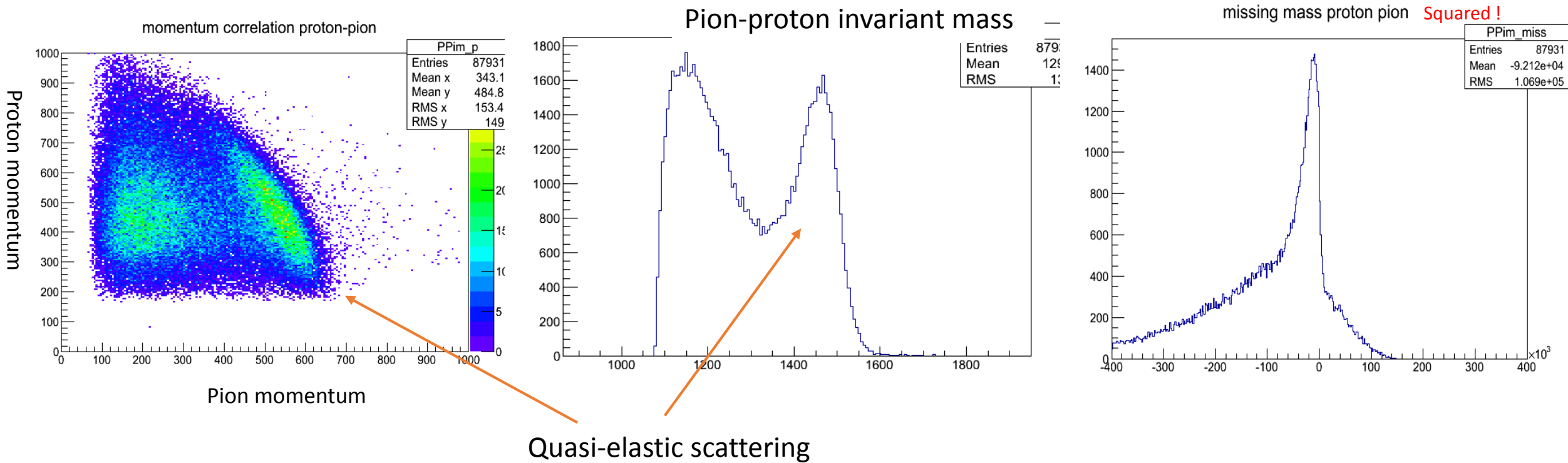


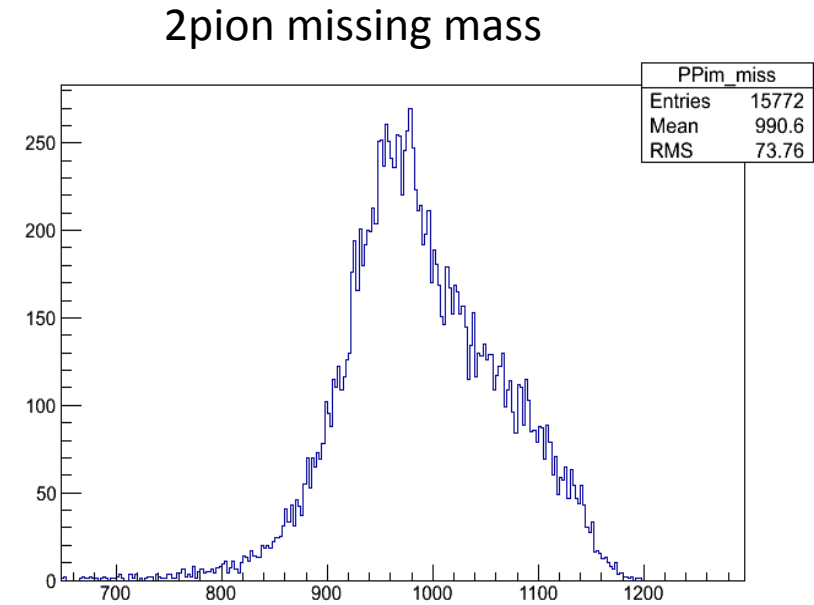
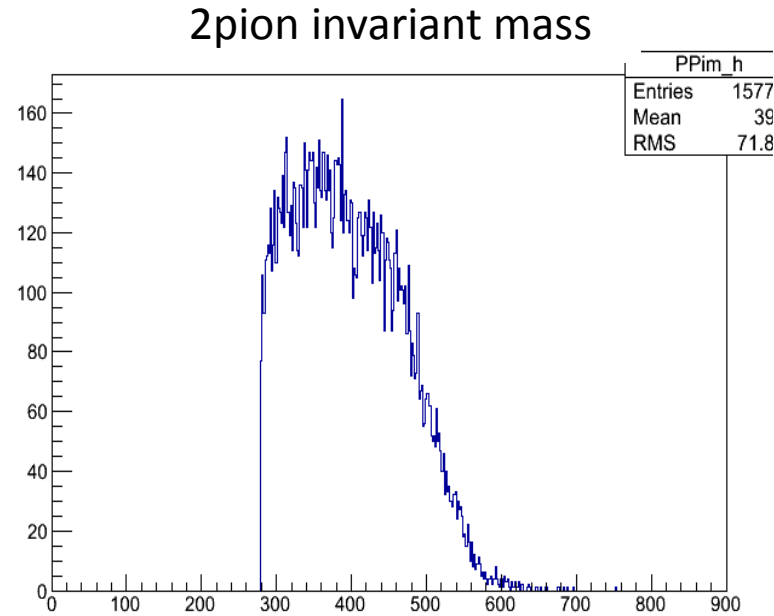
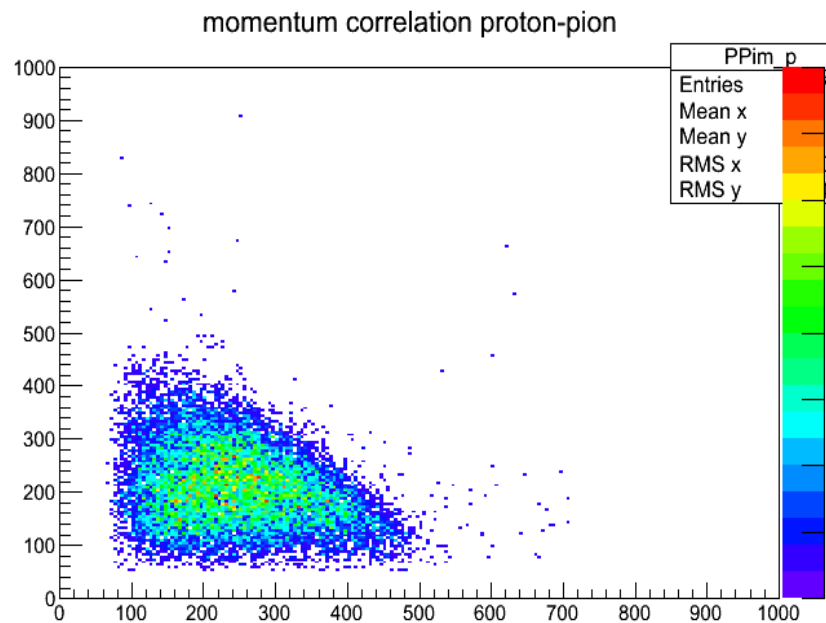
# Carbon: Pion-proton events (2.1 MLN events analysed)



Quasi-elastic scattering on bound proton (Elastic scattering ideally should have Total CMS energy of 1498 MeV and missing mass zero )

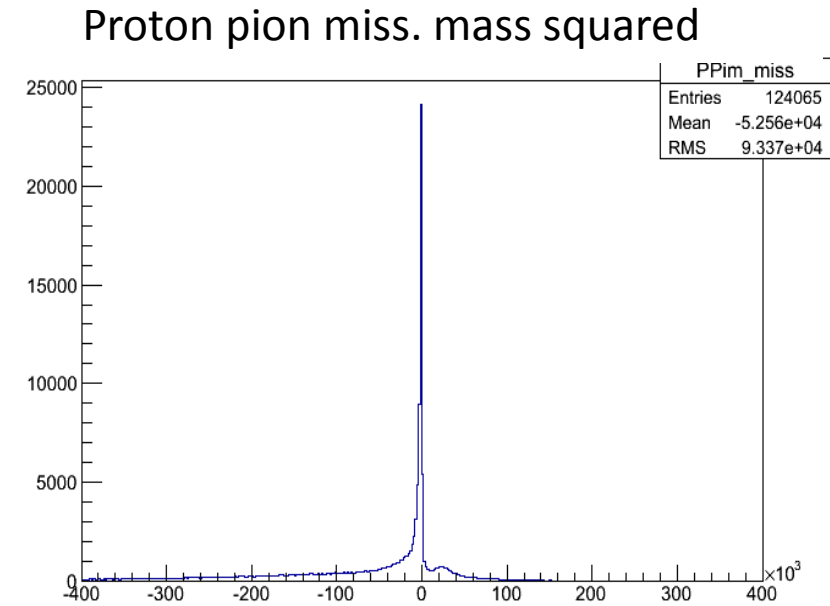
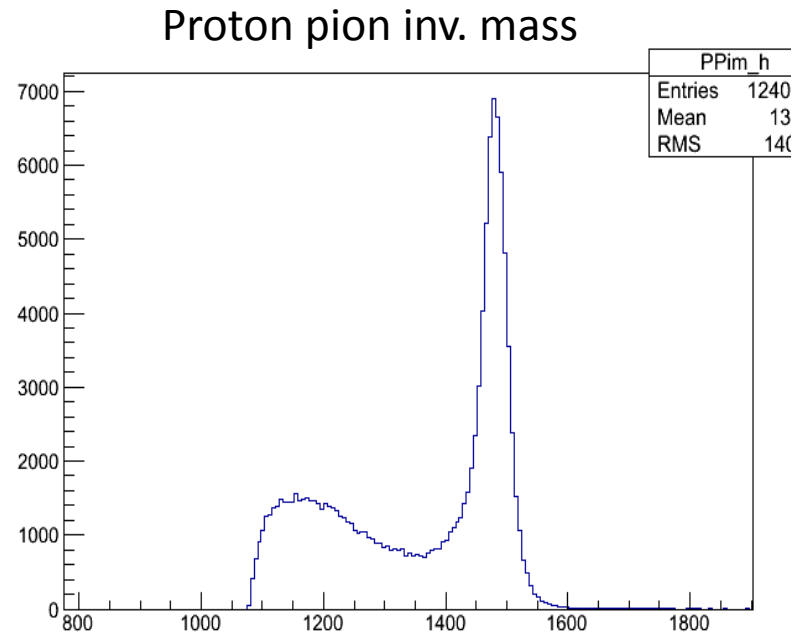
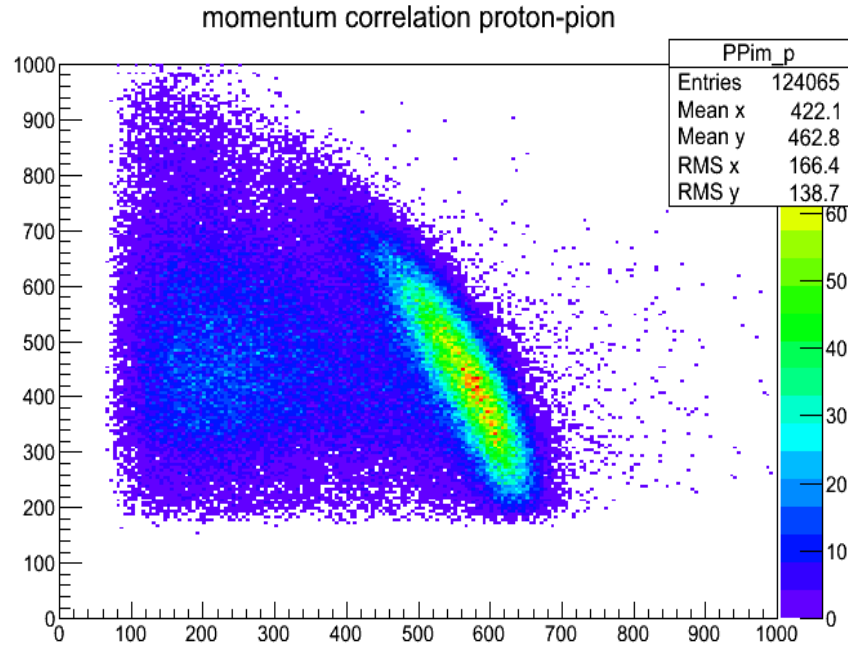
Particle identification on mass spectrum

# Carbon : $\pi^+ \pi^-$ events (2.1 MLN events analysed)



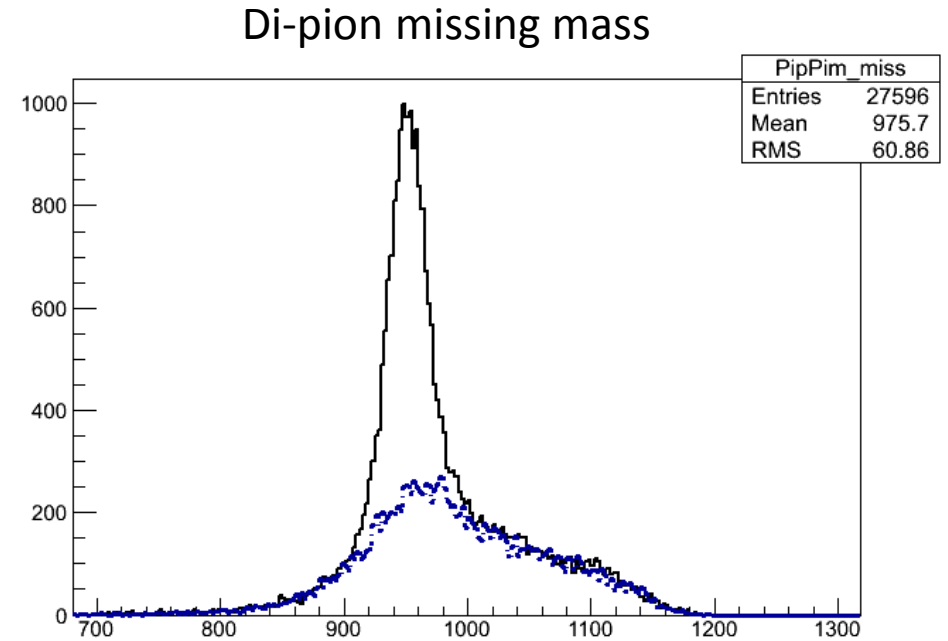
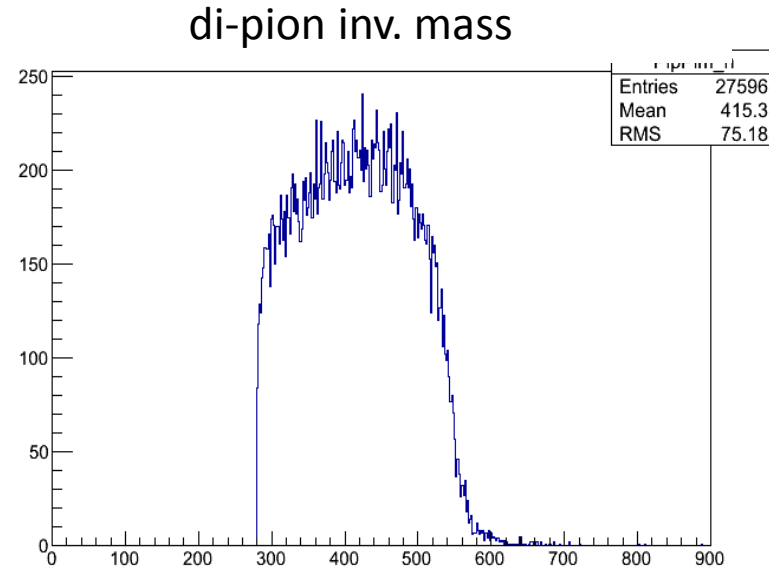
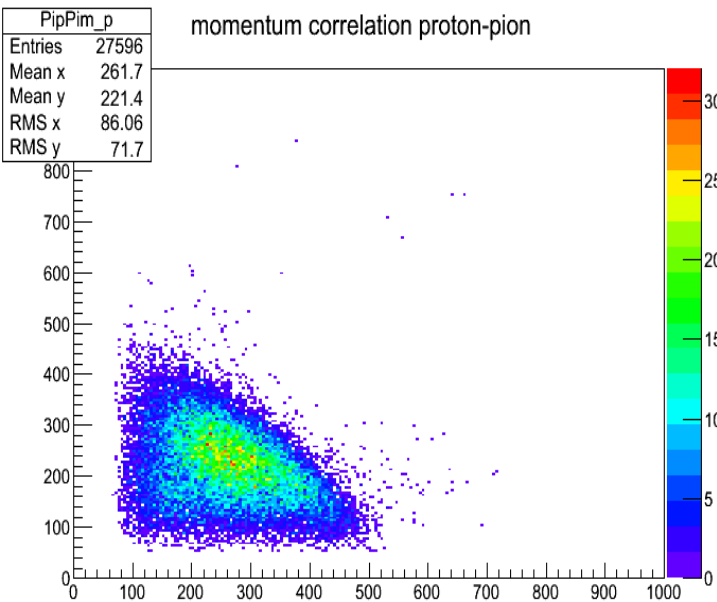
di-pion events from Carbon target (no clear peak at missing neutron mass visible- expected for pion-proton reaction)

# PolyEthylene: Pion-proton events (also $\sim 2.1$ MLN events)



- very clear signal from proton-pion elastic scattering
- $\sim 40\%$  more (total) yield as compared to carbon target
- Background can be almost completely isolated by cuts on inv. Mass & missing. Mass (see corresponding plots on slide 1)

# PolyEthylene: $\pi^+ \pi^-$ events (also $\sim 2.1$ MLN events)



- very clear signal from  $\pi^- p \rightarrow \pi^- \pi^+ n$  reaction (missing of neutron)
- $\sim 100\%$  more (total) yield as compared to carbon target
- Background can be reduced by cut on missing. mass (dashed histograms shows resp. missing mass from carbon run (slide2) **normalized** to the numer of collected events  $\sim 35\%$  in window around missing neutron mass) -
- resolution can be improved by pion momentum reconstruction, detector calibration(?)