

FIRST LOOK AT RG-K CASCADE PRODUCTION

Bianca Gualtieri

Florida International University

Advisor: Prof. Lei Guo

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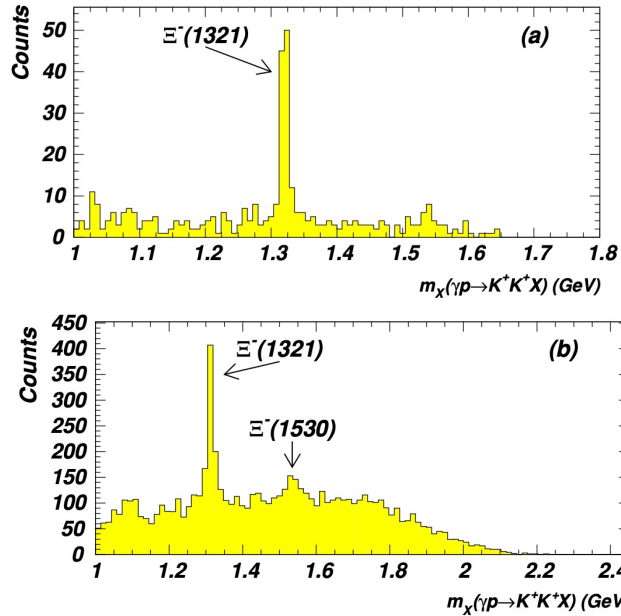
OVERVIEW

- Studying the topology: $ep \rightarrow e'K^+K^+(X)$
- Looking into RG-K pass-2 dataset for 7.5 GeV
- Electron detected in Forward Detector
- ~50% of data is analyzed from the “golden runs” set

PREVIOUS CASCADE STUDIES

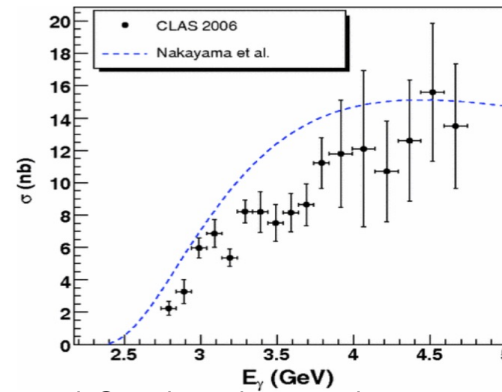
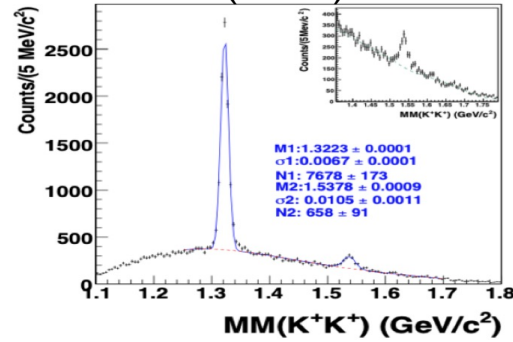
**Photoproduction
Experiments**

2005: CLAS g6 provided the first-ever exclusive measurement of Ξ^- in $\gamma p \rightarrow K^+ K^+ \Xi^-$



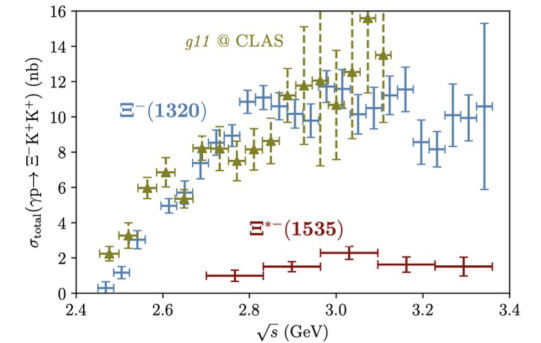
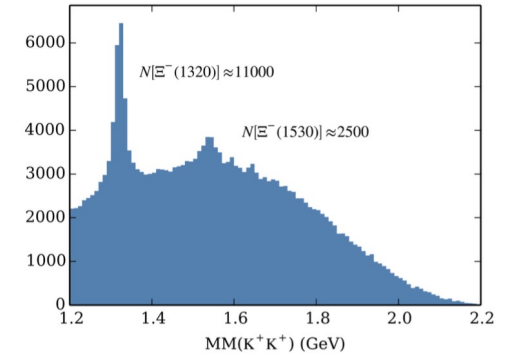
J.W.Price et al. Exclusive photoproduction of the cascade hyperons

2007: g1 data, provided cross section results for Ξ^- (1320) and Ξ^- (1530)



L.Guo et al. Cascade production in the reaction $\gamma p \rightarrow K^+ K^+ (\Xi^-)$ and $\gamma p \rightarrow K^+ K^+ \pi^- (\Xi^-)$

2018: g12 expanded the kinematic region of study (W=3.3 GeV) as well as increased statistics

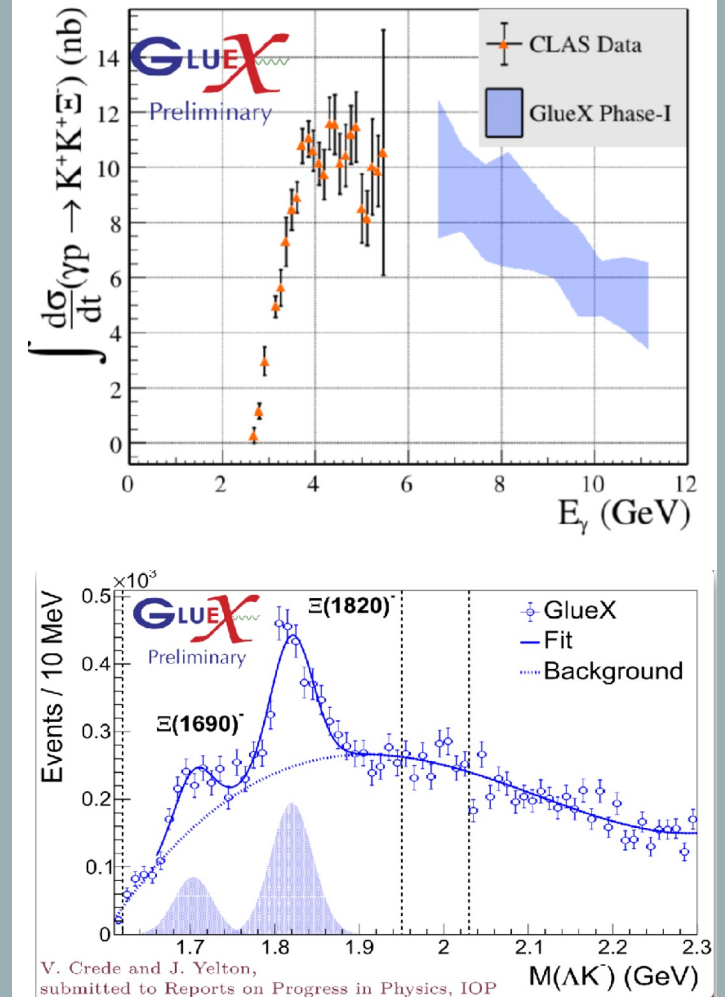


J.T. Goetz et al. Ξ^* Photoproduction from Threshold to W=3.3 GeV

PREVIOUS CASCADE STUDIES

PREVIOUS CASCADE STUDIES

- GlueX has recently presented on Cascade production (Hao Li, JLUO 2024)
- Extending the energy region of photoproduction data for $\Xi^-(1320)$ as well as first photoproduction measurement of $\Xi^{*-}(1690)$ and $\Xi^{*-}(1820)$



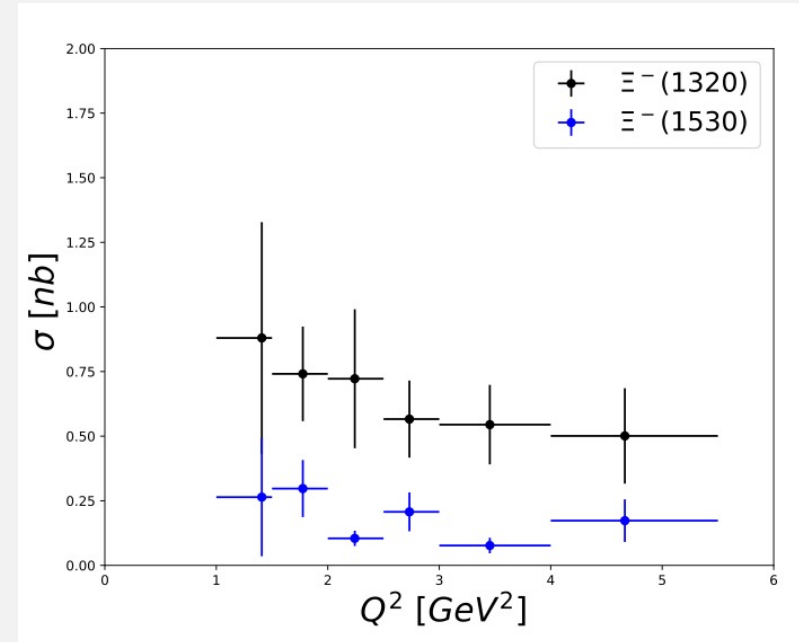
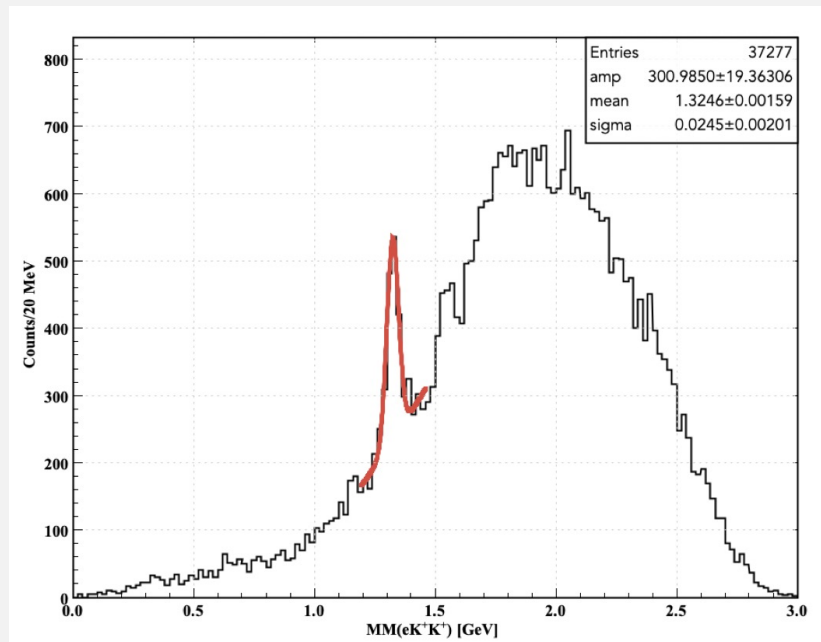
Chandra Akondi, Volker Crede

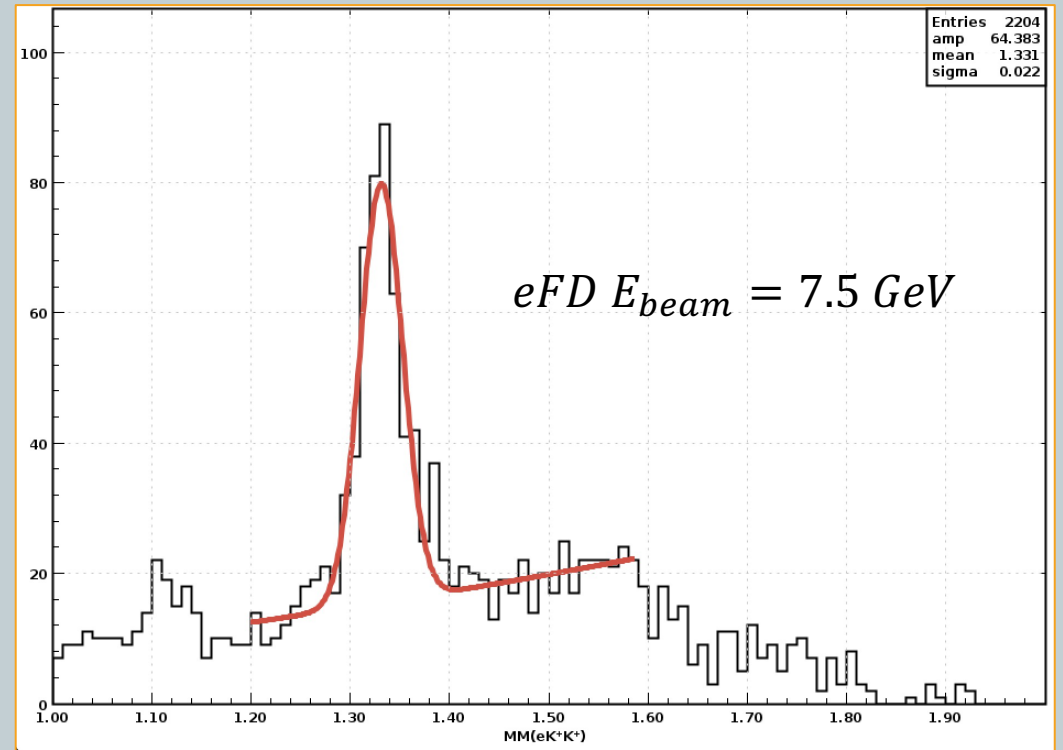
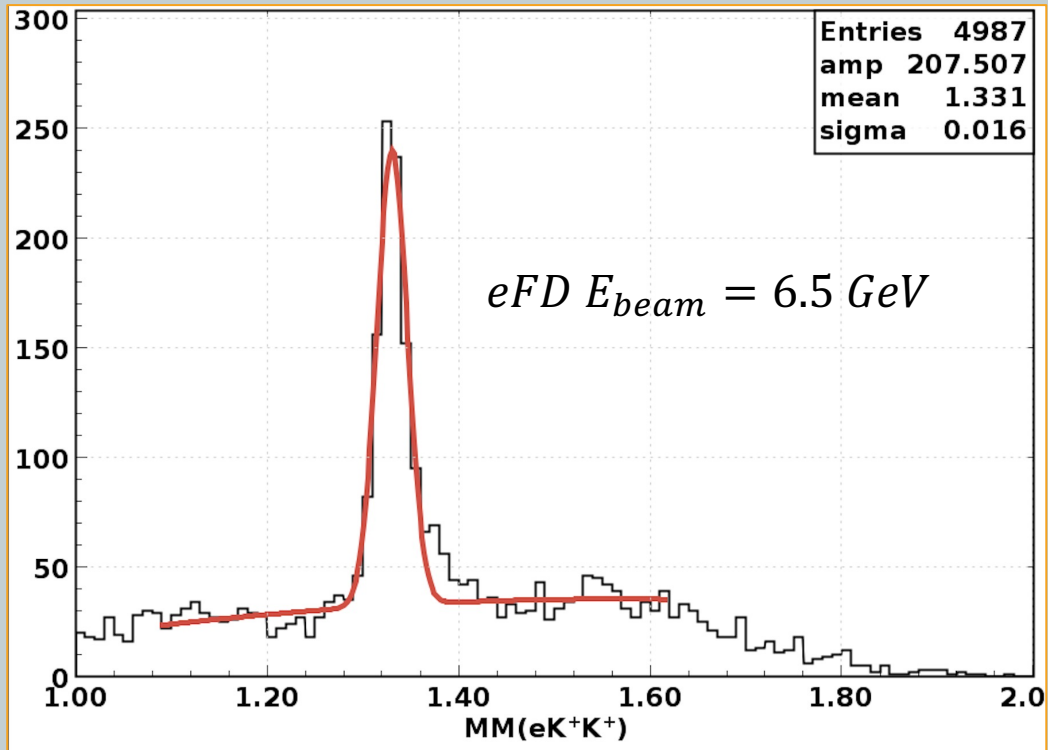
PREVIOUS CASCADE STUDIES

**Electroproduction
Experiments**

PREVIOUS CASCADE STUDIES

- In 2023, Jose Carvajal provided the first-time measurements of the ground state Ξ^- cross-sections in electroproduction at RG-A energies
- Shown for e-FD





Jose Carvajal, FIU

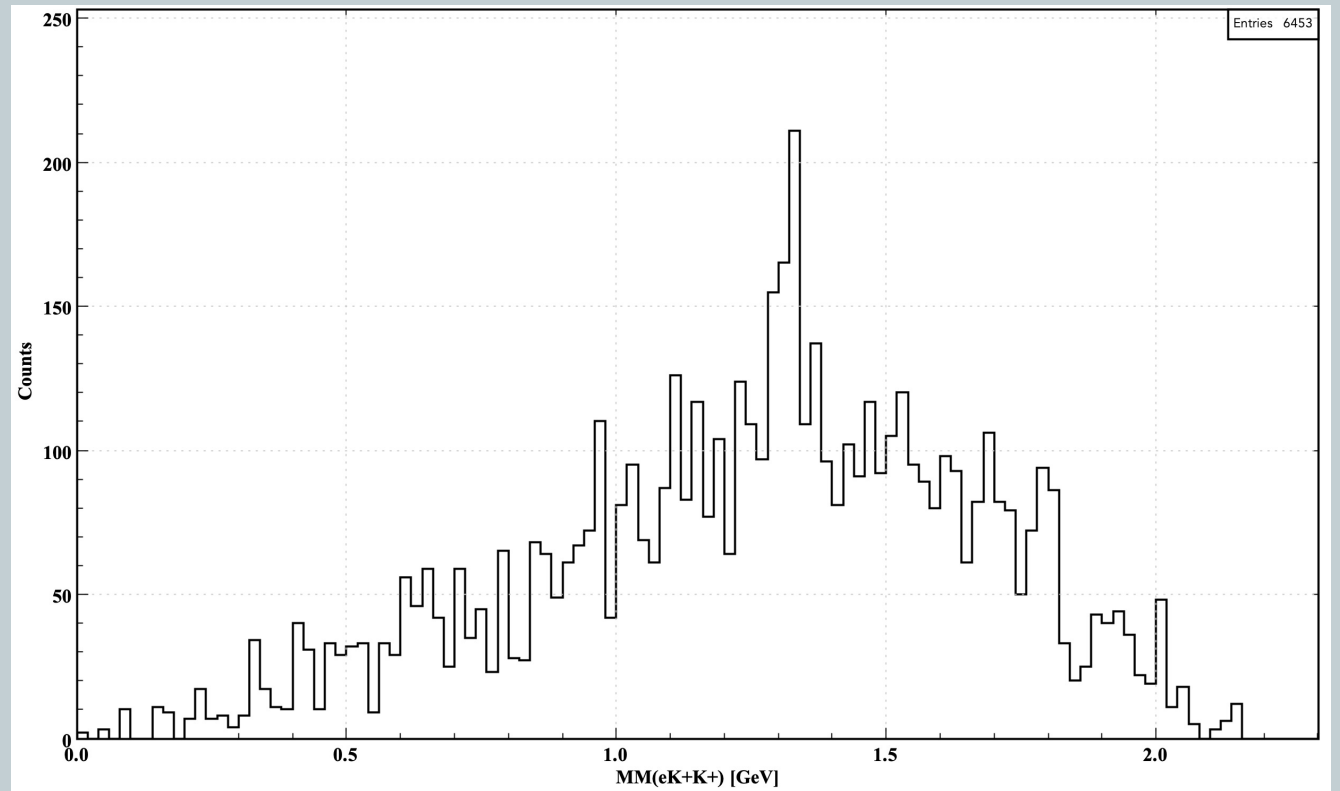
PASS-I RG-K $ep \rightarrow e'K^+K^+(X)$

ELECTRON IN FD 7.5 GEV (RG-K, PASS2)

Cuts:

- Timing
- Momentum
- Chi2pid
- Vertex
- Polar Angle

No Fiducial Cuts have been applied yet!



OUTLOOK

- Obtain more statistics for $E_{beam} = 6.5 \text{ GeV}$ and $E_{beam} = 7.5 \text{ GeV}$
- Look into e' in Forward Tagger as well
- Expand cross section measurement for lower energy region in electroproduction of cascade

