Isolation of the φ-mesons and Λ(1520) from $e\,p \rightarrow e\,p\,K^+\,K^-$ events

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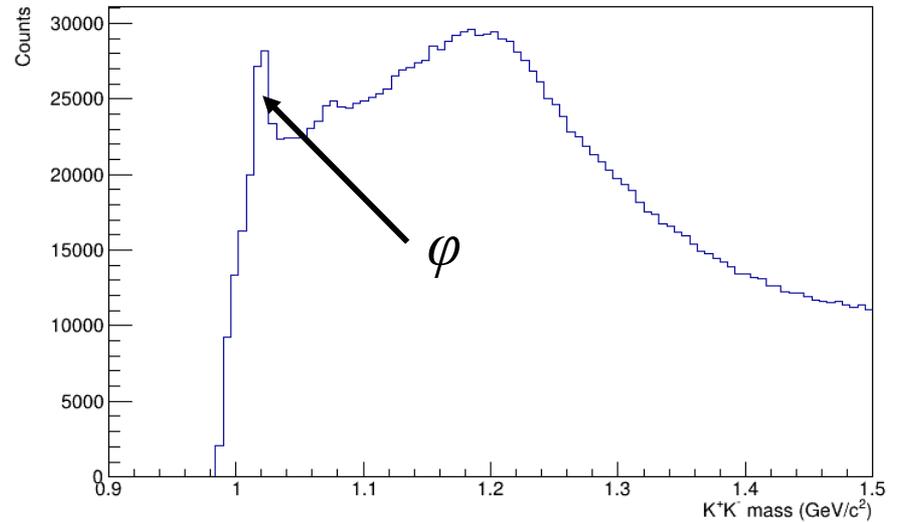
Programs and procedures

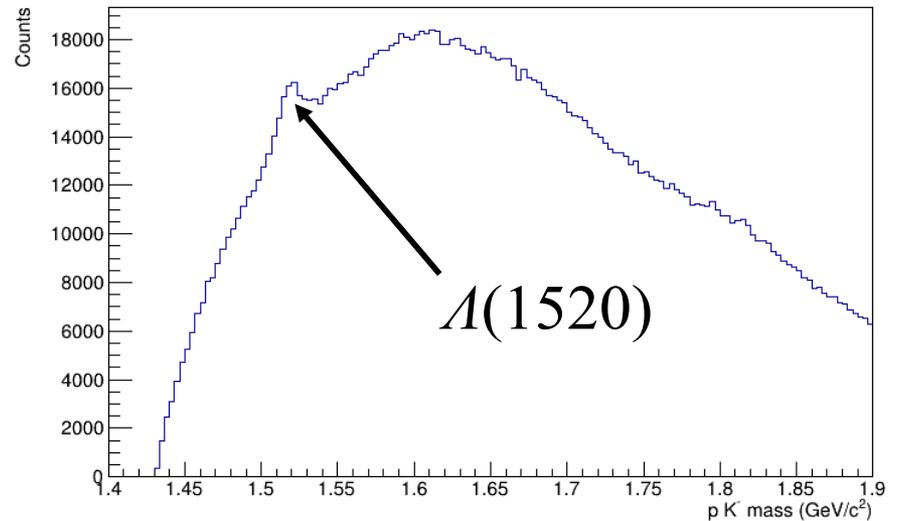- Data compiled from 112 runs

$$\varphi \rightarrow K^+ K^-$$

- The peaks are not well defined.

$$\Lambda(1520) \rightarrow p\,K^-$$
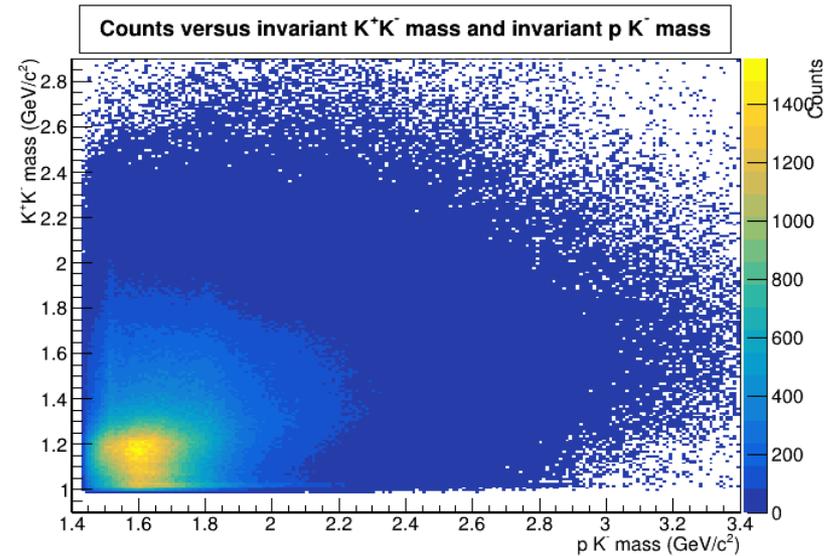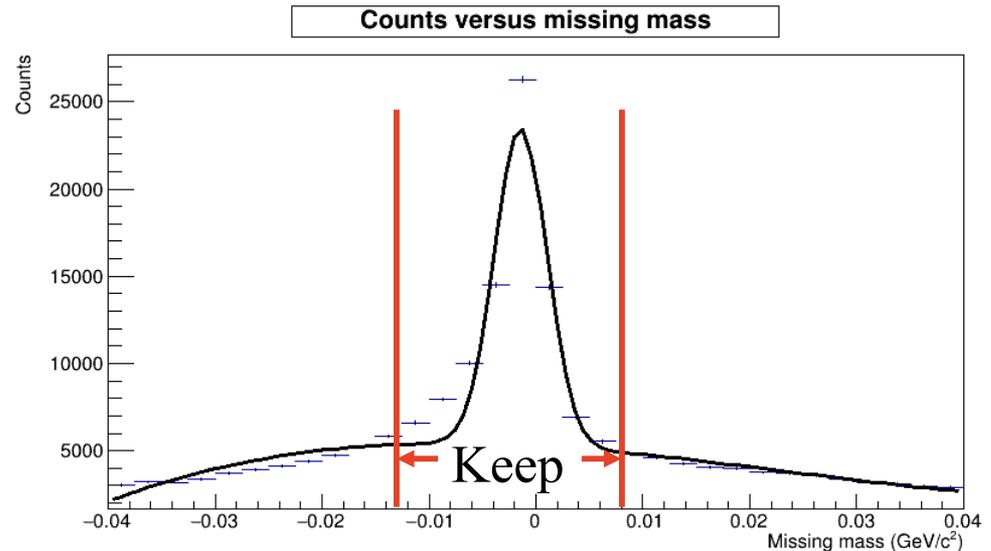
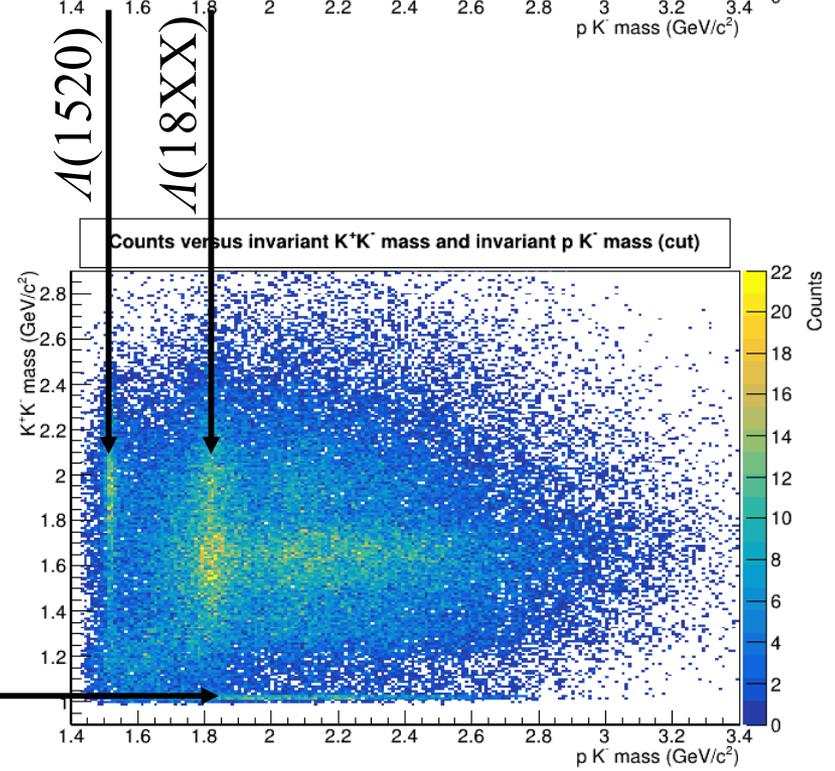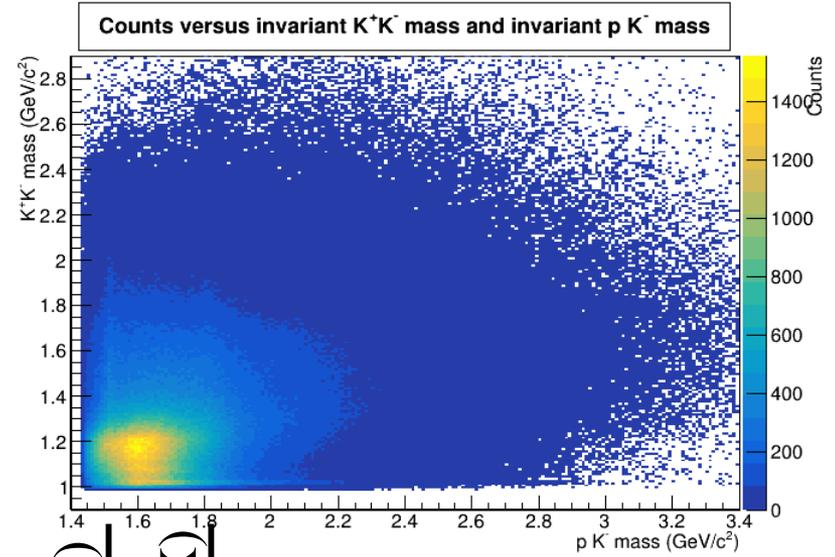**Counts versus K⁺ K⁻ mass**

Counts versus p K⁻ mass

- Looking at the reaction:
$e\,p \rightarrow e\,p\,K^{+}\,K^{-}\,X$, where X is missing

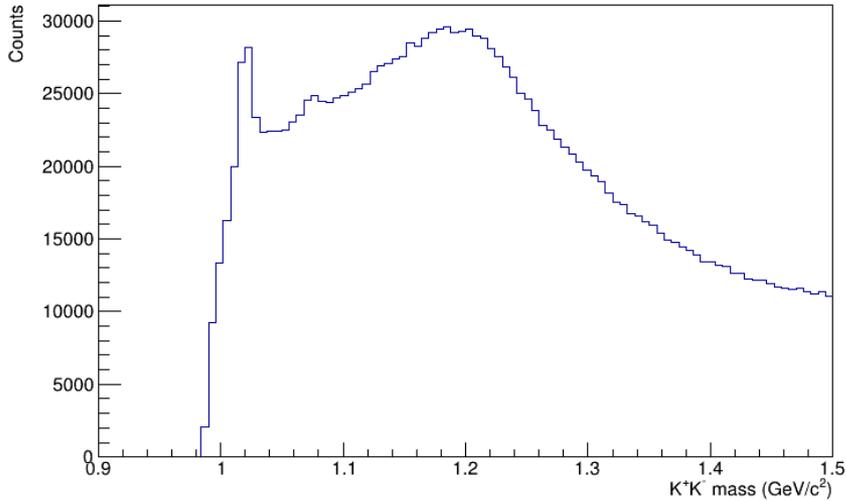- Cutting anything outside the red lines.

- After the cut from the missing mass. Individual particles can be distinguished from each other.

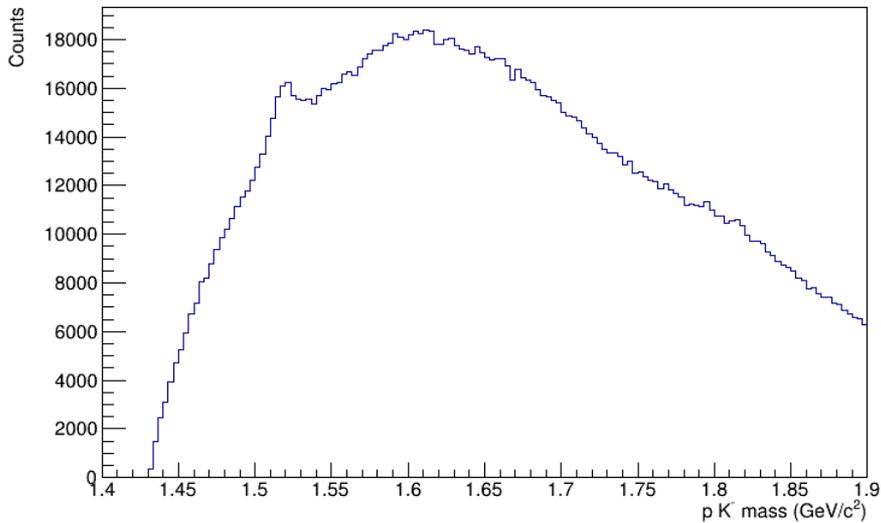- Lambda 18XX stands for Lambda 1800 1810 1820 1830

Counts versus invariant K⁺K⁻ mass and invariant p K⁻ mass
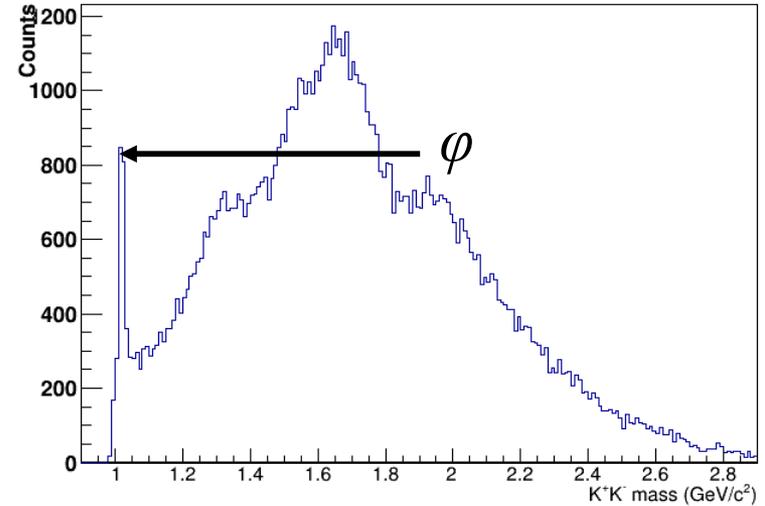
$\Lambda(1520)$ $\Lambda(18XX)$

Counts versus invariant K⁺K⁻ mass and invariant p K⁻ mass (cut)

φ

Before cut

Counts versus K⁺ K⁻ mass

Counts versus p K⁻ mass

After cut

Counts versus invariant K⁺K⁻ mass (cut)

φ

Counts versus invariant p K⁻ mass (cut)

$\Lambda(18XX)$

$\Lambda(1520)$
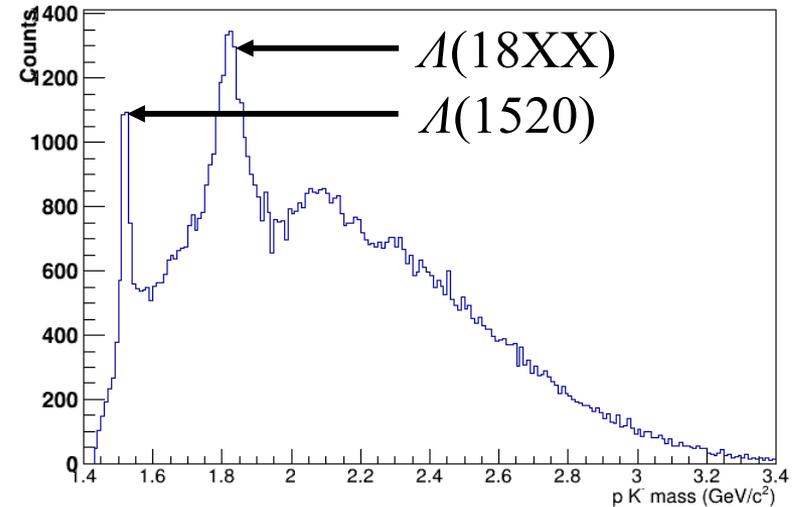
- We can now see distinguished peaks ☺

Next steps

- Look to include
  - $K^0 \rightarrow \pi^+\pi^-$
  - $\pi^0 \rightarrow \gamma\,\gamma$
  - neutrons

- Look for $e\,p \rightarrow e\,p\,K^0\,\Sigma^+$, where $\Sigma^+ \rightarrow p\,\pi^0$ or $n\,\pi^+$

- Also interested in adding $\pi^0 \rightarrow \gamma\,\gamma$