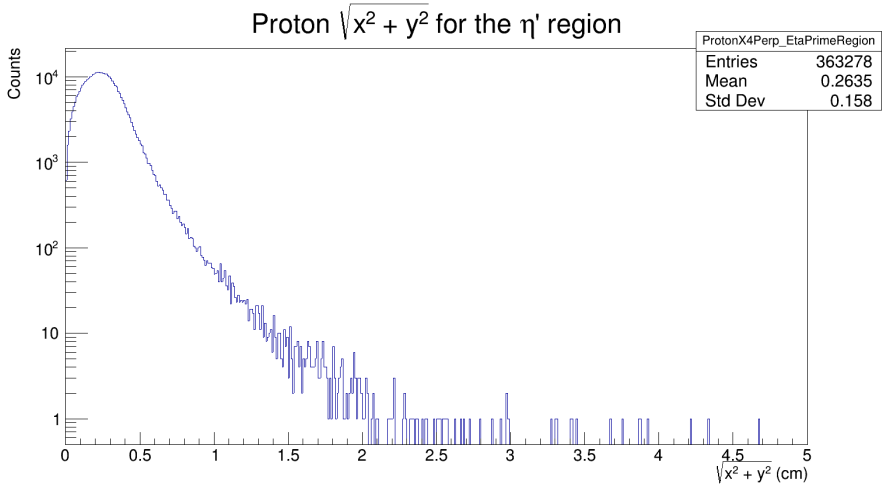
Vertex cut studies using the $\eta\pi\pi$ final states

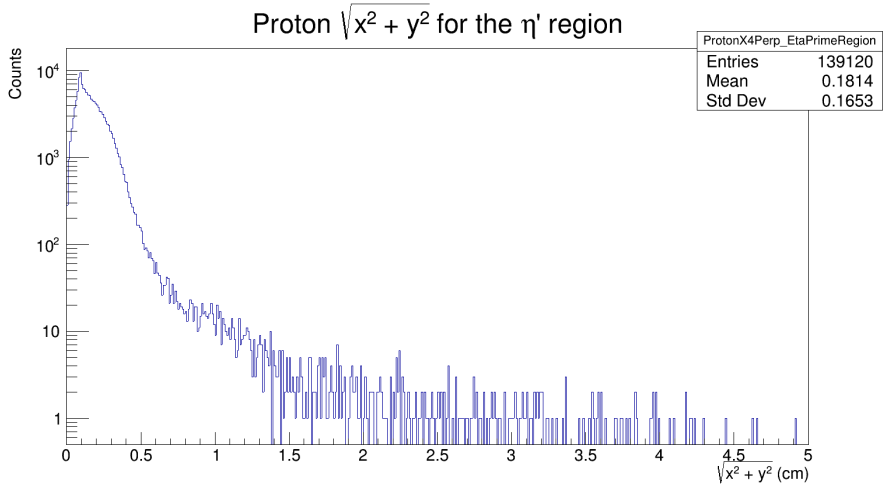
University of Athens

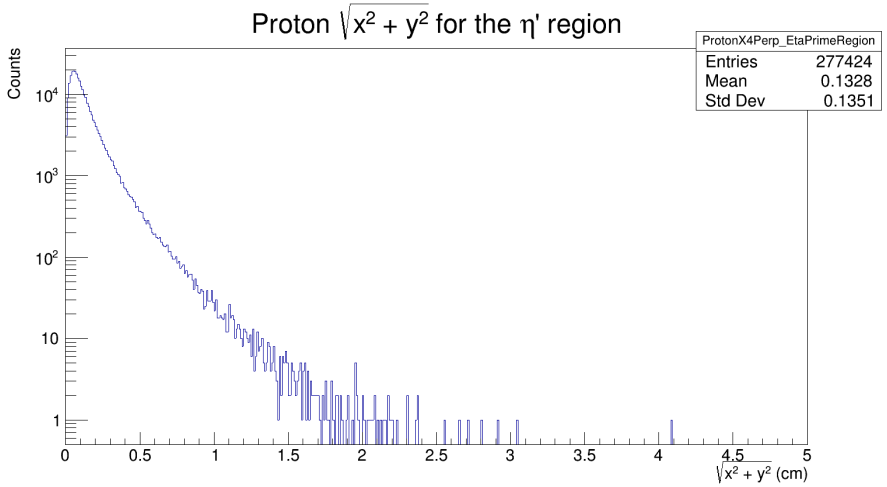
June 18th, 2020

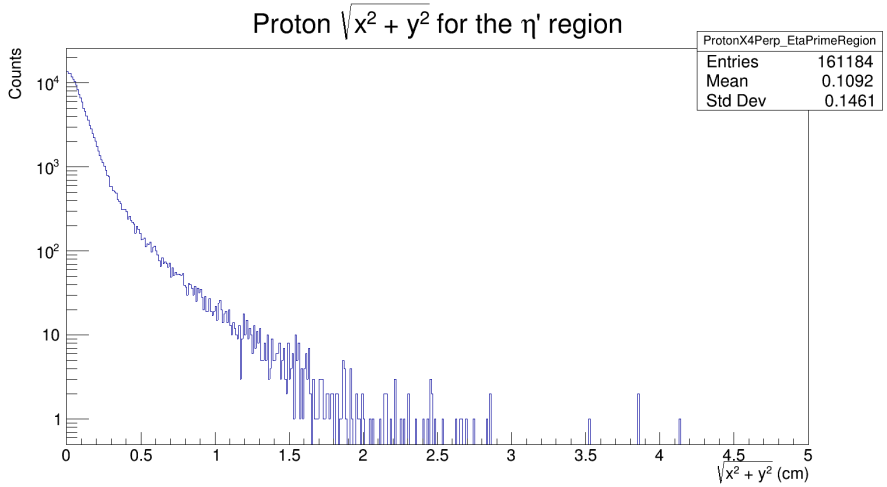
Vertex radial DOCA histograms

Proton radial DOCA



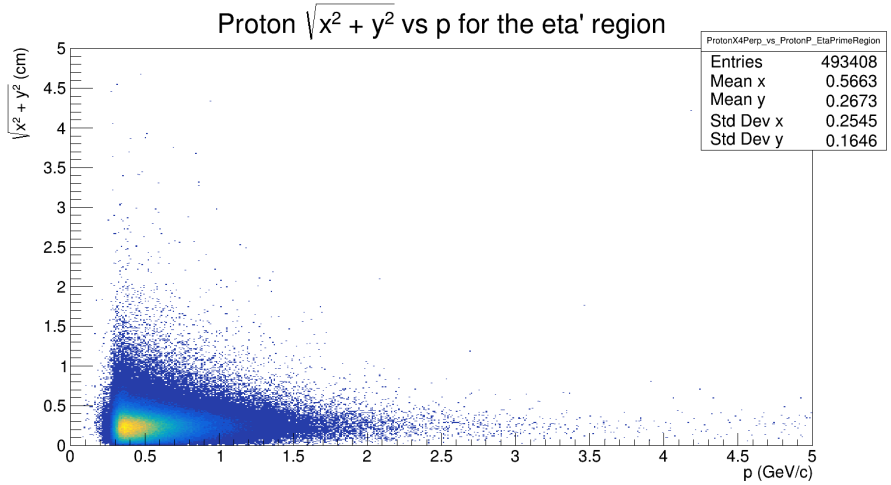


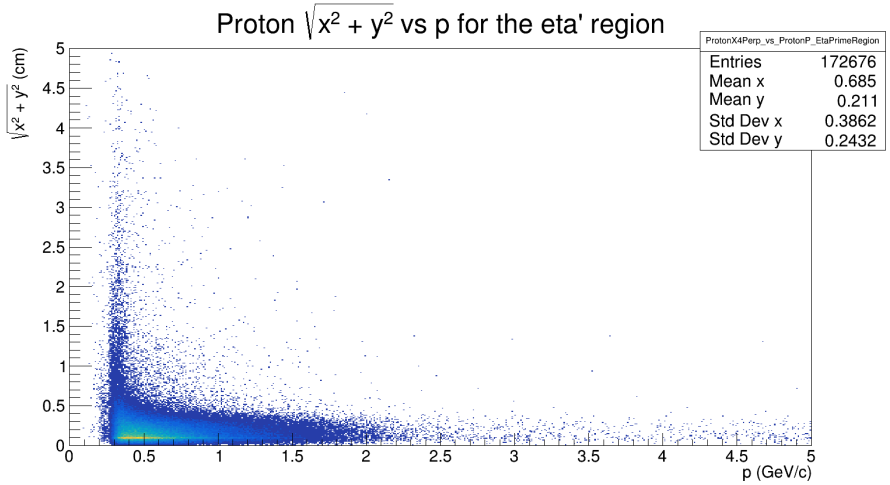


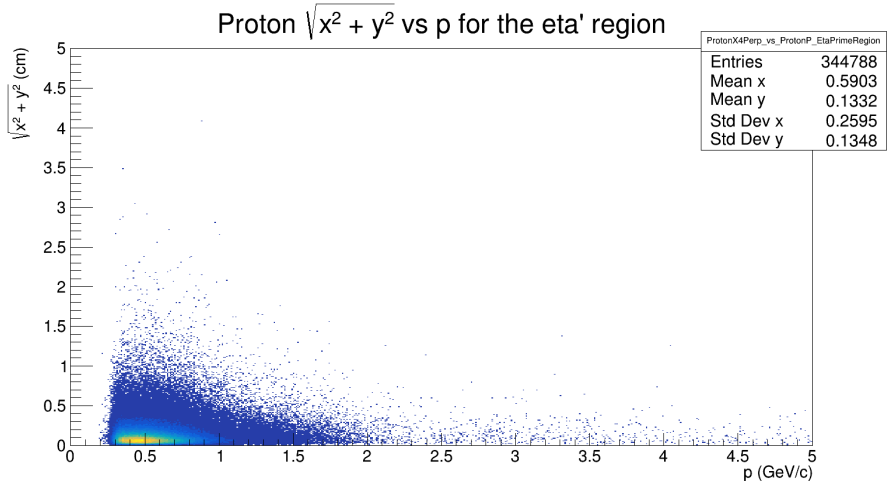


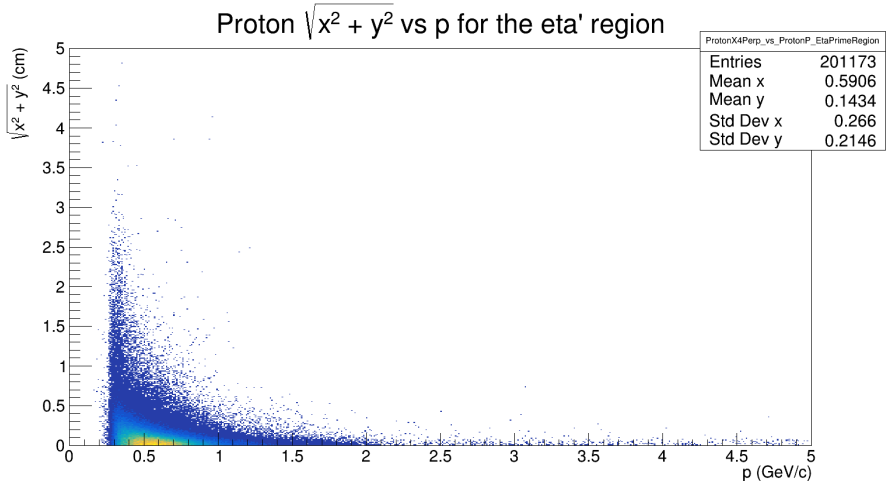
- **Top row**: Data, **Bottom row**: MC, **Left Column**: $\eta\pi^+\pi^-$, **Right Column**: $\eta\pi^0\pi^0$

Proton radial DOCA vs proton momentum





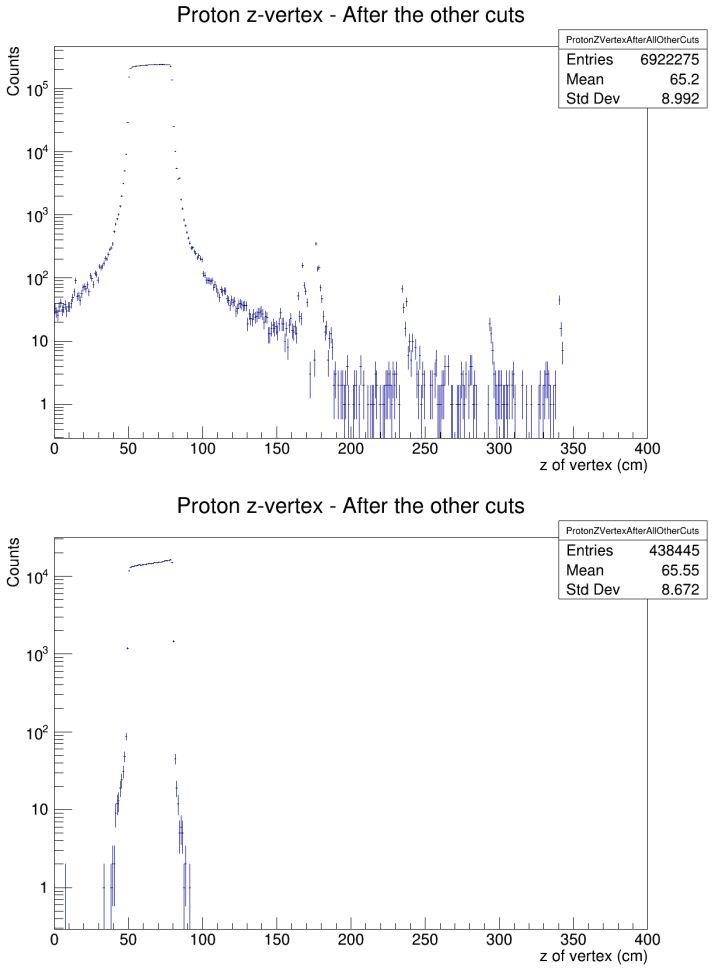




- **Top row**: Data, **Bottom row**: MC, **Left Column**: $\eta\pi^+\pi^-$, **Right Column**: $\eta\pi^0\pi^0$

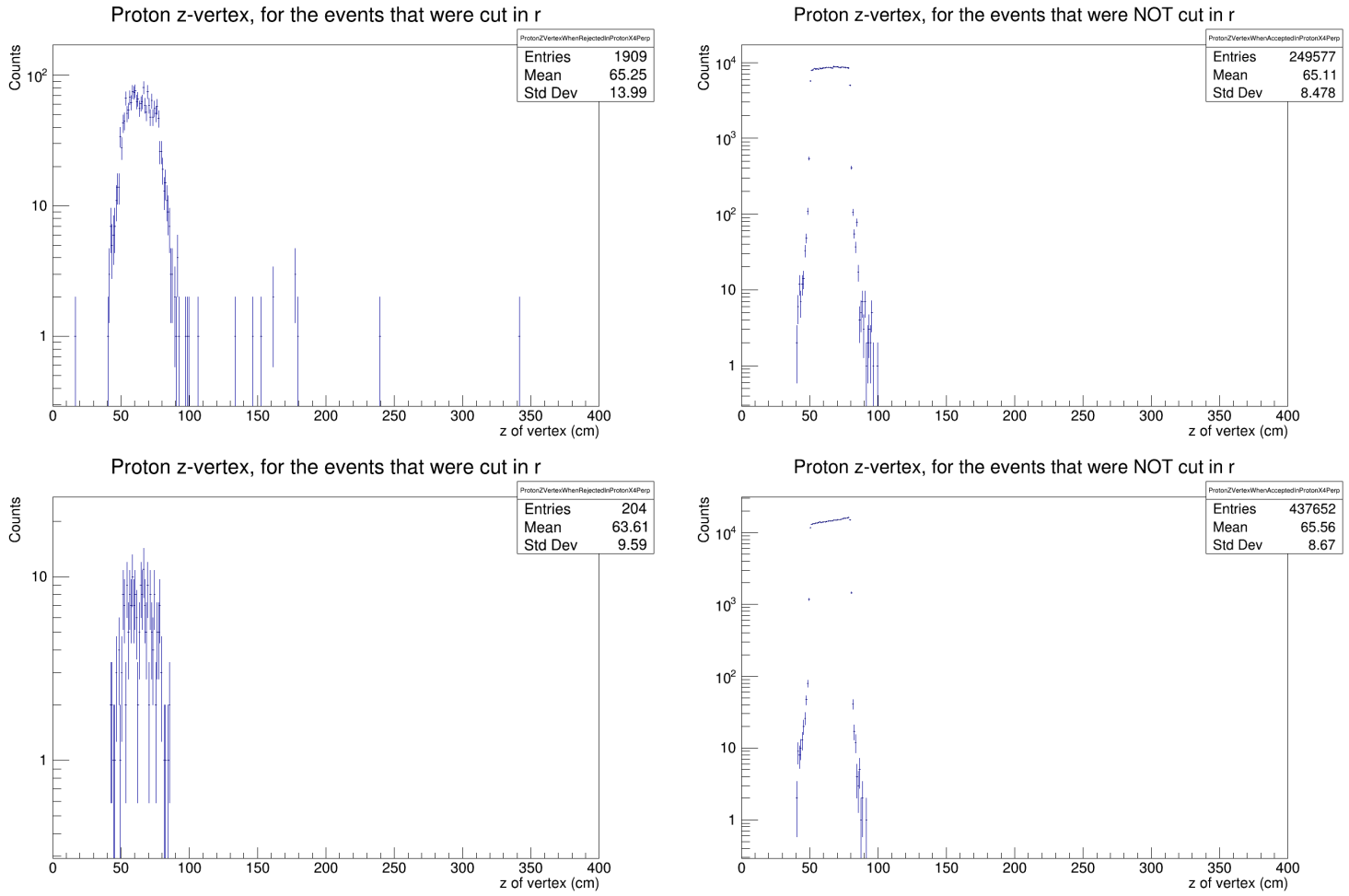
Vertex z-coordinate histograms

Proton and π^+ z-vertex



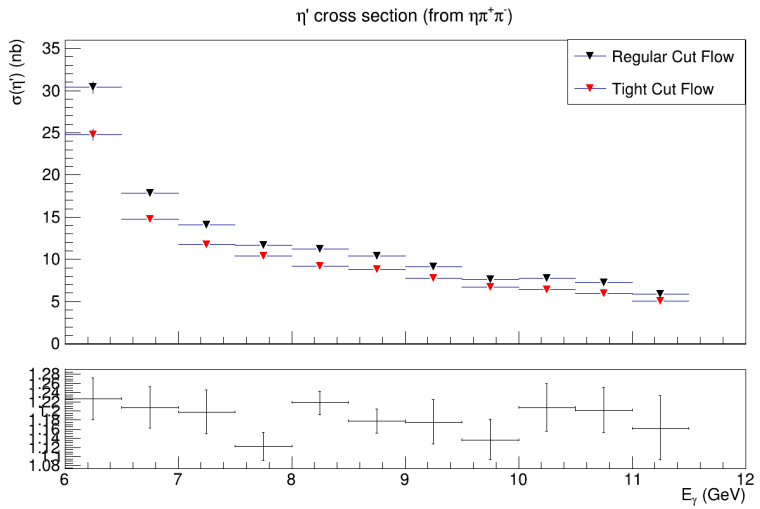
- **Top:** Data (from all the events), **Bottom:** Monte Carlo (η' only)

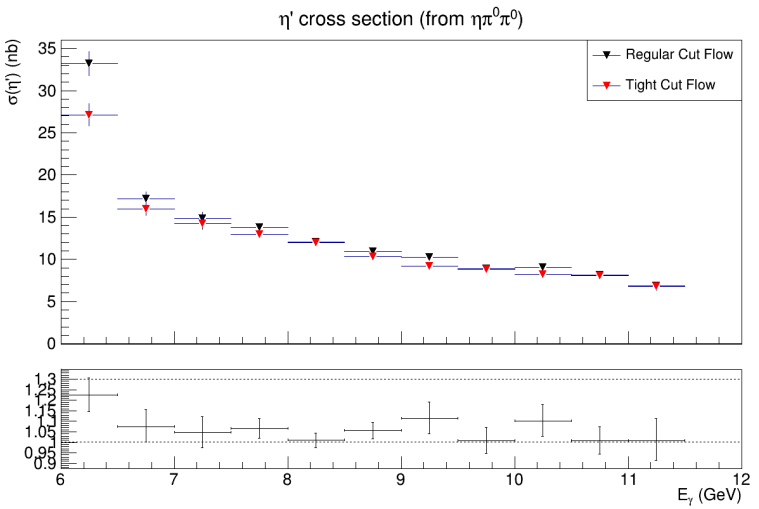
Proton z-vertex from the events that were/weren't cut from the proton radial cut

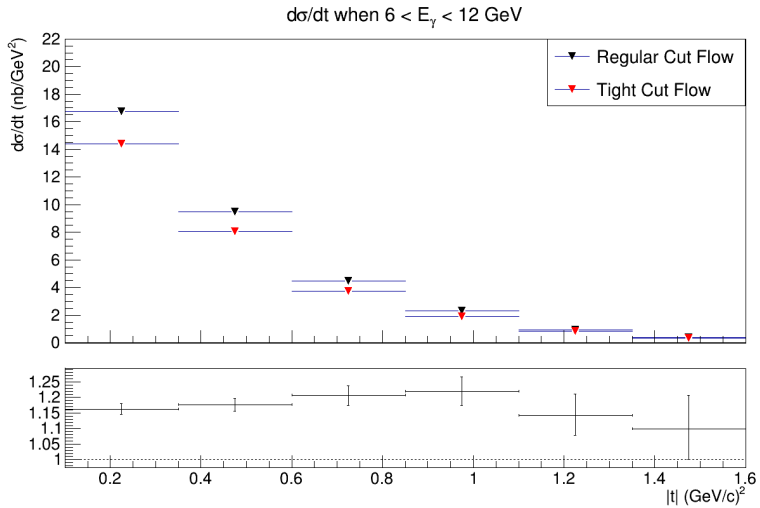


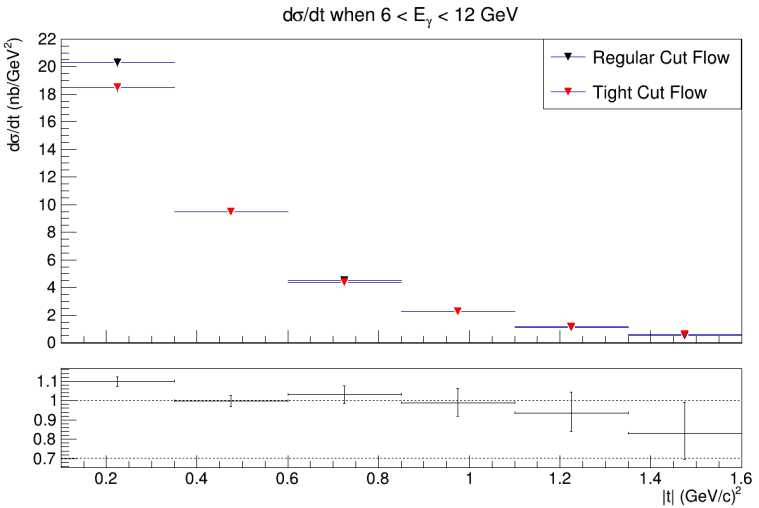
- **Top:** Data, **Bottom:** Monte Carlo
- **Left:** Proton z-vertex for the events that didn't survive the proton radial DOCA cut, **Right:** Proton z-vertex for the events that survived the proton radial DOCA cut

Standard vs Tight Selection Cuts



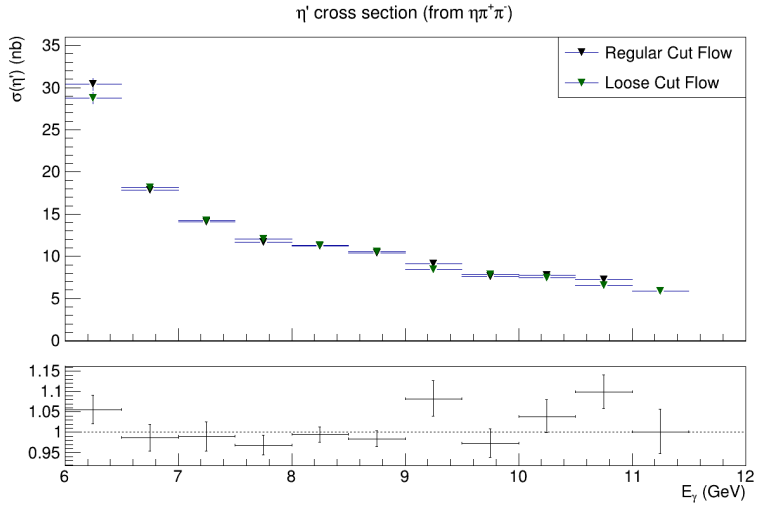


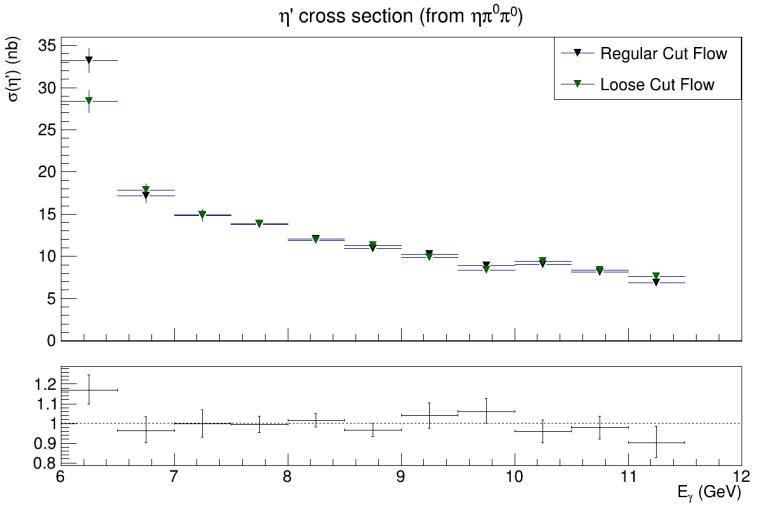


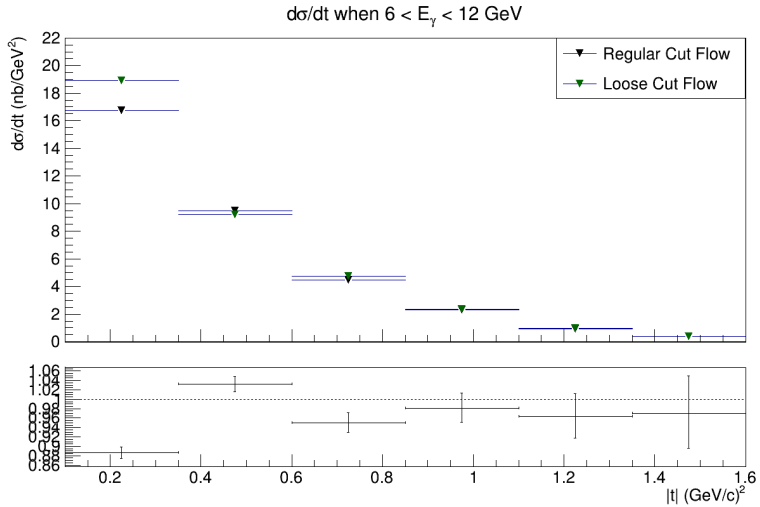


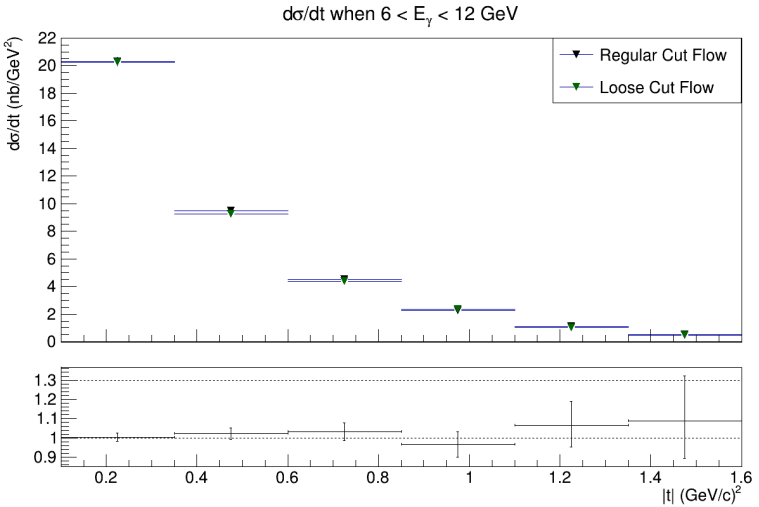
- **Left:** $\eta\pi^+\pi^-$, **Right:** $\eta\pi^0\pi^0$, **Top:** $\sigma(E)$, **Bottom:** $d\sigma/dt$
- The tight Selection Cuts used to affect mostly the $\eta\pi^+\pi^-$ final state (resolved)

Standard vs Loose Selection Cuts









- **Left:** $\eta\pi^+\pi^-$, **Right:** $\eta\pi^0\pi^0$, **Top:** $\sigma(E)$, **Bottom:** $d\sigma/dt$
- The loose Selection Cuts give (almost) the same results as the Standard Selection Cuts