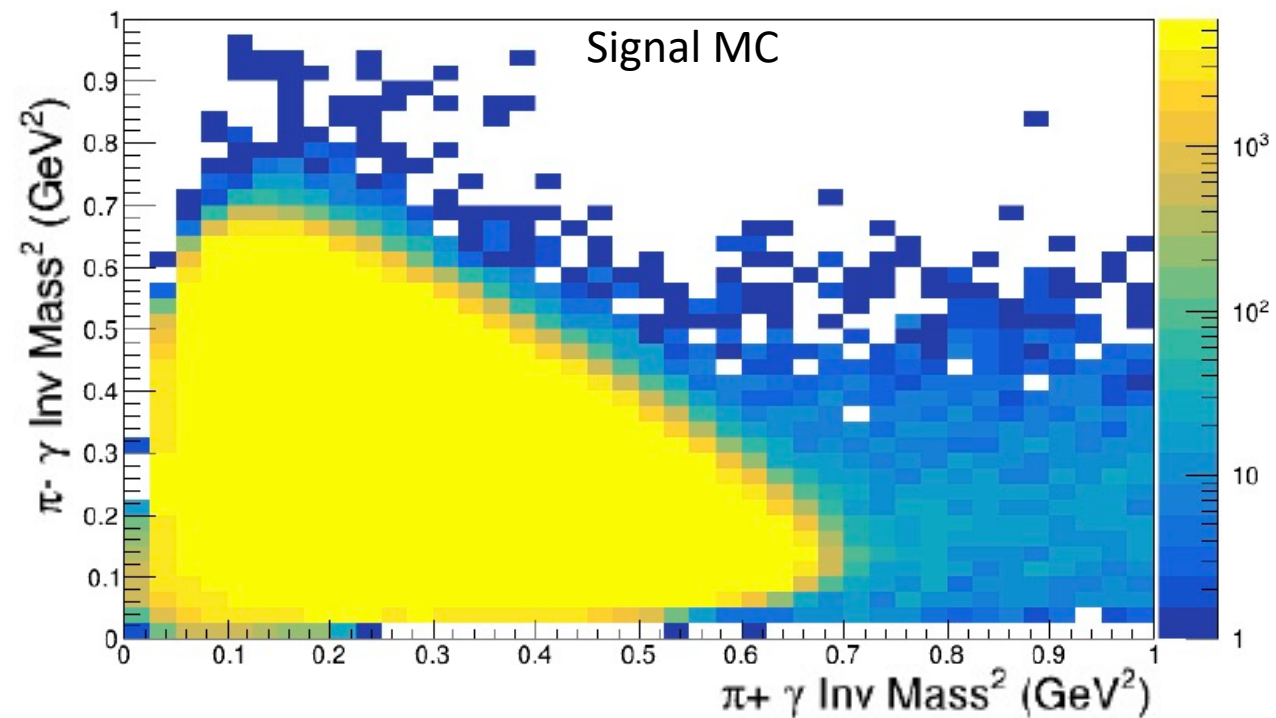
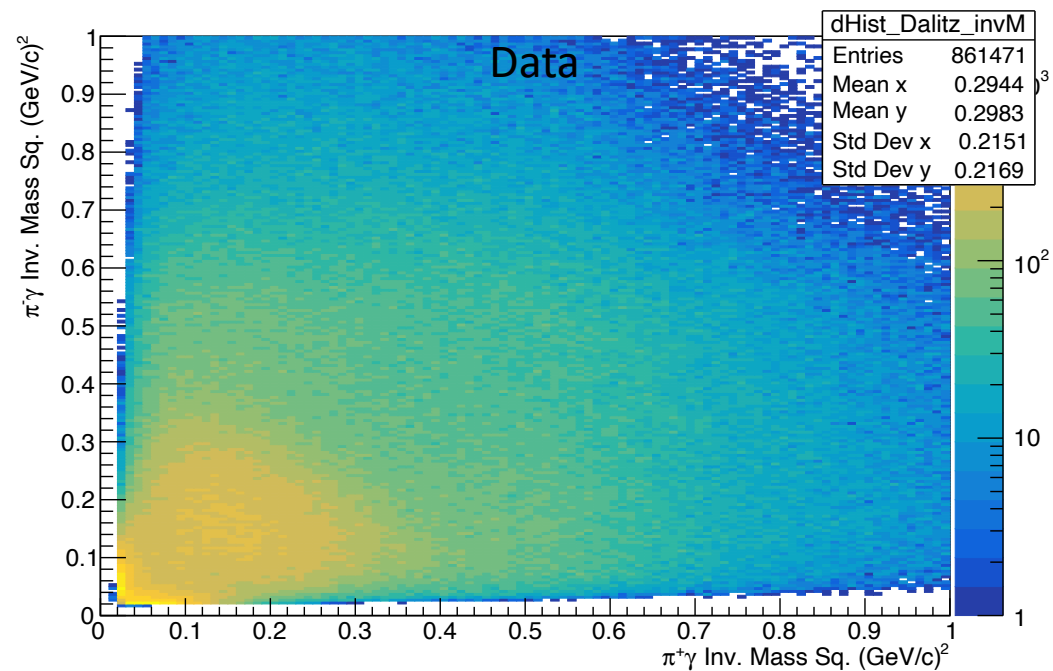
$$50 \text{ cm} < p_{\text{vert}}^z < 80 \text{ cm}$$



$p_{\text{vert}}^{\perp} < 1 \text{ cm}$



Linear cut on Dalitz plot



Invariant mass distributions after all the cuts

