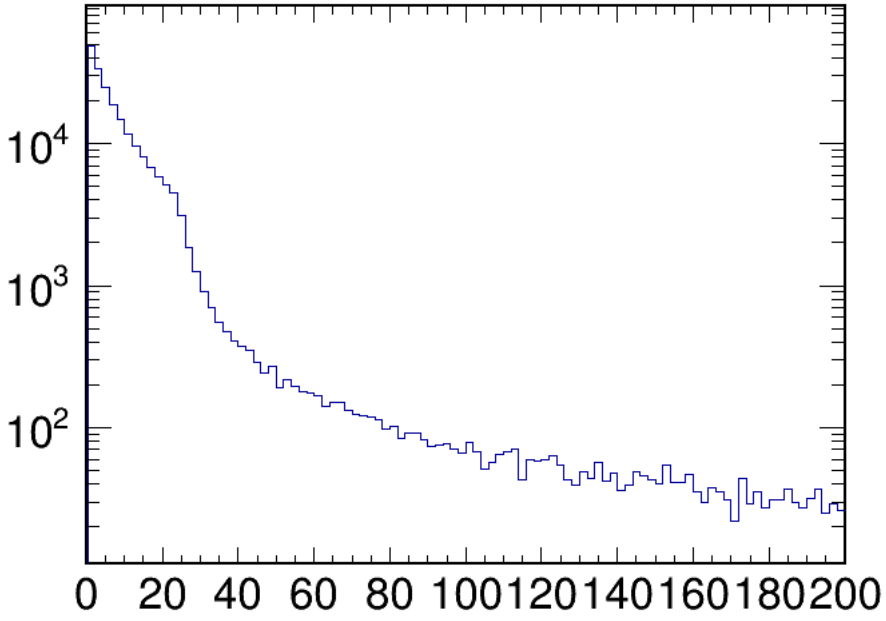
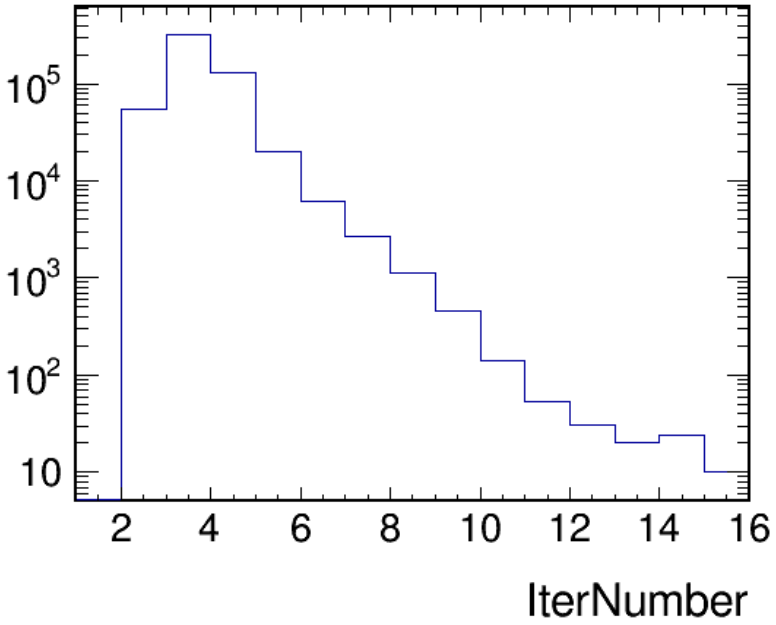
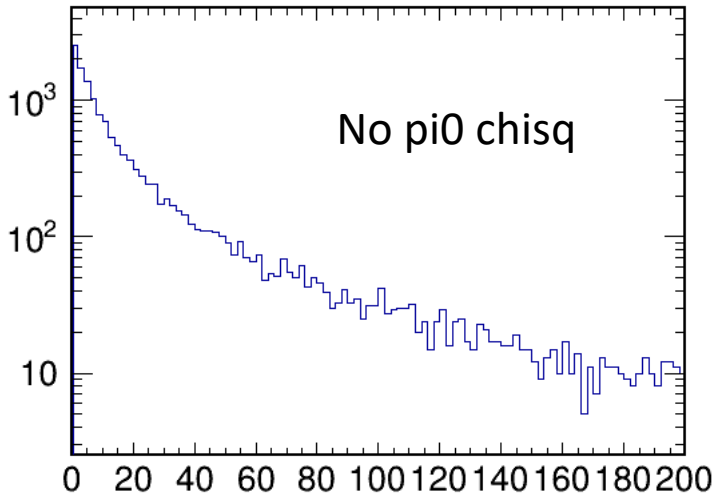
Details of χ^2_{kmfit}



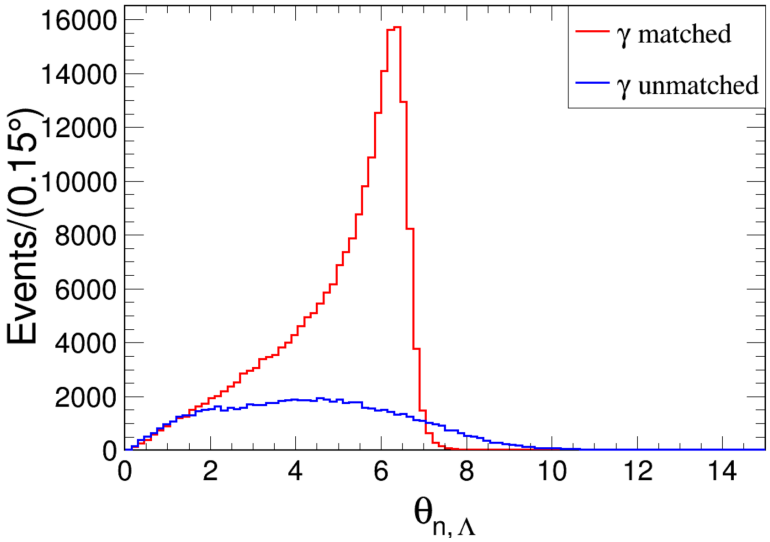


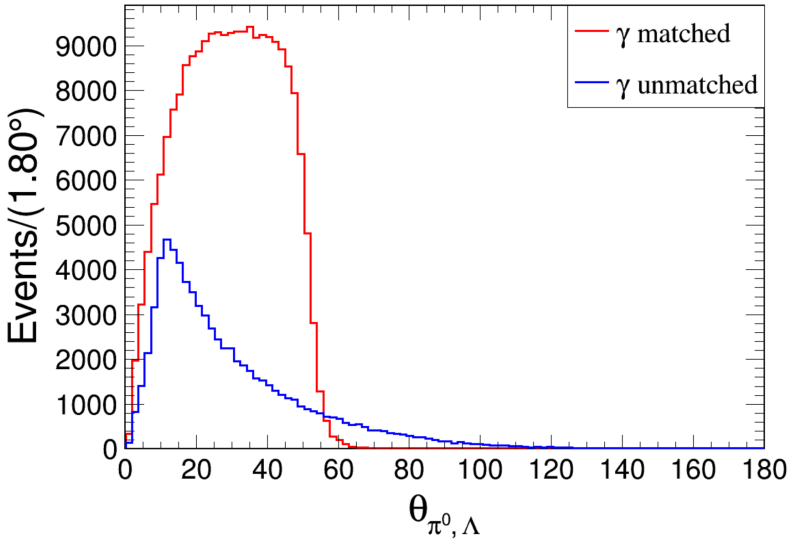


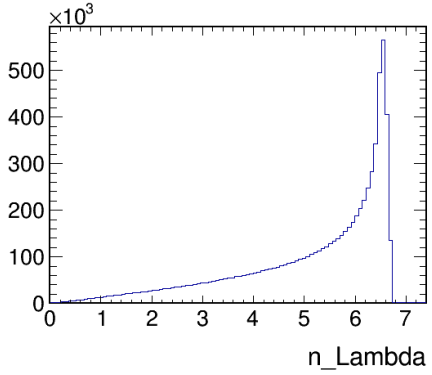
Event Selection

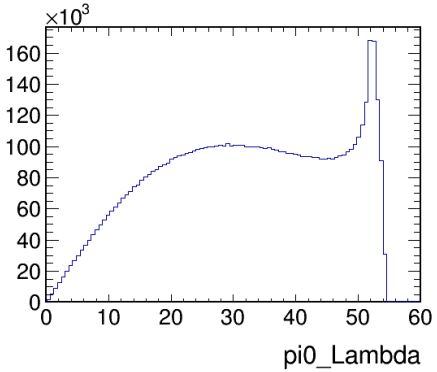
- Charged Tracks
  - $V_r \leq 10cm$
  - $V_z \leq 30cm$
  - $|cos\theta| < 0.93$
- PID
  - Proton: $p > 0.5\ GeV$ && PID: Prob(p) > Prob(K/π)
  - Pion: $p < 0.5\ GeV$ && PID: Prob(π) > Prob(K/p)
  - nProton $\geq$ 1; nPion $\geq$ 1
- $\bar{\Lambda}$ Reconstruction
  - Primary and Secondary vertex fit
  - Choose $\bar{p}\,\pi^+$ with least χ^2_{Sec}
  - $L/\sigma_L > 2.0$
  - $\chi^2_{sec} < 15$
  - $\left|M_{\bar{p}\pi^+} - 1.1157\right| < 0.008\ (GeV/c^2)$
- Shower Selection
  - $|cos\theta| \leq 0.8\ ,\ E > 25MeV$
  - $0.86 \leq |cos\theta| \leq 0.92\ , E > 50MeV$
  - $0 \leq TDC \leq 14$
  - Nshower ≥ 2
  - $Ang_{shower,ChgTrk} \geq 10°$ (for $\bar{p} \geq 20°$)
  - $\theta_{\Lambda,\,shower} \geq 10°$
- π^0 1C Kinematic Fit
  - $\chi^2_{\pi^0} < 25$
  - $75 < M_{\gamma\gamma} < 175\ (MeV)$
  - $\left|E_{\gamma_1} - E_{\gamma_2}\right|/p_{\pi^0} < 0.8$
- Kinematic fit
  - Loop all π^0, do kinematic fit of $\bar{\Lambda}n\pi^0$
  - Missing neutron
  - Constrain $M_{n\pi^0} = M^{PDG}_{\Lambda}$
  - Constrain $P_{ecms} = P_{\bar{\Lambda}} + P_n + P_{\pi^0}$
  - $\chi^2_{kmfit} < 30$

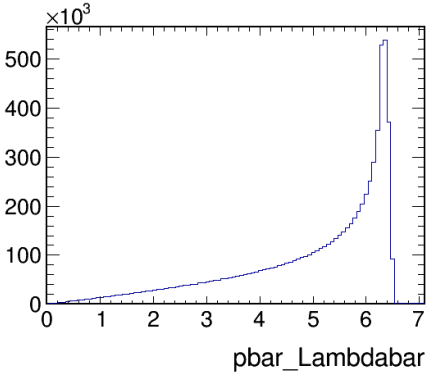
Some Distribution

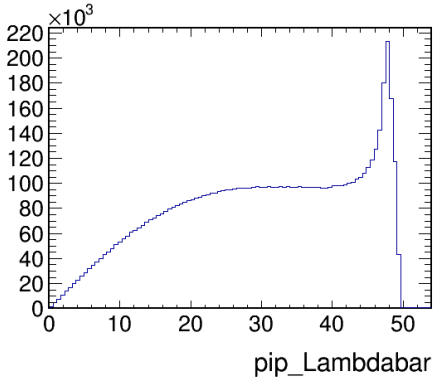






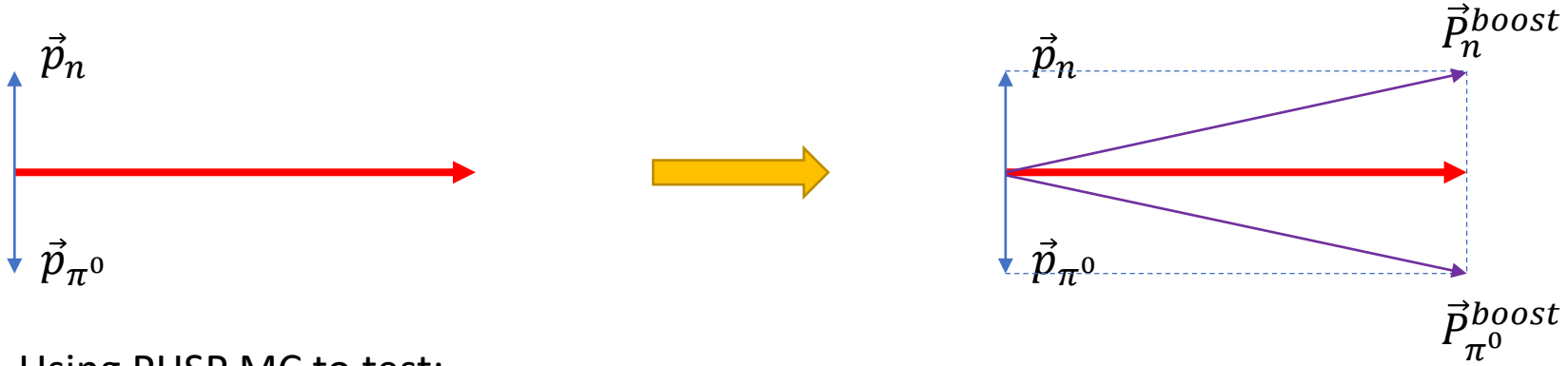






小角度原因

对于$\Lambda \to n\pi^0$系统，M_Λ与$M_n + M_{\pi^0}$太接近，在Λ质心系下，$n\pi^0$的动量很小，因此在实验系$n\pi^0$将有很小的夹角。



Using PHSP MC to test: