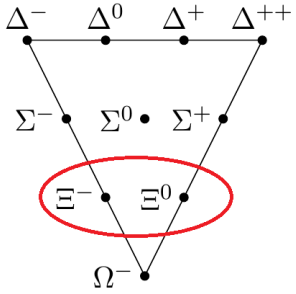
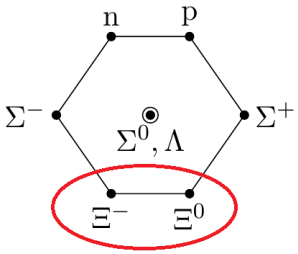
Photoproduction of Ξ^- at GlueX

Ashley Ernst
Florida State University
[For the GlueX Collaboration]

Jefferson Lab Users Organization Meeting
June 24 – 26th, 2019

Cascade Baryons, Ξ's

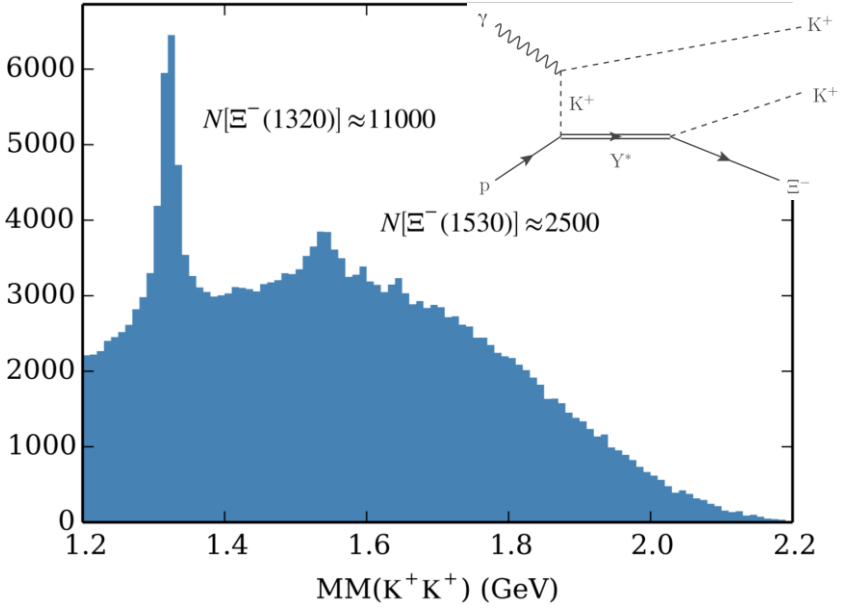


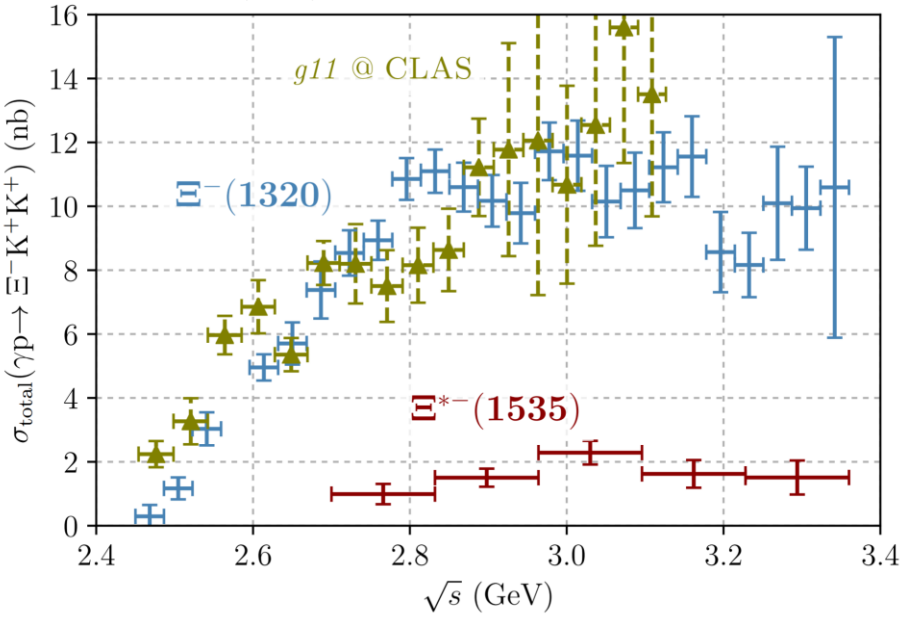


Particle	J^P	Overall Status
Ξ(1318)	$1/2^+$	****
Ξ(1530)	$3/2^+$	****
Ξ(1620)		*
Ξ(1690)		***
Ξ(1820)	$3/2^-$	***
Ξ(1950)		***
Ξ(2030)	$5/2^?$	***
Ξ(2120)		*
Ξ(2250)		**
Ξ(2370)		**
Ξ(2500)		*

$\Xi^-(1320)$ – Previous Measurements

CLAS: J. T. Goetz et al. Phys. Rev. C 98, 062201 (2018)





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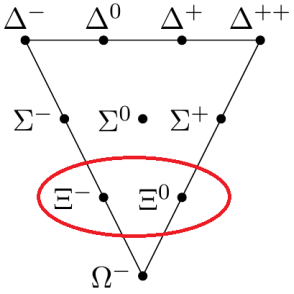

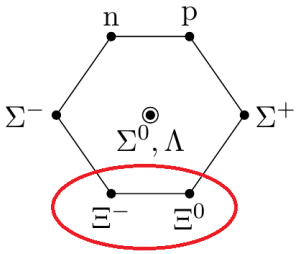

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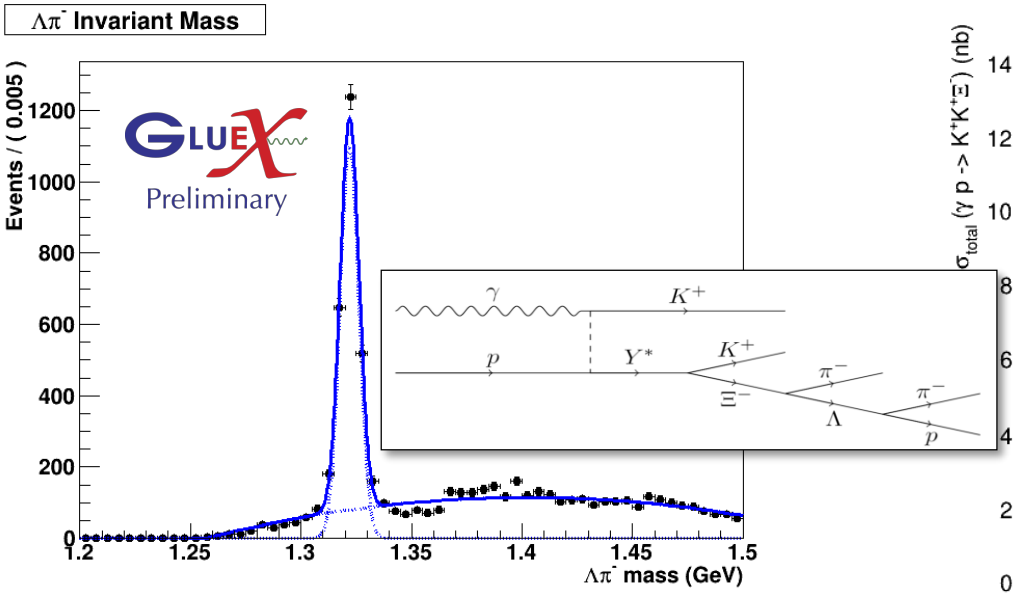
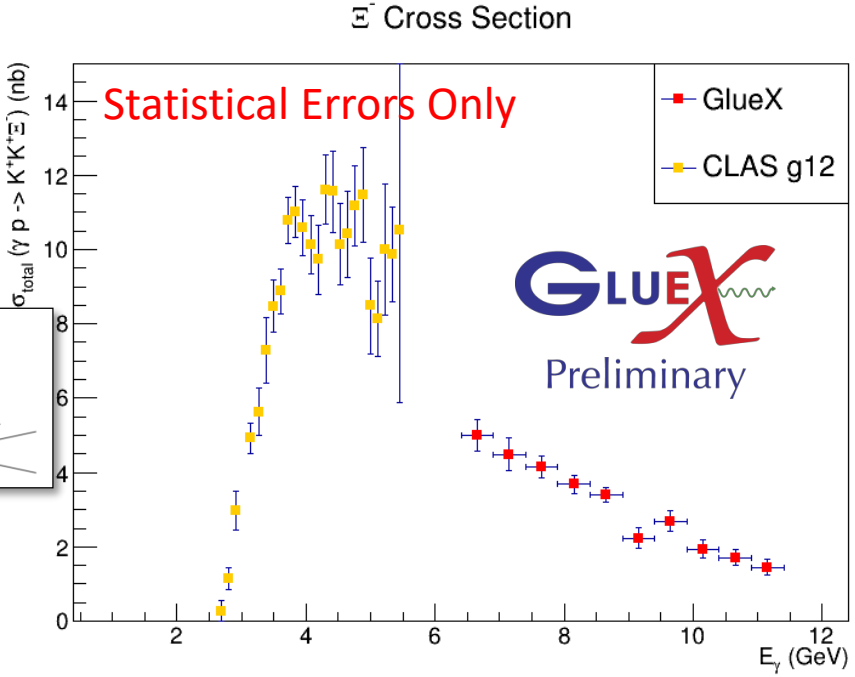
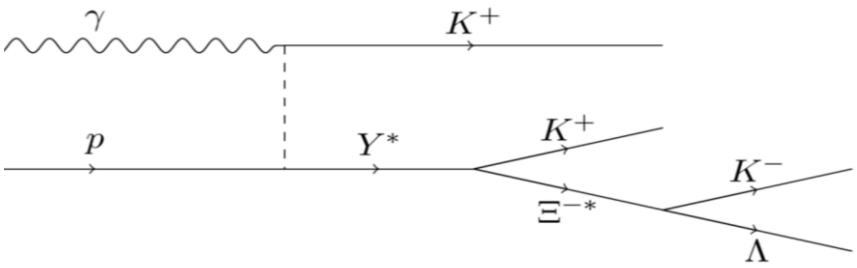
$\Xi^-(1320)$





Search for Ξ^{-*}

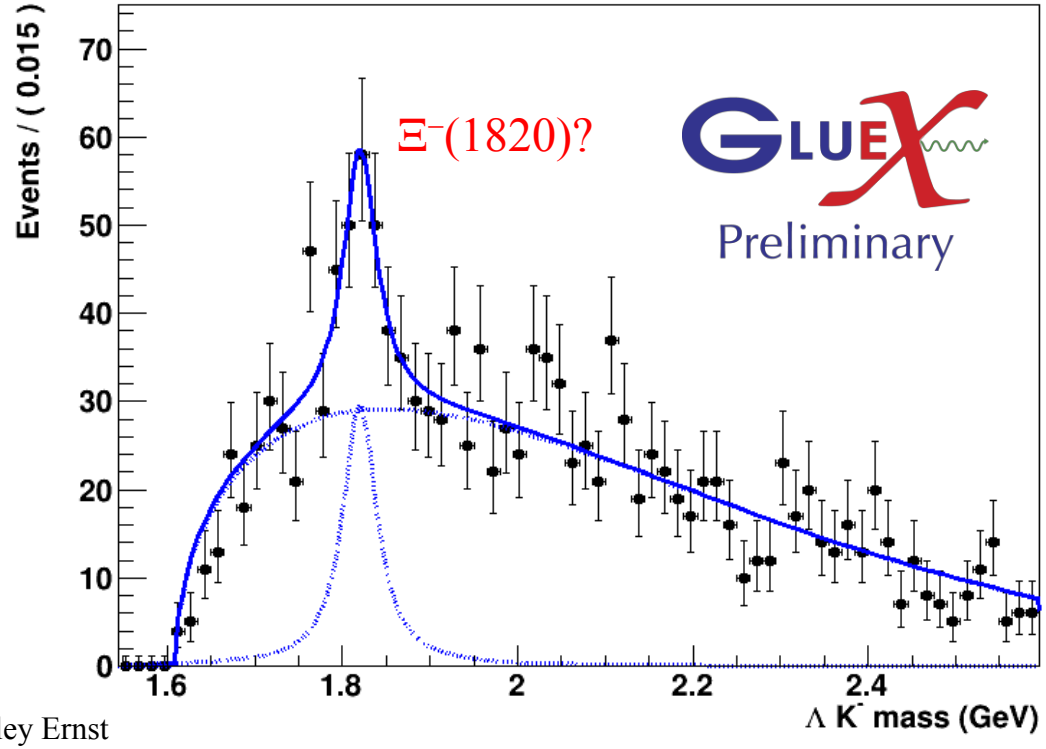


Decay	
Ξ^-	$\to \Lambda\pi^-$
Ξ^*	$\to \Lambda K$
	$\to \Sigma K$
	$\to \Xi\pi$
	$\to \Xi(1530)\pi$
	$\to \Xi\pi\pi$
	$\to \Lambda K\pi$
	$\to \Sigma K\pi$

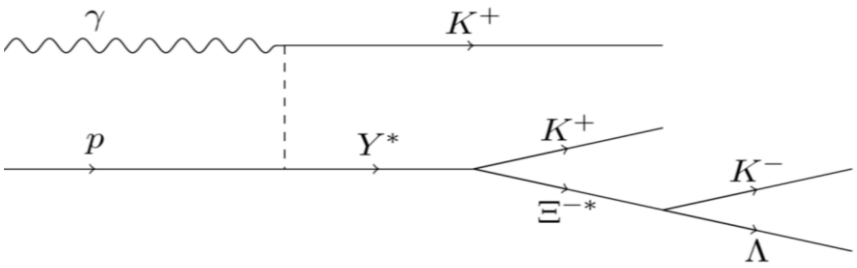
Possible Resonances		BR
$\to \Lambda K$	$\Xi(1690)$	seen
	$\Xi(1820)$	large
	$\Xi(1950)$	seen
	$\Xi(2030)$	~ 0.2
	$\Xi(2120)$	seen

- Initial look into the ΛK^- channel with 20% of Phase-I data
- Possible signal for $\Xi^-(1820)$
- Phase-II with DIRC will extend π/K separation to higher momenta

Λ K$^-$ Invariant Mass



Search for Ξ^{-*}



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	$\to \Sigma K$
	$\to \Xi\pi$
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  - See Yunjie's talk