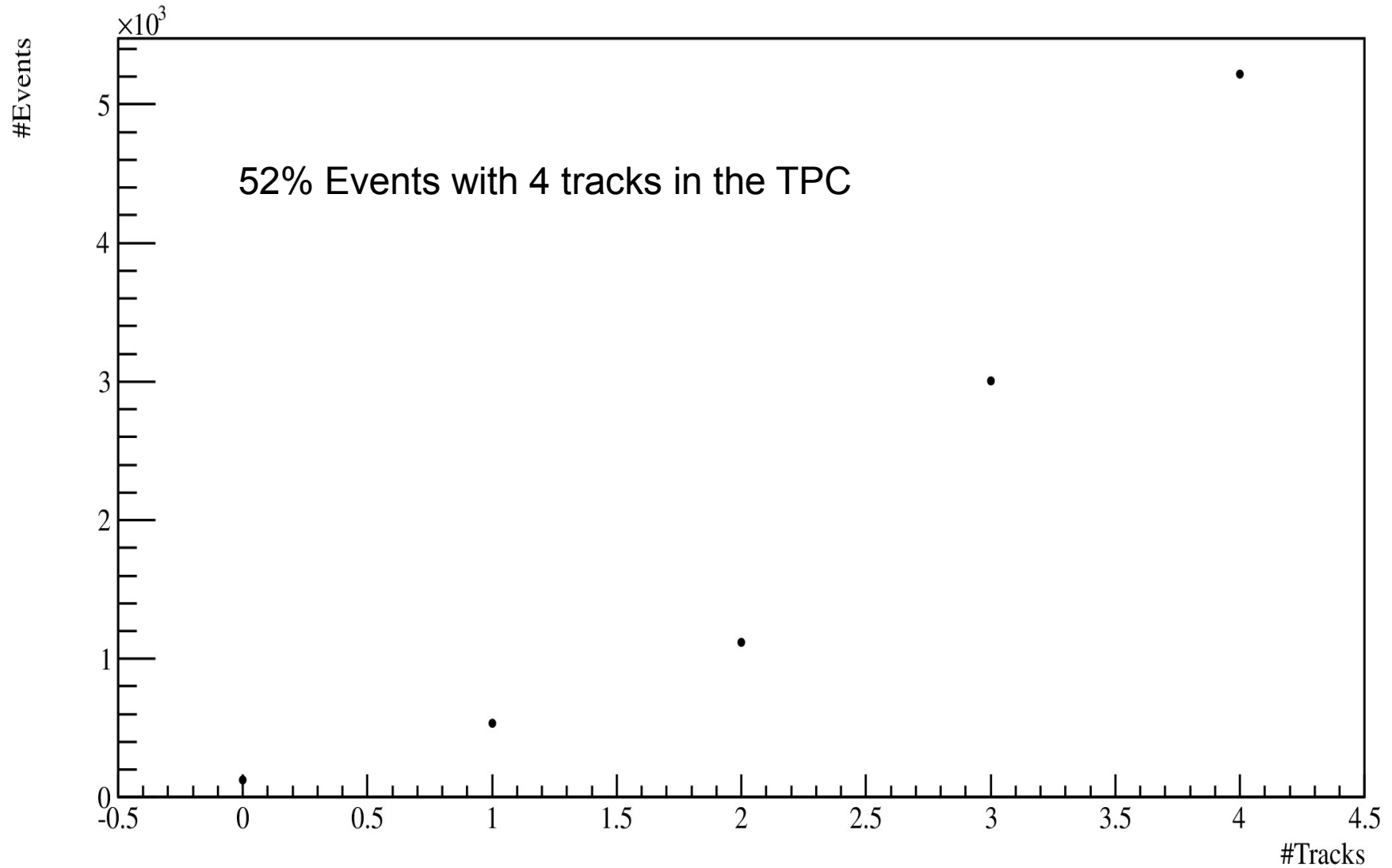


$\bar{p}p \rightarrow \Lambda\bar{\Lambda}$ -Analysis TPC

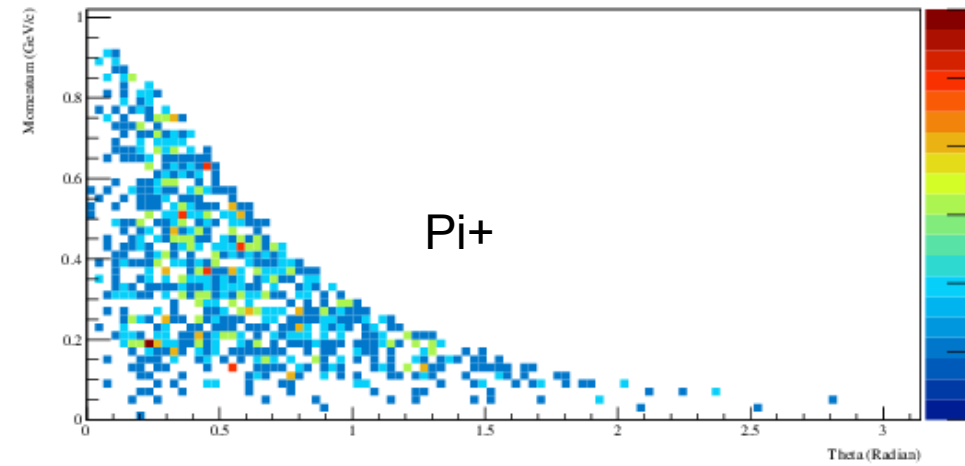
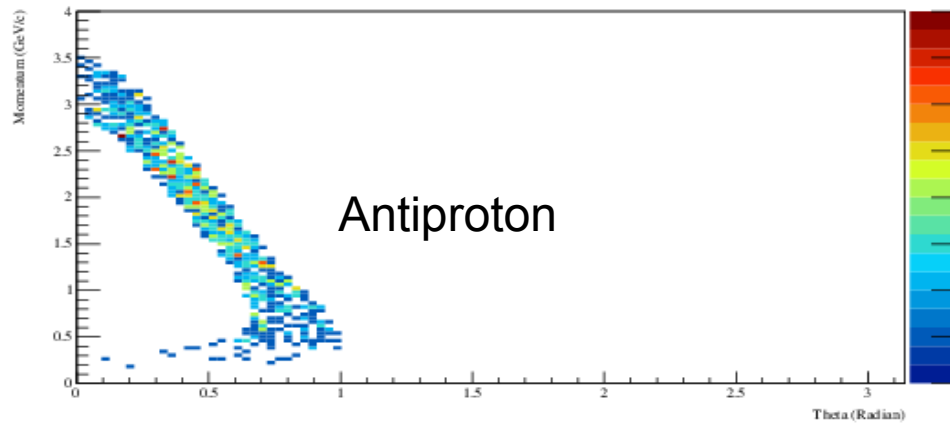
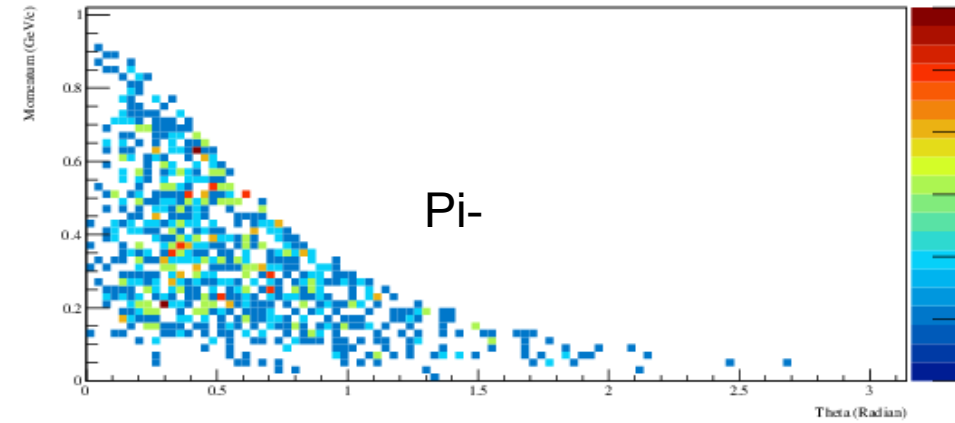
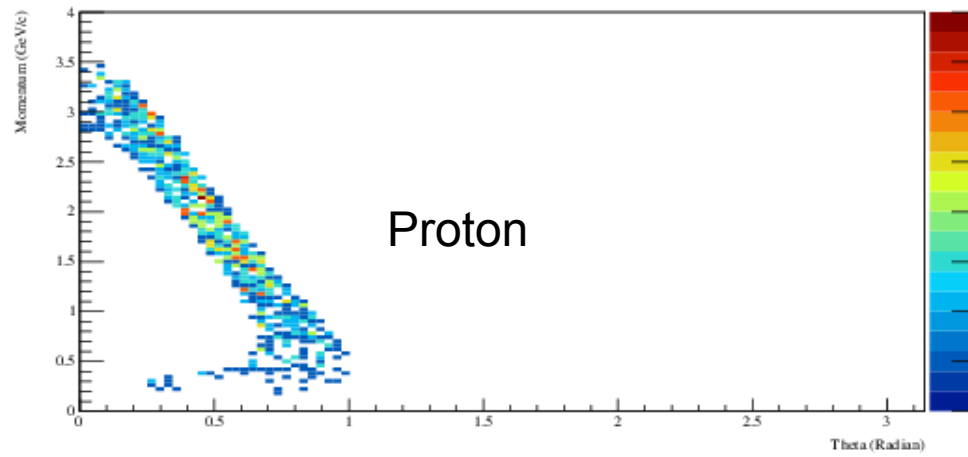
Simulation overview

- Channel $\bar{p}p \rightarrow \Lambda \bar{\Lambda}$
- Beam momentum 4 GeV/c
- Generator EvtGenDirect PHSP
- Monte Carlo PID
- 10 000 events simulated

Geometrical acceptance



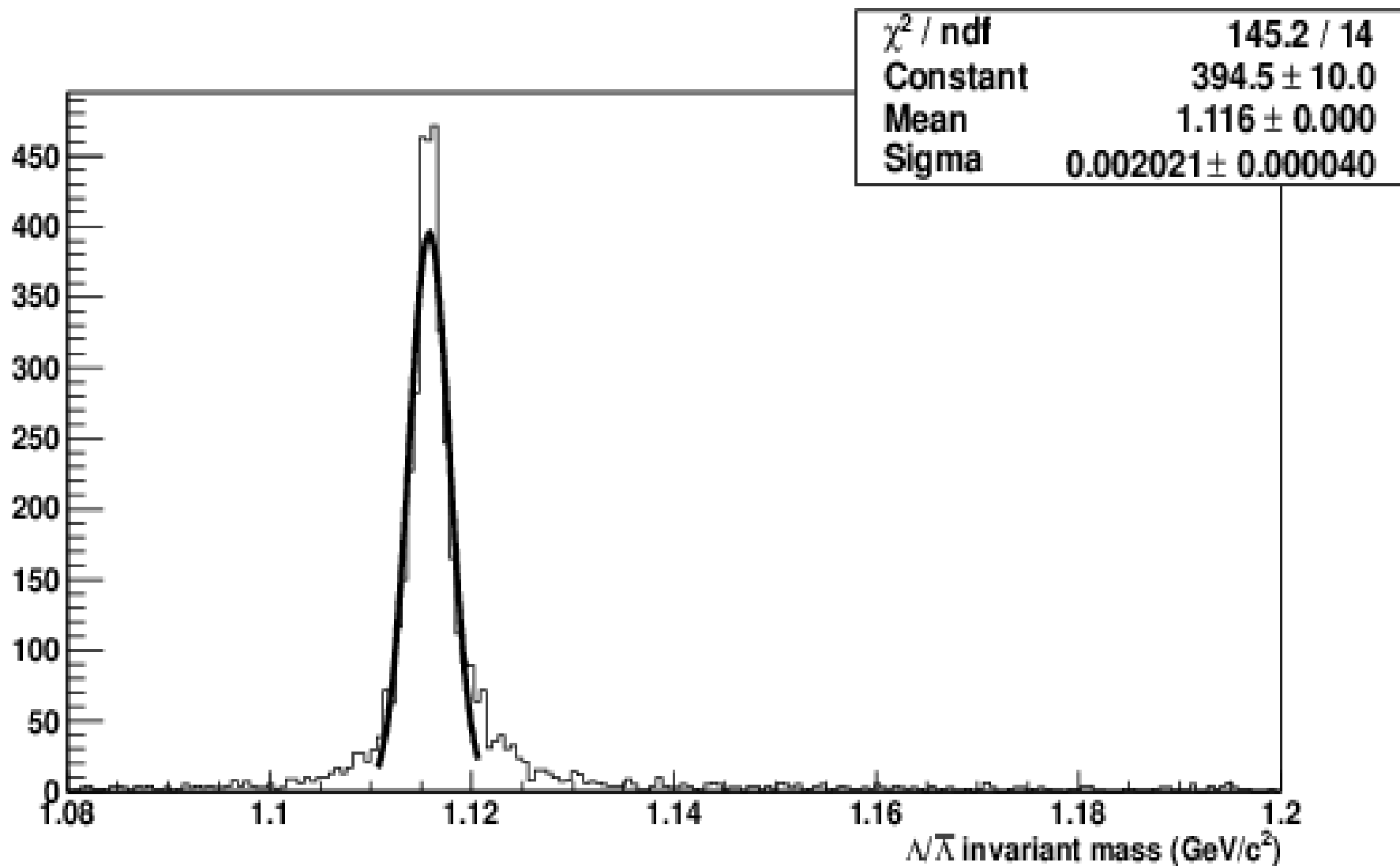
Kinematics



Analysis overview

- Analysis using fitted GFTracks
- Based on MC-PID lists are made of protons, antiprotons, pi- and pi+.
- Continue only if all lists have entries
- Protons and pi-(antiprotons&pi+) are combined to form $\Lambda(\bar{\Lambda})$ -candidates
 - The POCA between the two tracks is found using a simple newtonian search.
 - The Lambda mass is calculated using the 4-momentum of the two decay particles at the decay vertex.
 - The candidate with the closest distance between the tracks is chosen.

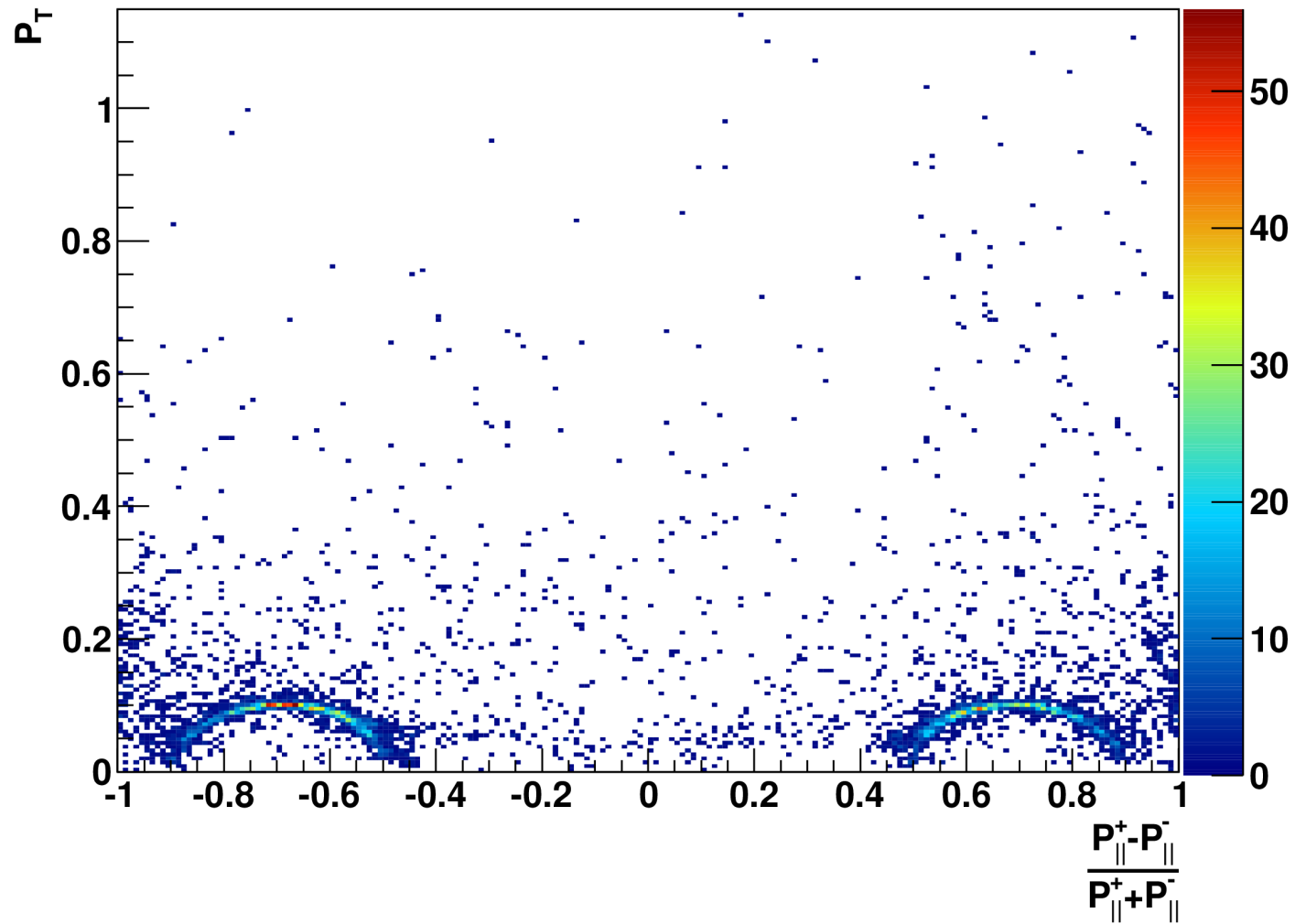
$L\bar{L}$ -invariant mass, best POCA



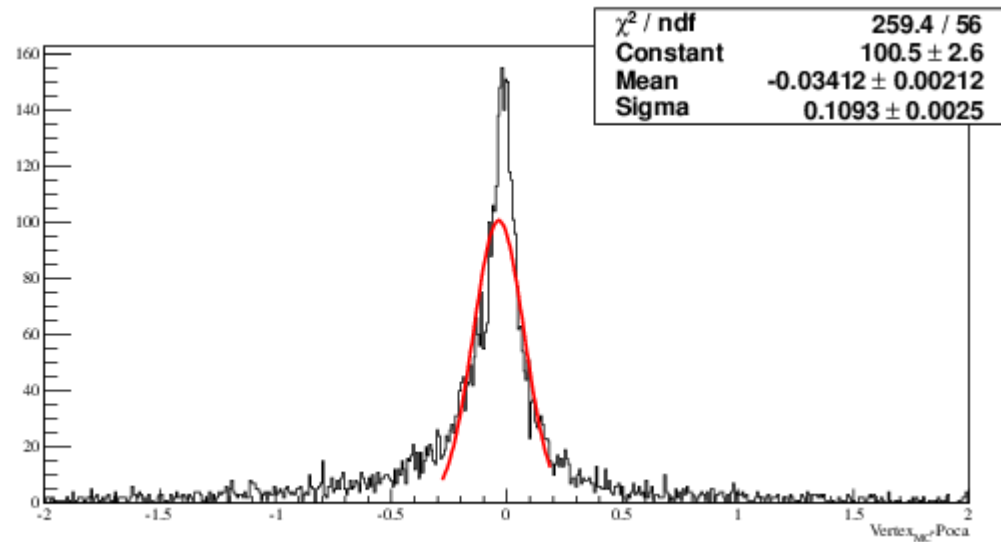
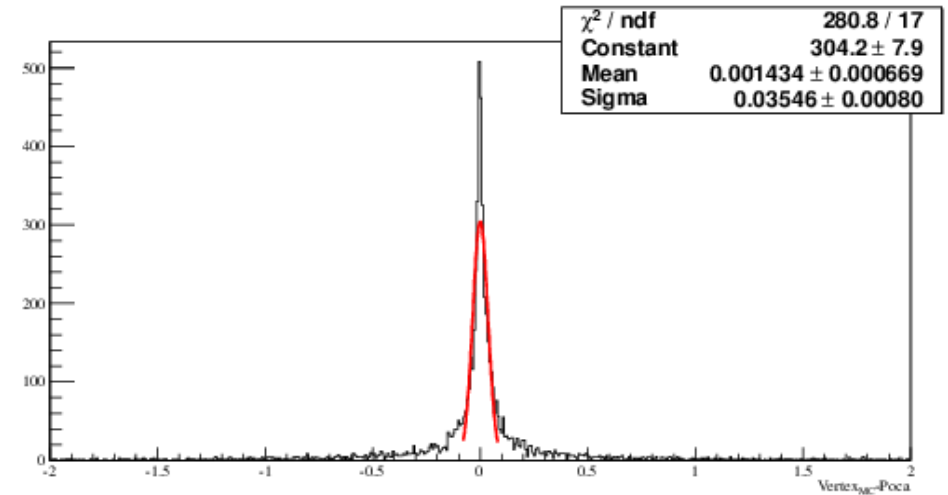
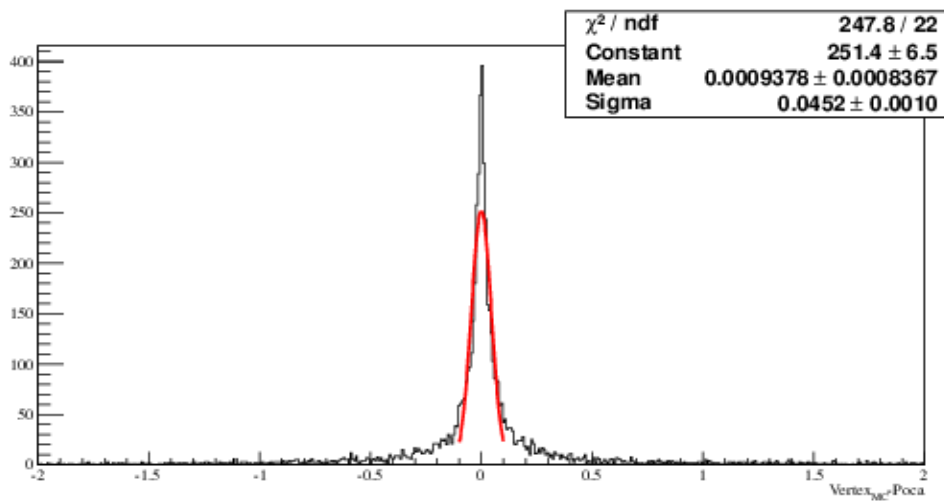
$L\bar{L}$ -invariant mass, best POCA

- 3496 L/\bar{L} -fully reconstructed and within 3 sigma of the fitted gaussian.
- Estimated global reco efficiency: ~18.0 %
- Detector efficiency ~34.5 %

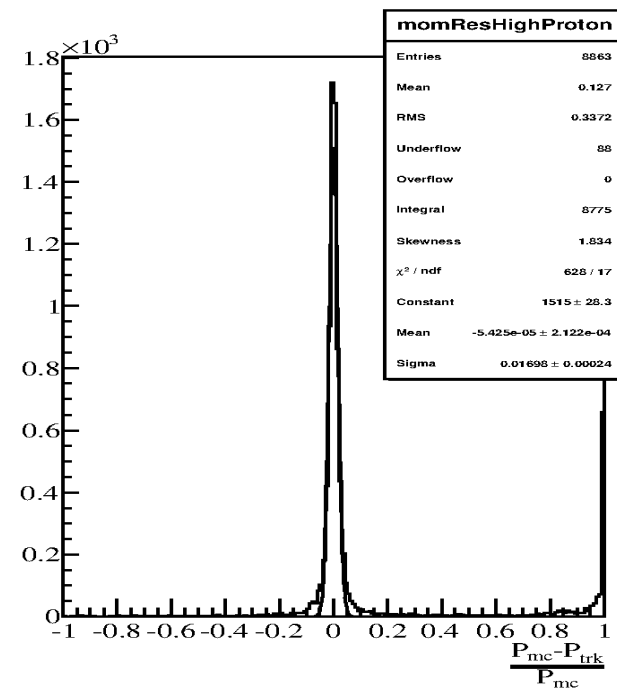
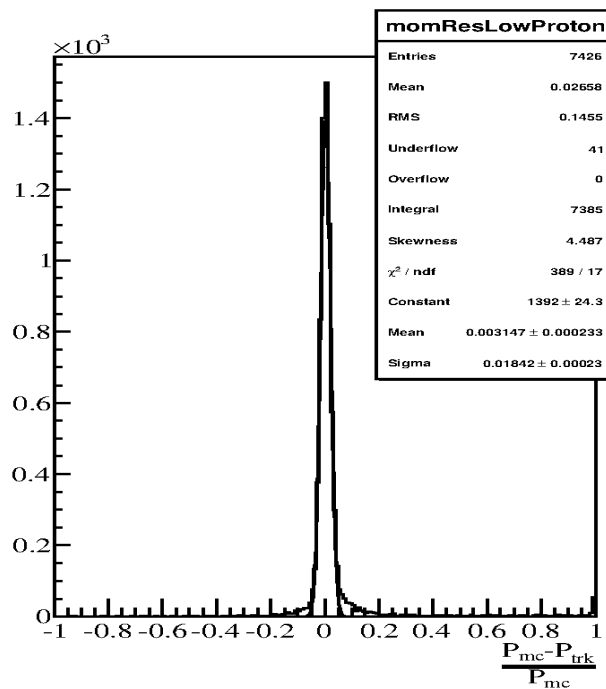
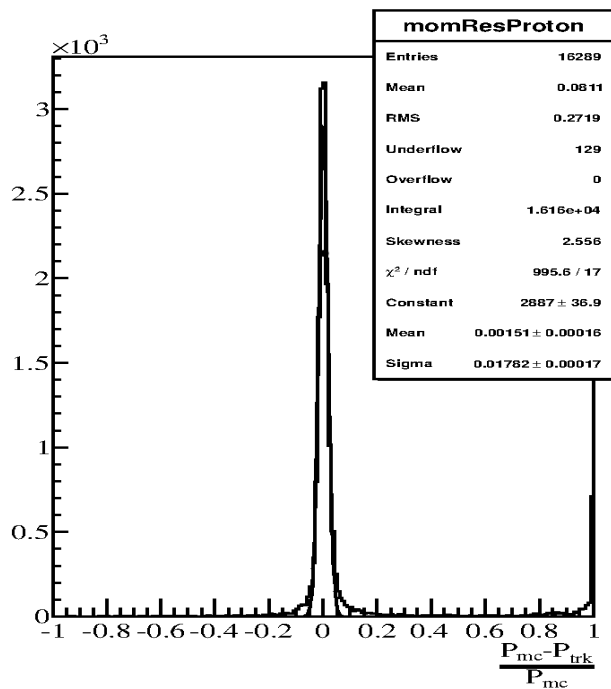
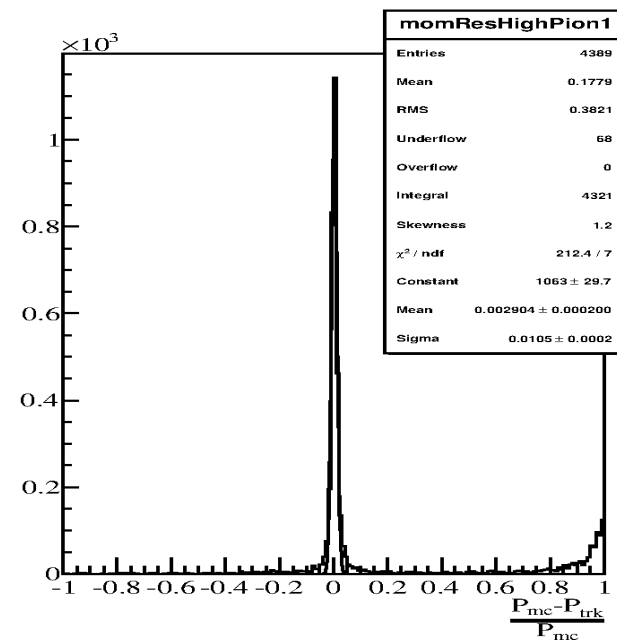
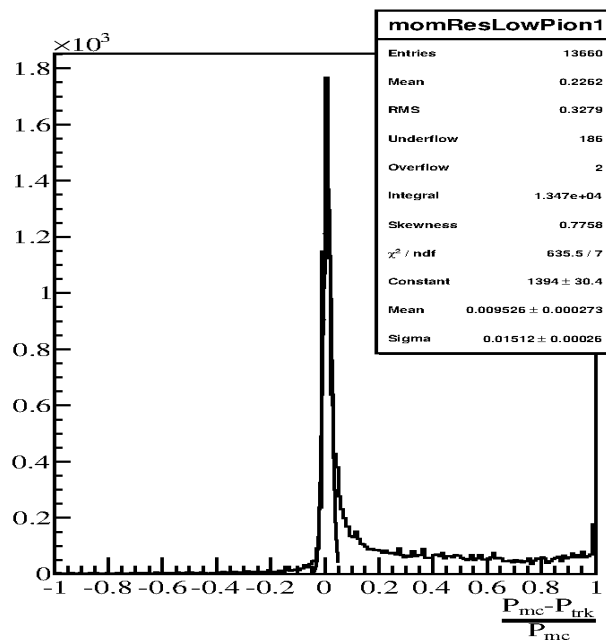
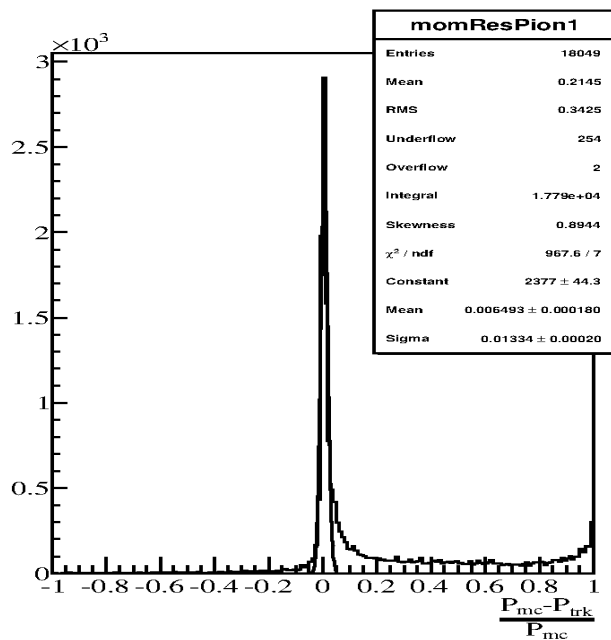
Armenteros plot, all combinations



Distance to MC vertex



Momentum resolution



Conclusion

- 52 % Geometrical acceptance
- 18 % Global reconstruction efficiency
- 34 % Detector efficiency (global/geometrical)
- 2 MeV (σ) Mass resolution
- Vertex resolution xy: ~ 4 mm, z: ~ 1 mm

- **No vertex fitter!**
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