Partial wave analysis of the reaction $\gamma p \longrightarrow p K^{-} K^{+} \pi^{0}$

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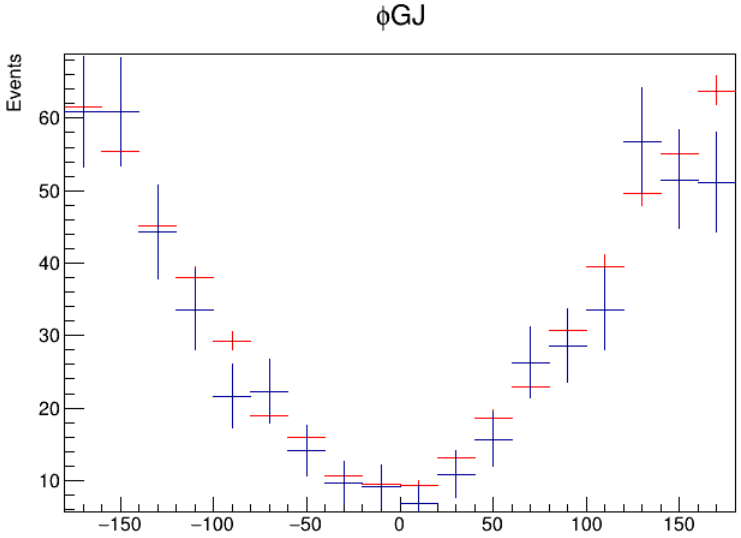
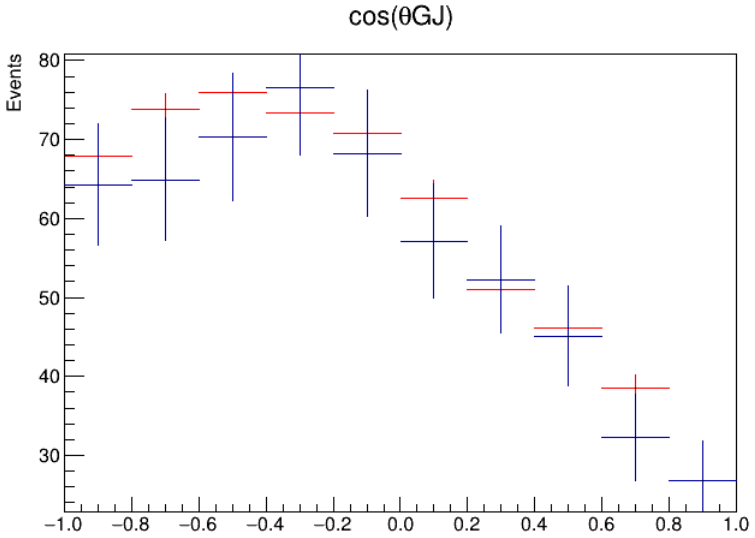
Model

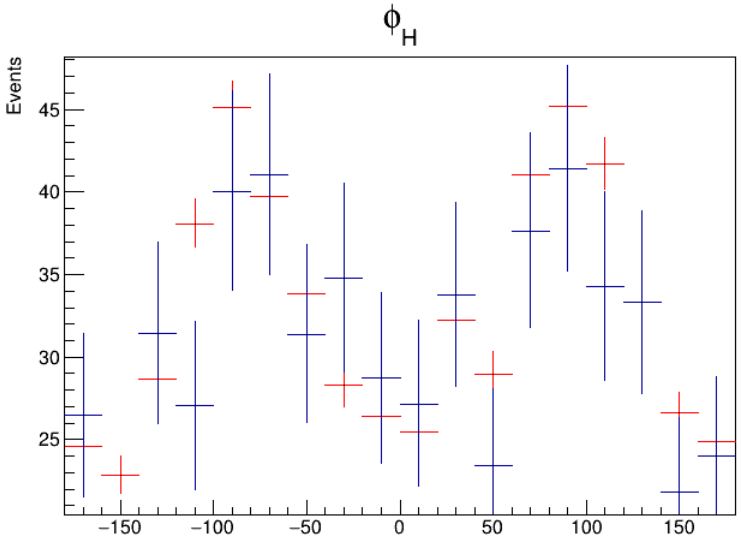
$$\gamma p \rightarrow p X$$
$$\hookrightarrow \pi^0 I$$
$$\hookrightarrow K^- K^+$$

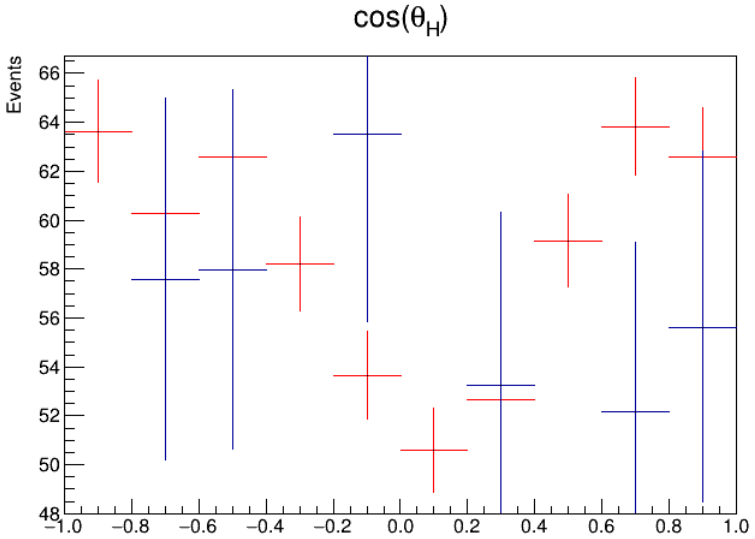
- Decay of resonance X modeled as two sequential decays where the isobar I decays to $K^- K^+$
- Resonance decay angles analyzed in the Gottfried-Jackson frame
- Isobar decay angles analyzed in the helicity frame
- Intensity function is an incoherent sum of two coherent sums:
  1. (J=0, l=0, s=0) and (J=1, l=1, s=0) amplitudes added coherently
  2. (J=0, l=1, s=1), (J=1, l=1, s=0), and (J=1, l=0, s=1) amplitudes added coherently
- For J=1, we sum over m from -1 to 1

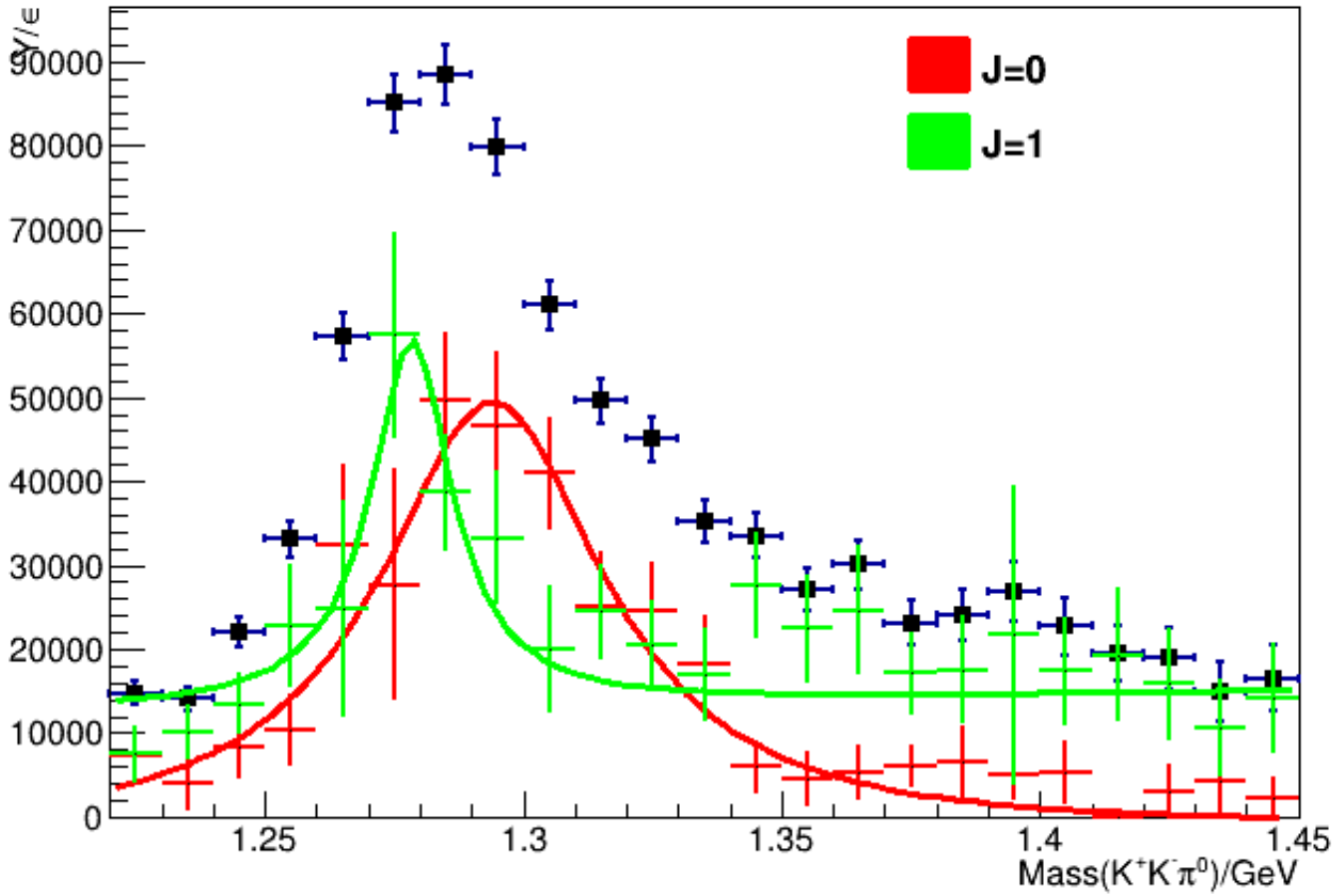
Fits at 1295 MeV

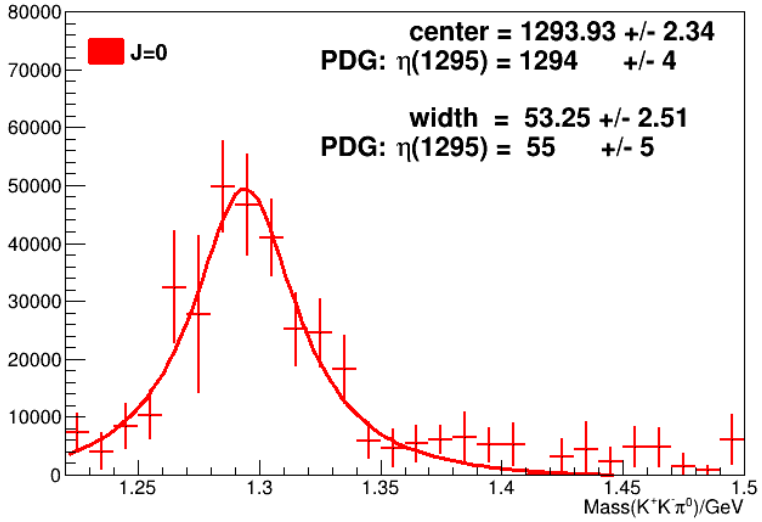


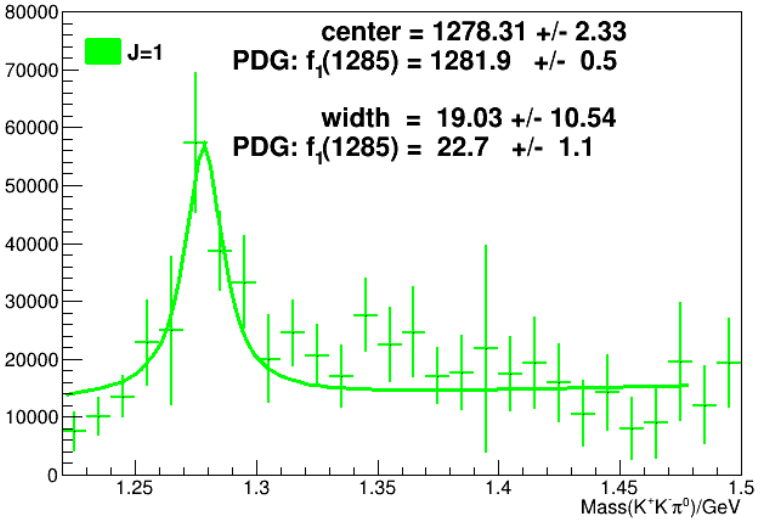







N/ε
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
1.25
1.3
1.35
1.4
1.45
Mass(K⁺K⁻π⁰)/GeV
J=0
J=1





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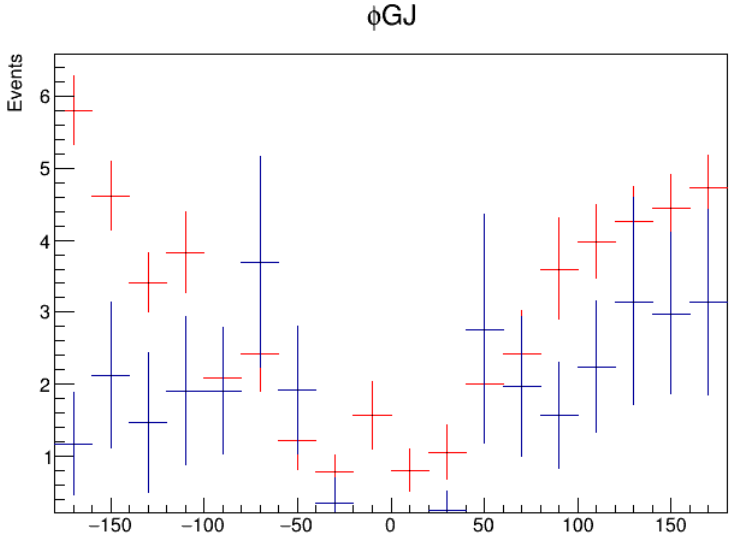
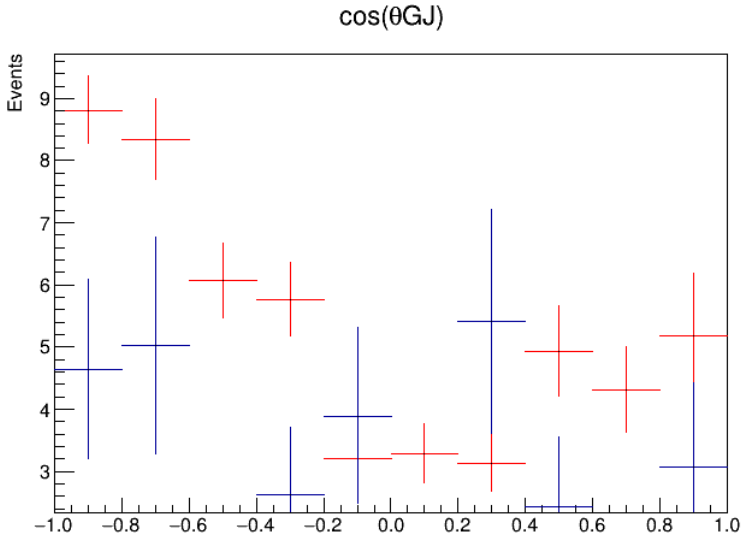
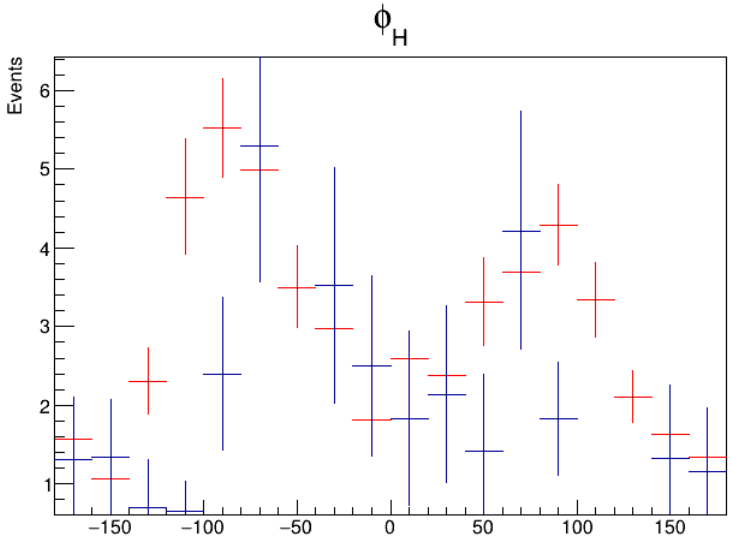
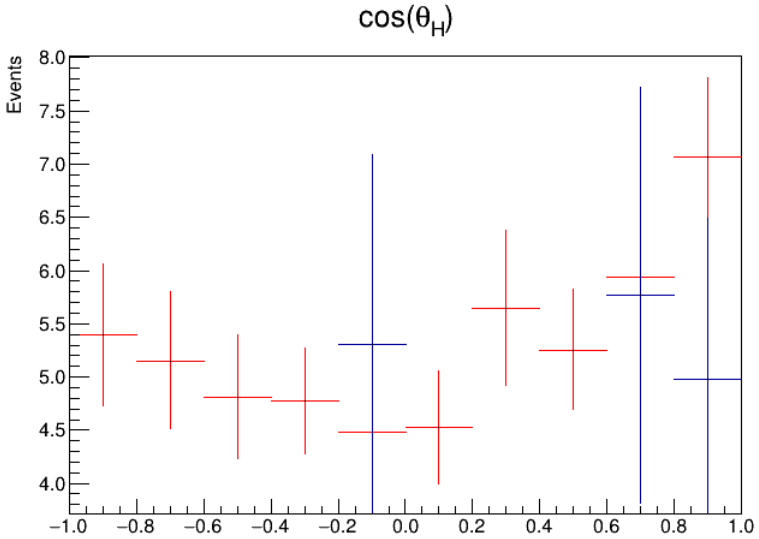
Phi pi

Fits at 1295 MeV

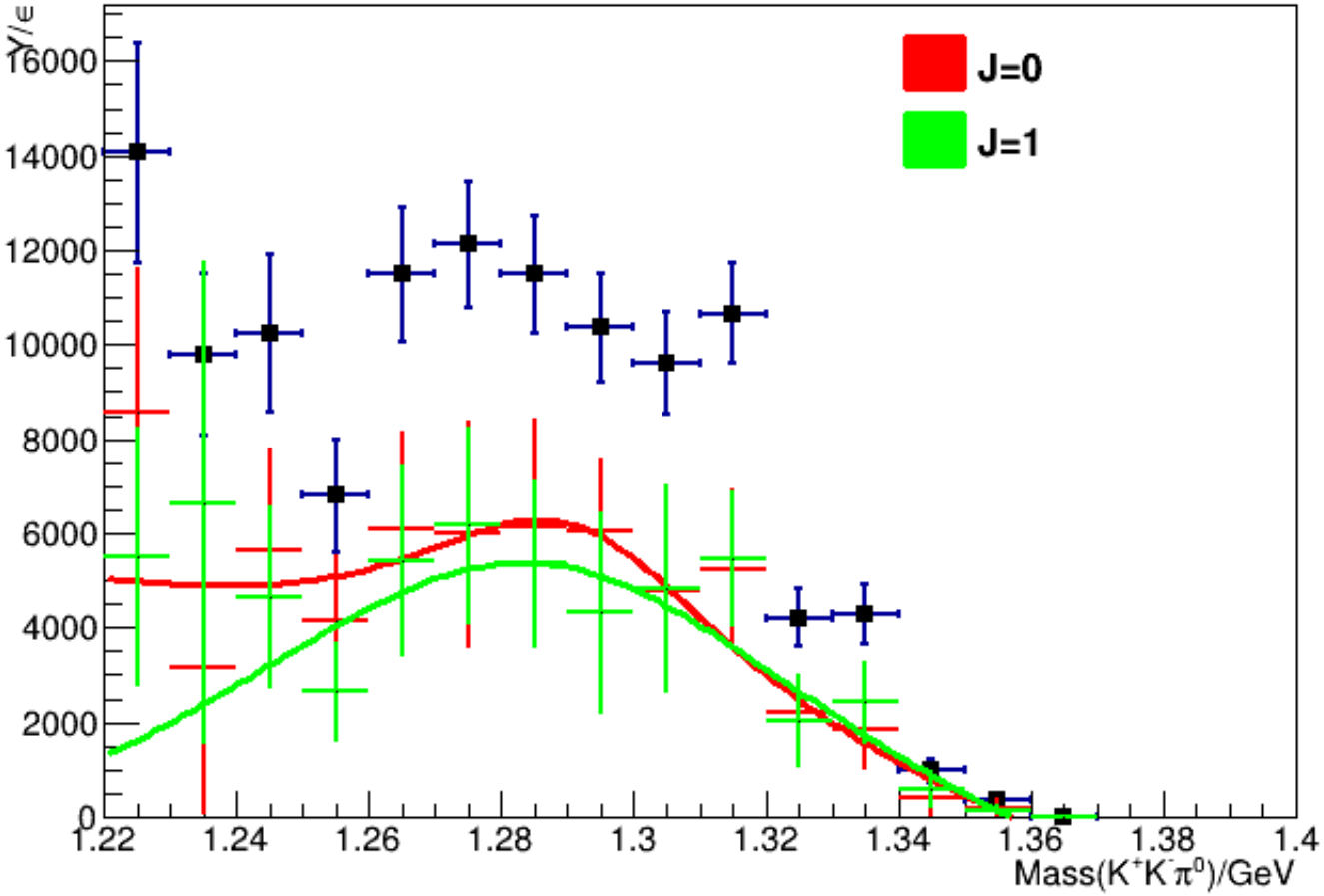








Phi pi


Y/ε
16000
14000
12000
10000
8000
6000
4000
2000
0
1.22
1.24
1.26
1.28
1.3
1.32
1.34
1.36
1.38
1.4
Mass(K⁺K⁻π⁰)/GeV
J=0
J=1