

Search for $\eta_c \rightarrow \bar{p}k^+\Lambda + \text{c.c.}$ decay

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Outline

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- 2 Analysis
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Motivation

Recently, the decay channel $\eta_c \rightarrow pK^-\bar{\Lambda}$ has been reported in Belle, with the corresponding branching fractions $B(\eta_c \rightarrow pK^-\bar{\Lambda}) = (2.9_{-0.3}^{+0.4} \pm 0.4) \times 10^{-3}$.

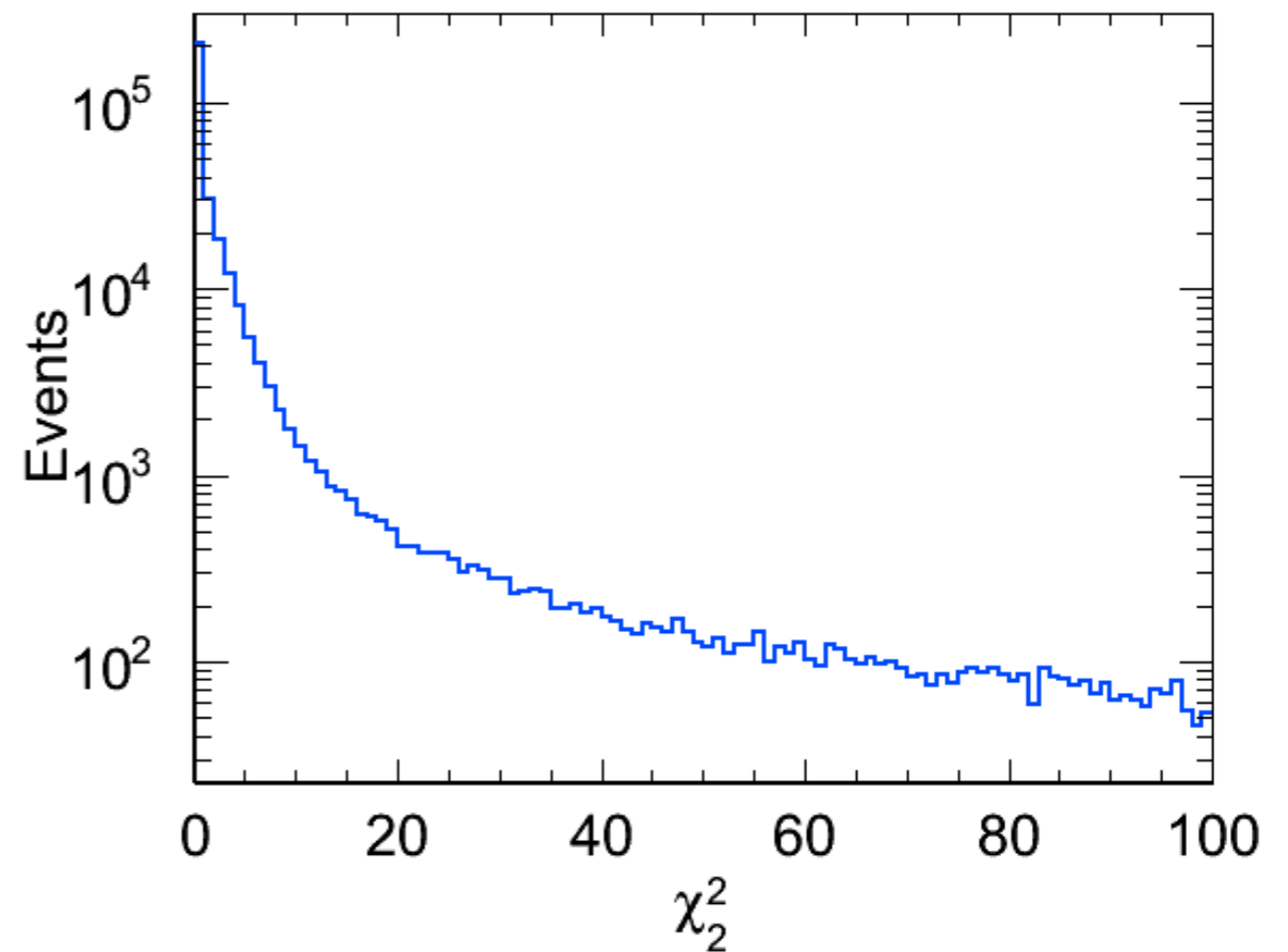
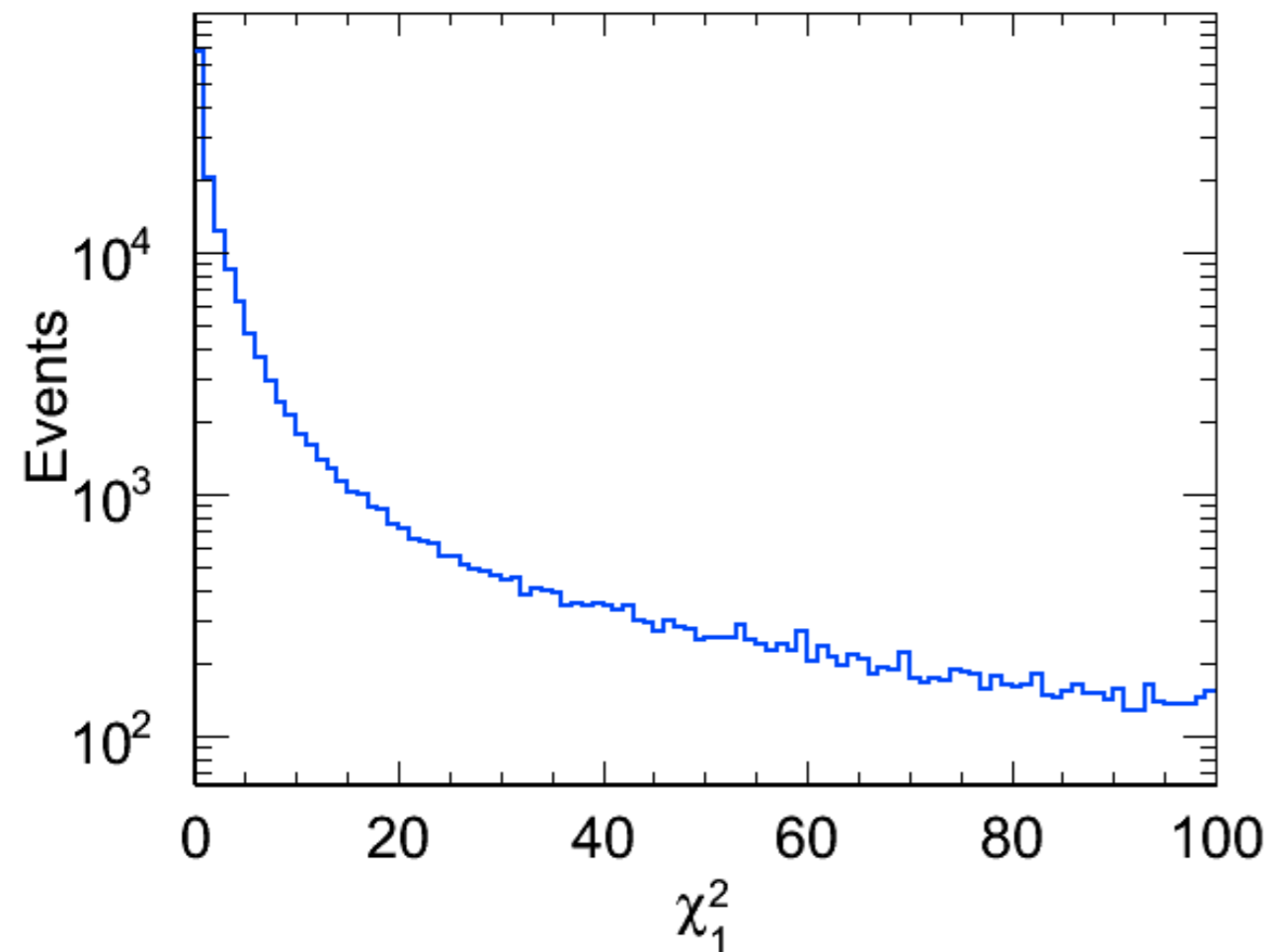
We perform the analysis to confirm the result.

Analysis

- 1 Analysis Environment: BOSS 6.6.4.p01
- 2 MC: 0.5m MC samples generated at $\sqrt{s} = 3.097$ GeV
- 3 Firstly, we reconstruct the Λ by the decay mode $\Lambda \rightarrow p\pi^-$
- 4 Secondly...

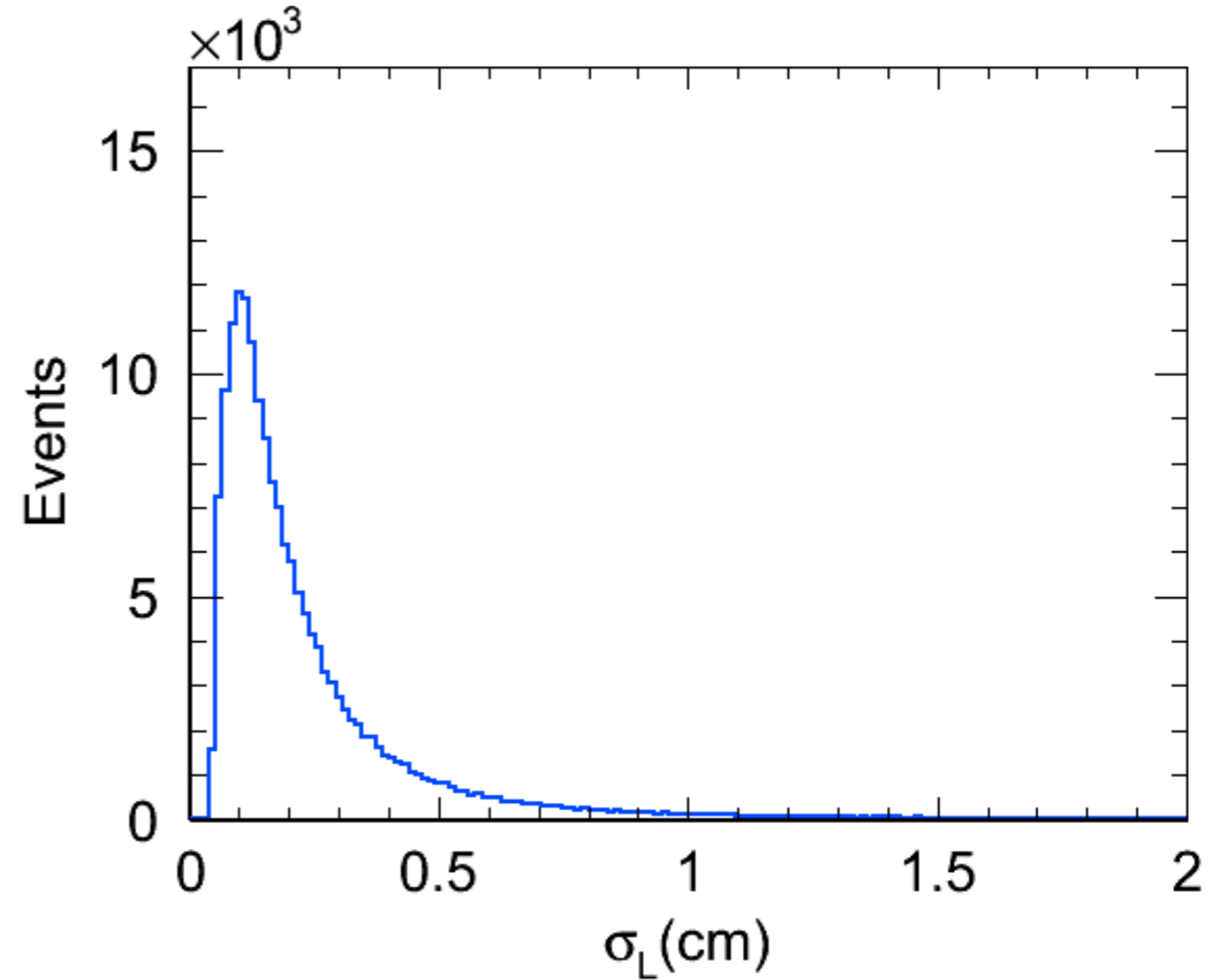
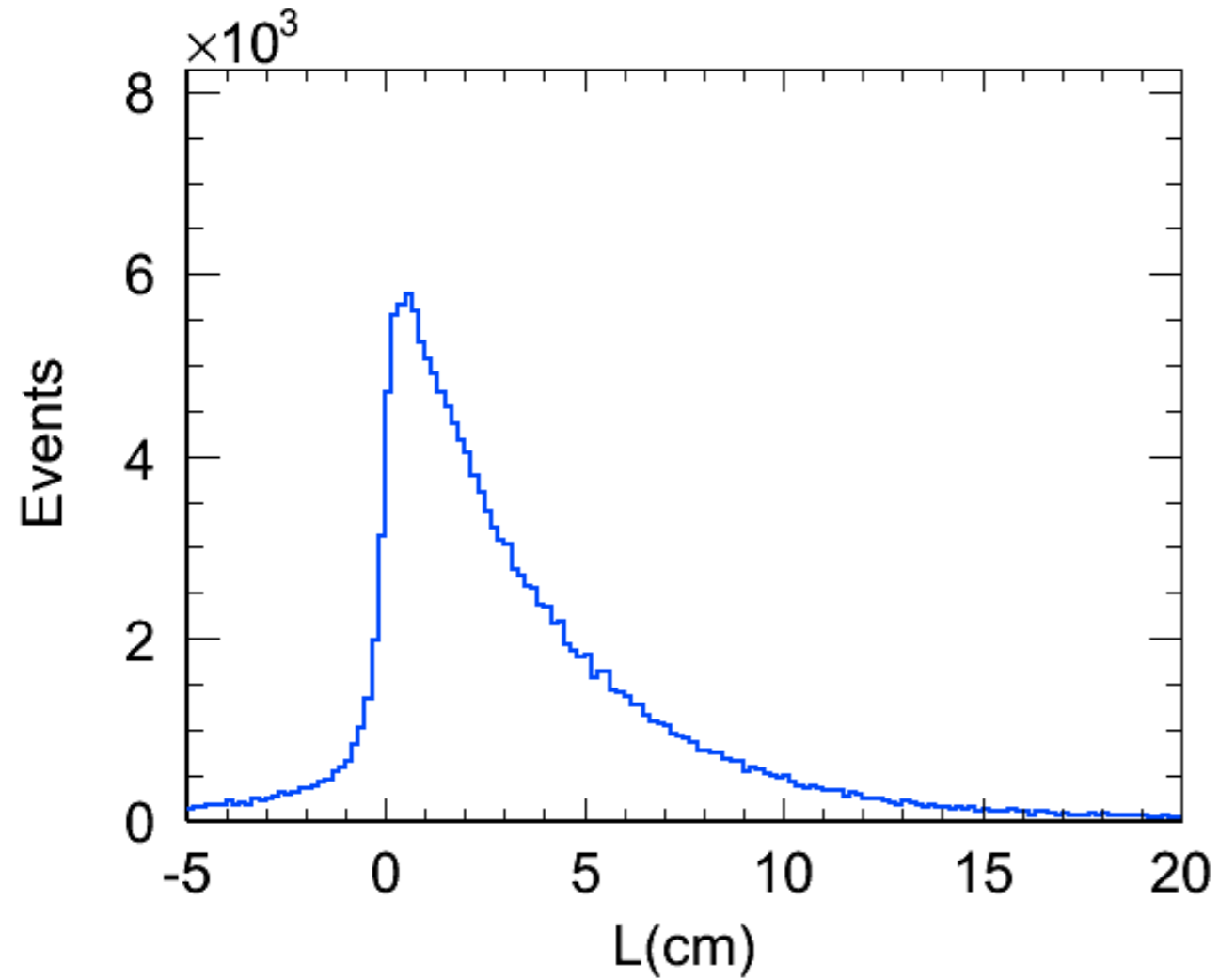
Reconstruct $\Lambda(\Lambda \rightarrow p\pi^-)$

1. Good charged track:
Distance of the track from IP in z direction: $|R_Z| < 20$ cm.
The polar angle of the track: $|\cos\theta| < 0.93$.
2. Proton PID: $\text{prob}(p) > 0$, $\text{prob}(p) > \text{prob}(\pi)$, $\text{prob}(p) > \text{prob}(K)$.
3. No pion PID.
4. χ^2 of the primary vertex fit: $\chi^2_1 < 100$.
5. χ^2 of the secondary vertex fit: $\chi^2_2 < 100$.



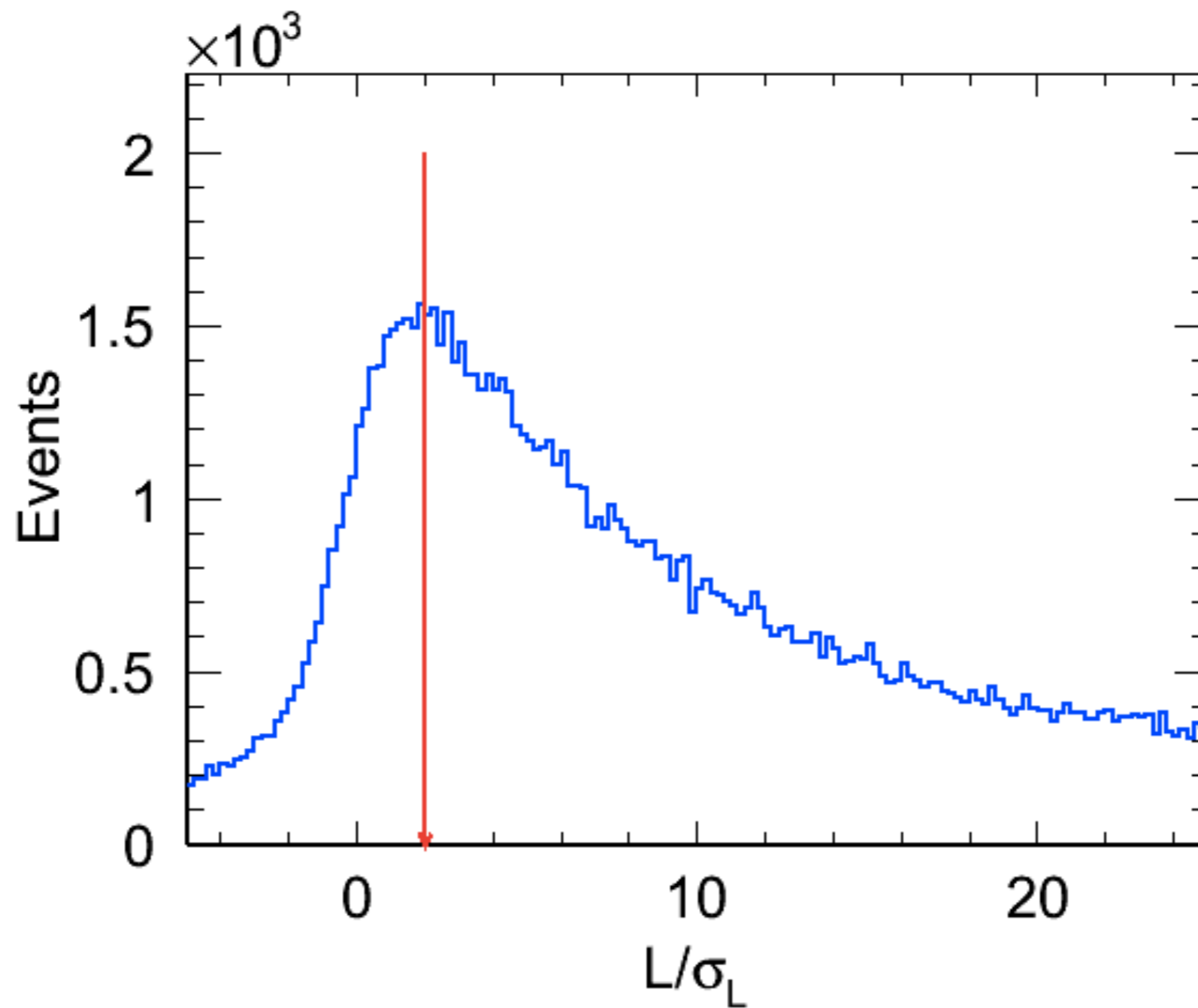
Reconstruct $\Lambda(\Lambda \rightarrow p\pi^-)$

Decaylength and decaylengtherror:



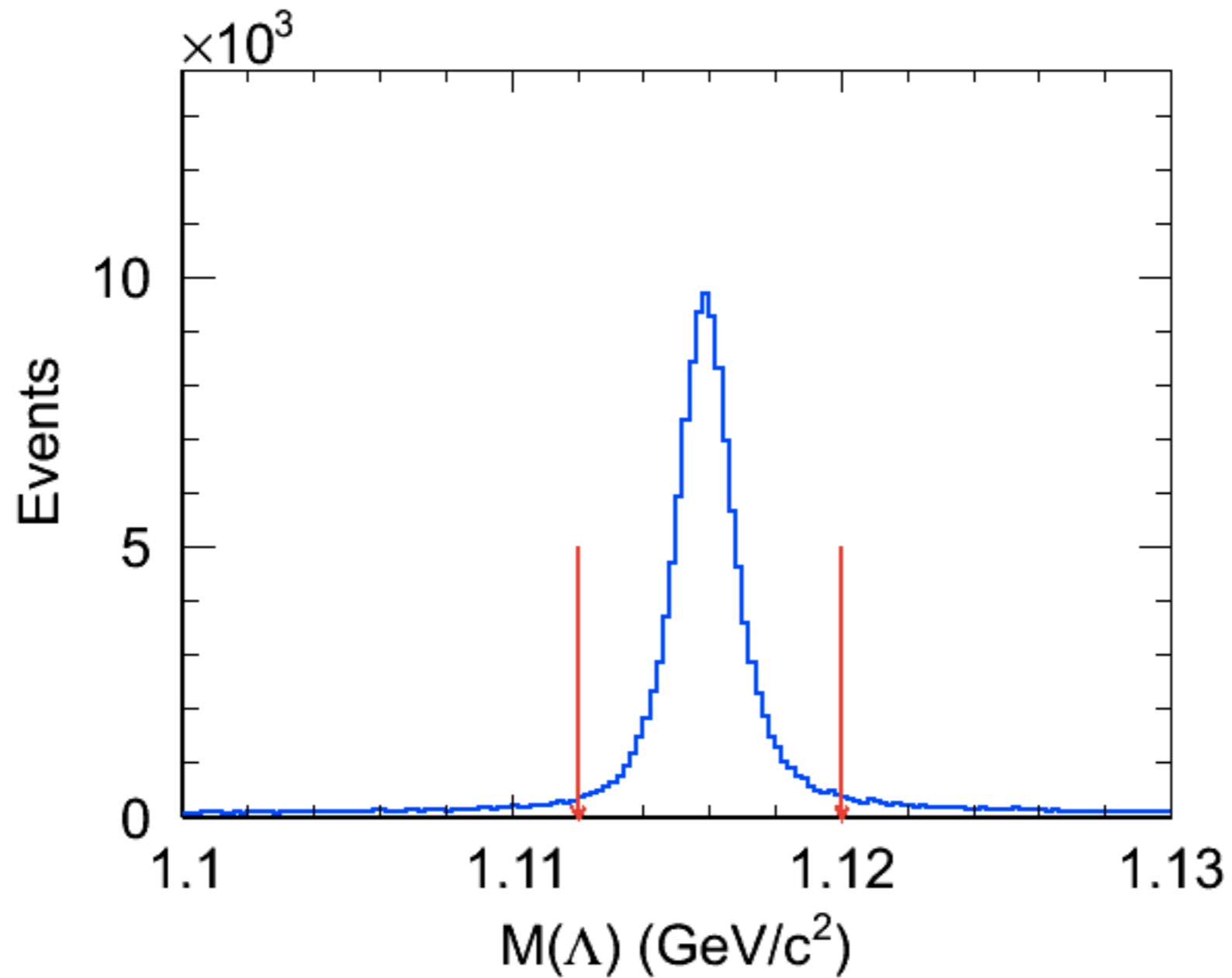
Reconstruct $\Lambda(\Lambda \rightarrow p\pi^-)$

L/σ_L of the secondary vertex fit: $L/\sigma_L > 2$



Reconstruct $\Lambda(\Lambda \rightarrow p\pi^-)$

Invariant mass of Λ candidates: $M(\Lambda) \in [1.112, 1.120] \text{ GeV}/c^2$



To be continue...

Thank you!