Group meeting August 23rd, 2024



Instruction responsibilities

- Classes for Fall 2024:
 - PHY 331:
 - 1st lecture completed!
 - PHY 361:
 - 1st lecture completed!
 - Met with new student for independent study
 - Princess Colin



Service responsibilities

- Committee:
 - GlueX Compton Analysis Review Committee:
 - Have author response
 - Need to produce new review



Group responsibilities

• Nothing to report



Timelines



\bigcap												2	20	24	4												
January					February							March							April								
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$\Xi^* \rightarrow \Xi \pi^0$ hybrid subtraction

Each photon is associated only with best combo for that photon



Ξ^* Generator Refinement

- Starting with code from Brandon build for $\Xi(1530)$ and modifying for general Ξ^*
- Taking the initial reaction as $\gamma p \to K Y^*$
- Mandelstam variables have relationship:
 - $s+t+u = m_{\gamma}^2 + m_p^2 + m_K^2 + m_{Y*}^2$
- We can lock down the kinematics of the initial reaction by specifying *s*, *t* and m_{Y^*}
- Started with Mandelstam *s* and *t*

- Three rounds of MC to set *t*-slope (parameter *b* in Ae^{-b|t|}) to 1.138/GeV²
- Should have shaped mass[*Y*^{*}] before worrying too much about the *t*-slope since mass[*Y*^{*}] is set before the *t*-slope in the generator
- Fourth round: First pass at shaping mass[*Y**]



• Distribution in E_{γ} distribution is good for each round $\rightarrow s$ is good



• Mass $[Y^*]$ is getting better, but still needs another round



- t_{fast} looks much better after shaping mass[Y^*] \bigcirc
- After final shaping of mass[*Y*^{*}] is complete, I might have to change the *t*-slope one more time

Issue: $\Xi^* \rightarrow \Xi \pi^0$ fitting

- Fits:
 - Voight + 2^{nd} degree poly
 - Voight + [2nd degree poly]*sigmoid
 - Voight + [1st degree poly]*sigmoid



Issue: $\Xi^* \rightarrow \Xi \pi^0$ fitting



PDG:

- center = 1535.0(6) MeV
- width = 9.1(5) MeV

Note: Each fit looks good, and we do not know what the true background shape is or which background is more correct than the others \textcircledinfty . We just know that one of the Voights is too wide (by only 1.1 error bars) compared to PDG.





Nothing to report right now \otimes



