

Λ and $\bar{\Lambda}$ with Box Generator

Mar 17, 2015 | Albrecht Gillitzer, IKP Forschungszentrum Jülich

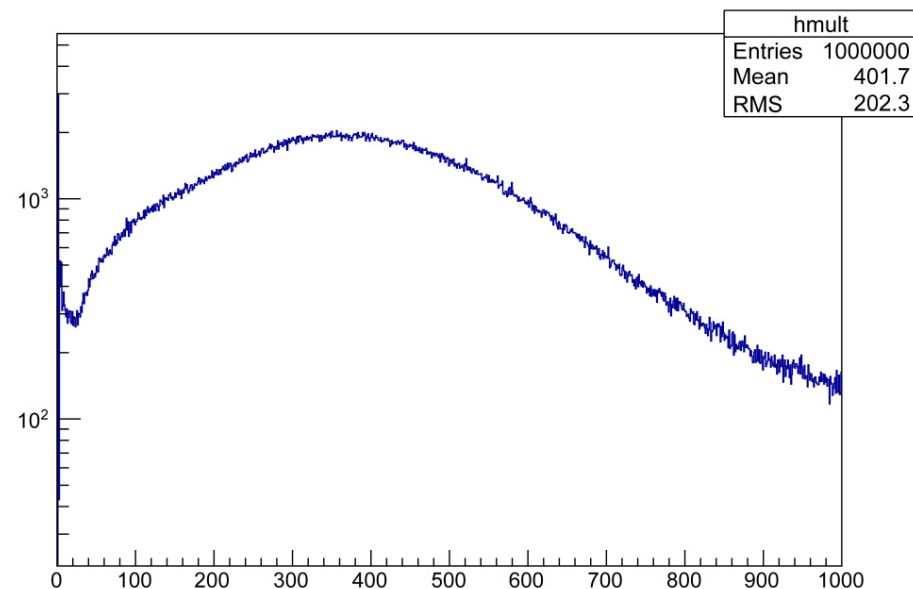
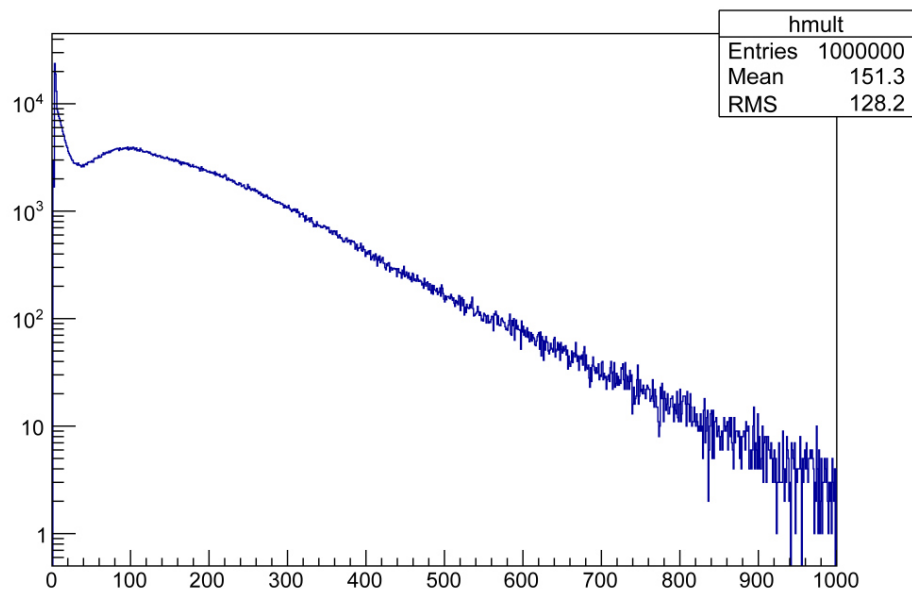
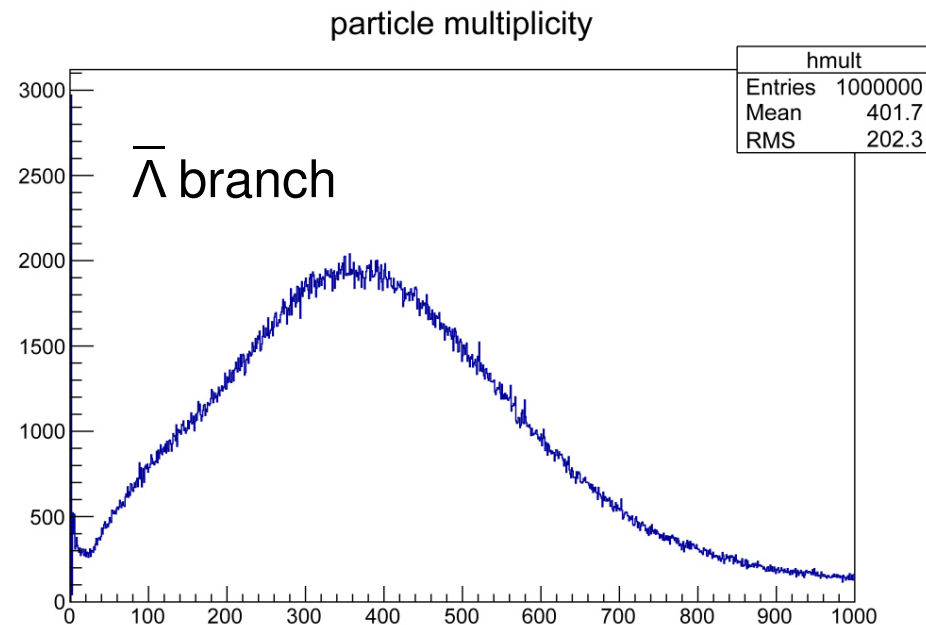
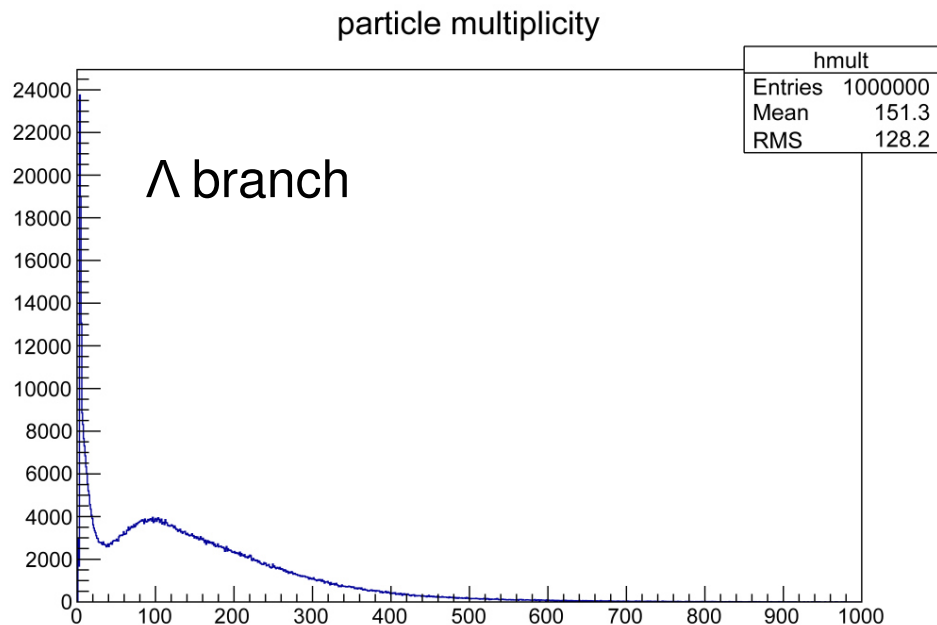
LII $\bar{\Lambda}$ PANDA Meeting, Giessen, March 2015

Box Generator Settings

- PandaRoot version: 26413 (Oct14 release)
- # events: 1×10^6 Λ and 1×10^6 $\bar{\Lambda}$
- expected $p\pi^-$ and $\bar{p}\pi^+$ pairs: 639000 each
- momentum range: 0.5 GeV/c – 3.0 GeV/c
- theta range: 0° – 35°
- phi range: 0° – 360°

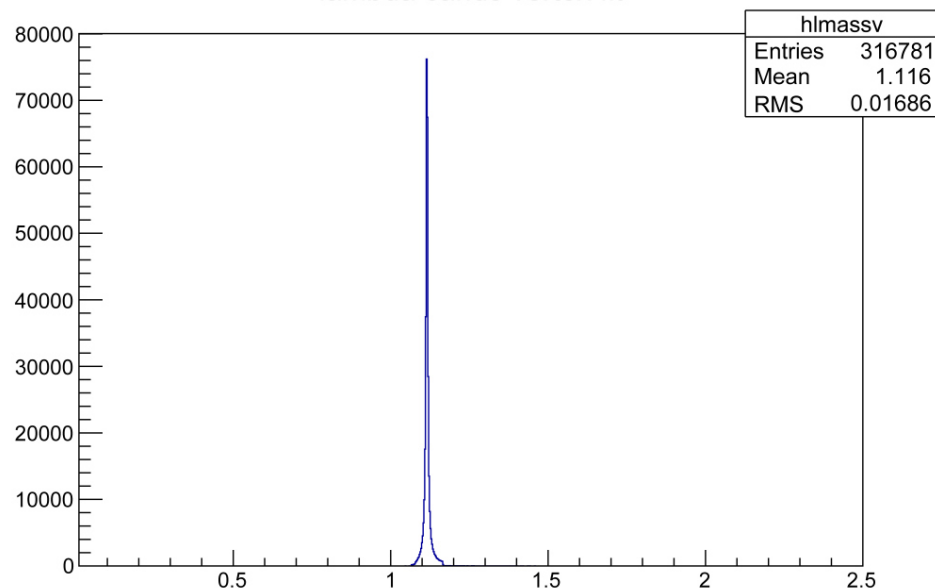
Statistics and Efficiencies

	Λ branch	Λ bar branch
MC $p\pi$ event fraction	62.7%	62.3%
# MC $p\pi$ events	626951	622500
p / p bar rec. eff.	78.7%	70.4%
π^- / π^+ rec. eff.	83.5%	86.0%
Λ / Λ bar rec. eff.	50.5%	47.0%

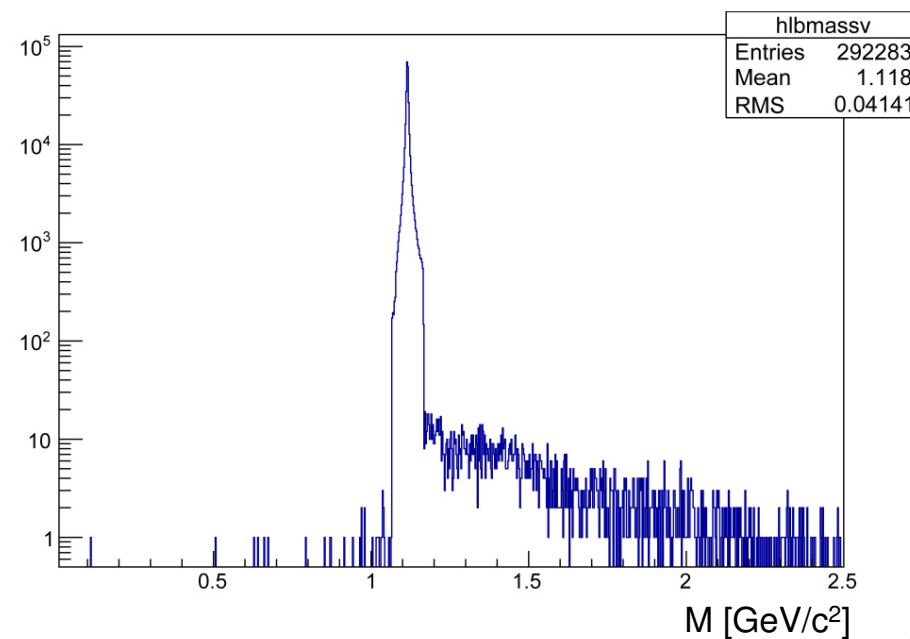
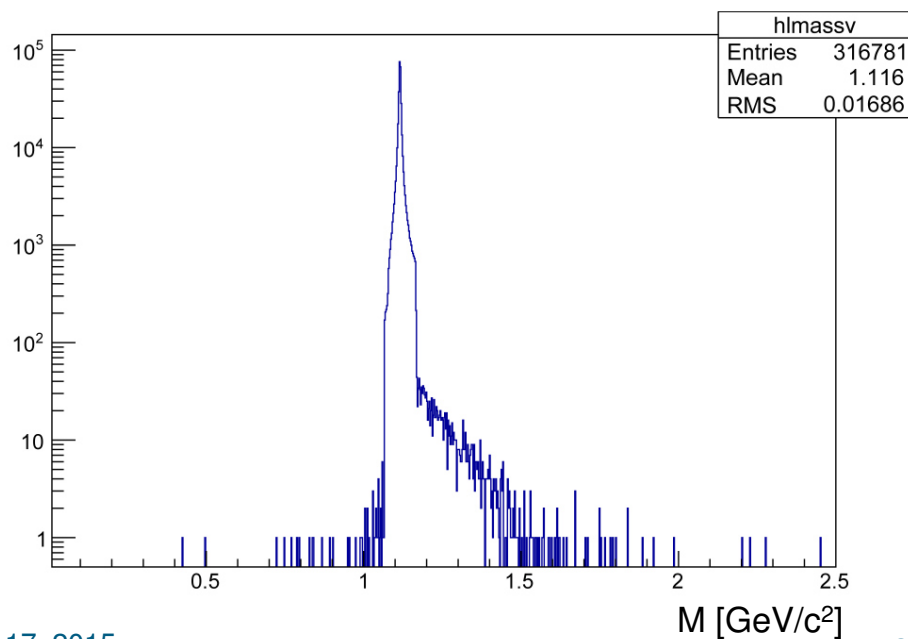
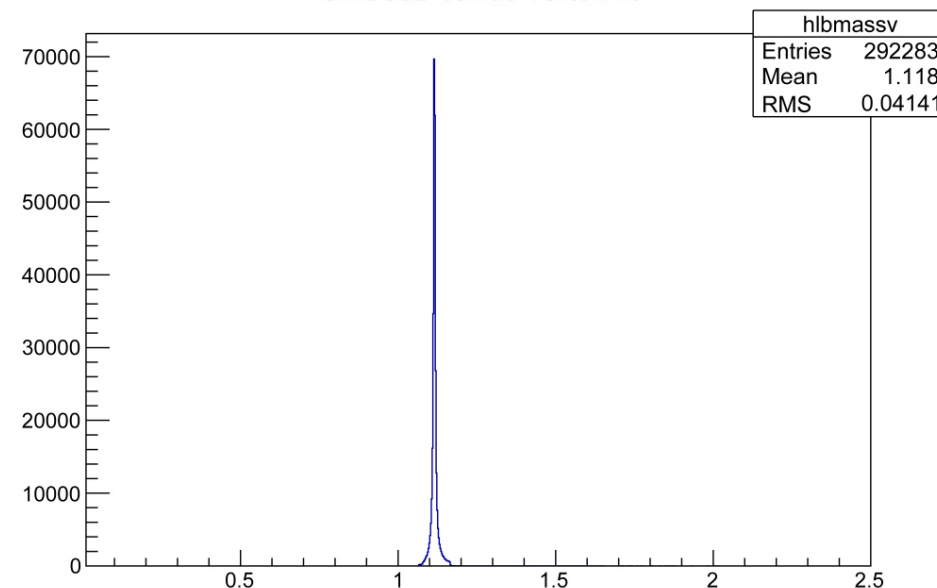


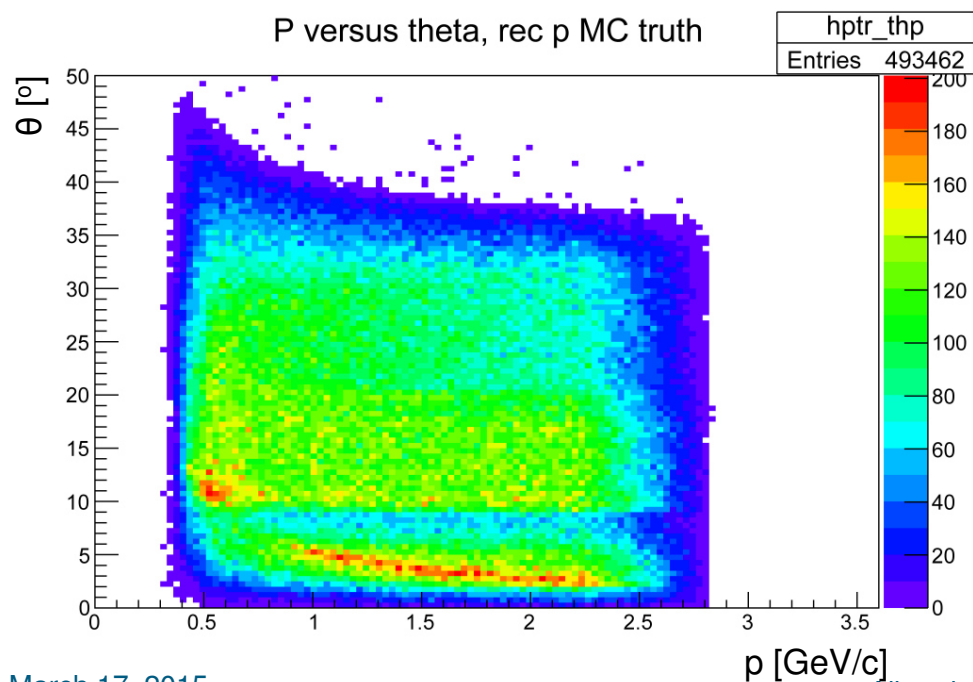
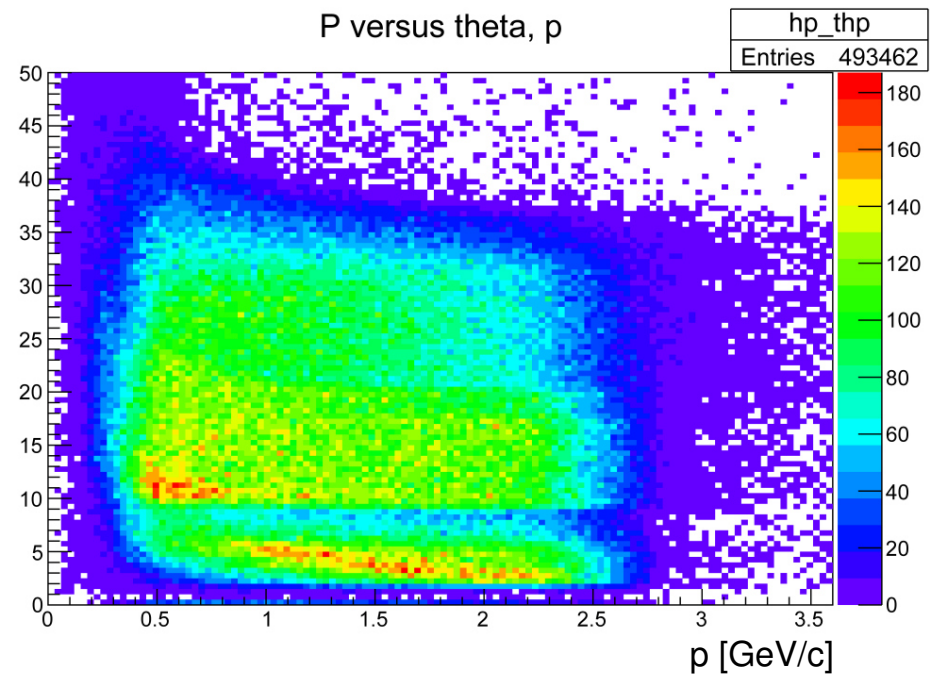
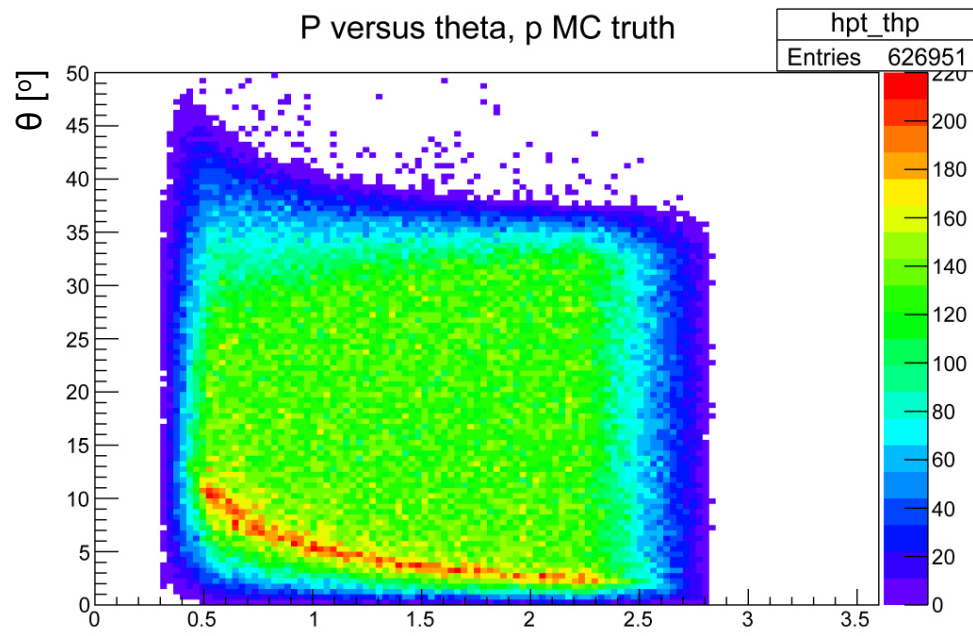
Λ and $\bar{\Lambda}$ Candidates

lambda cand vertex fit

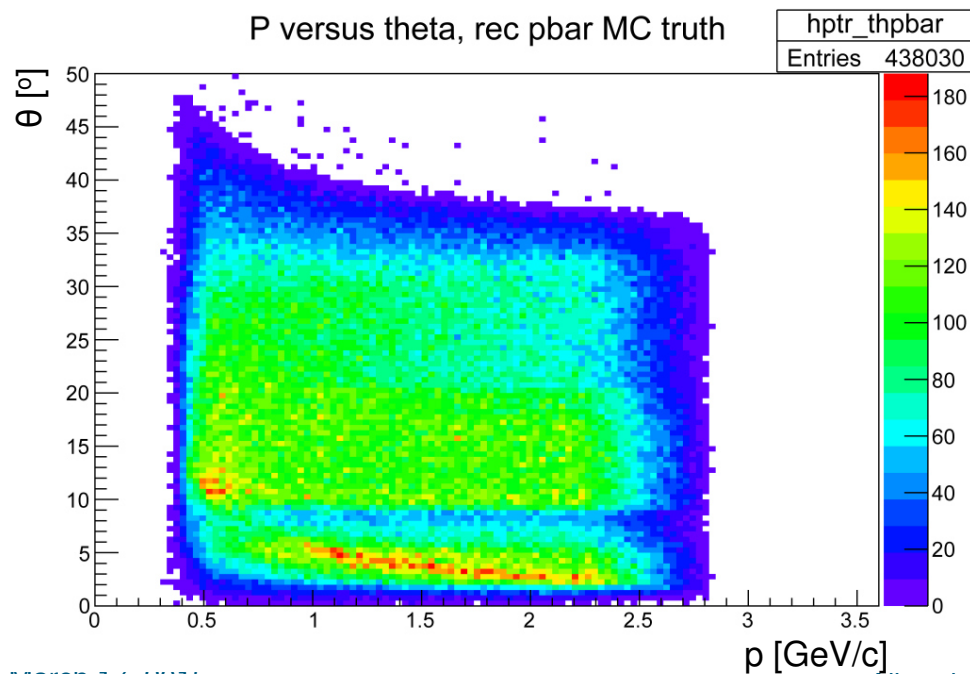
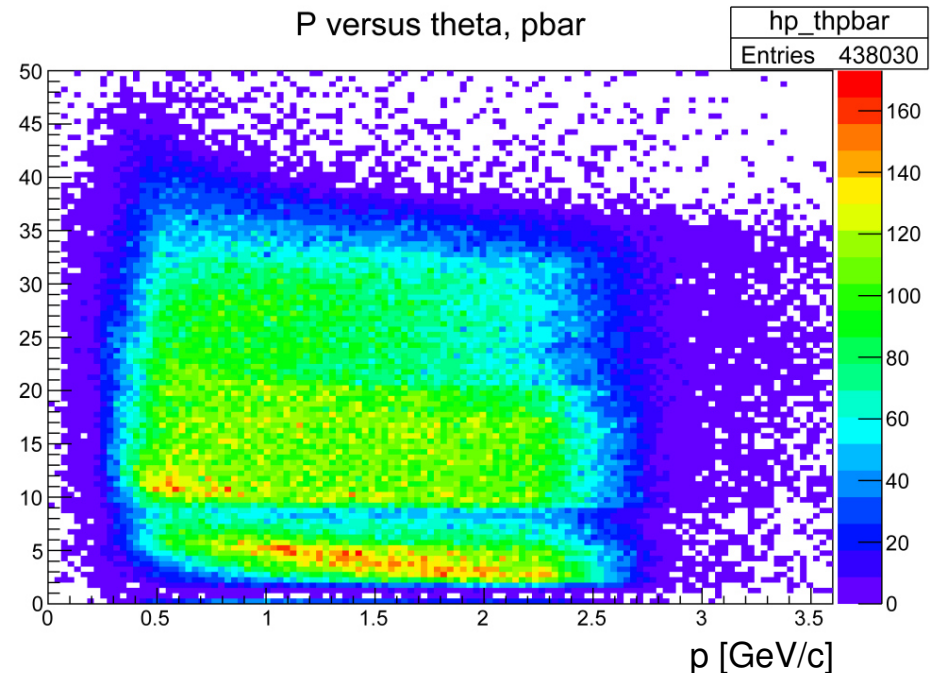
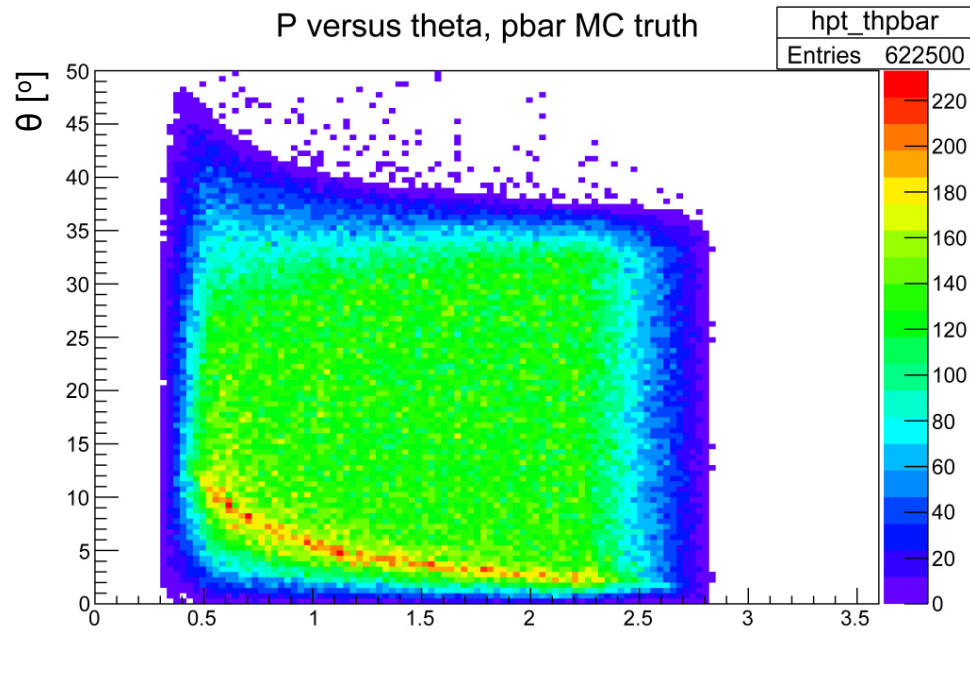


lambdab cand vertex fit

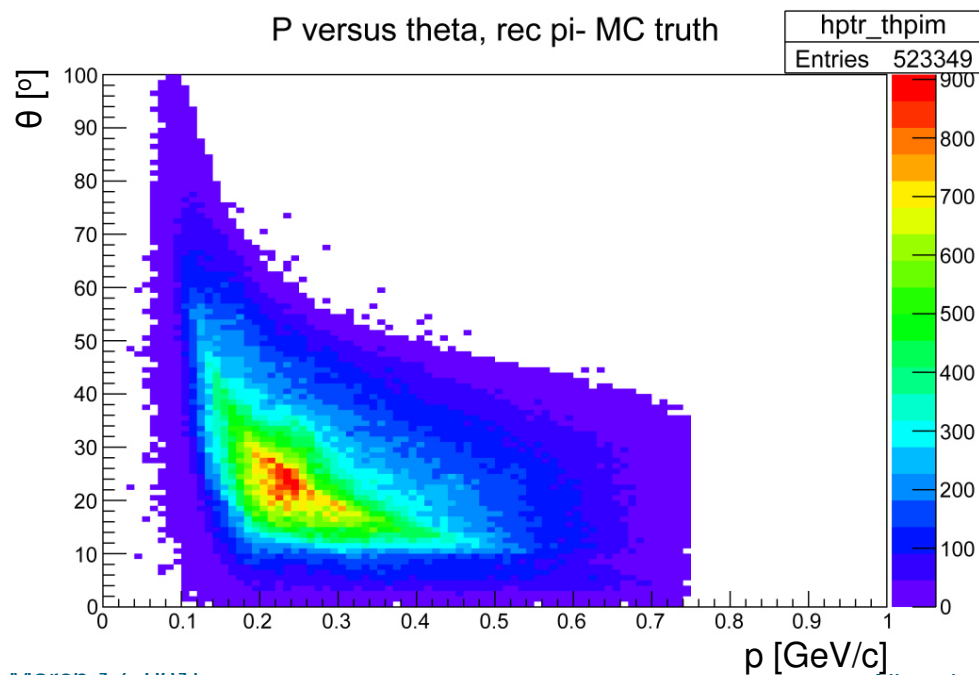
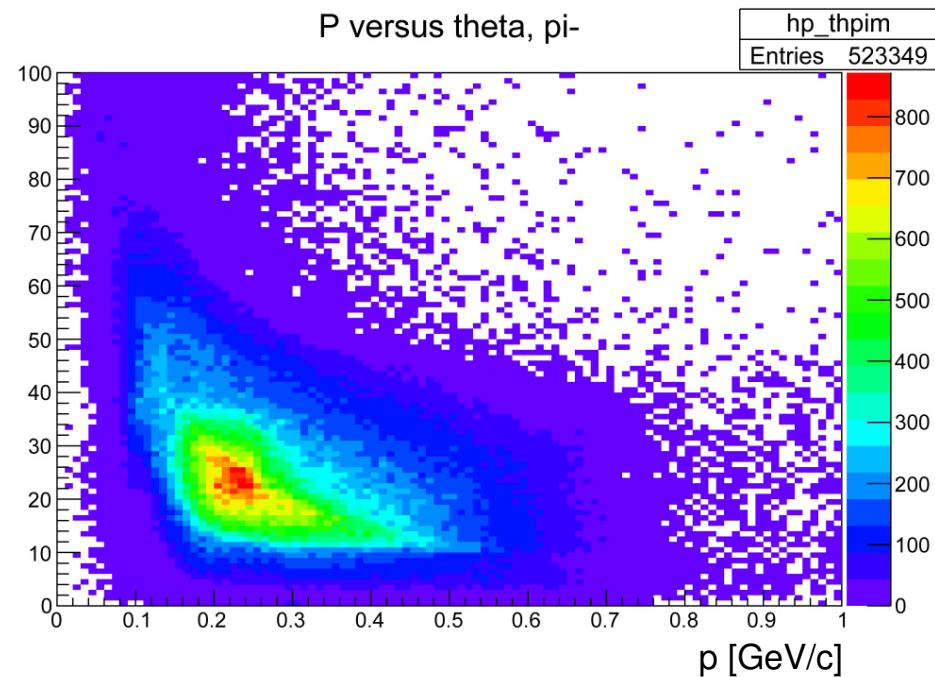
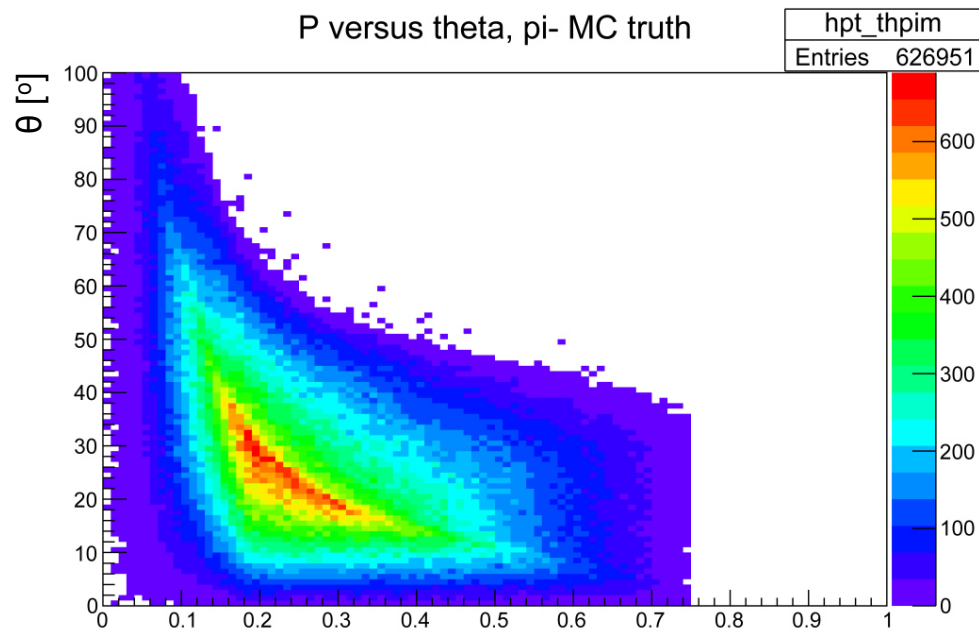




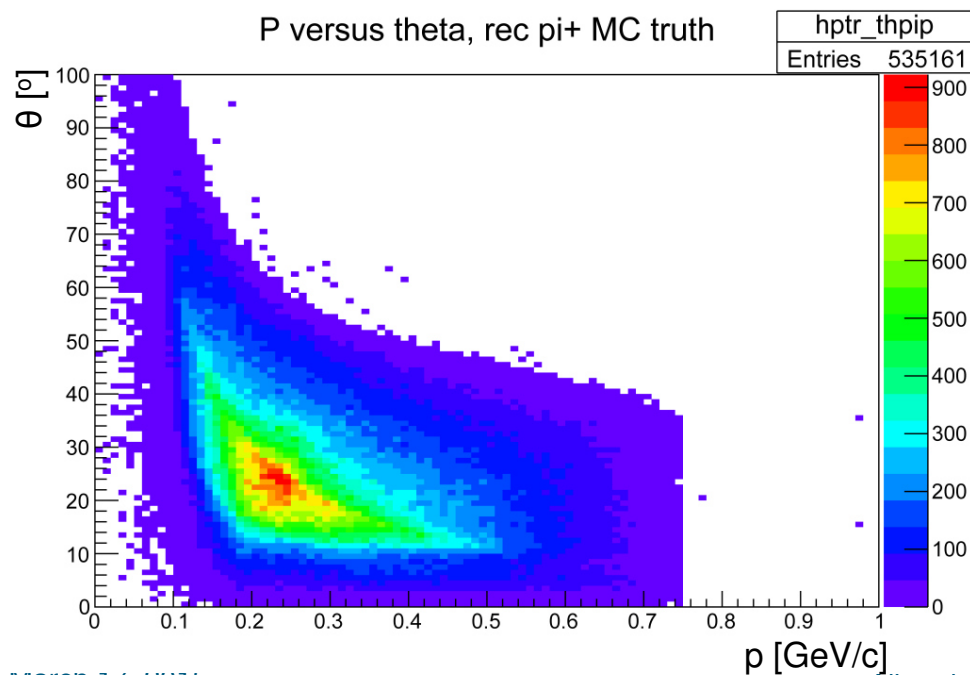
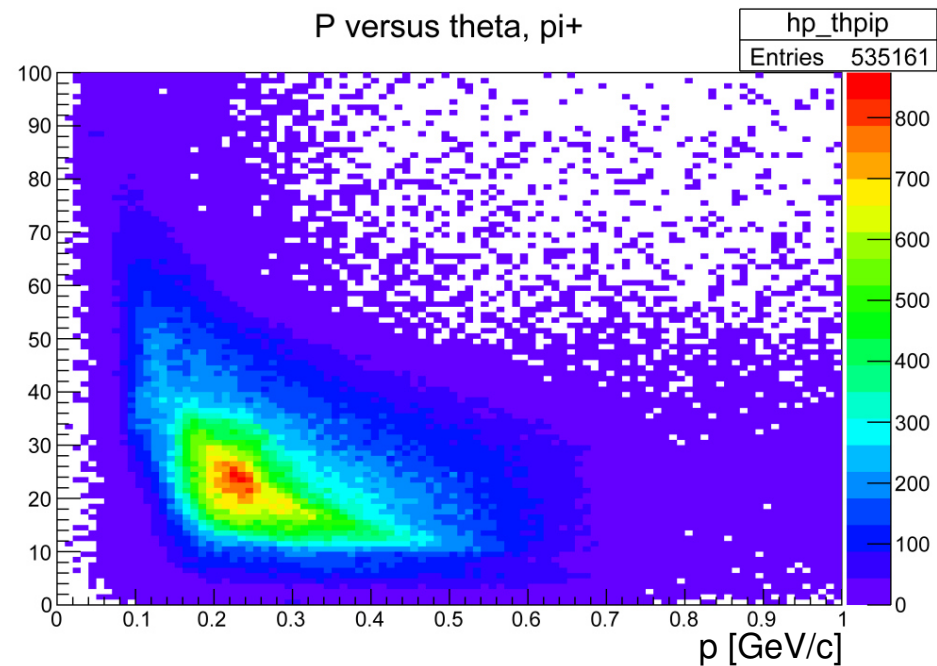
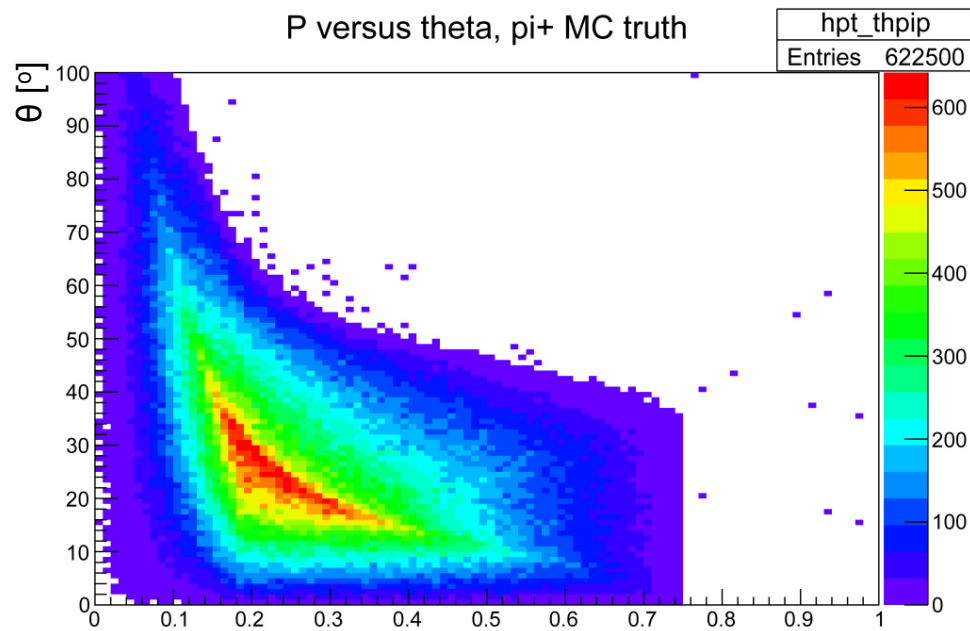
Protons: θ vs. p



Antiprotons: θ vs. p

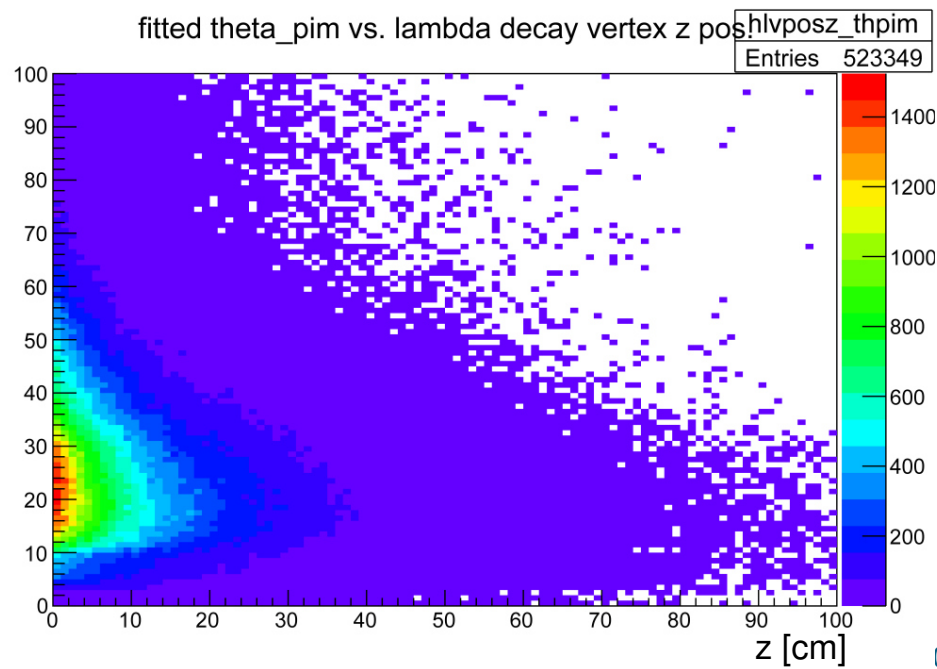
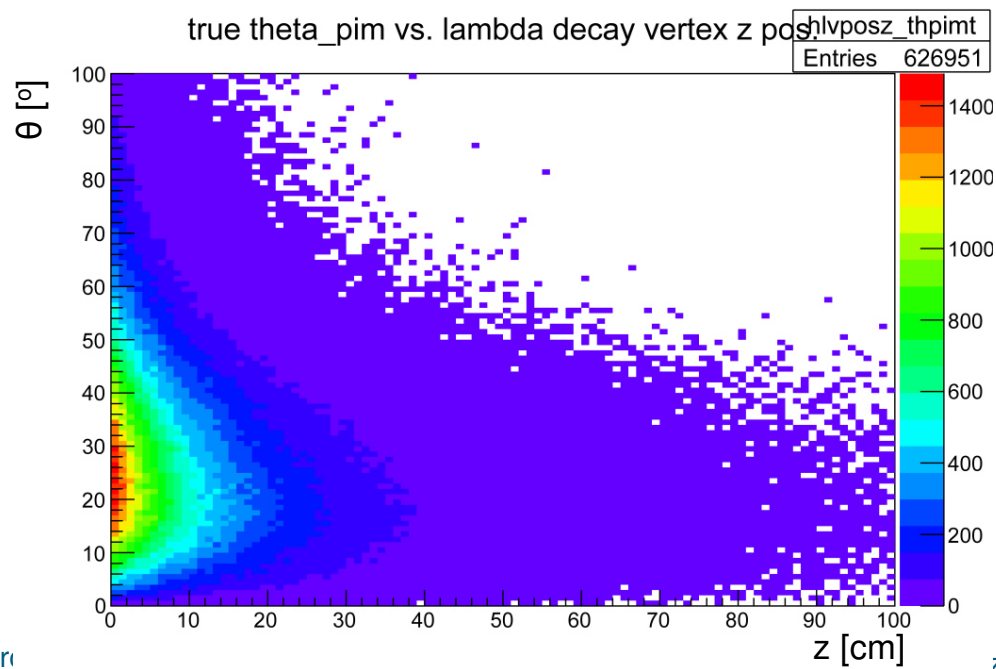
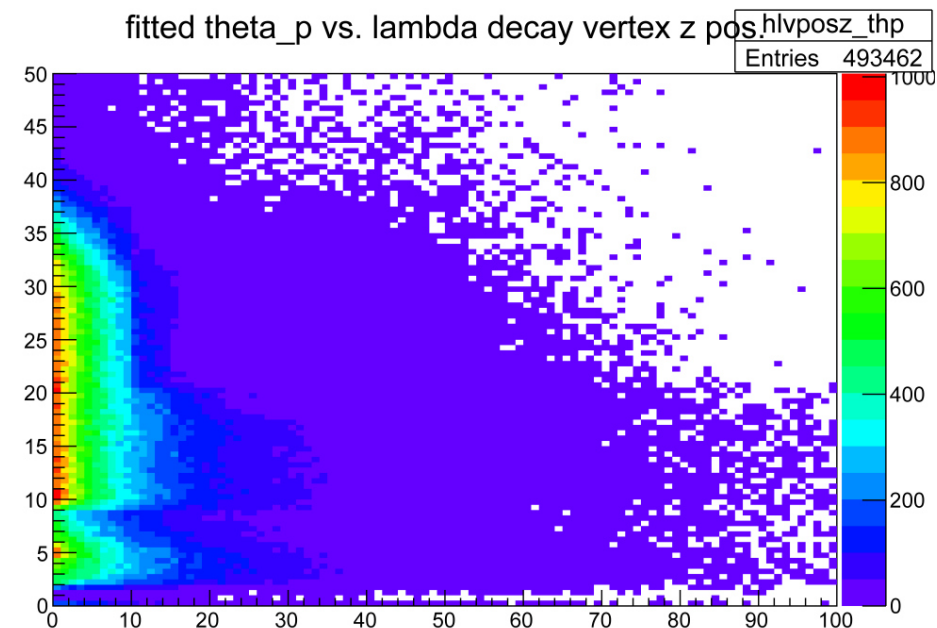
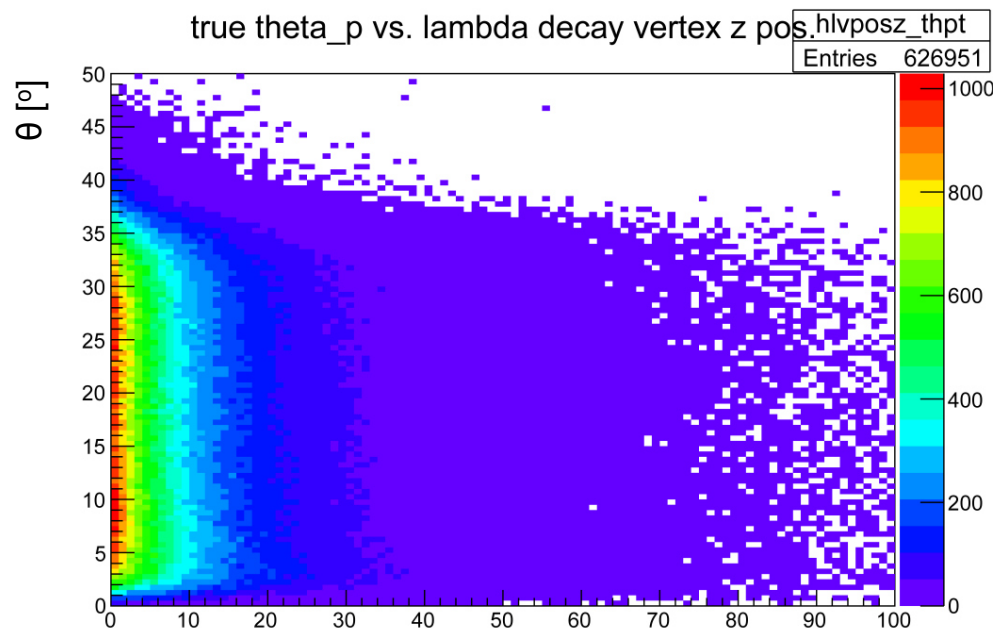


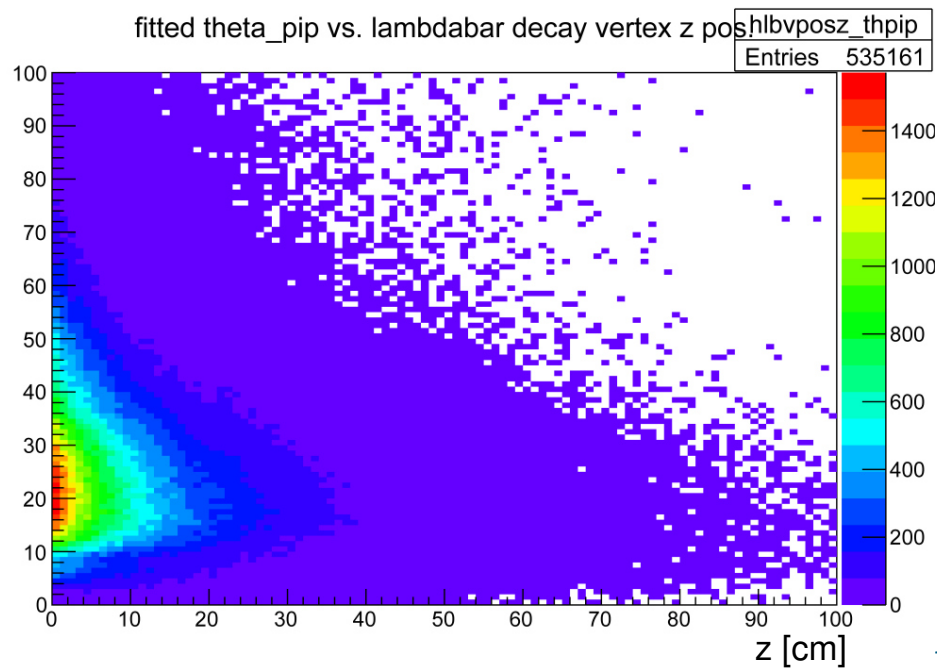
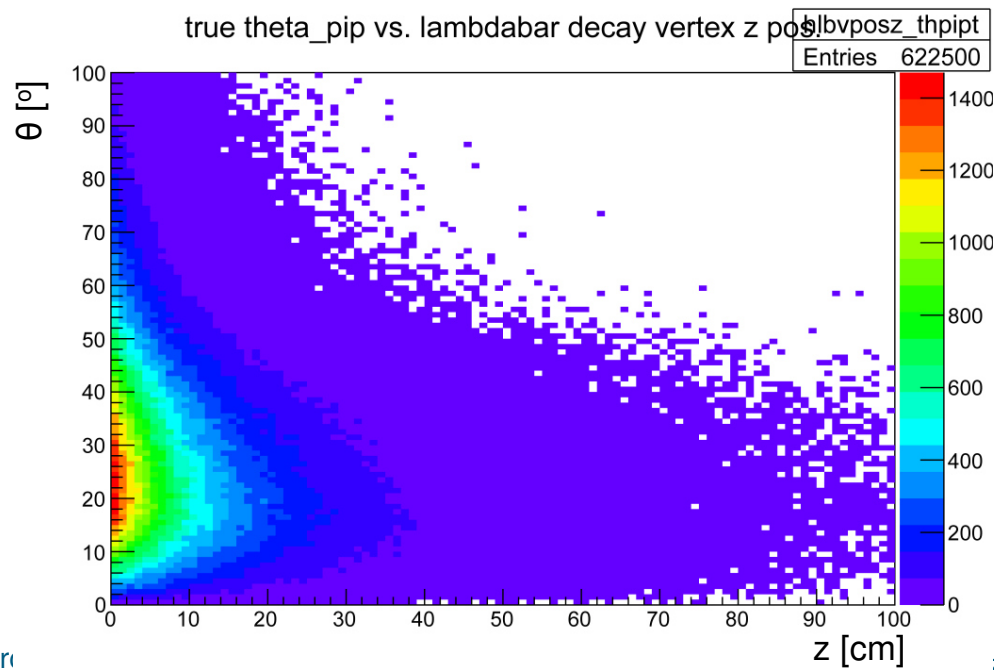
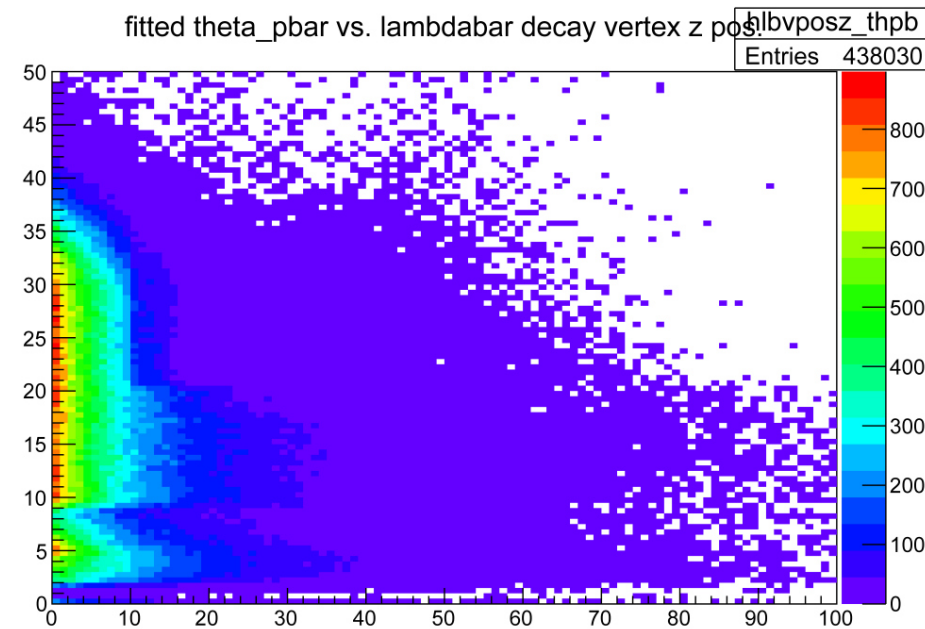
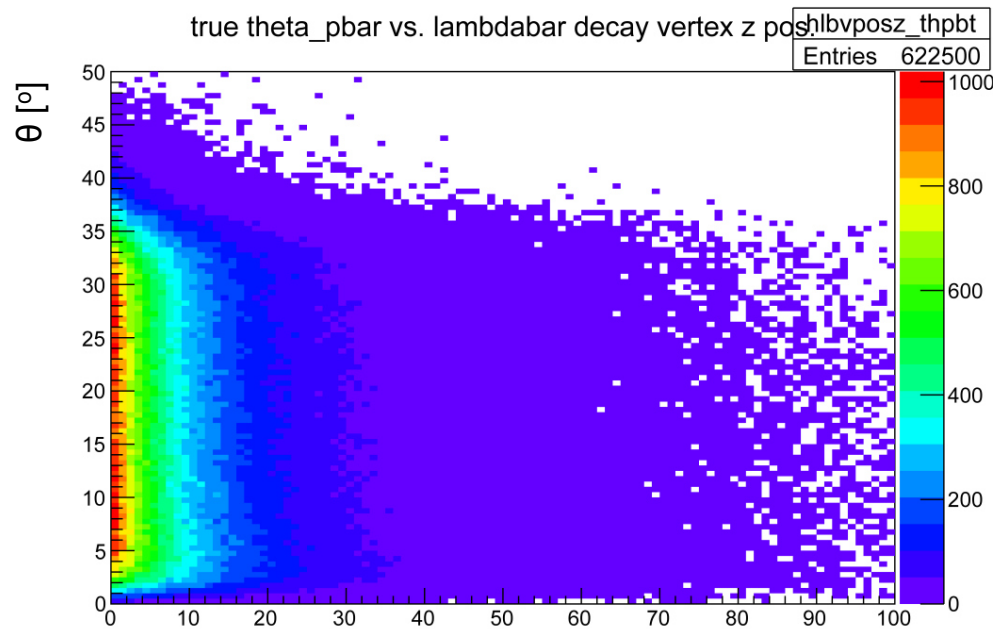
π^- : θ vs. p



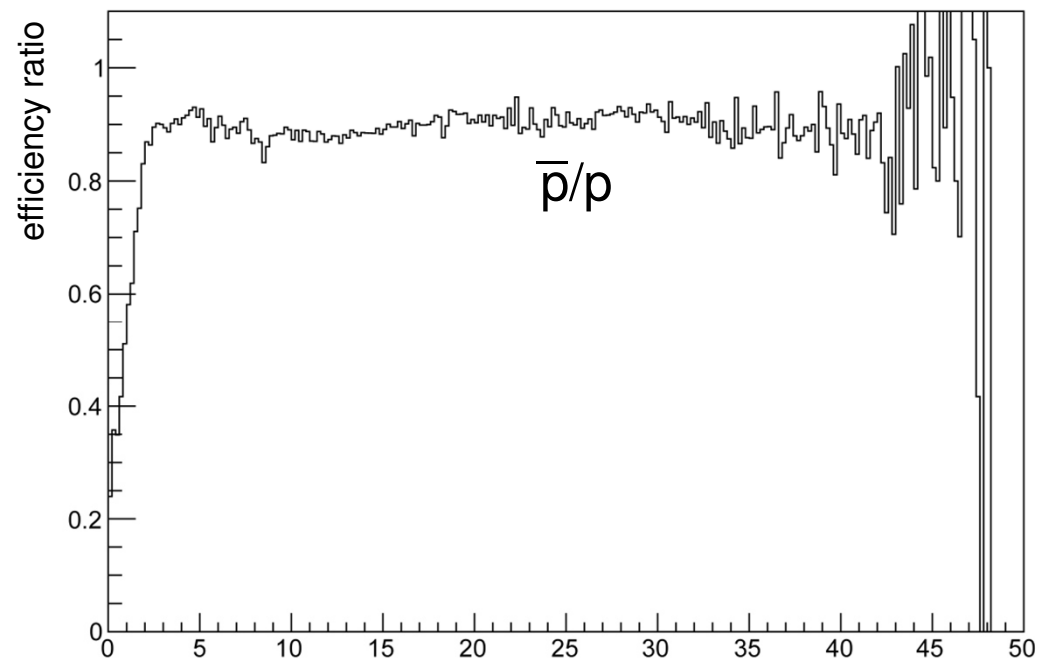
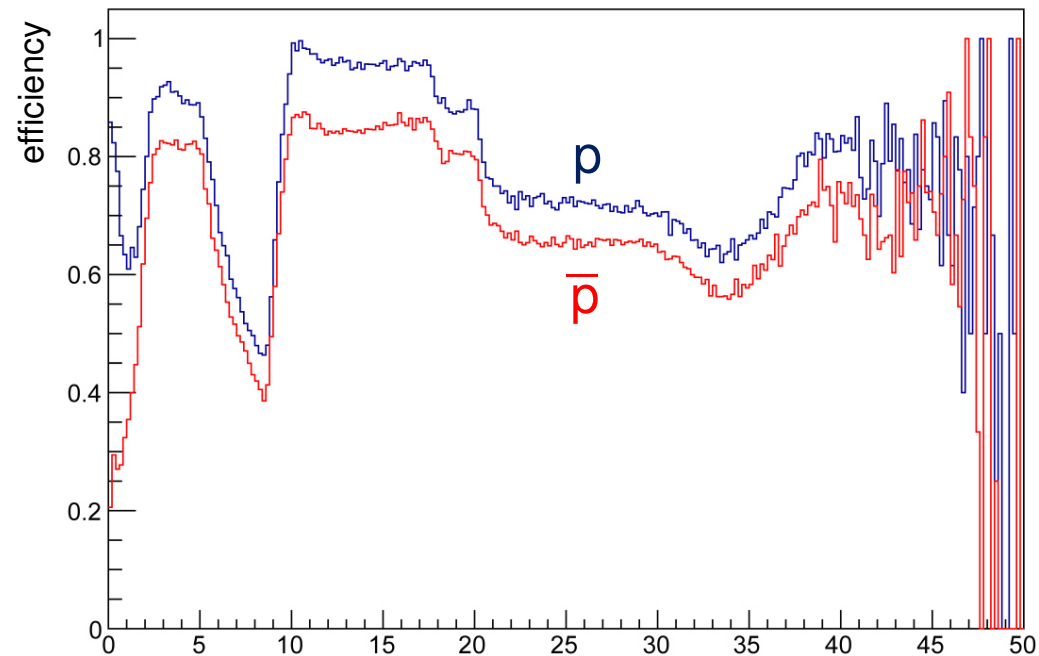
π^+ : θ vs. p

$p, \pi^-: \theta$ vs. Λ decay z

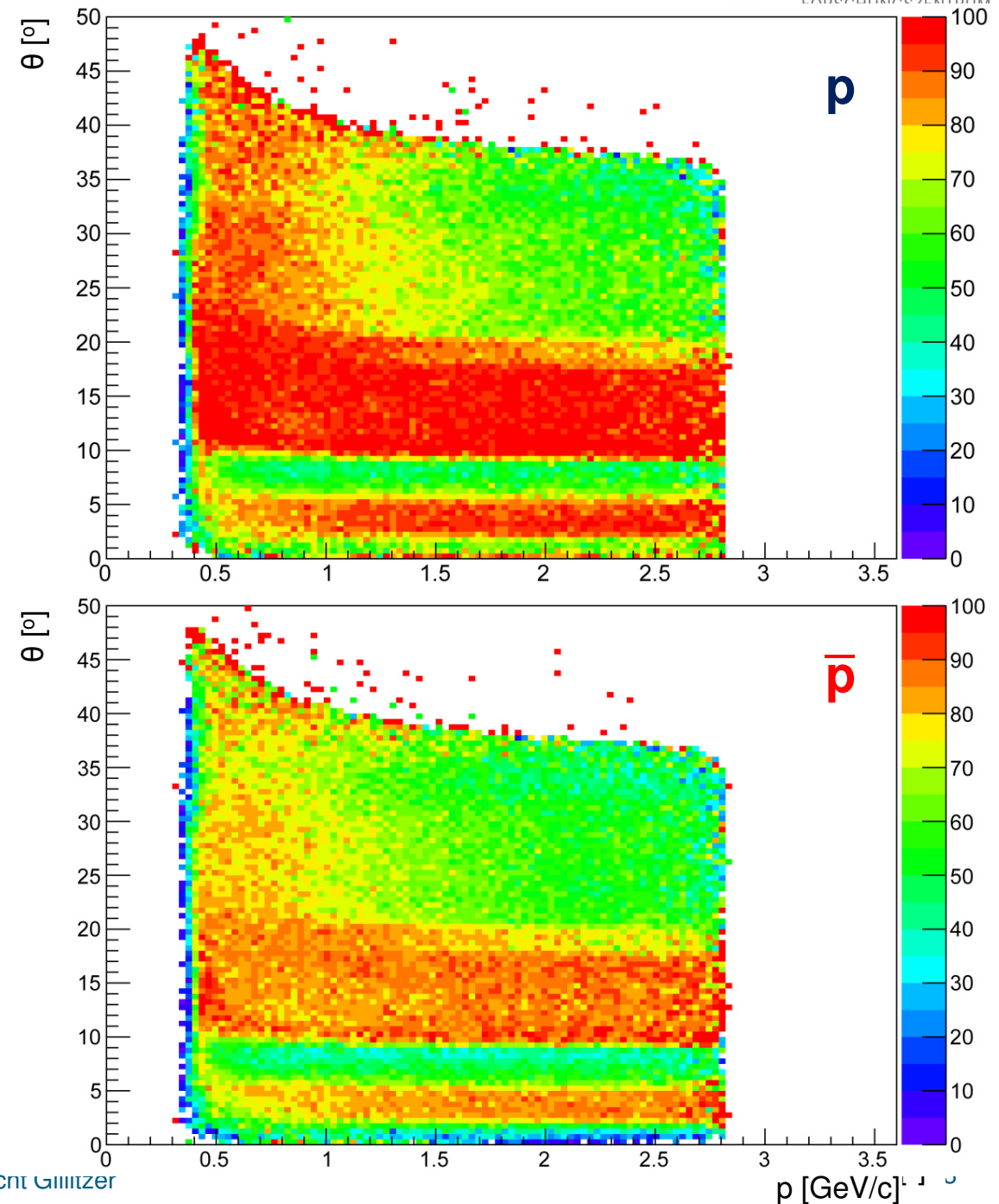




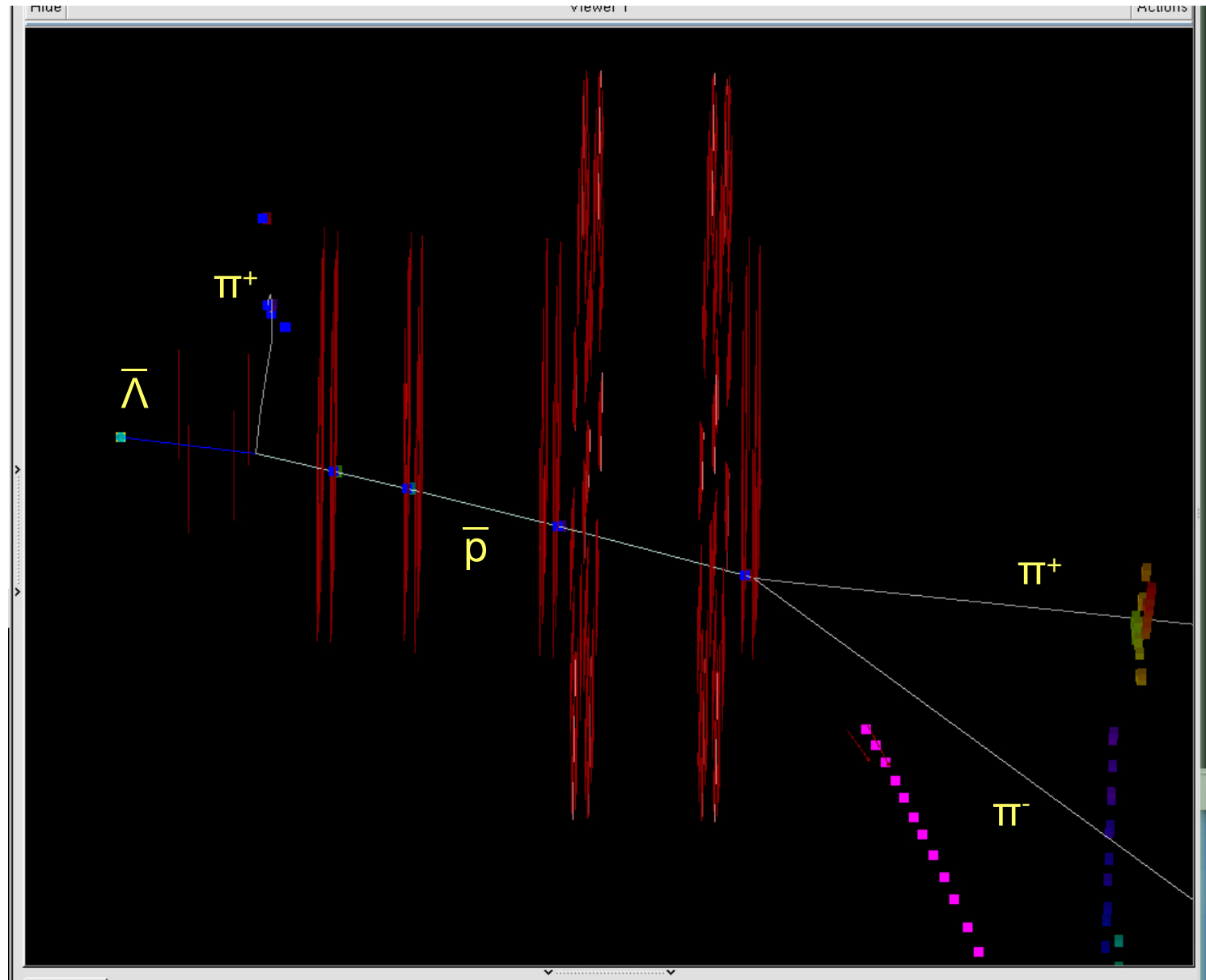
Comparison: p and \bar{p} Reconstruction Efficiency



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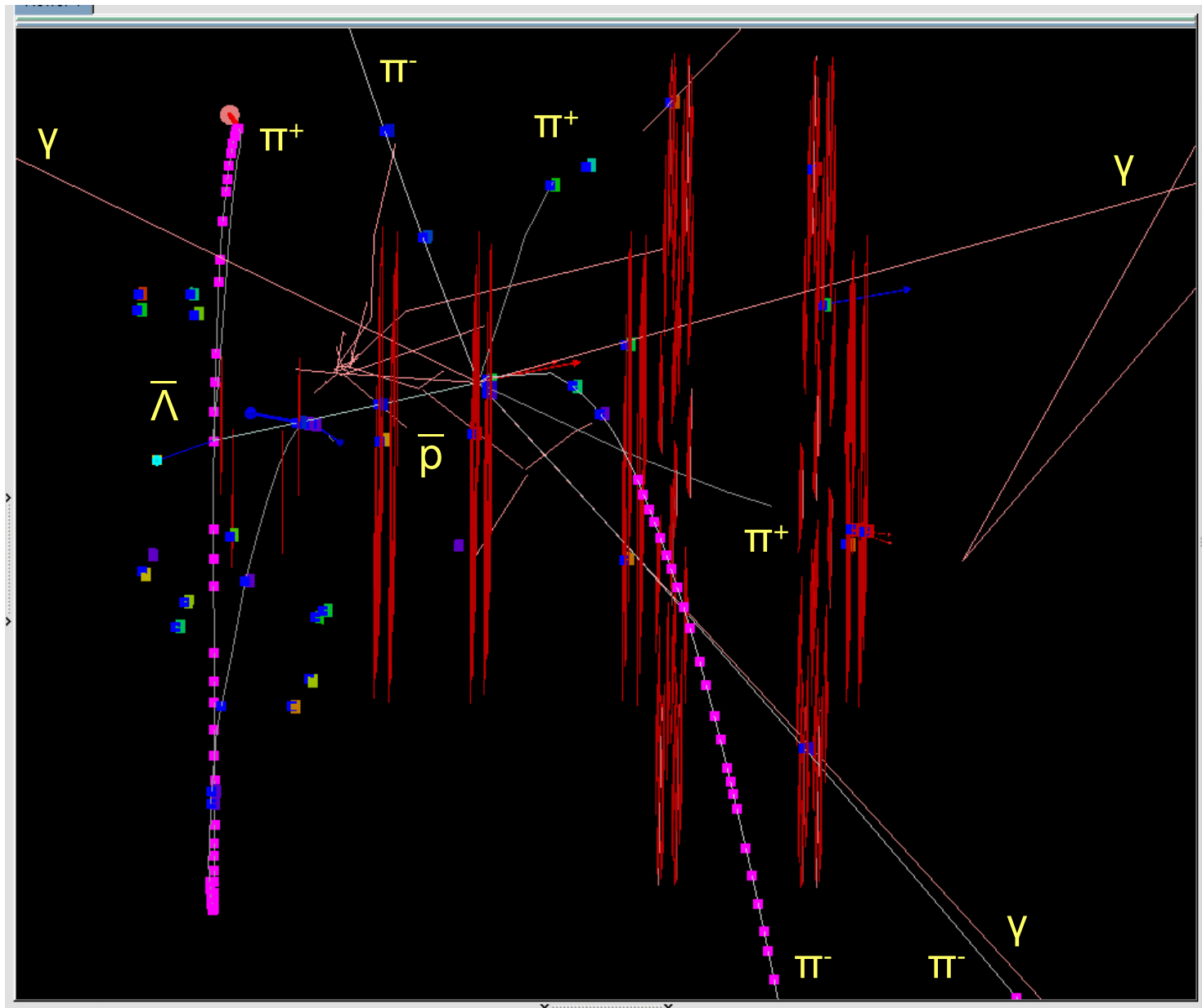


\bar{p} annihilation



evt #8

\bar{p} annihilation



evt #11

Summary

- 1 million Λ and 1 million $\bar{\Lambda}$ generated with the Box Generator were simulated
- the reconstruction efficiency for antiprotons is by about 10% lower than for protons
- no systematic difference observed for π^+ and for π^-
- annihilation of antiprotons is seen in Event Display
- next: realistic pattern recognition