

bggen study of  $\Xi^* \rightarrow \Xi\pi$

# Reaction

$$\gamma p \rightarrow K^+ K^+ \Xi^{*-},$$

where

$$\Xi^{*-} \rightarrow \Xi^- \pi^0,$$

$$\Xi^- \rightarrow \Lambda \pi,$$

and

$$\Lambda \rightarrow p \pi^-$$

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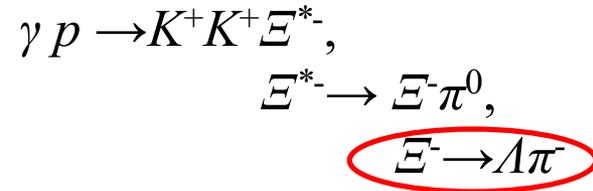
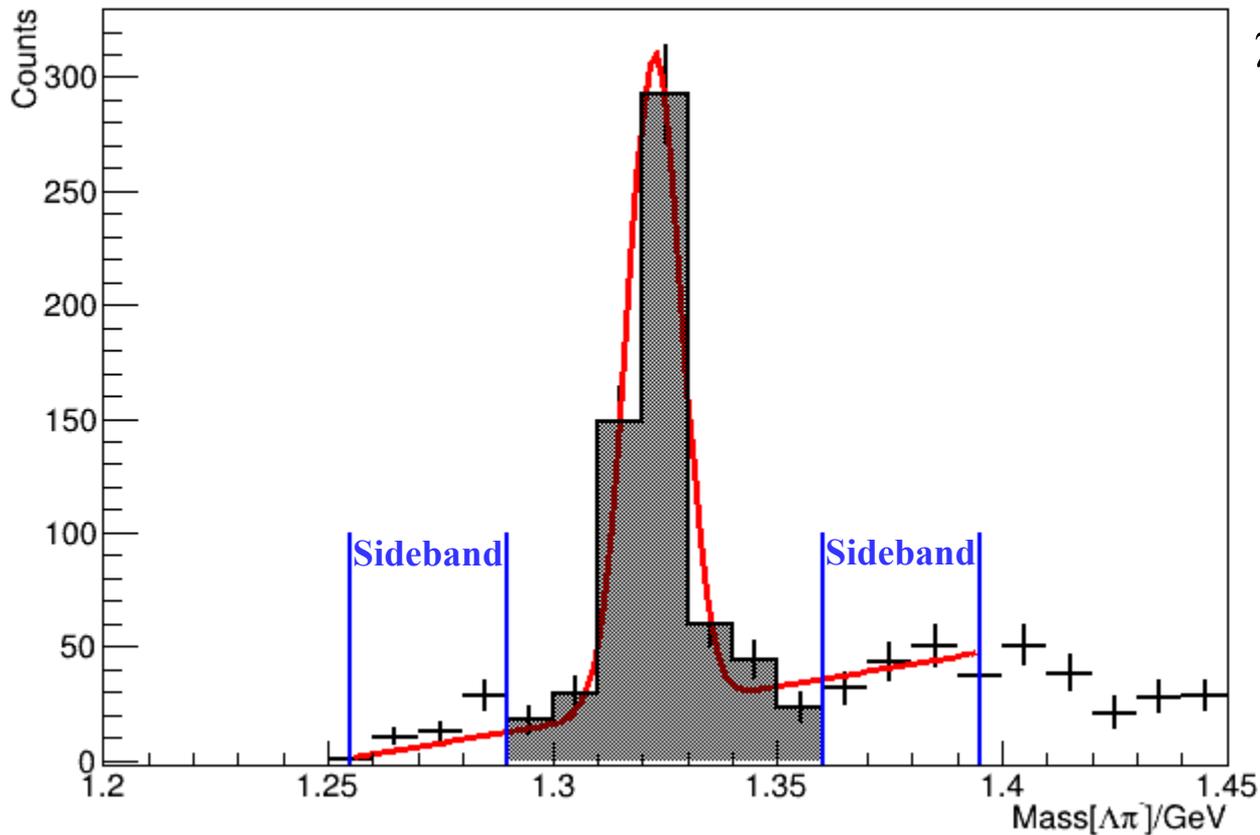
and

$$\Lambda \rightarrow p \pi^-$$

In what is shown today, I'm looking for

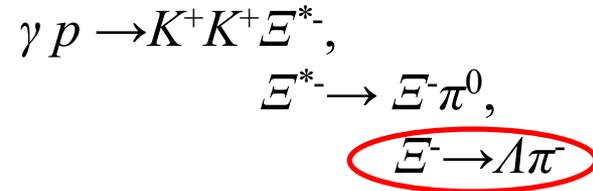
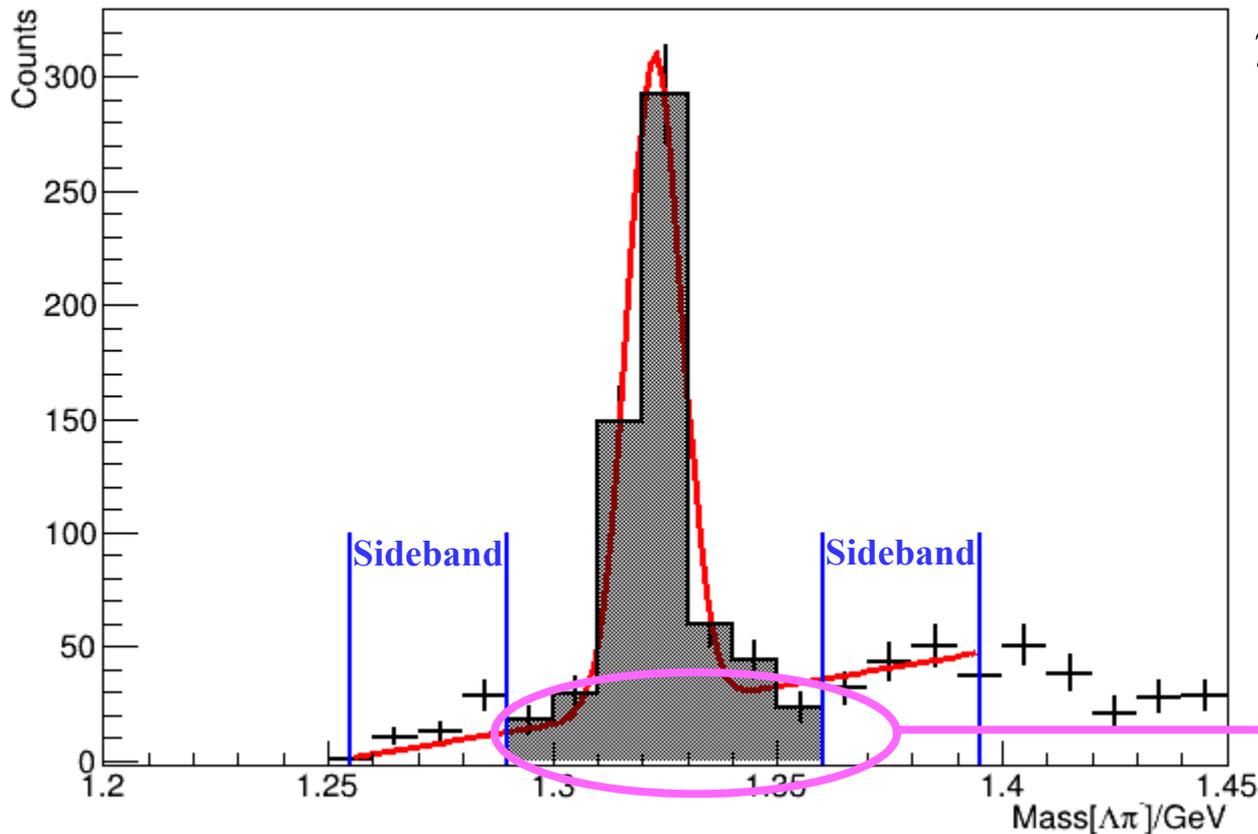
- ground state  $\Xi$  : bggen background
  - Used 500 Million events from bggen-2018-08-ver02\_23

# Invariant mass of $\Lambda\pi^-$



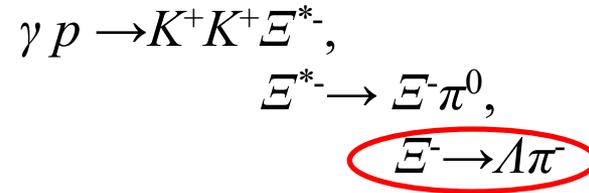
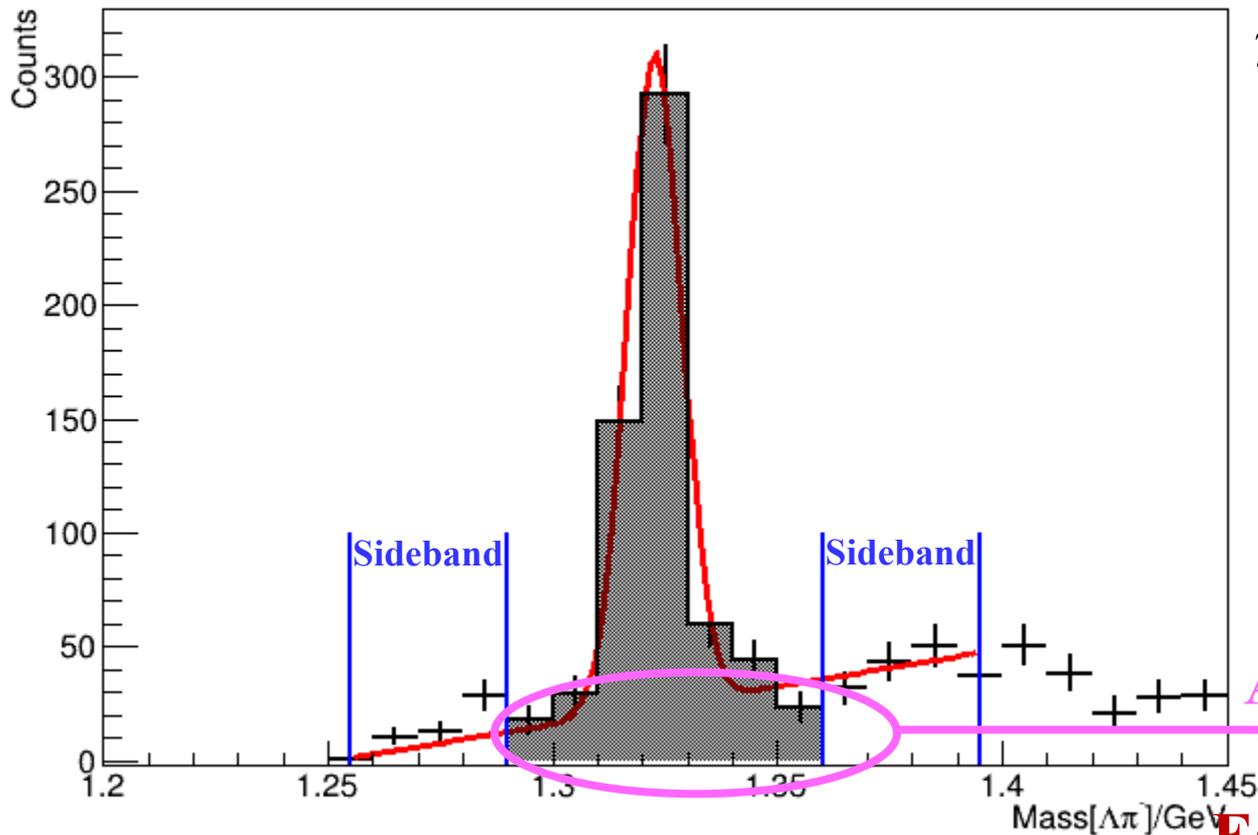
- Hybrid method for accidental subtraction
- CL cut at  $10^{-6}$
- Significance of  $\bar{E}^-$  pathlength  $> 4$
- $|t_{\text{fast}}| < 3 \text{ GeV}^2$
- $K^*$  cut ( $0.85 \text{ GeV} < \text{mass}[K^+\pi^0] < 0.95 \text{ GeV}$  removed)

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# Invariant mass of $\Lambda\pi^-$



Actual background shape?  
Estimate with bggen?

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# Statistical issue

Not enough statistics (yet) to include all cuts:

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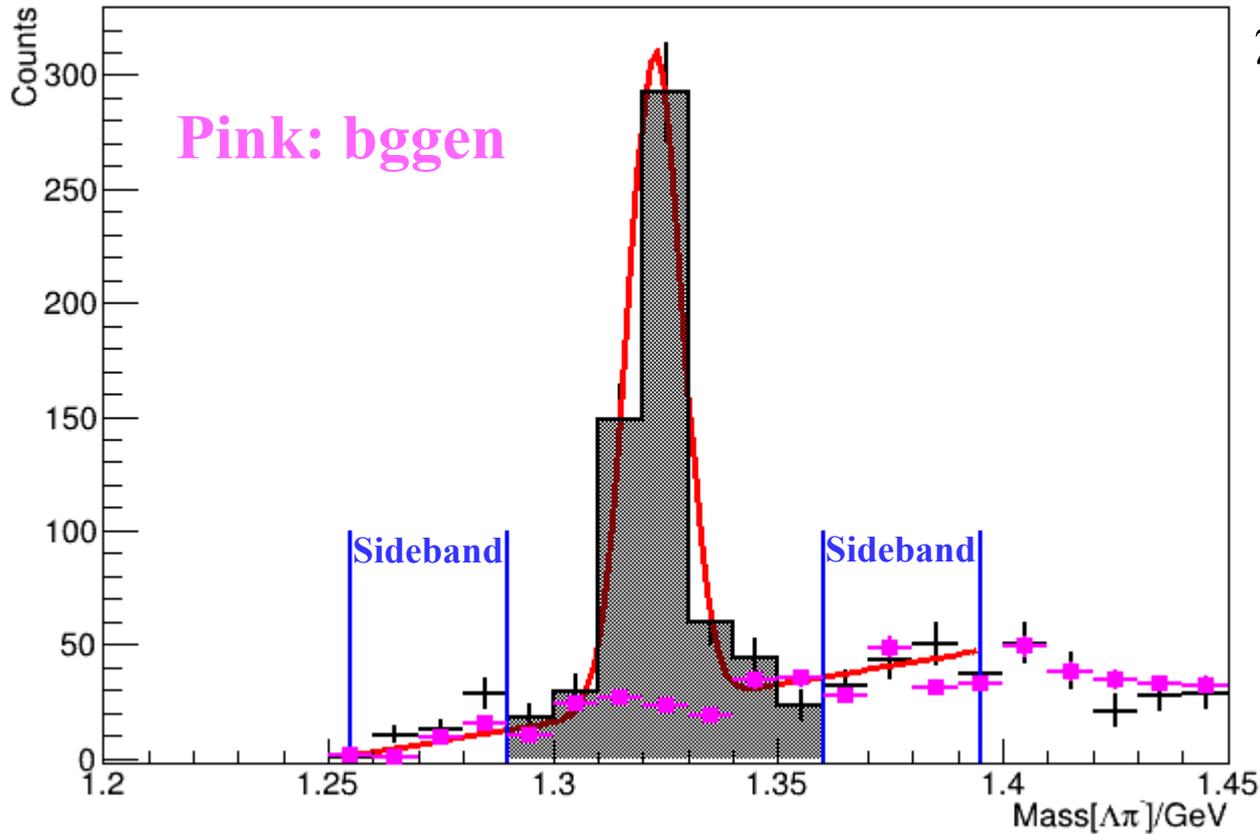
# Statistical issue

Not enough statistics (yet) to include all cuts in comparison:

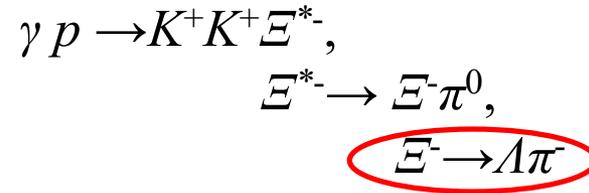
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But enough statistics to look at subset of cuts

# Invariant mass of $\Lambda\pi^-$

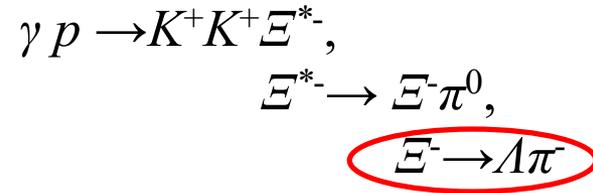
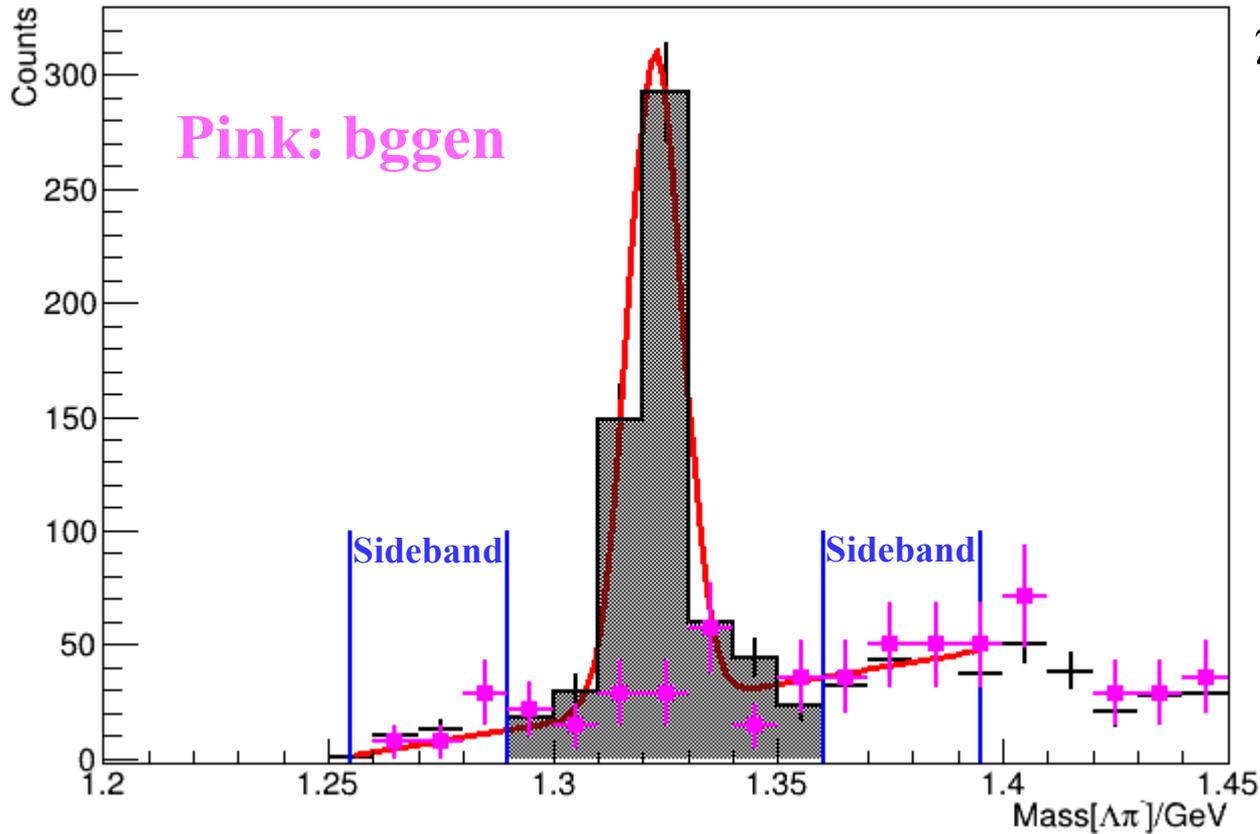


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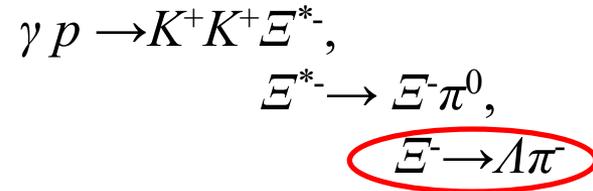
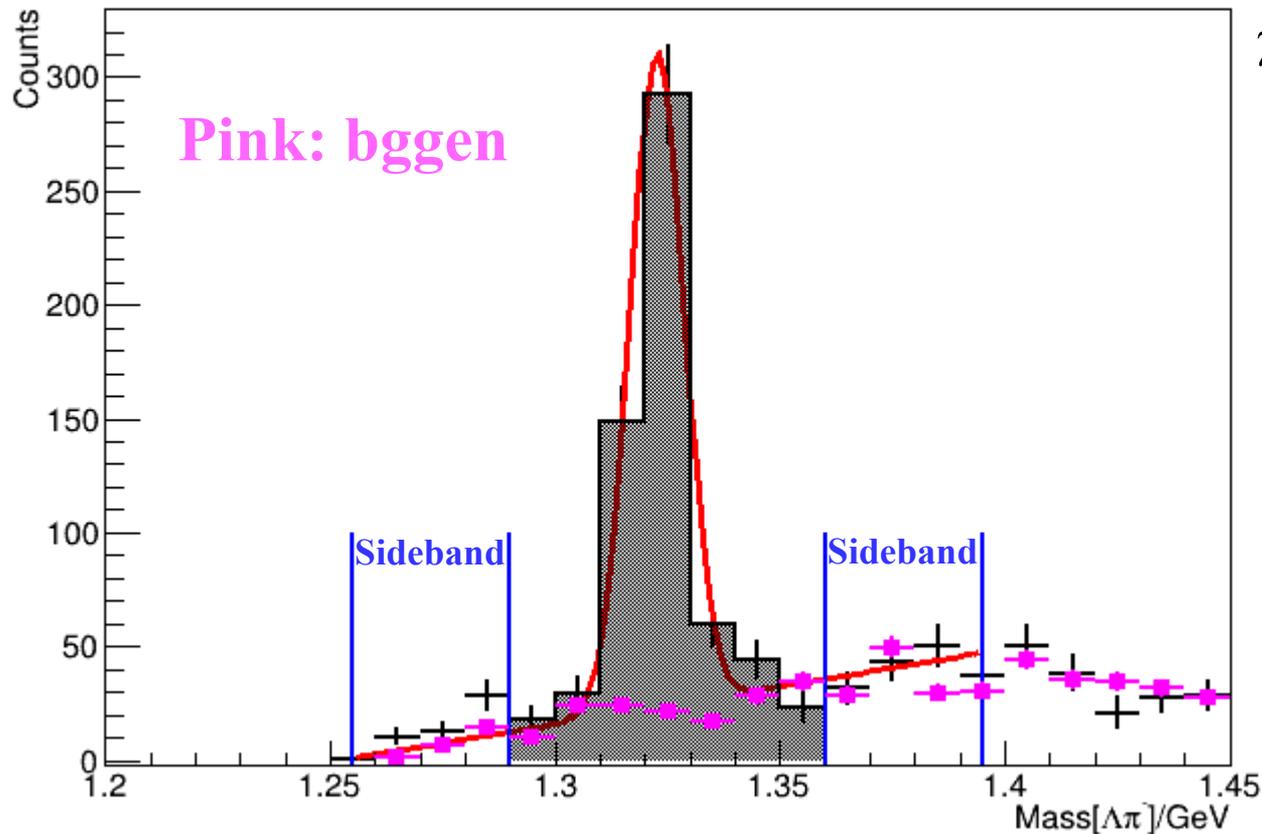
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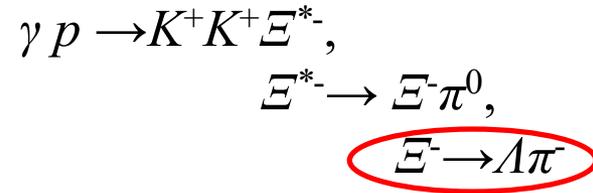
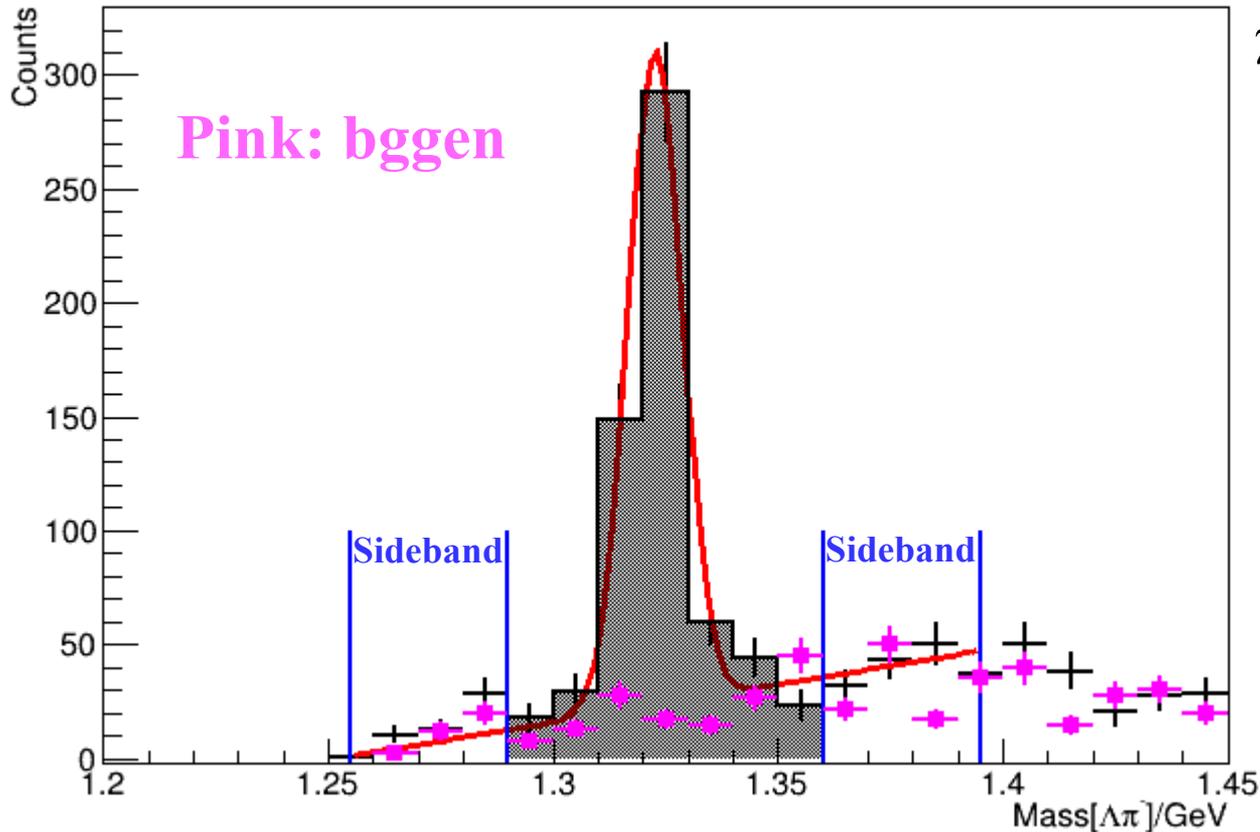
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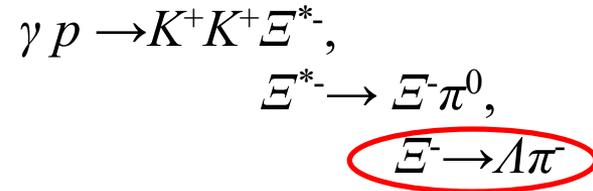
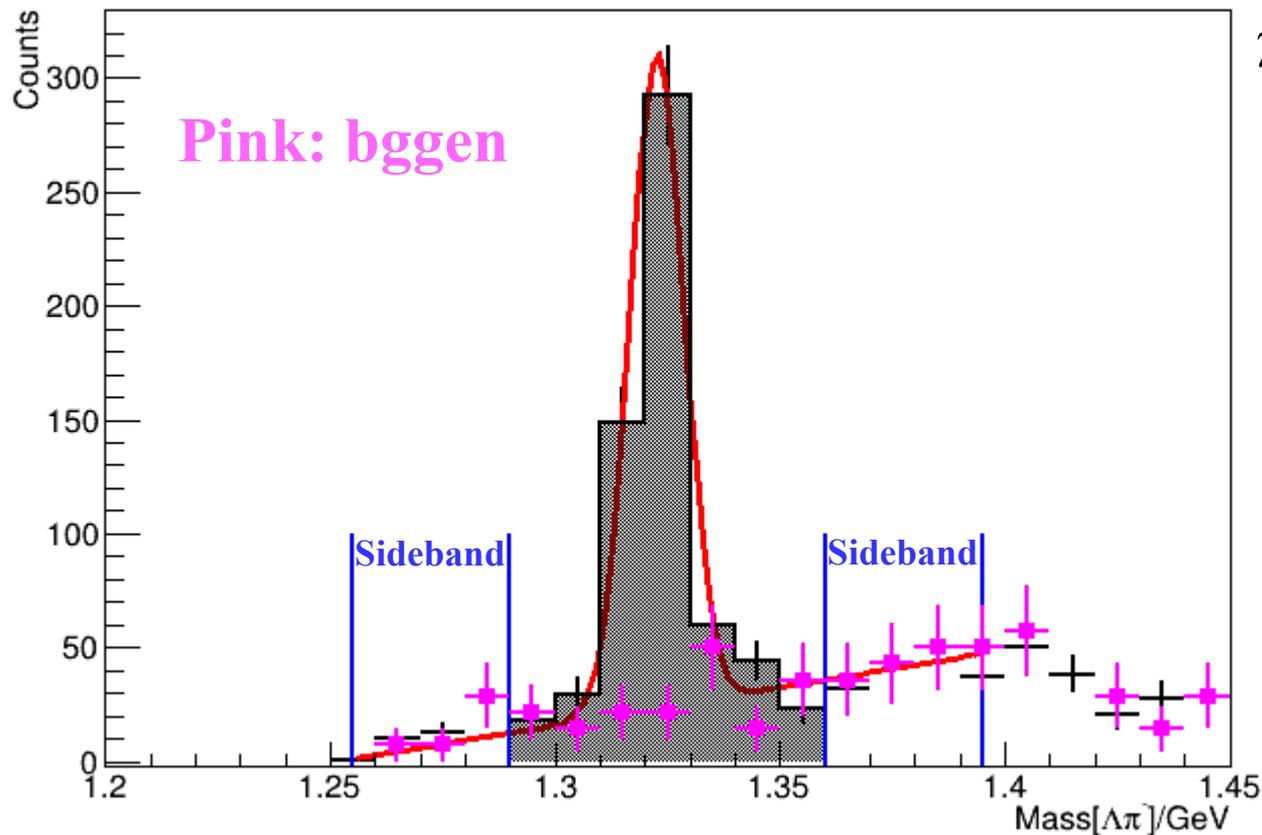
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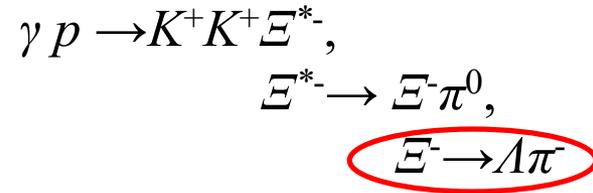
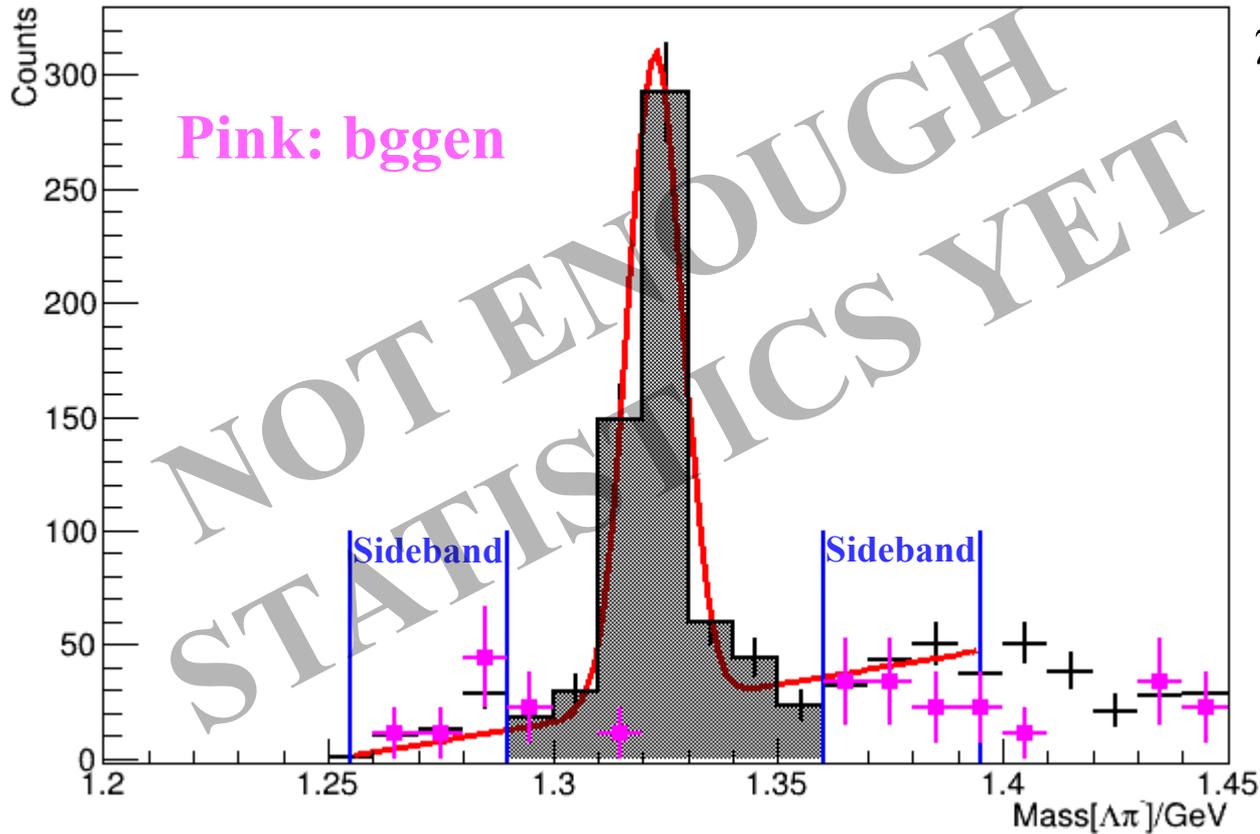
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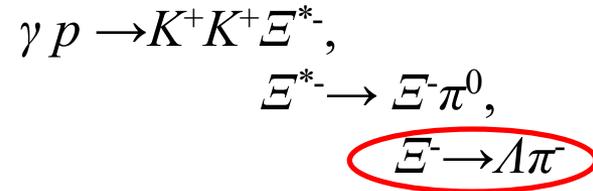
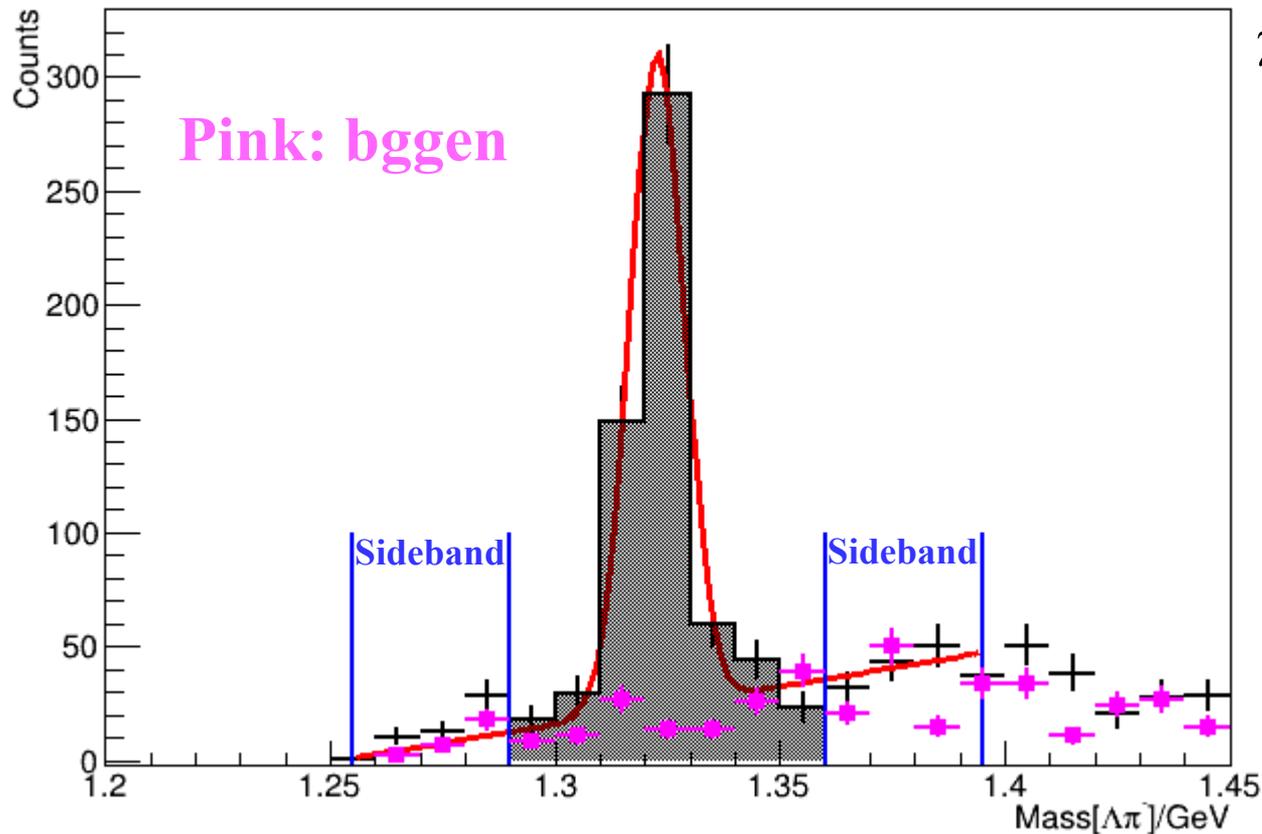
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Pink: bggen

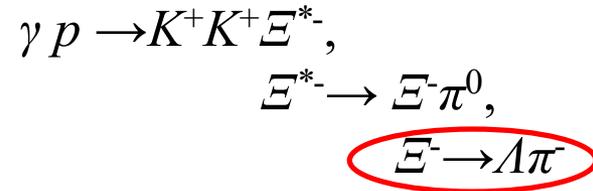
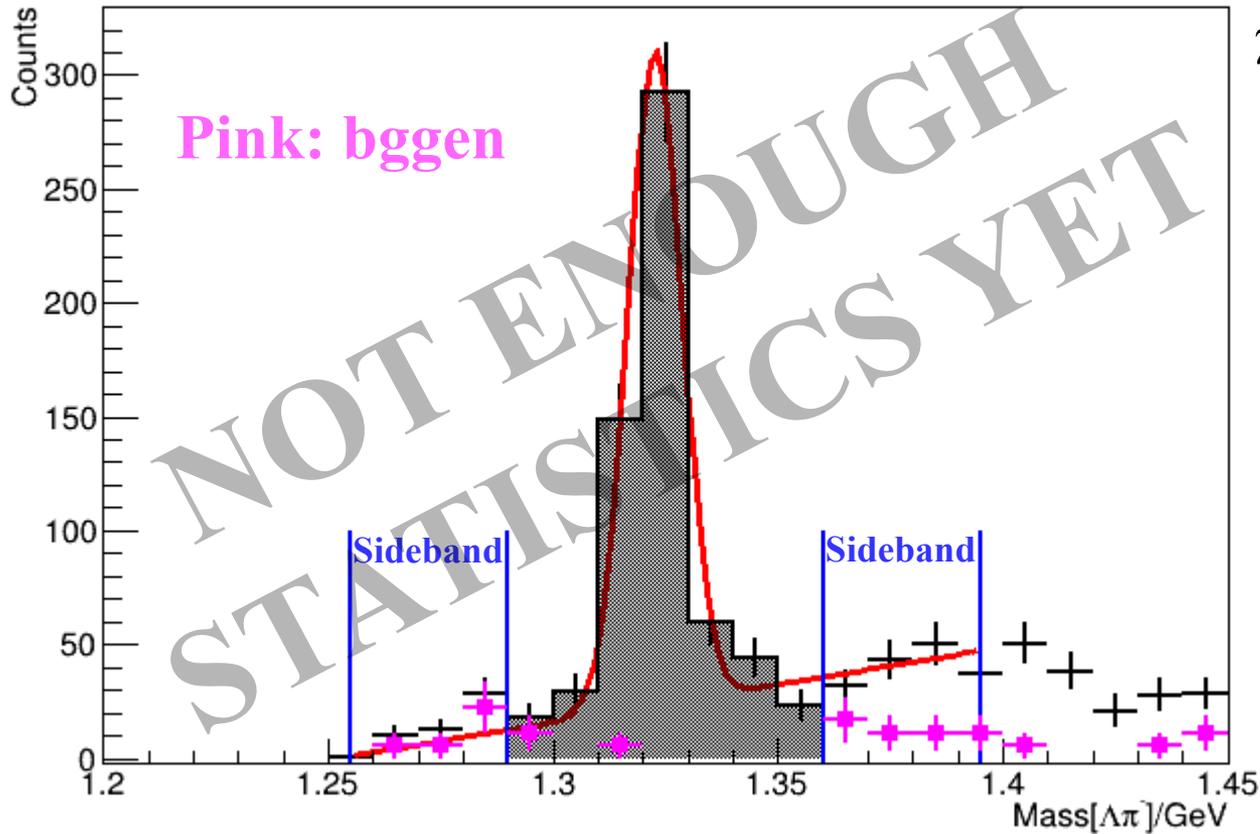
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# Next steps

- Increase statistics by a factor of 7 by using all bggen for 2018-01 and 2019-11
- Once enough statistics look at the estimate for the background of the  $\bar{E}^*$

# Title

