# Group meeting
# May 10th, 2024

# Instruction responsibilities

- Classes for Fall 2024:
  - PHY 331:
    - Need to make syllabus
  - PHY 361:
    - Need to make syllabus

# Service responsibilities

- Committee:
  - GlueX Compton Analysis Review Committee:
    - Waiting for author response

# Group responsibilities

- Met with Brandon and Alan on Tuesday
- New undergrad: Met with Dylan on Tuesday
- Need to start writing DOE report that is due early June

# Analysis

TPOL:

- Waiting for new cooked files from 2022 data
- Need to run parallel TPOL analysis on 2022 data:
  - Standard
  - compressed

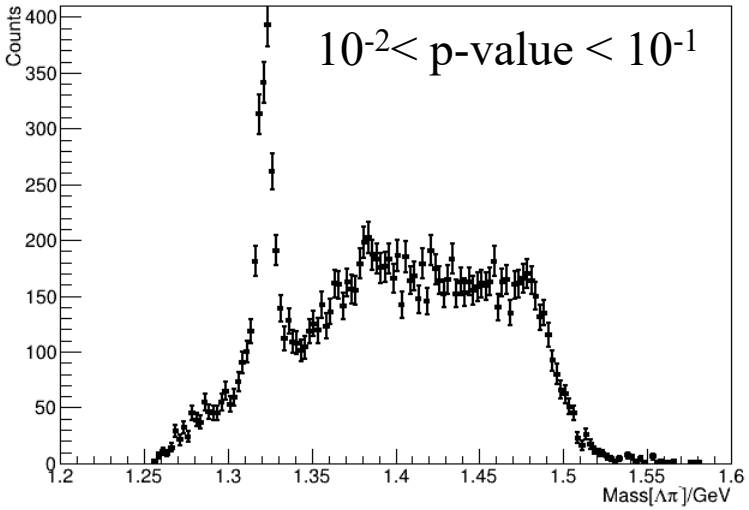
*KKπ*:

- After communicating with Matt Shepherd and Justin Stevens, found that the only recommended way to pass information from the data files to the AmpTools PWA is by way of the pKin 4-vector array
- Need include polarization information in low-mass PWA

$\Xi^*$: Next slide

# $\Xi^*$ Analysis

# $\Xi^*$ Analysis: *p*-value intervals



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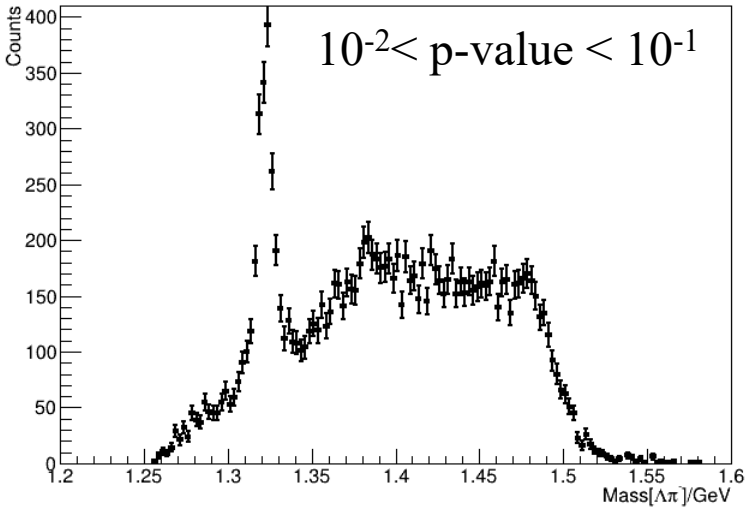


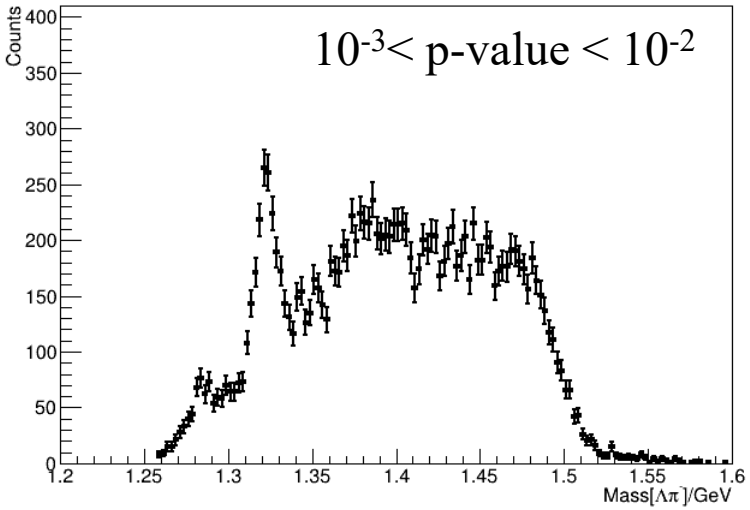

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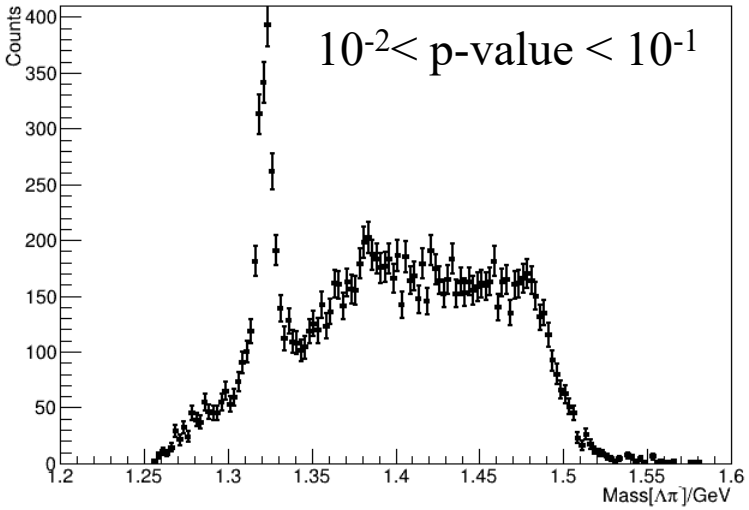


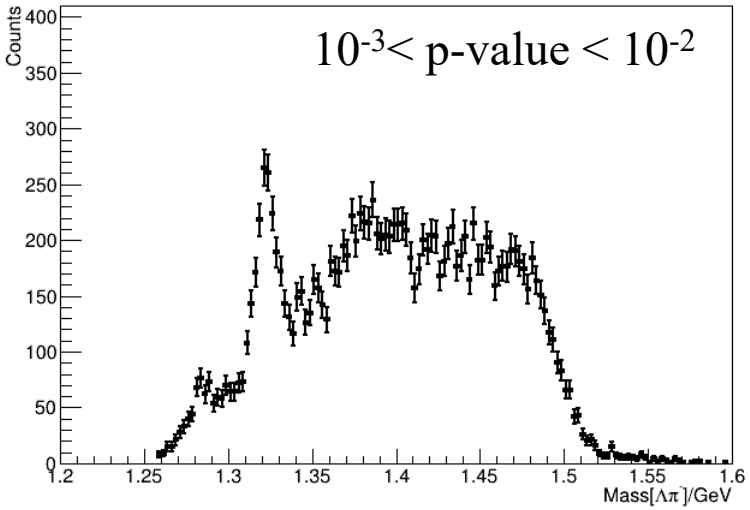


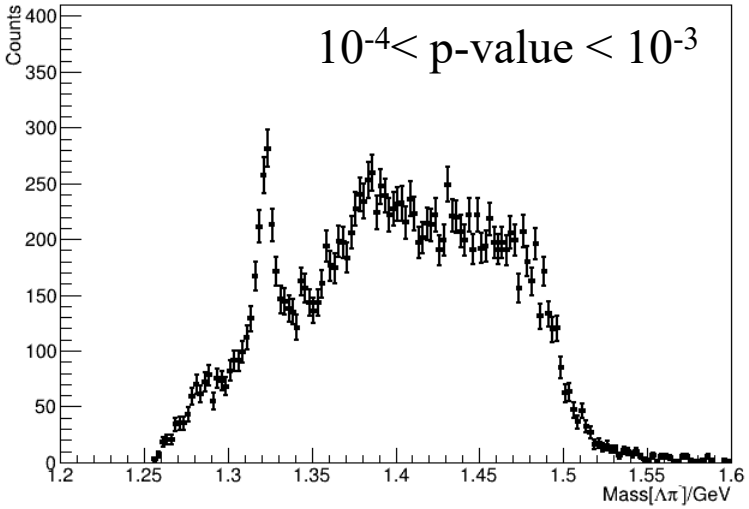

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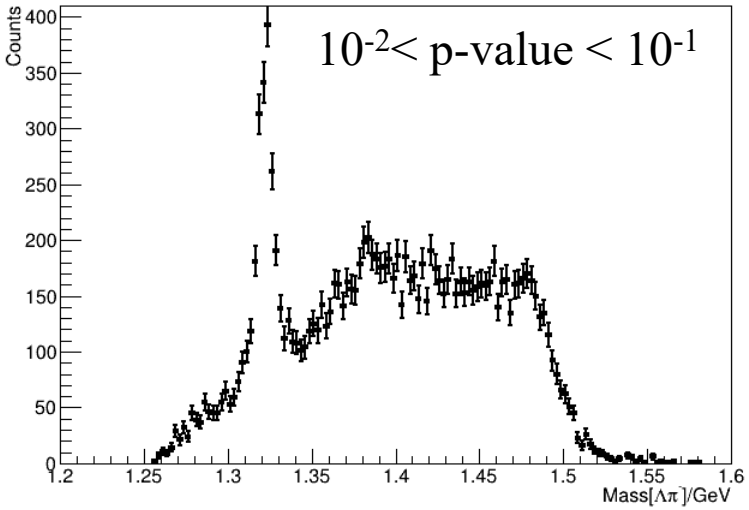


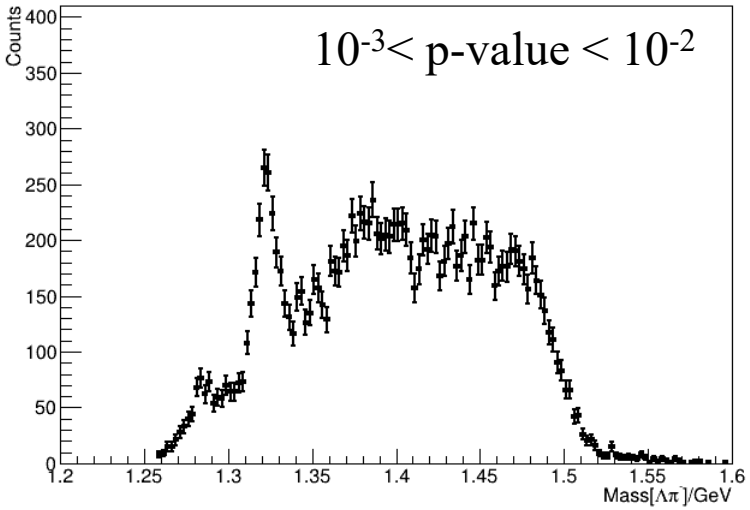


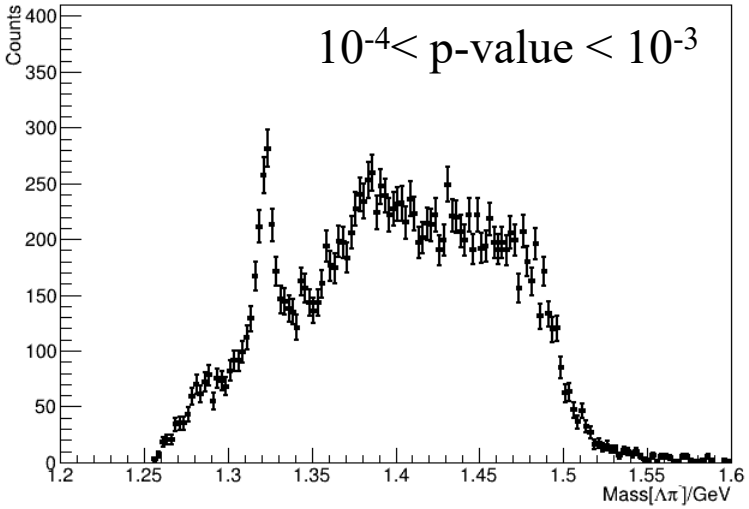


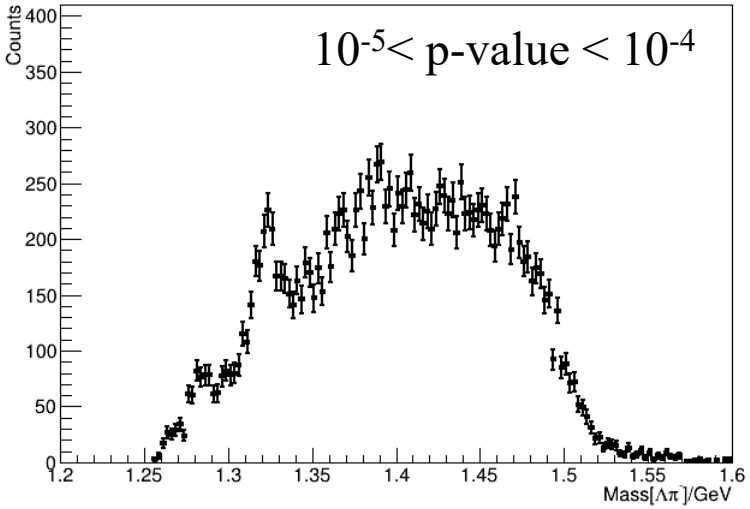

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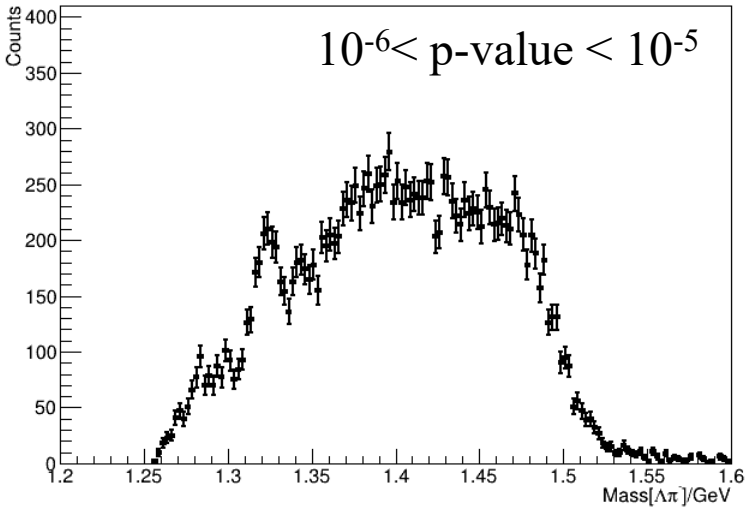

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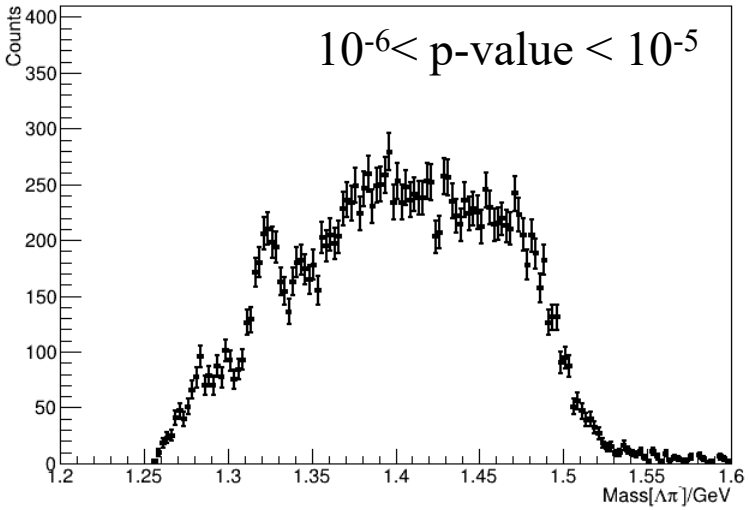


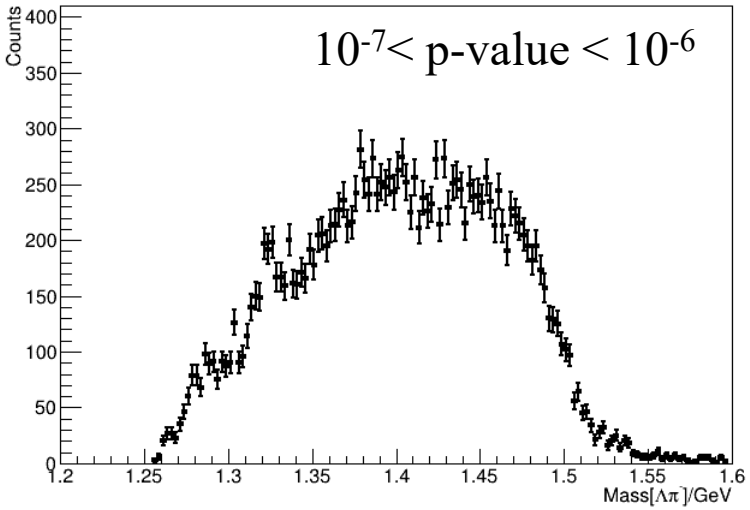

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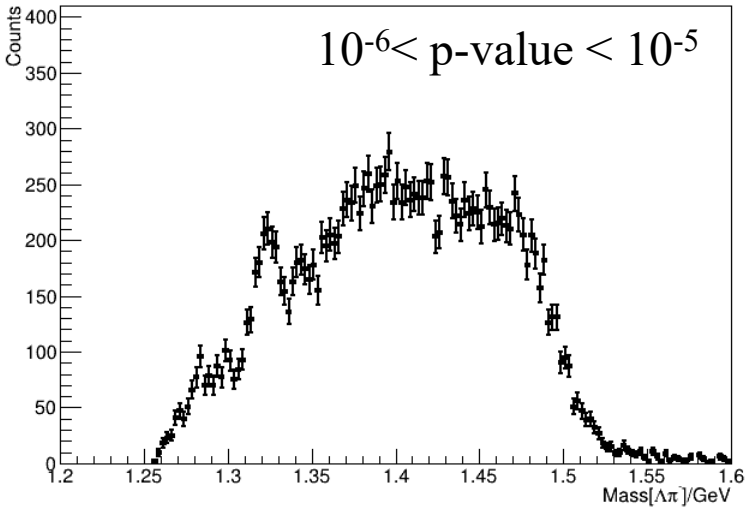


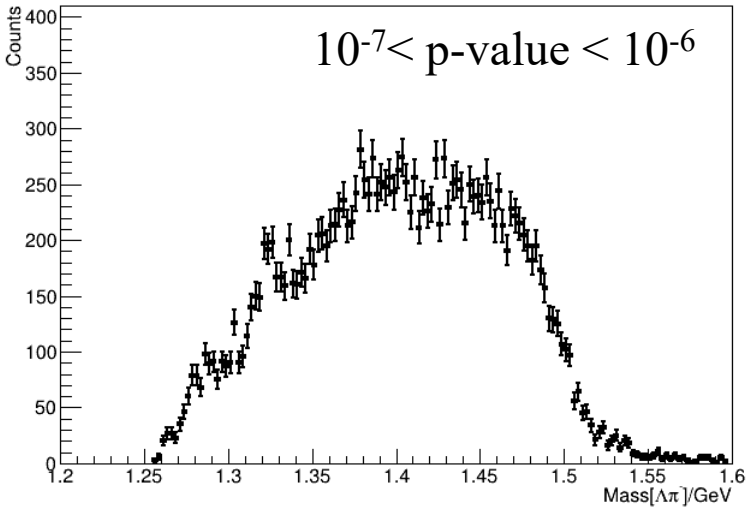


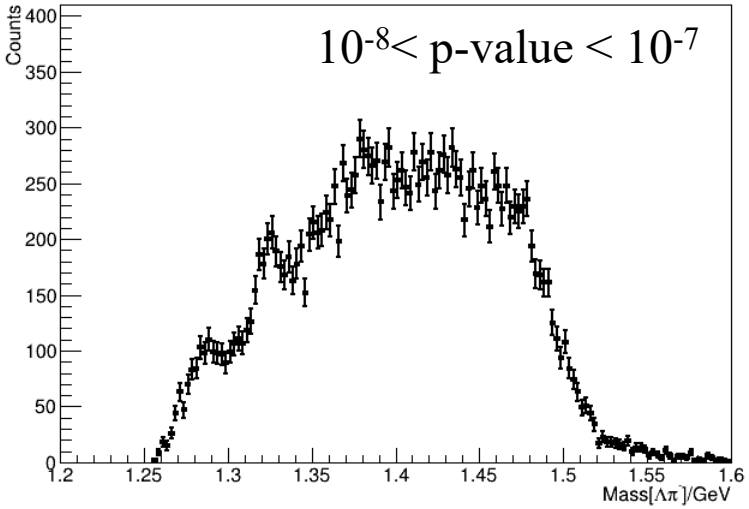

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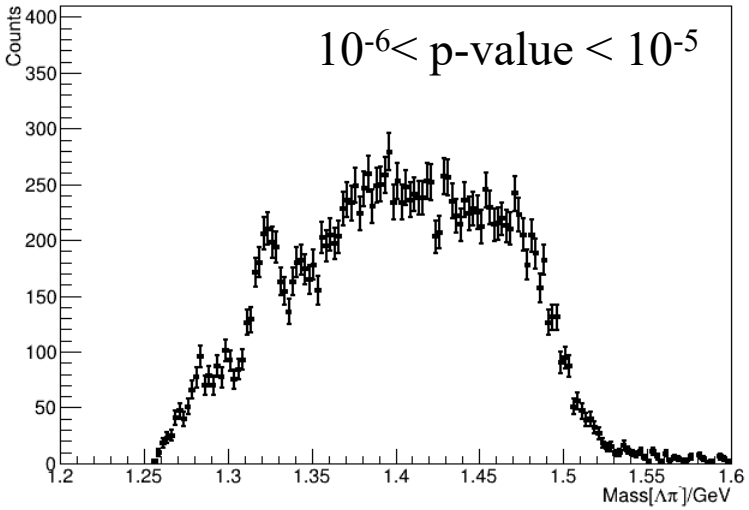


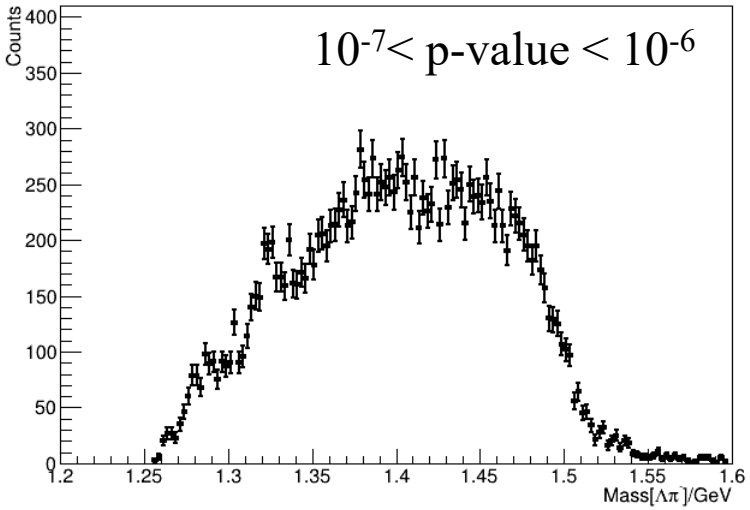


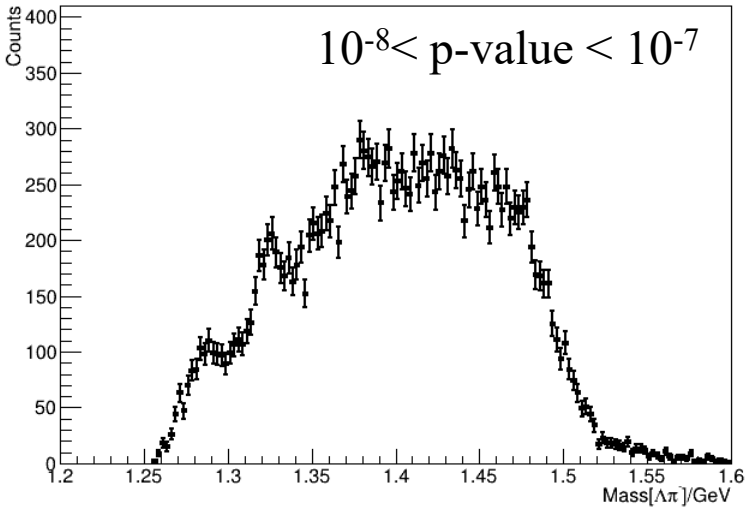


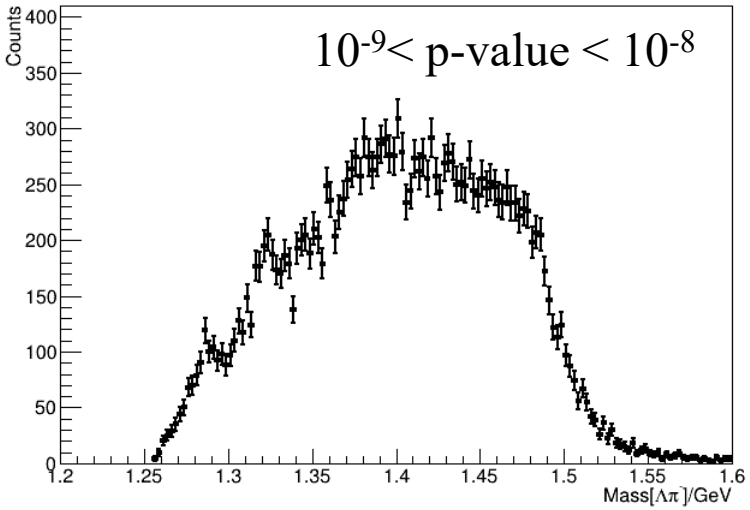

# $\Xi^*$ Analysis

Notation:

CLn: Confidence level for $p$-value > $10^{-n}$

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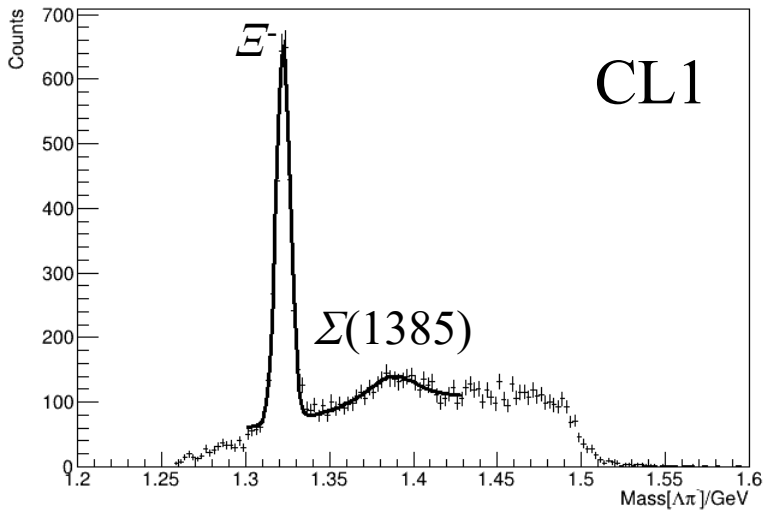
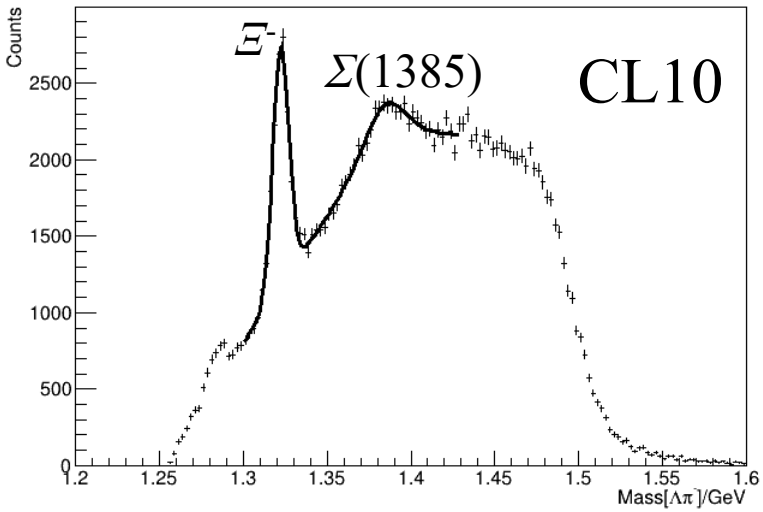
Concentrating on one very tight cut (CL1) and one very loose cut (CL10)

# $\Xi^*$ Analysis: mass[$\Lambda\pi^-$]



# $\Xi^*$ Analysis: $Q$-factors

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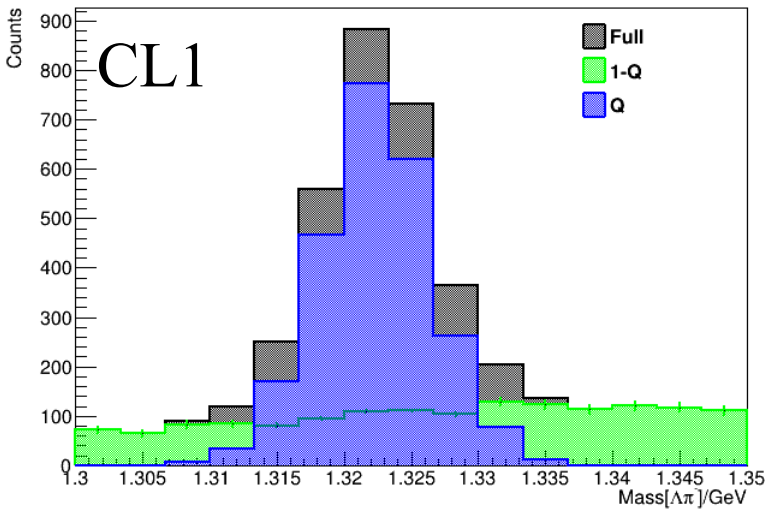
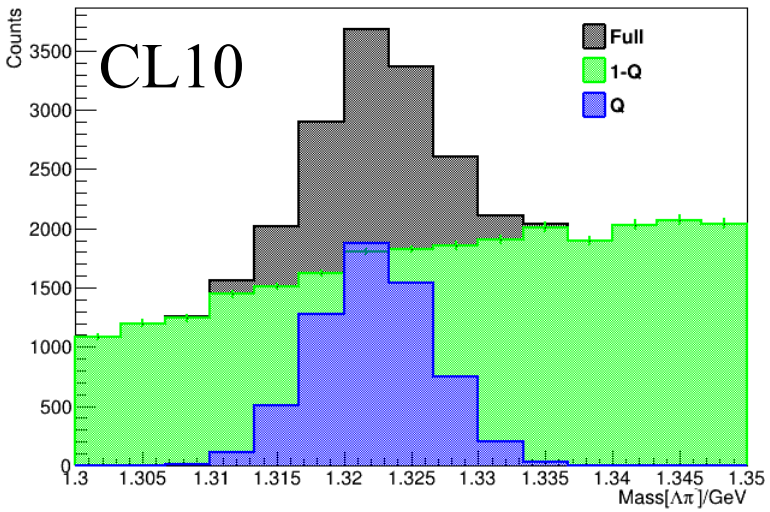
# $\Xi^*$ Analysis: $Q$-factors

Q-factors:

- Under development
- Fitting mass[$\Lambda\pi^-$] to mass of ground state $\Xi^-$
- Currently only using mass[$\Lambda\pi^-\pi^0$] to determine "distance" between events
- Using closest 40 events for $Q$-factor determination

# $\Xi^*$ Analysis: $Q$-factors on mass[$\Lambda\pi^-$]



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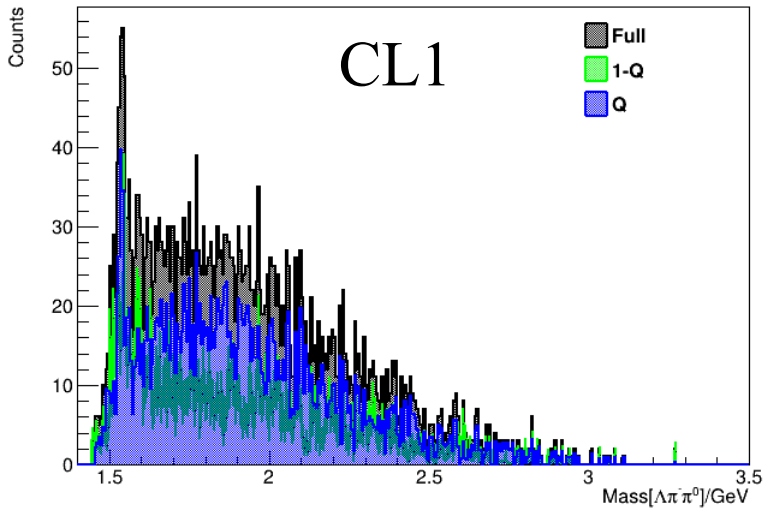


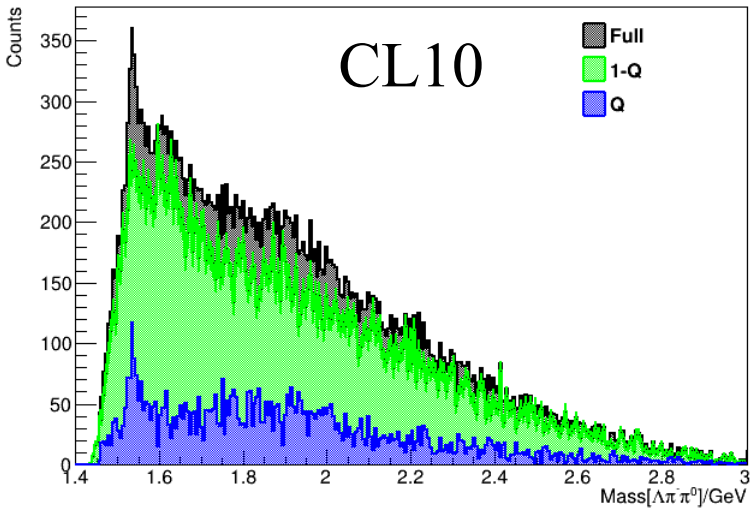

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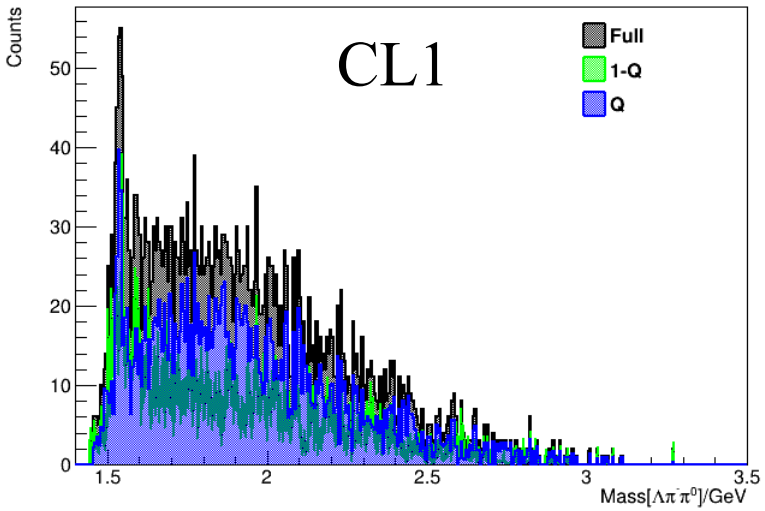
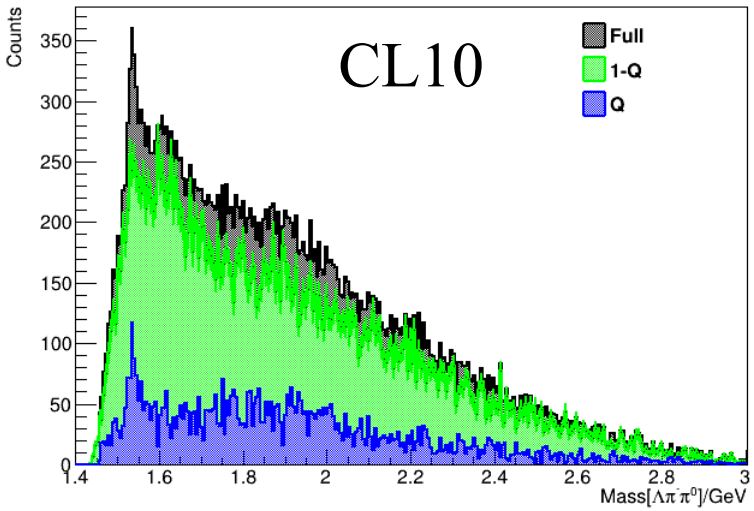
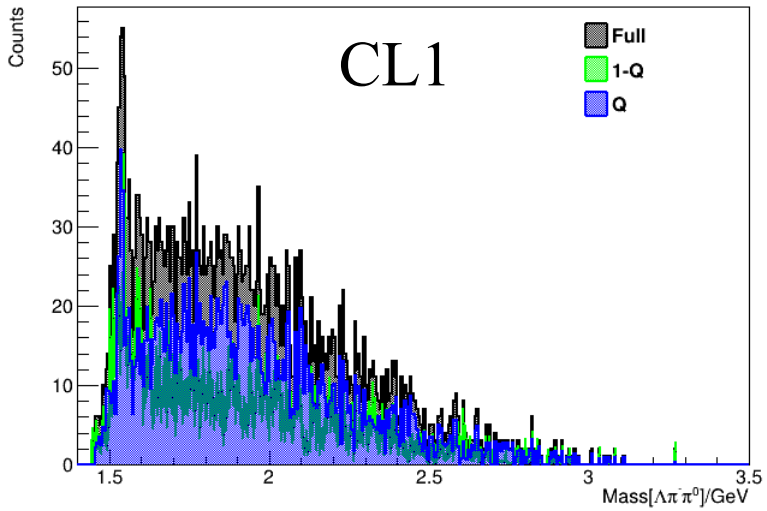
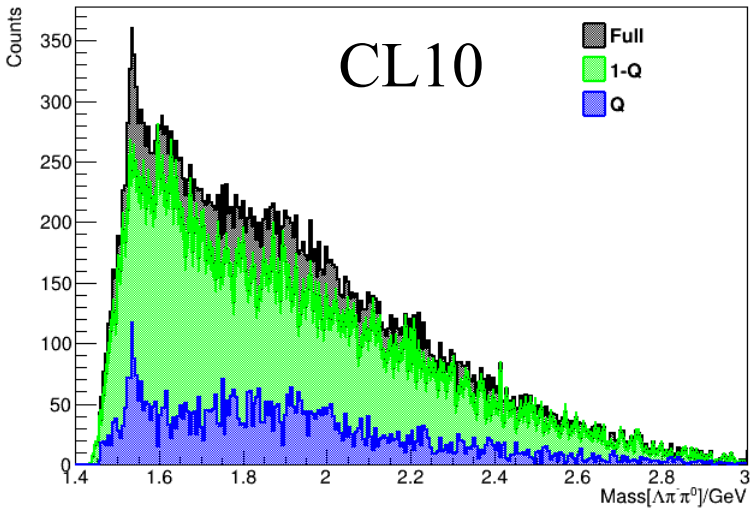



Huge reduction in background for CL10

# $\Xi^*$ Analysis: $Q$-factors on mass[$\Lambda\pi^-\pi^0$]




Close-up on low-mass range on next slide

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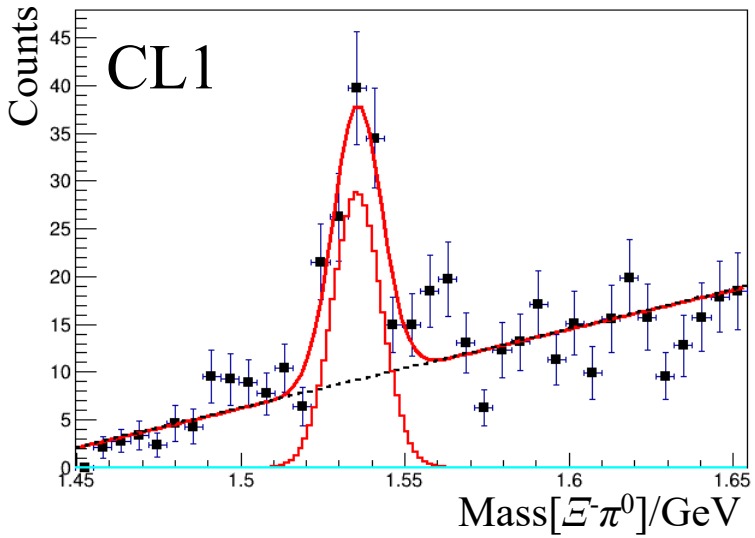


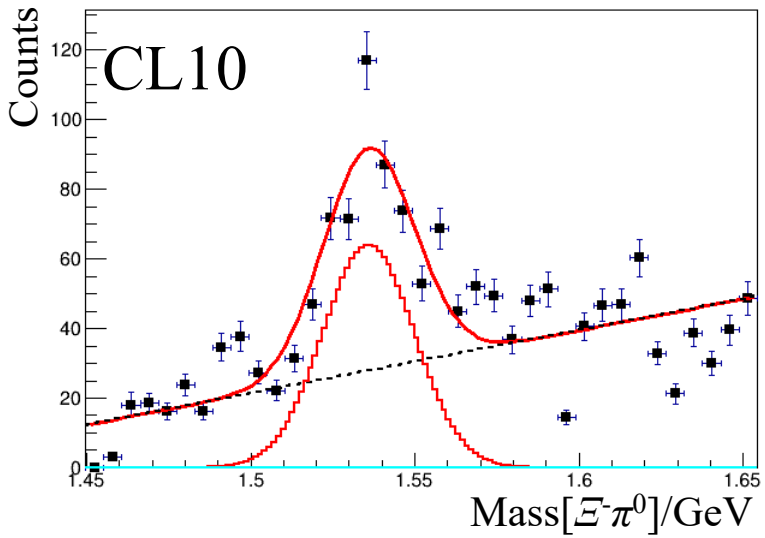

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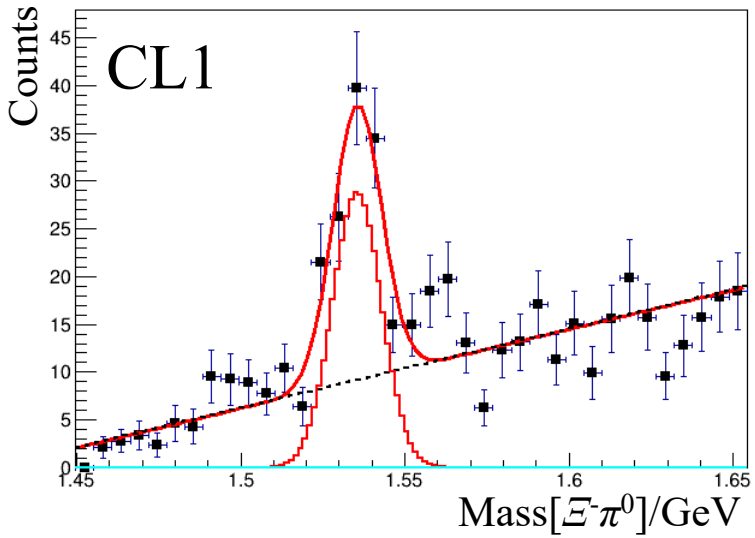
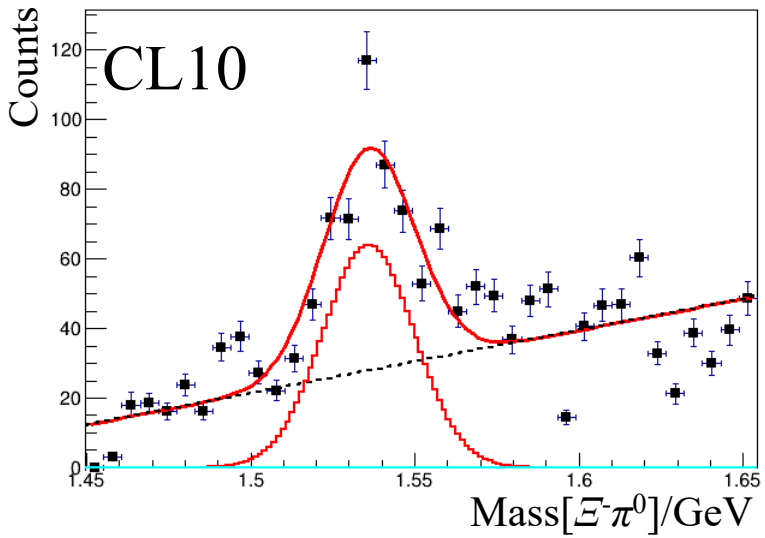
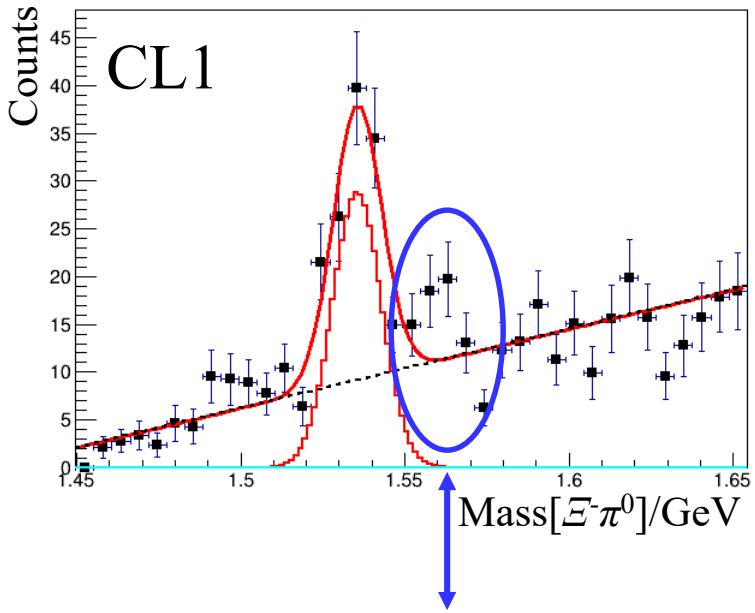
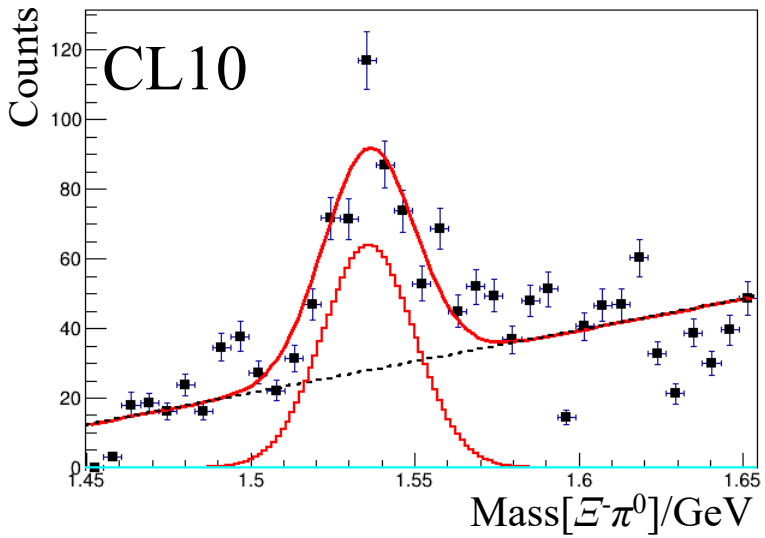



Peak is much wider for CL10

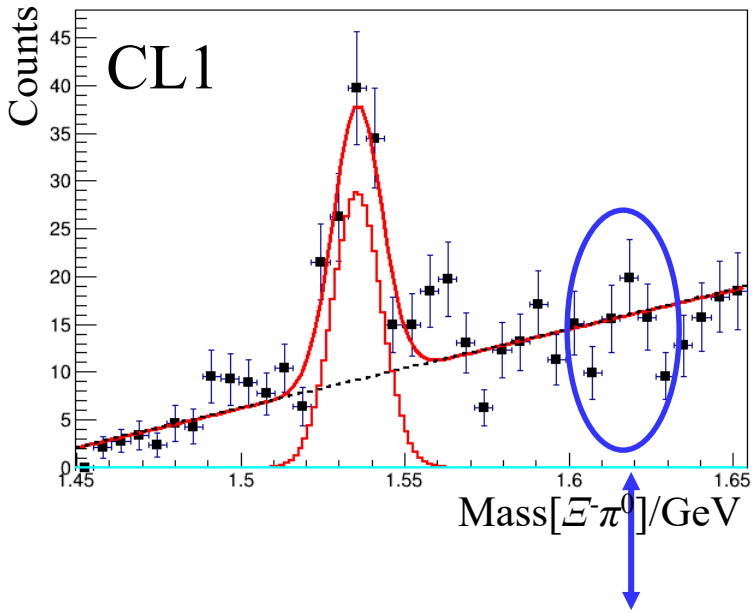
# $\Xi^*$ Analysis: $Q$-factors on mass[$\Lambda\pi^-\pi^0$]

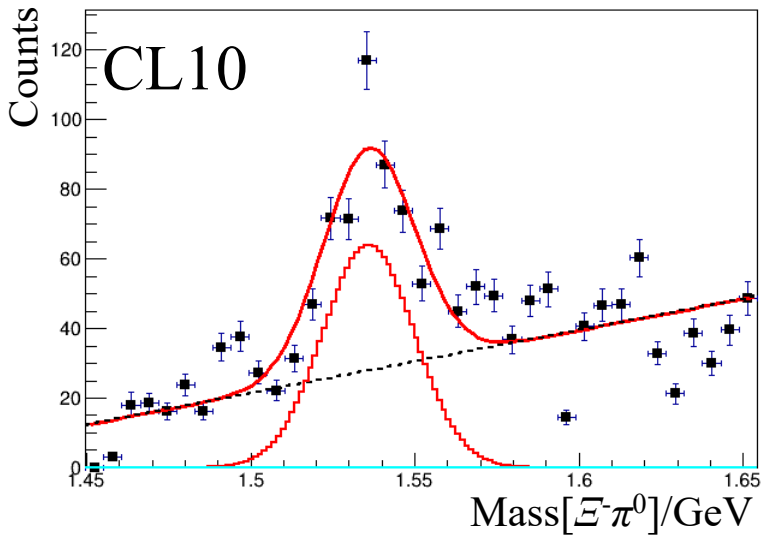



Statistical fluctuation?

# $\Xi^*$ Analysis: $Q$-factors on mass[$\Lambda\pi^-\pi^0$]



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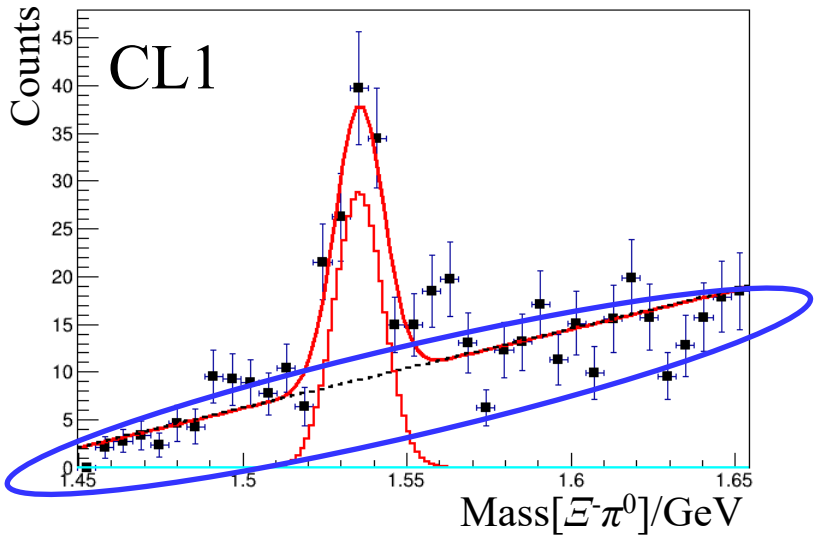
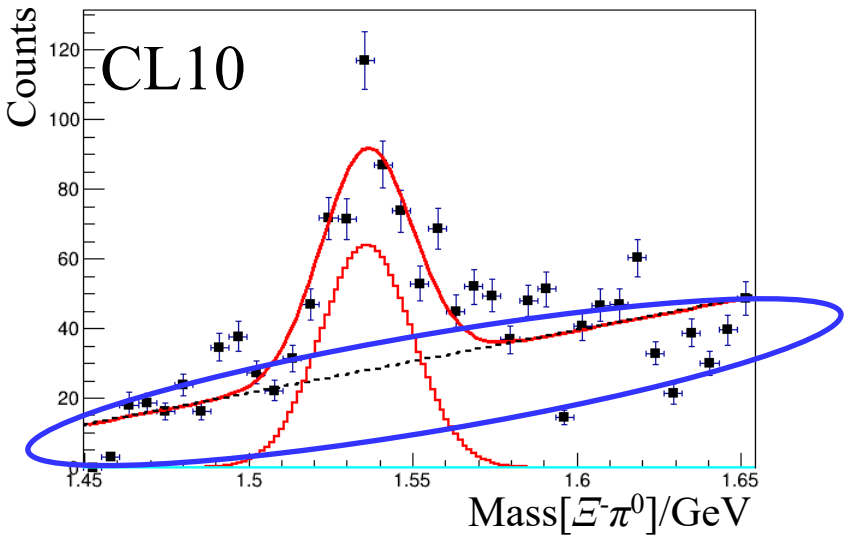
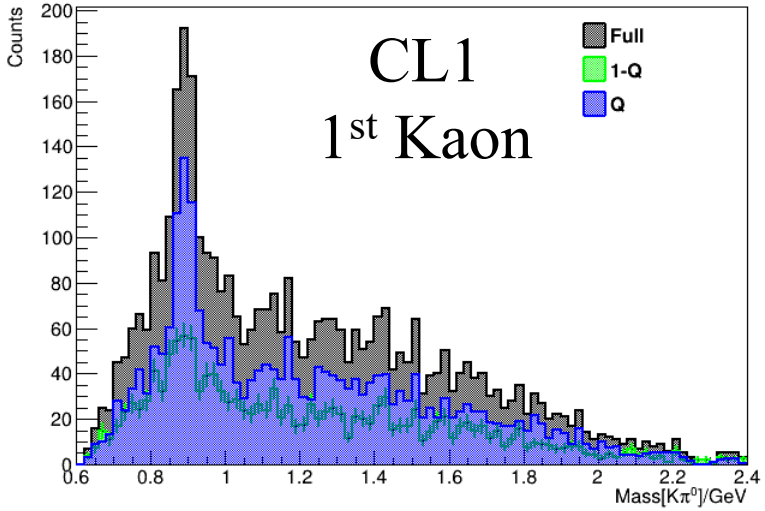
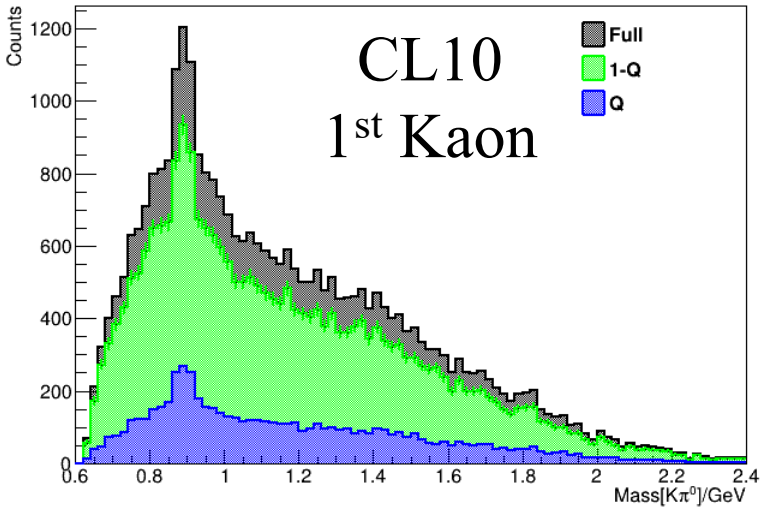


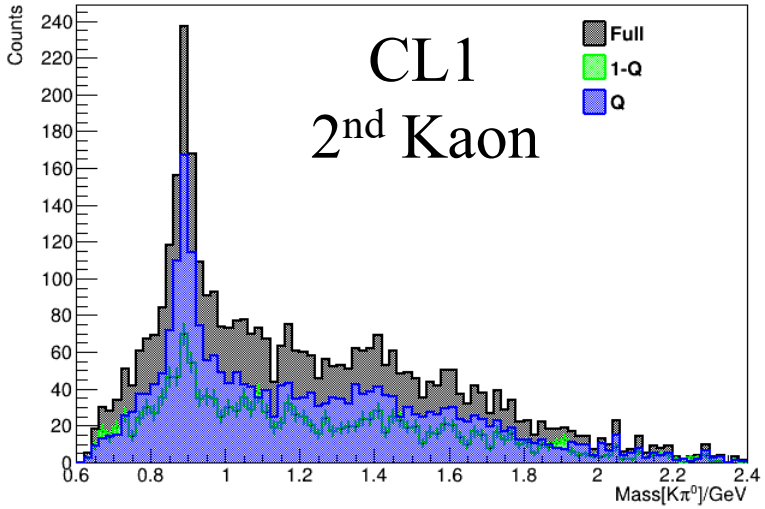



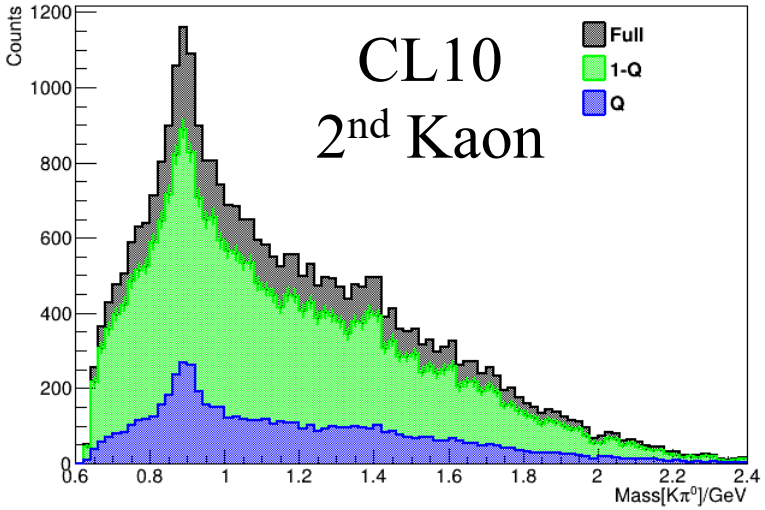

Can background be reduced further?

# $\Xi^*$ Analysis: $Q$-factors on mass[$K^+\pi^0$]



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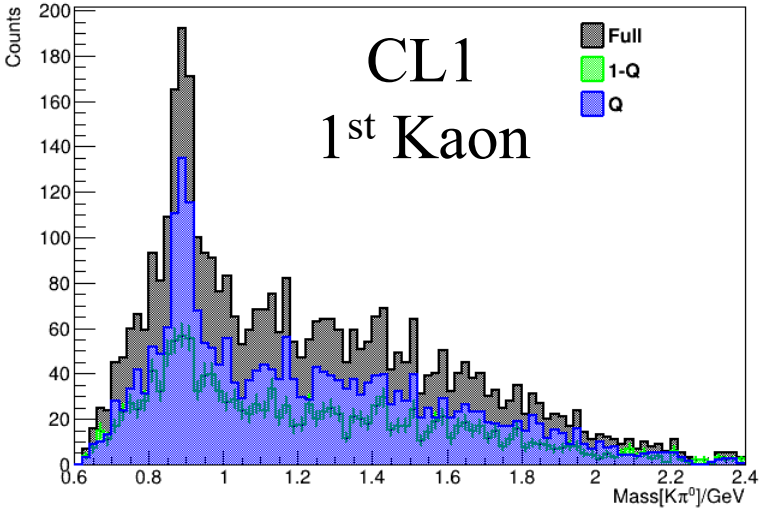


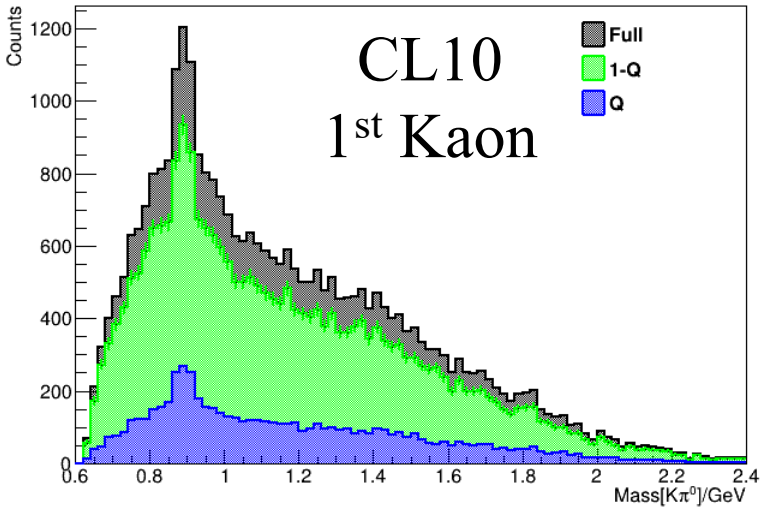

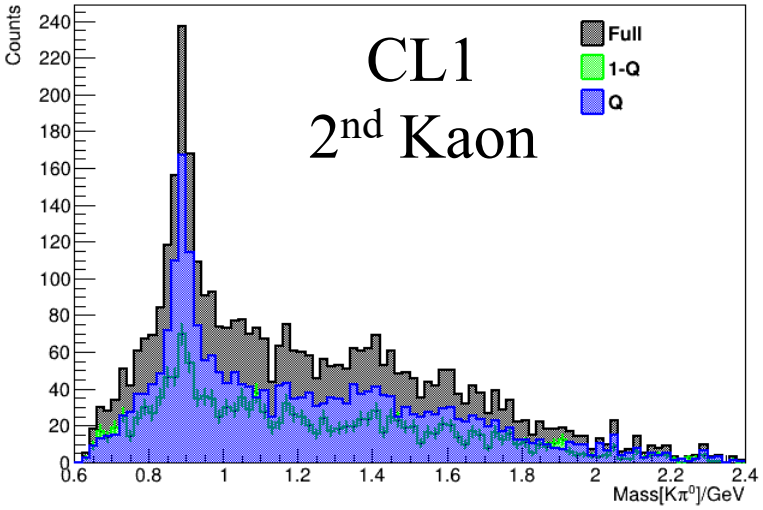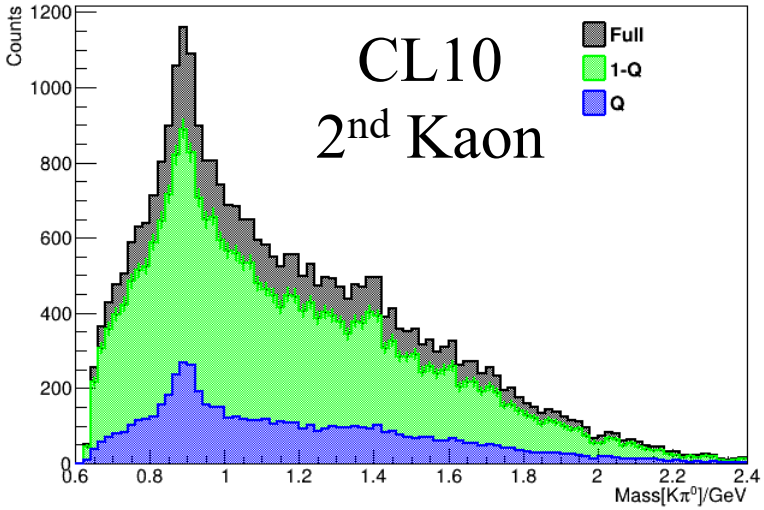
Considerable $K^*$ contamination