$K^+K^-\pi^0$

Increased mass range

Using states of definite reflectivity

Including K^* isobars

Change in construction of intensity plots

- In recent presentations, I've been using intensity contributions from individual waves to build up intensities of a subsets of waves. For example, I would add the m=-1, m=0 and m=+1 intensities to represent the J=1 intensity.

- As Justin pointed out in an email, adding subsets of wave intensities can cause issues when interferences are strong.

- We are seeing strong interferences for mass[KKπ] > 1.35 GeV (2^{nd} bump region)

- I am now building intensities that represent a subset of waves by adding the amplitudes within the plotGenerator and then having the plotGenerator produce the intensity histograms

Included in the fit at each mass[$KK\pi$] bin

Three coherent sums:

- **Background**

Included in the fit at each mass$[KK\pi]$ bin

- Uniform background

Three coherent sums:

- **Background**

Included in the fit at each mass[$KK\pi$] bin

- Uniform background
- J=0, m= 0, L=0, S=0, r = (-), Isobar = a_0
- J=0, m= 0, L=1, S=1, r = (-), $KK\pi$
- J=0, m= 0, L=1, S=1, r = (-), Isobar = K^{*+}
- J=0, m= 0, L=1, S=1, r = (-), Isobar = K^{*-}
- J=1, m=-1,0,1, L=1, S=0, r = (-), Isobar = a_0
- J=1, m=-1,0,1, L=1, S=0, r = (-), Isobar = K^{*+}
- J=1, m=-1,0,1, L=1, S=0, r = (-), Isobar = K^{*-}
- J=1, m=-1,0,1, L=1, S=1, r = (-), Isobar = K^{*+}
- J=1, m=-1,0,1, L=1, S=1, r = (-), Isobar = K^{*-}

Three coherent sums:

- **Background**
- ***r* = (-)**

Included in the fit at each mass[$KK\pi$] bin

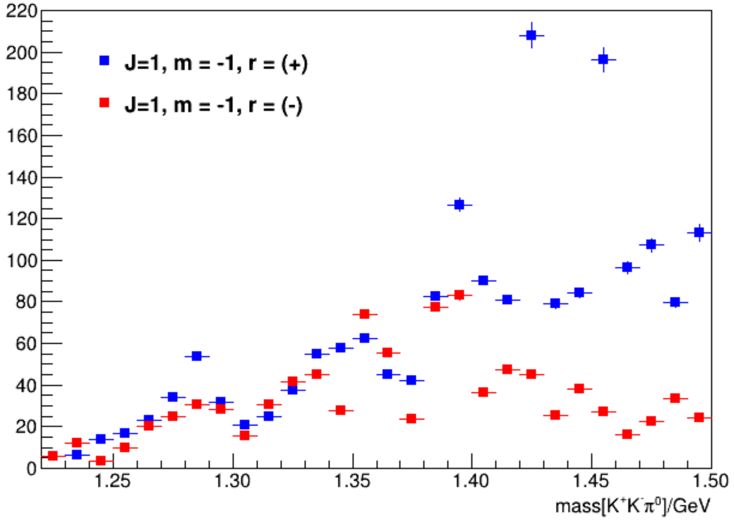
- Uniform background
- J=0, m= 0, L=0, S=0, r = (-), Isobar = a_0
- J=0, m= 0, L=1, S=1, r = (-), $KK\pi$
- J=0, m= 0, L=1, S=1, r = (-), Isobar = K^{*+}
- J=0, m= 0, L=1, S=1, r = (-), Isobar = K^{*-}
- J=1, m=-1,0,1, L=1, S=0, r = (-), Isobar = a_0
- J=1, m=-1, 1, L=1, S=0, r = (+), Isobar = a_0
- J=1, m=-1,0,1, L=1, S=0, r = (-), Isobar = K^{*+}
- J=1, m=-1, 1, L=1, S=0, r = (+), Isobar = K^{*+}
- J=1, m=-1,0,1, L=1, S=0, r = (-), Isobar = K^{*-}
- J=1, m=-1, 1, L=1, S=1, r = (+), Isobar = K^{*-}
- J=1, m=-1,0,1, L=1, S=1, r = (-), Isobar = K^{*+}
- J=1, m=-1, 1, L=1, S=1, r = (+), Isobar = K^{*+}
- J=1, m=-1,0,1, L=1, S=1, r = (-), Isobar = K^{*-}
- J=1, m=-1, 1, L=1, S=1, r = (+), Isobar = K^{*-}

Three coherent sums:

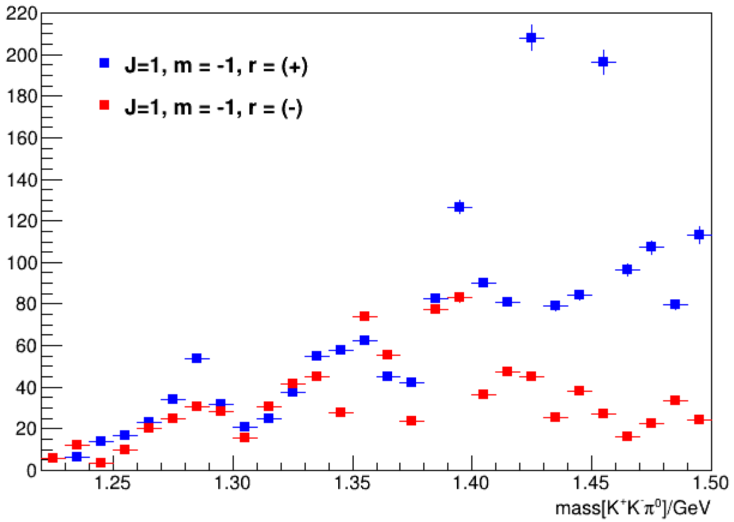
- **Background**
- ***r* = (-)**
- ***r* = (+)**

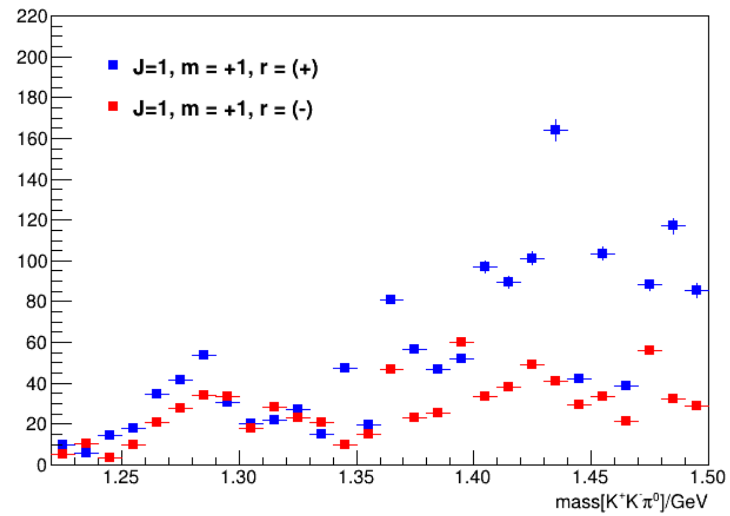
ASU

$J = 1$ reflectivities for each value of m

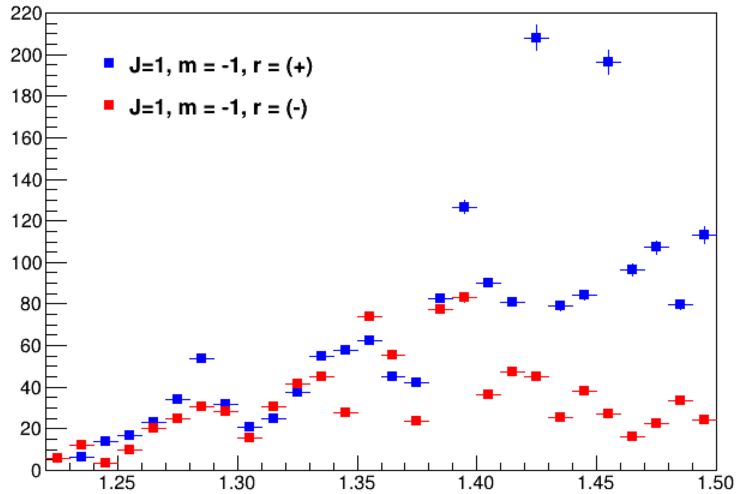


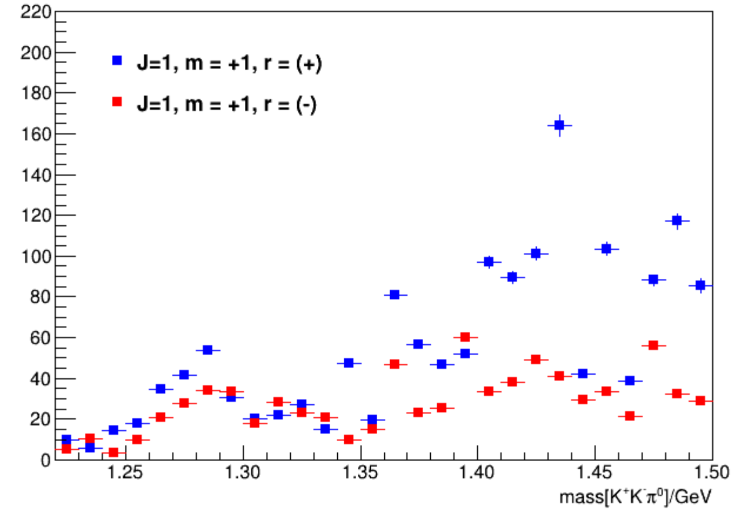
$J = 1$ reflectivities for each value of m

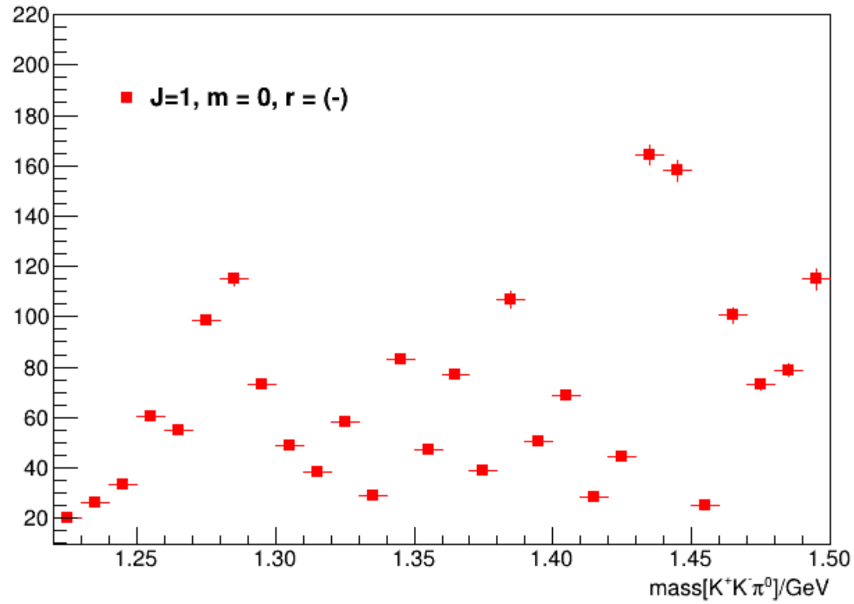




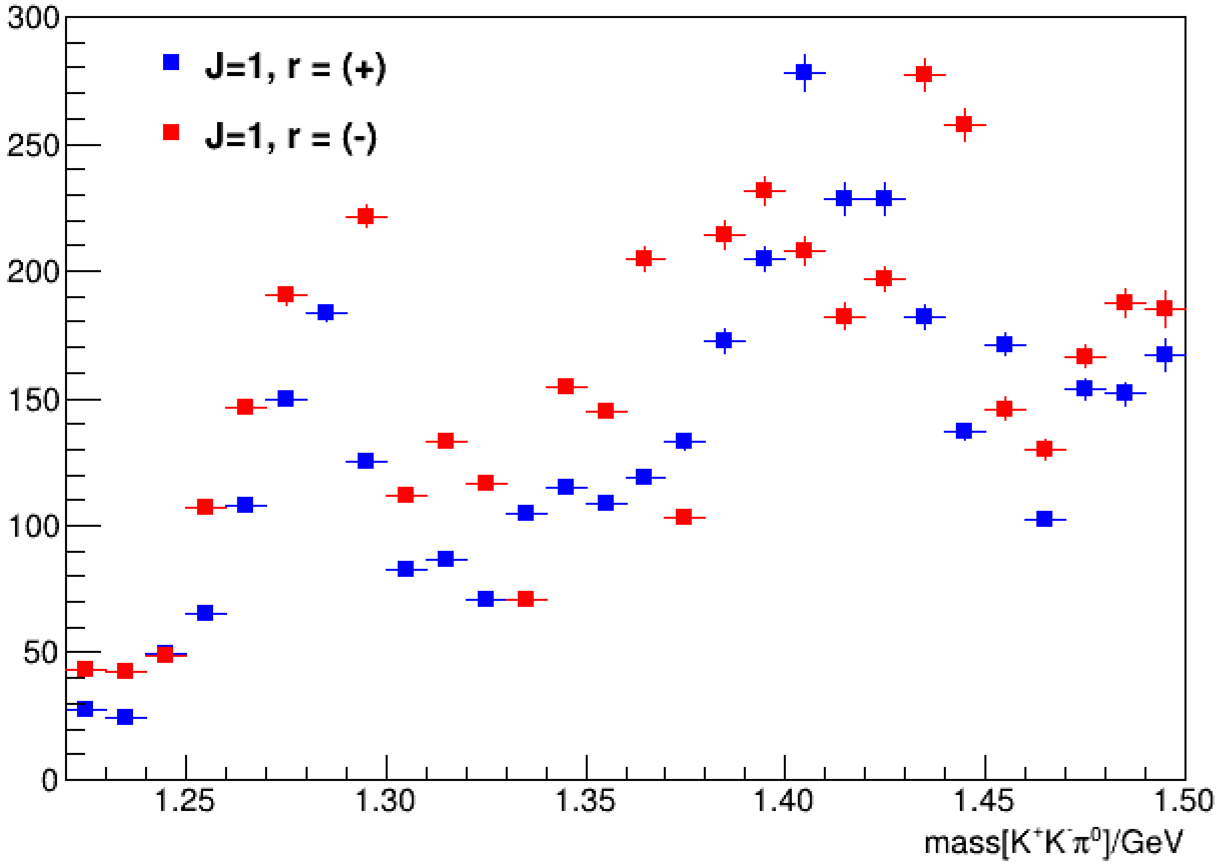
$J = 1$ reflectivities for each value of m



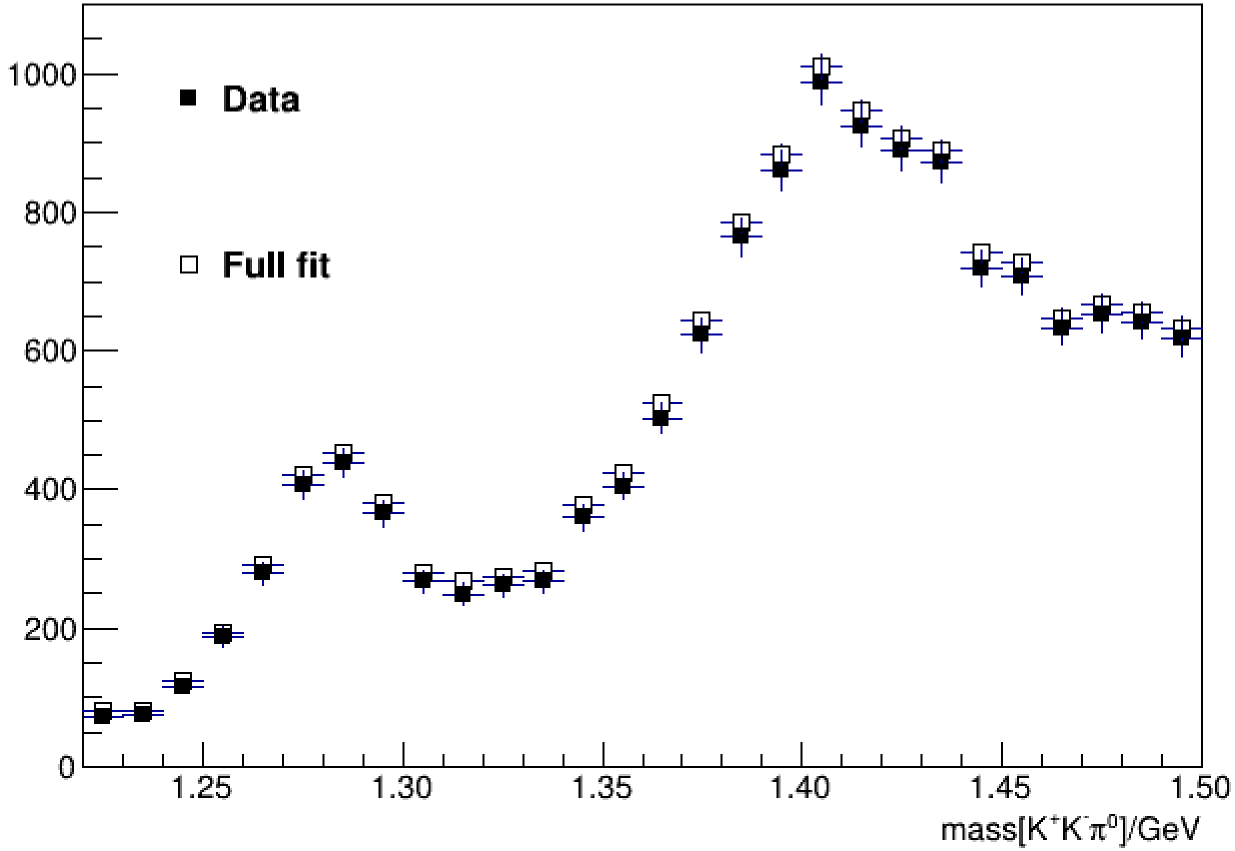




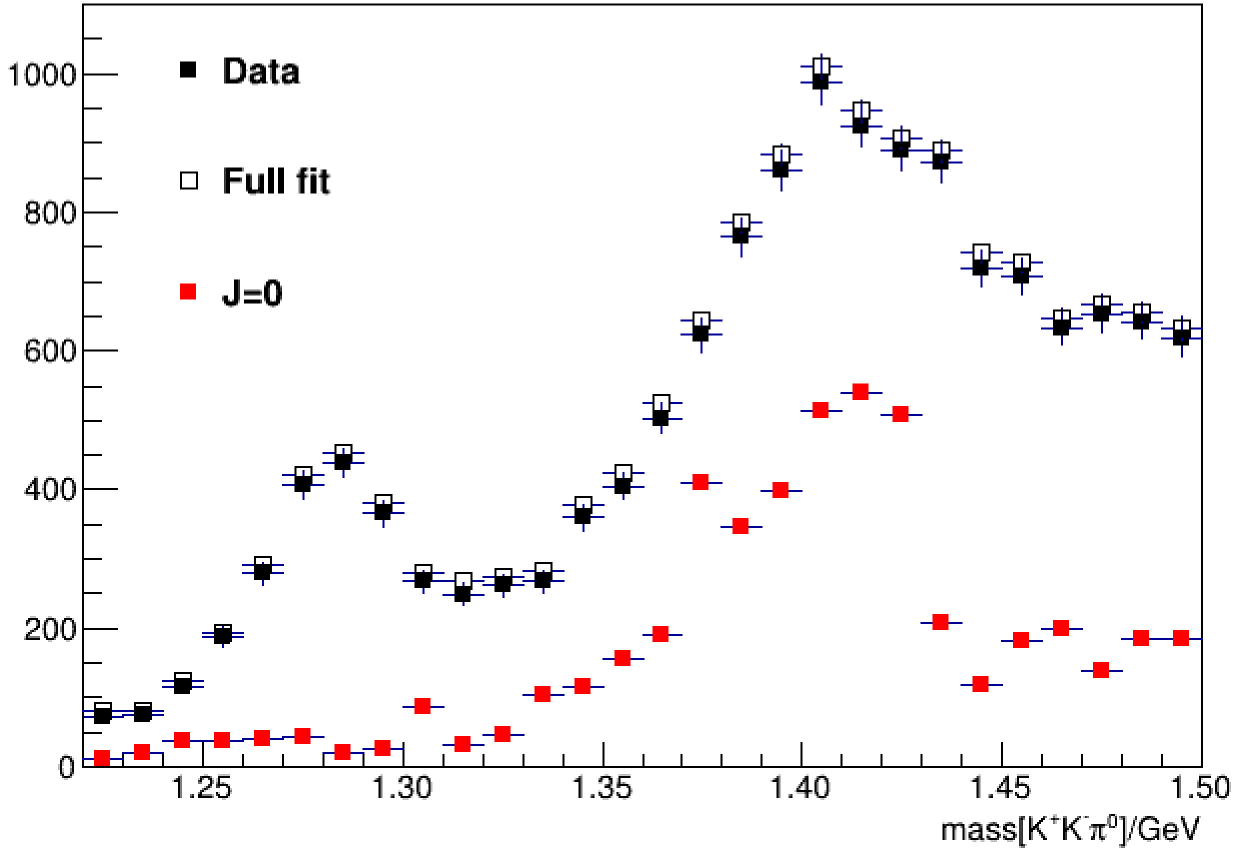
$J = 1$ reflectivities



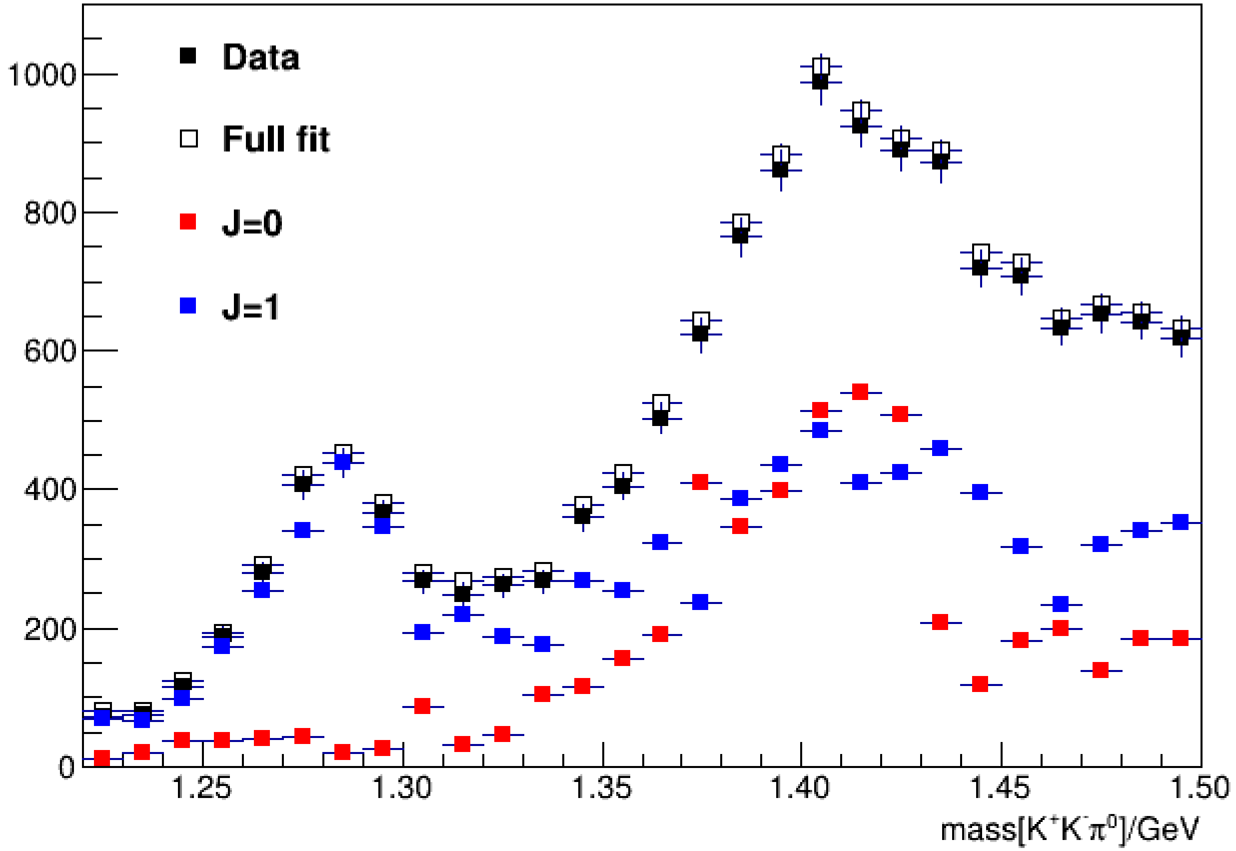
Fit compared to the data



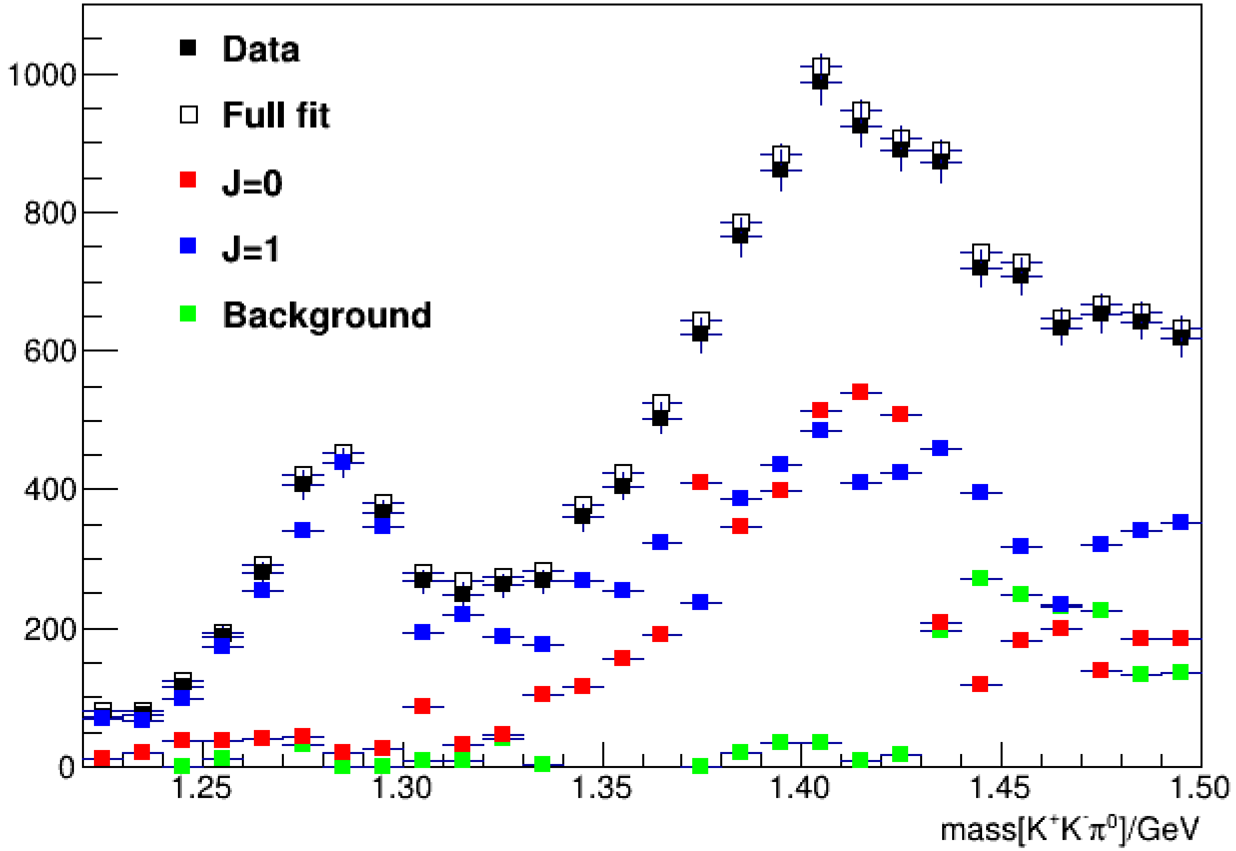
Fit compared to the data



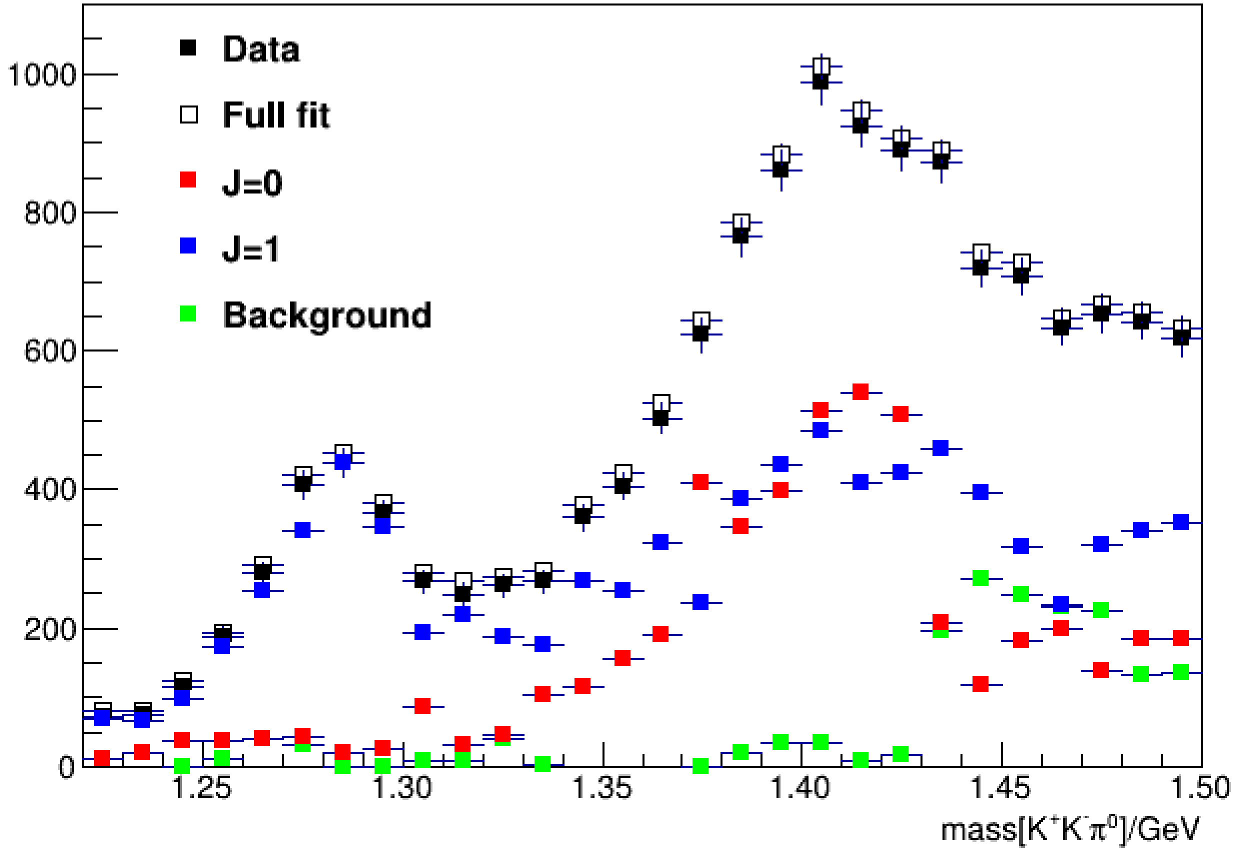
Fit compared to the data



Fit compared to the data

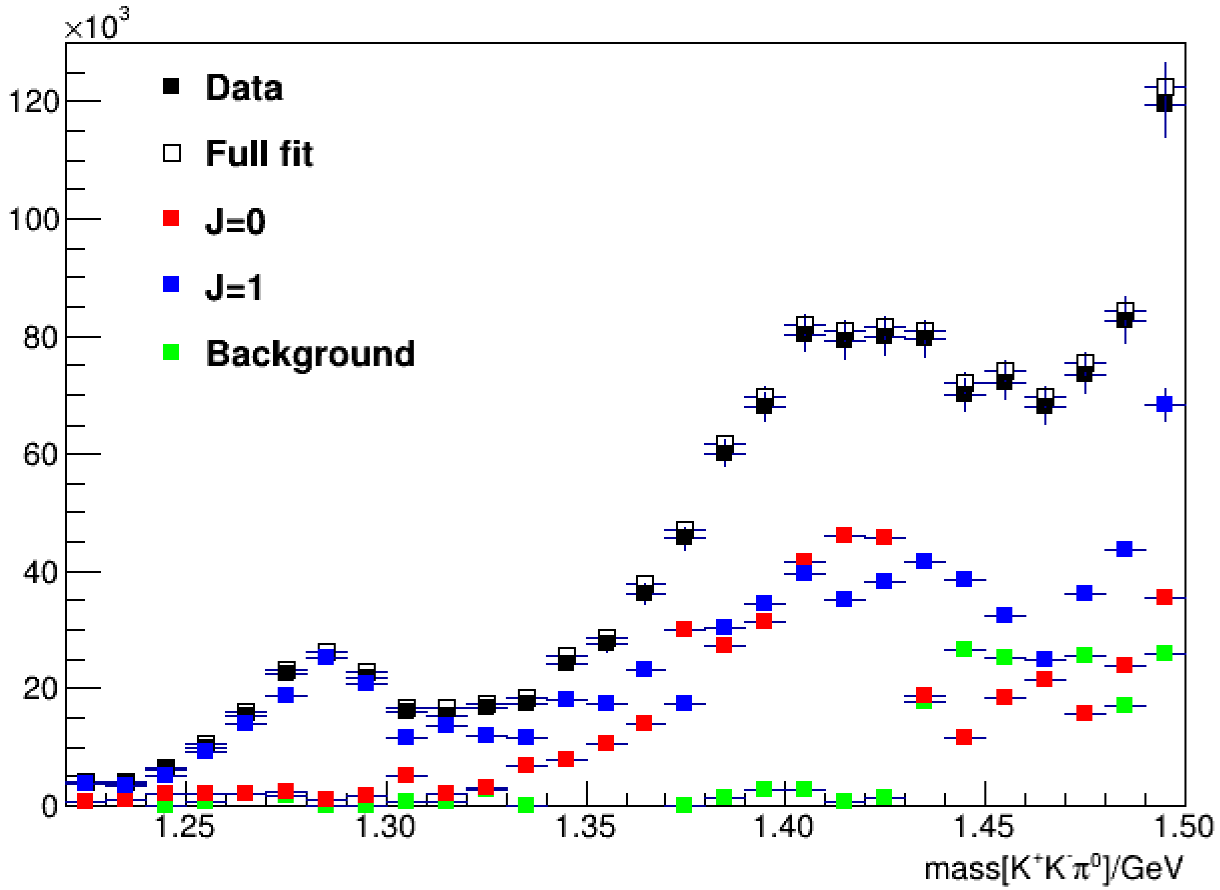


Fit compared to the data

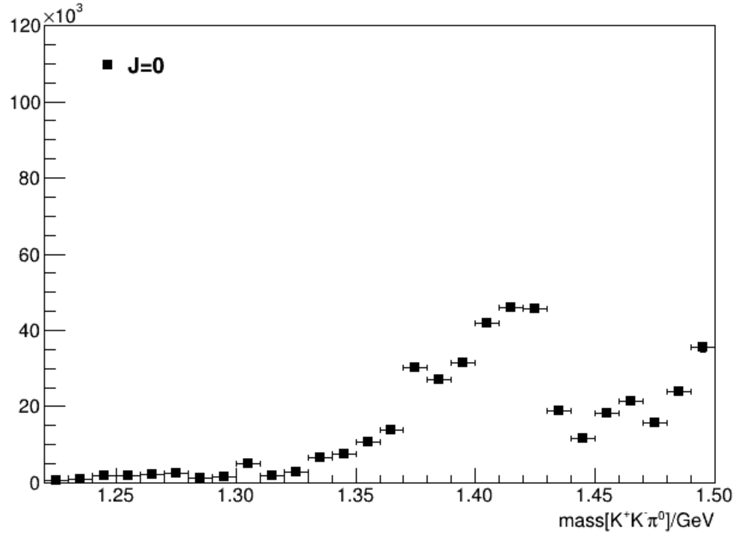


- **Need efficiency correction**

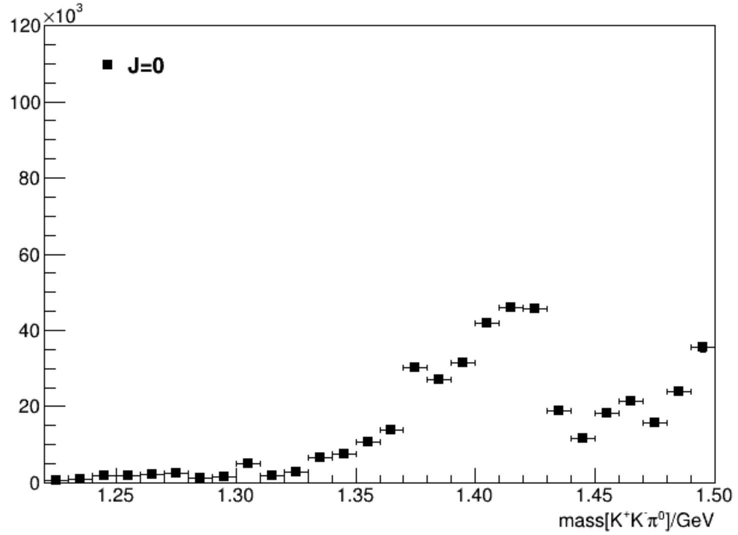
Efficiency corrected

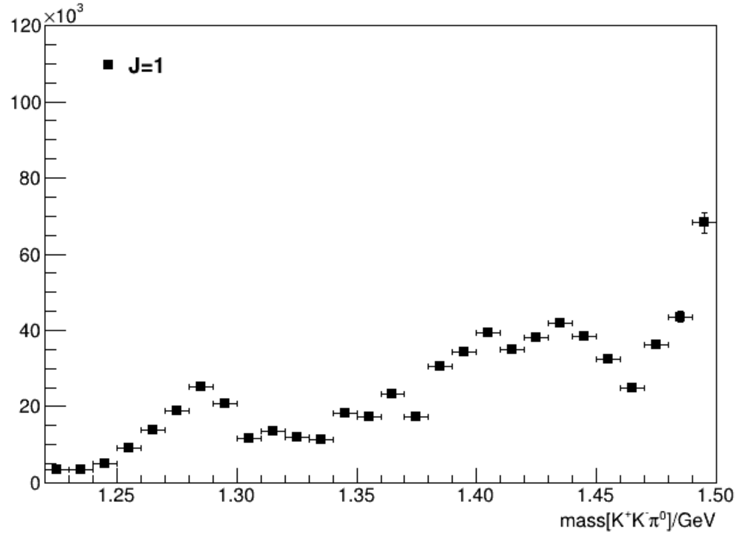


Individual J=0,1 contributions

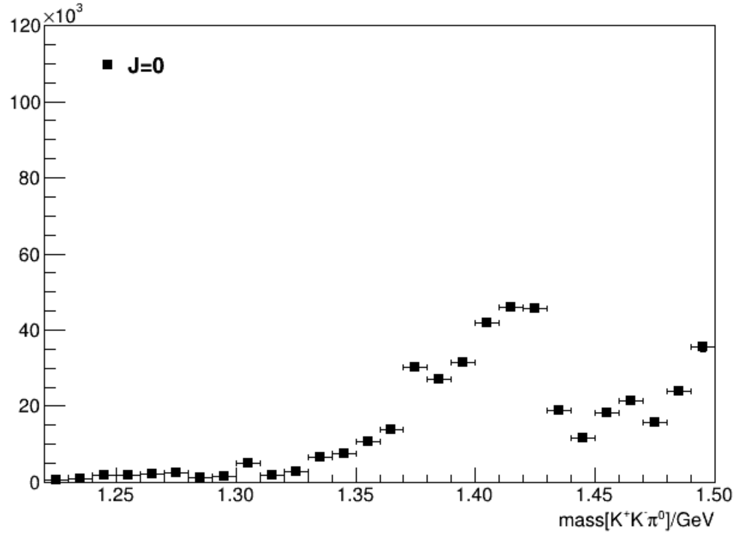


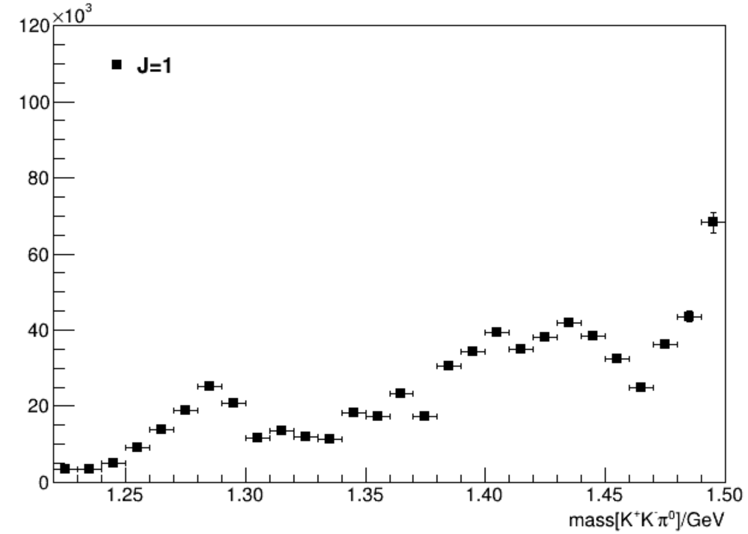
Individual J=0,1 contributions





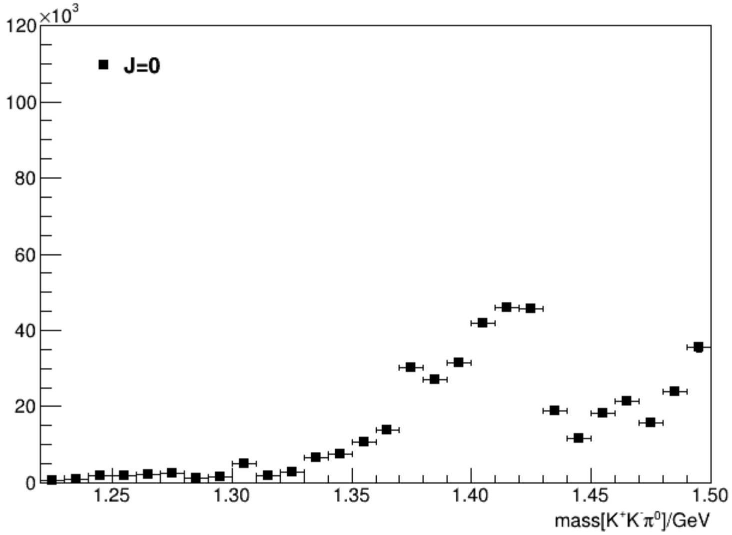
Individual J=0,1 contributions

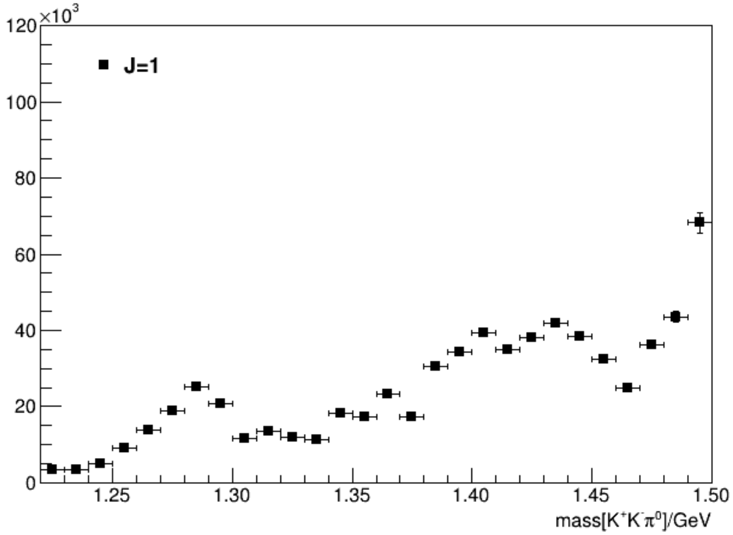




- Error bars look too small ☹

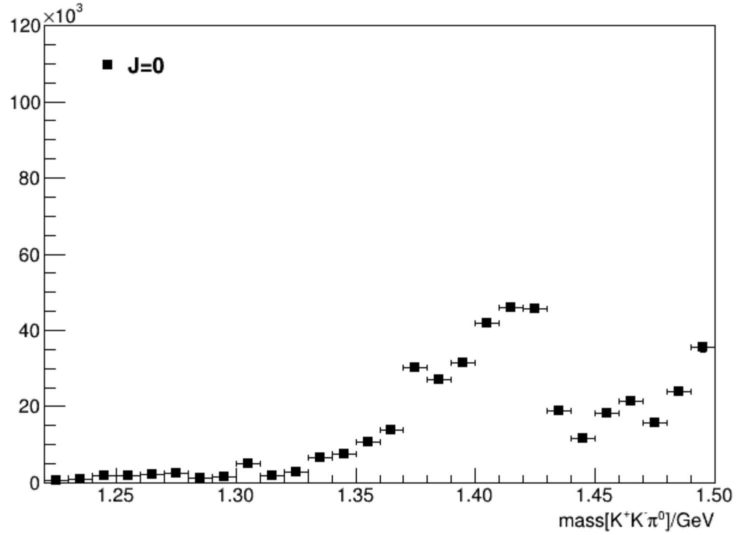
Individual J=0,1 contributions

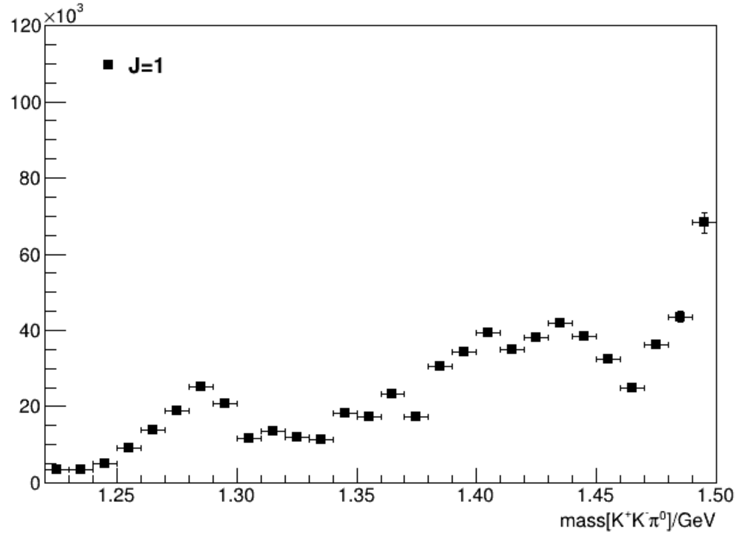




- Error bars look too small ☹
- Will bootstrap errors later

Individual J=0,1 contributions





- Error bars look too small ☹
- Will bootstrap errors later
- Will use quick temporary error estimates for now

Error estimate

- Breaking AmpTools results into parts that COULD add together to form the full fit IF no interference between the parts

Error estimate

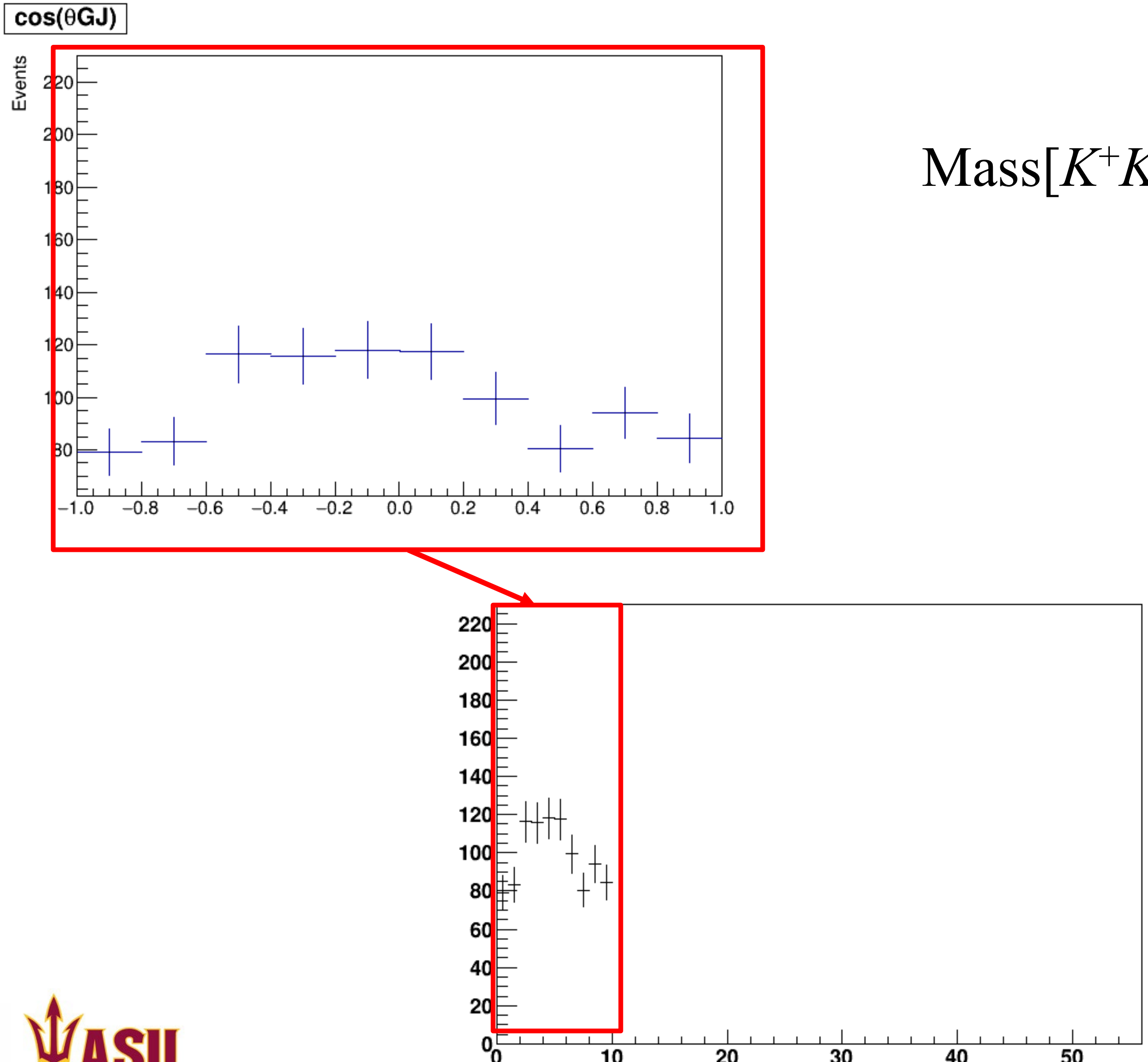
- Breaking AmpTools results into parts that COULD add together to form the full fit IF no interference between the parts

- Fit the AmpTools parts described above to the data

Error estimate

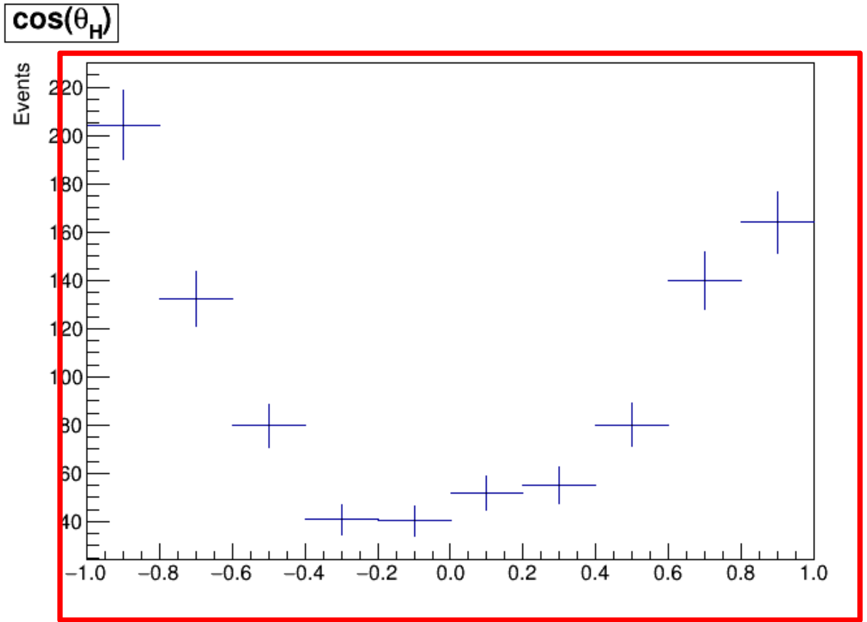
- Breaking AmpTools results into parts that COULD add together to form the full fit IF no interference between the parts
- Fit the AmpTools parts described above to the data
- Extract the uncertainty

Error estimate data construction

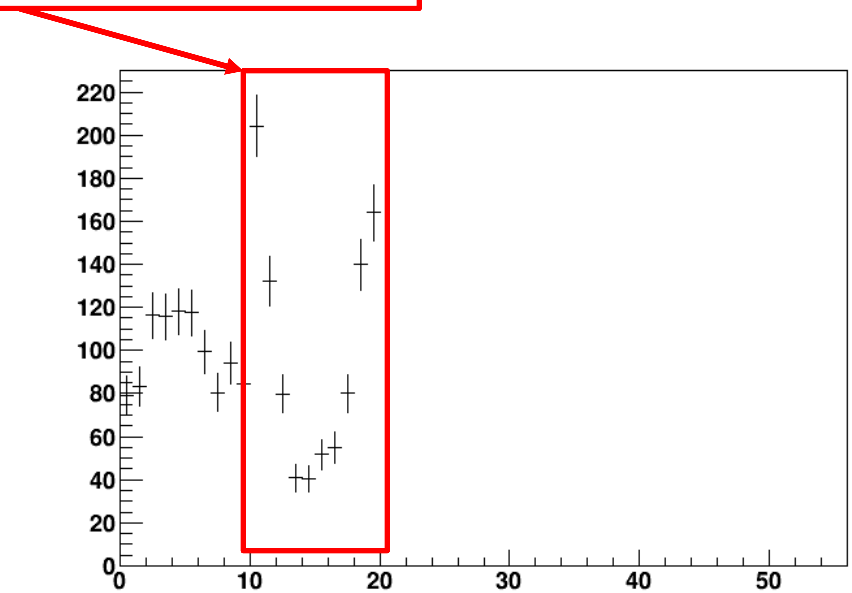


Mass[$K^+K^-\pi^0$] = 1405 MeV

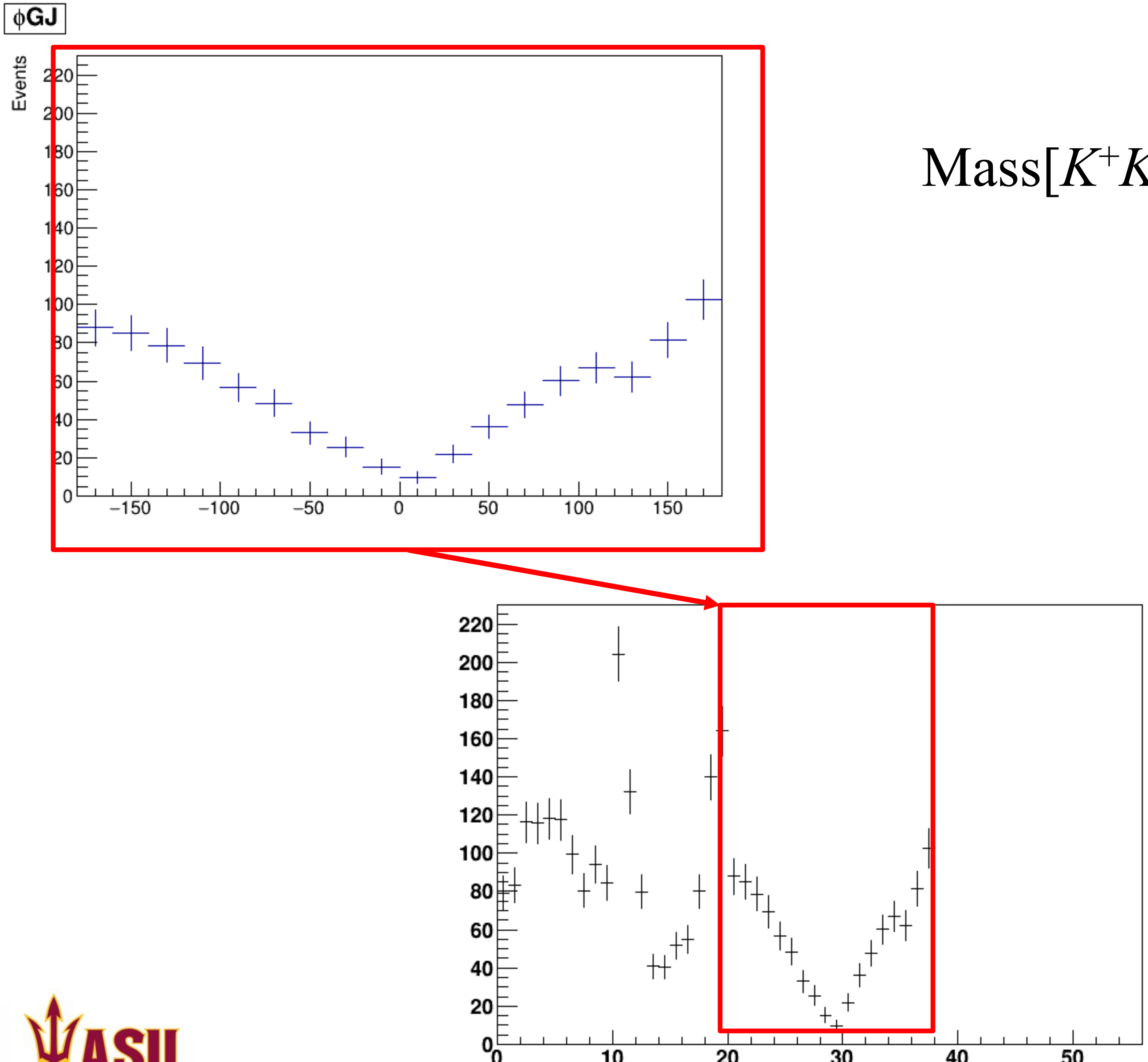
Error estimate data construction



Mass[$K^+K^-\pi^0$] = 1405 MeV



Error estimate data construction



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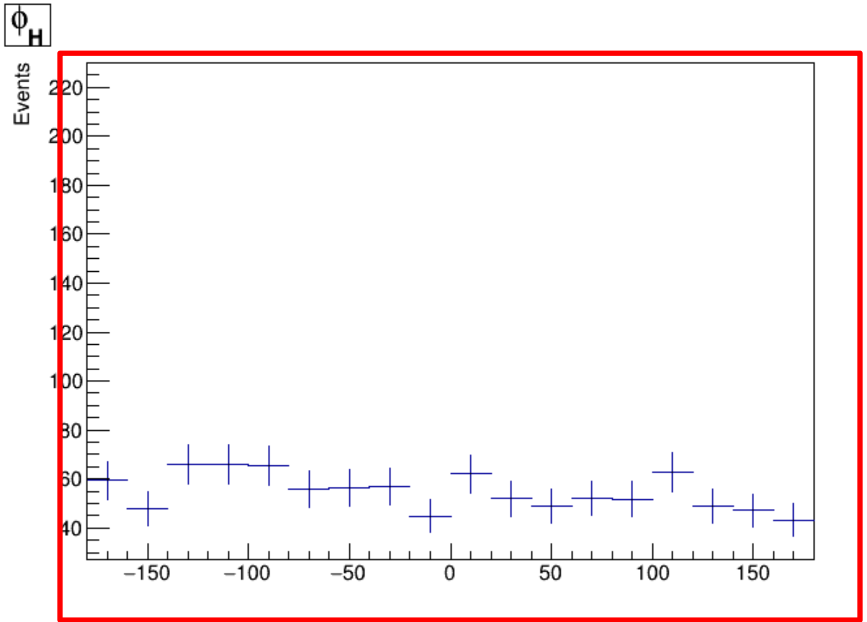

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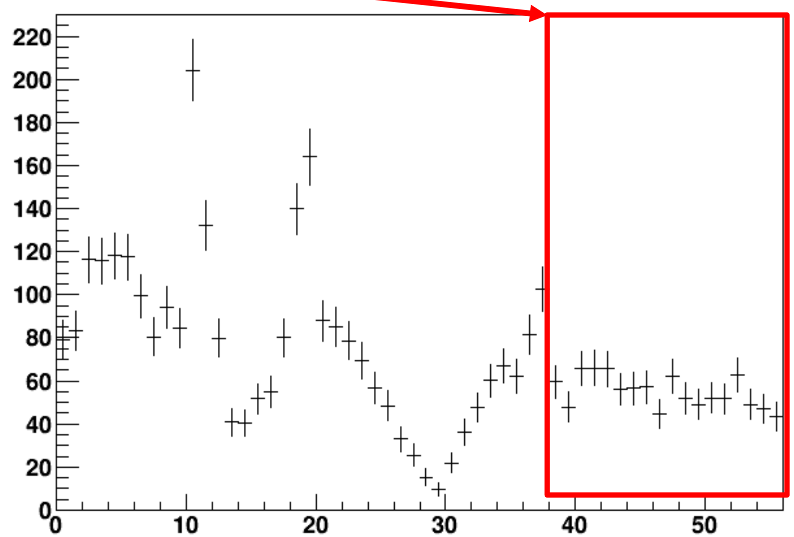

Error estimate data construction

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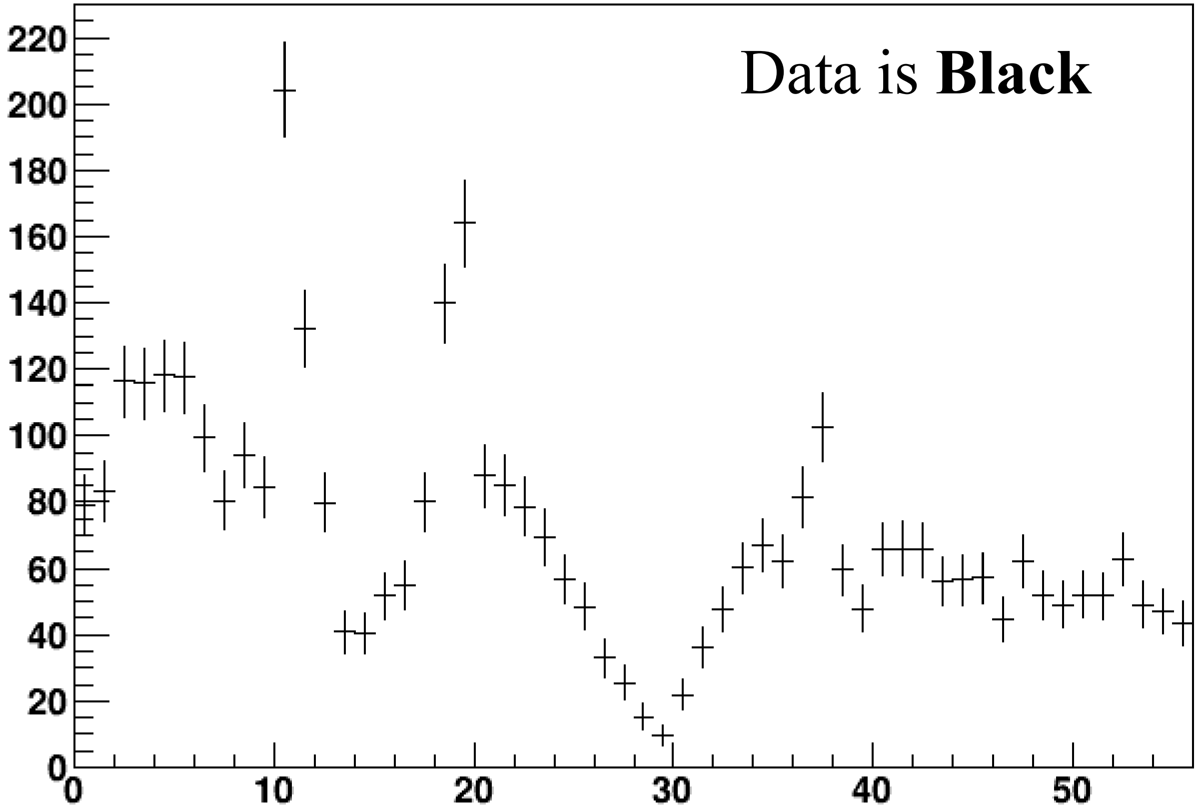

Error estimate data construction

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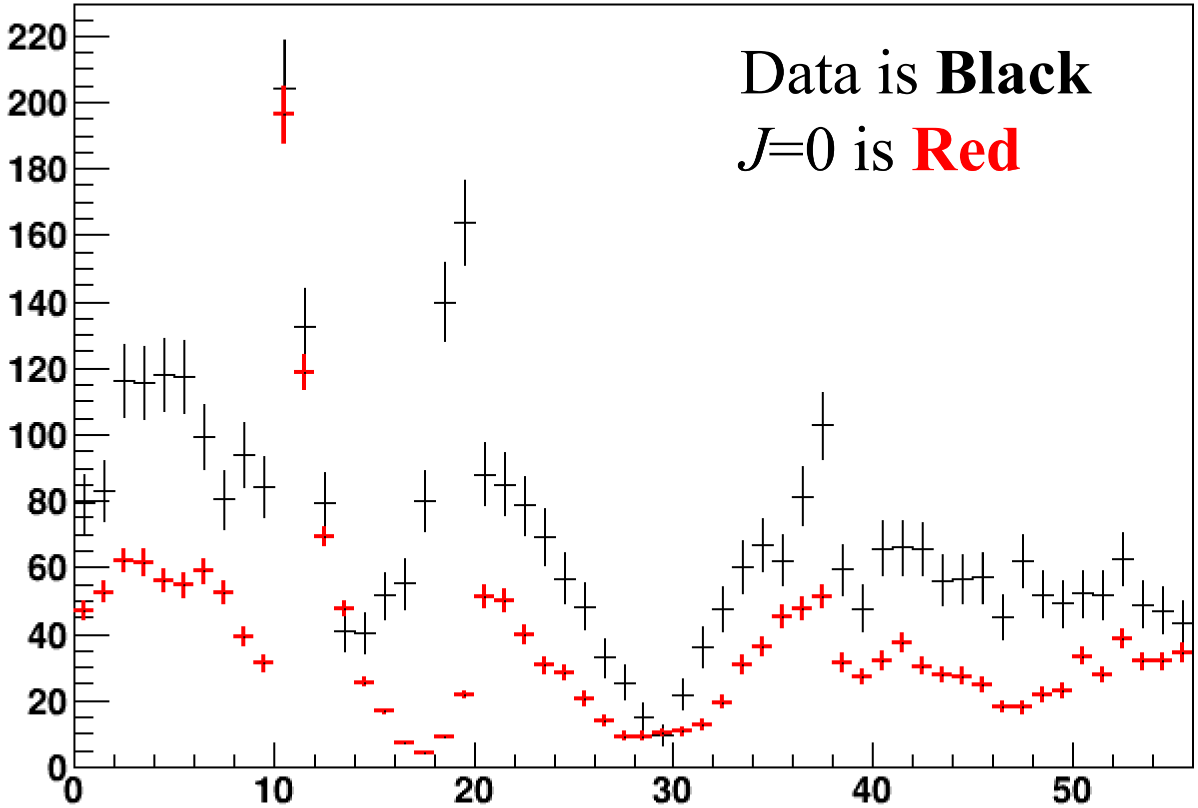

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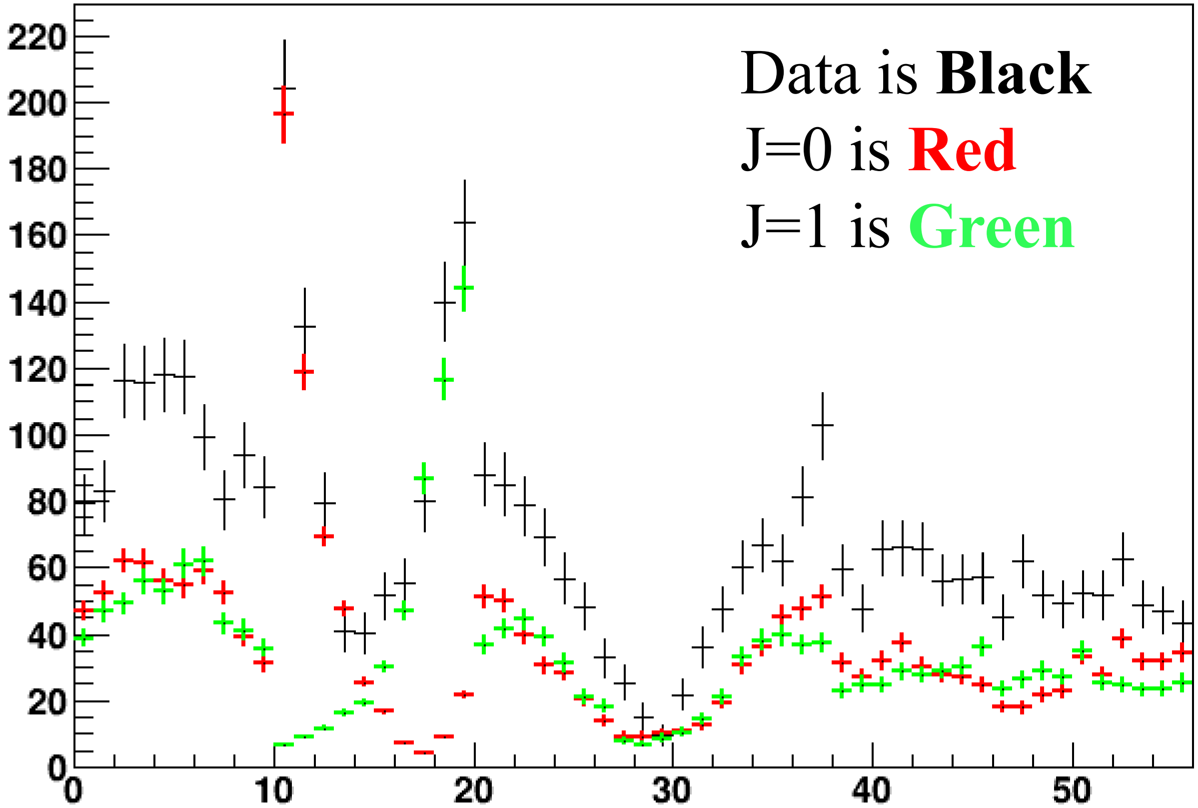
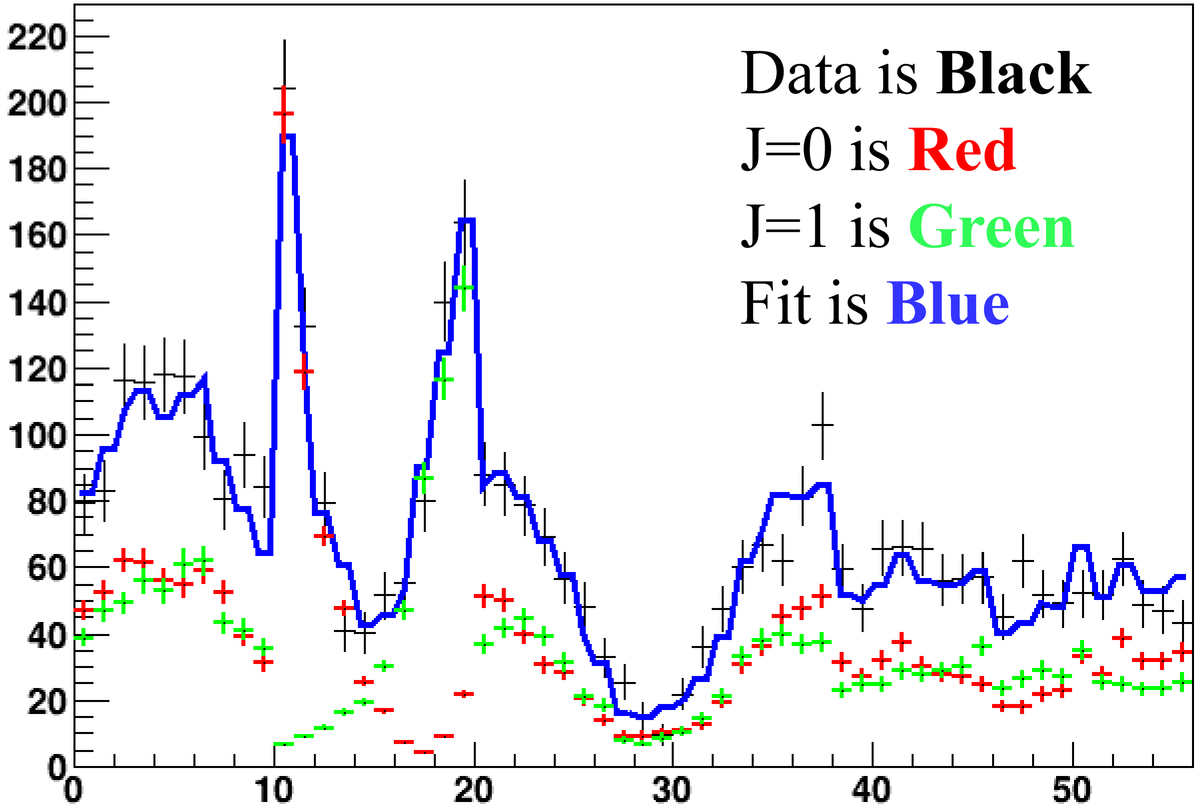
Mass[$K^+K^-\pi^0$] = 1405 MeV



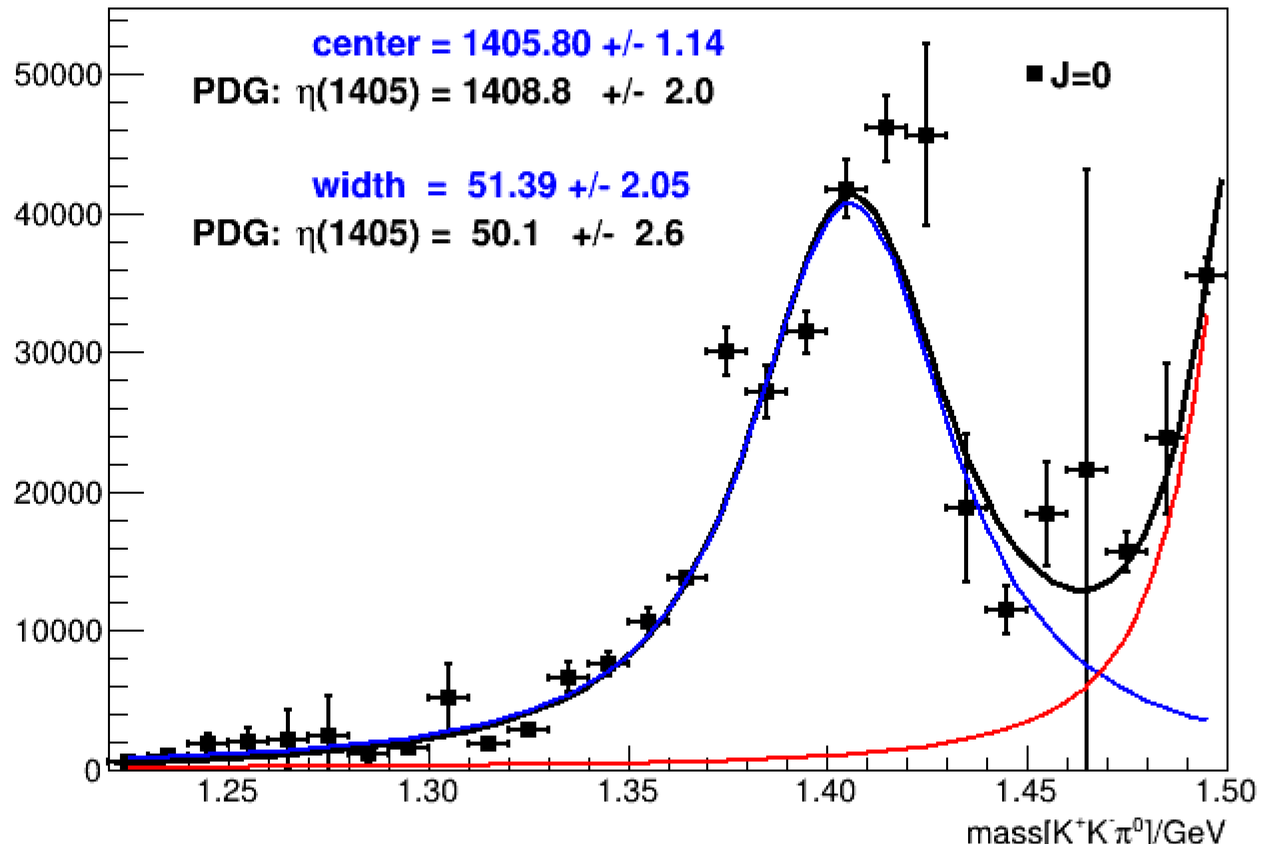
Error estimate data construction

Mass[$K^+K^-\pi^0$] = 1405 MeV



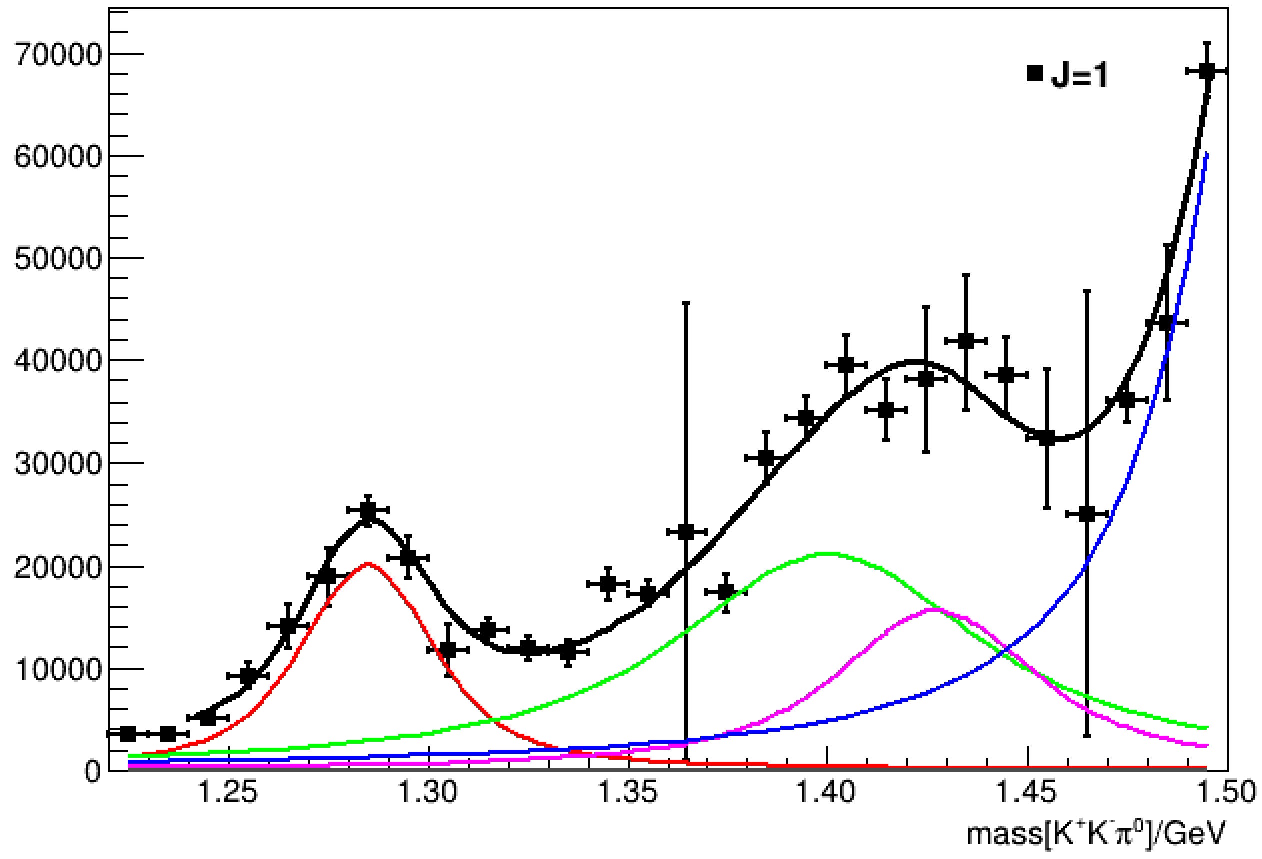
- Fit data to $aJ_0 + bJ_1$,where a and b are parameters of the fit
- The errors on a and b are then used in estimating the error for the J=0 and J=1 terms, respectively, for this mass bin

$J = 0$ fit results compared to $\eta(1405)$

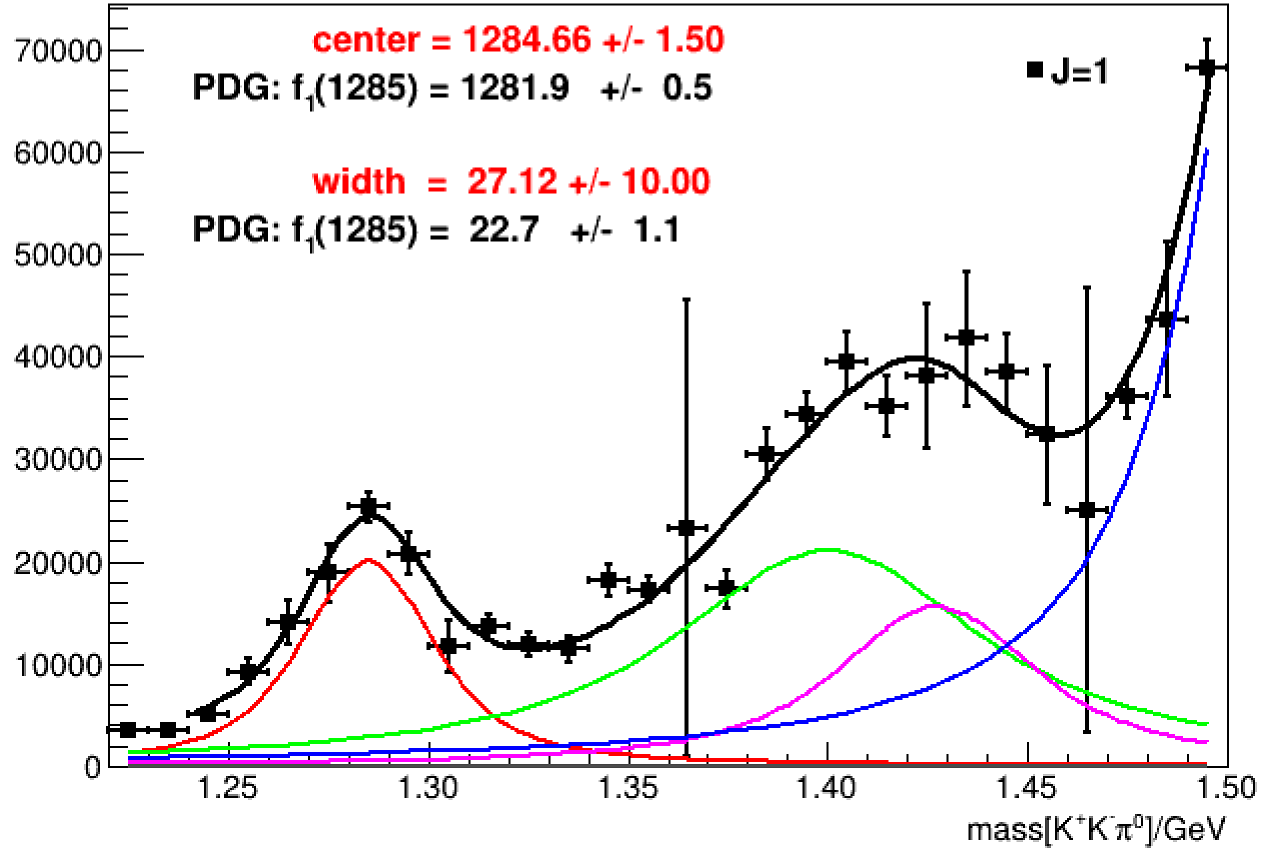


- Mass center is good 😐
- Width is good ☺
- Background (**red**) is ? ☹

$J = 1$ fit results

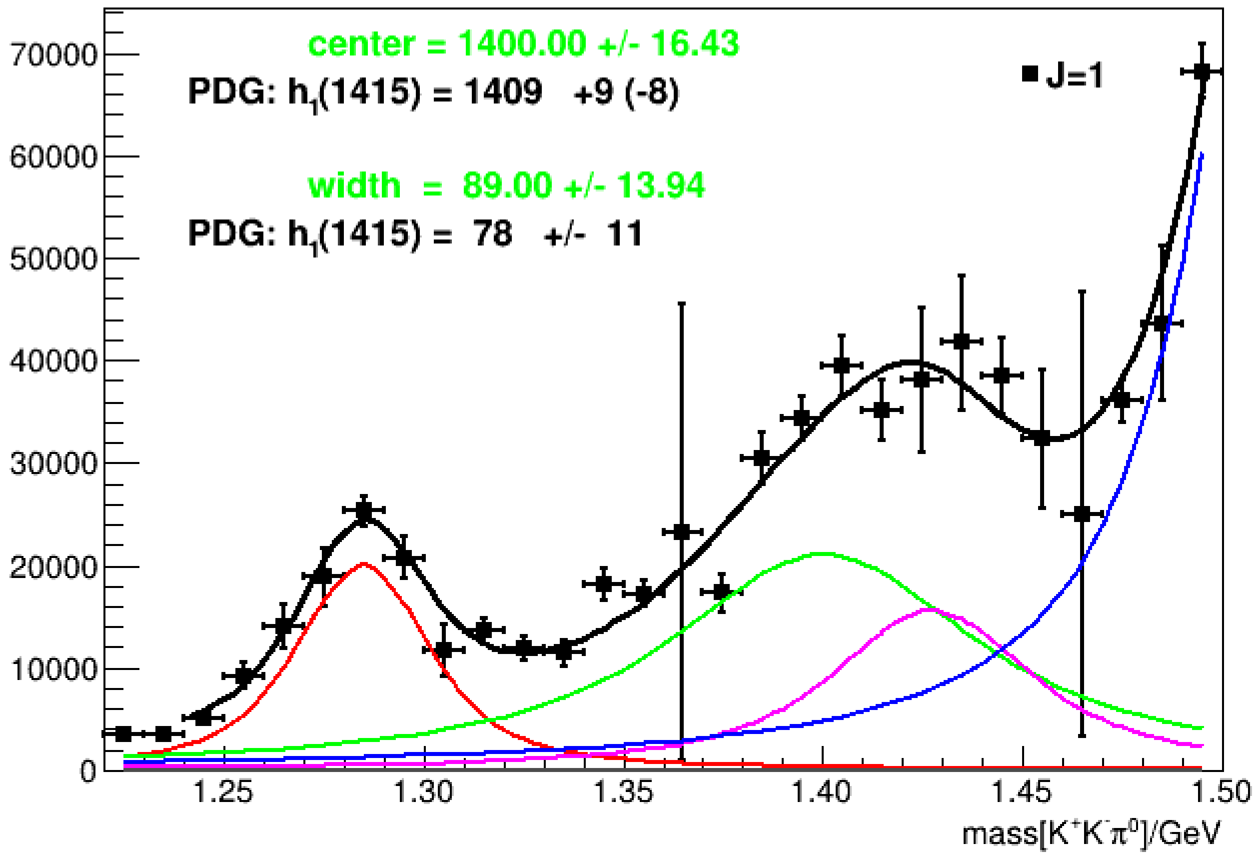


$J = 1$ fit results compared to $f_1(1285)$



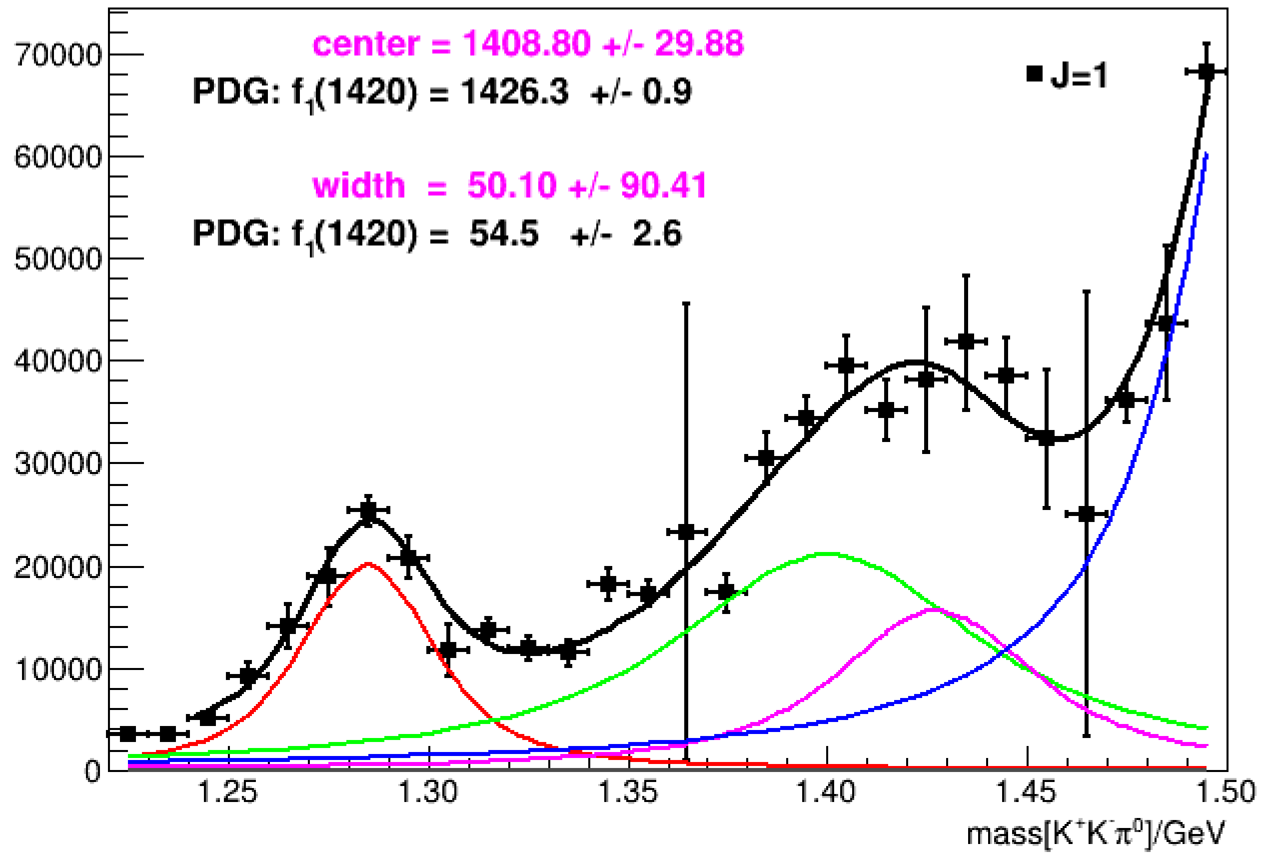
- Mass center is too slightly off 😐
- Width is good ☺

$J = 1$ fit results compared to $h_1(1415)$



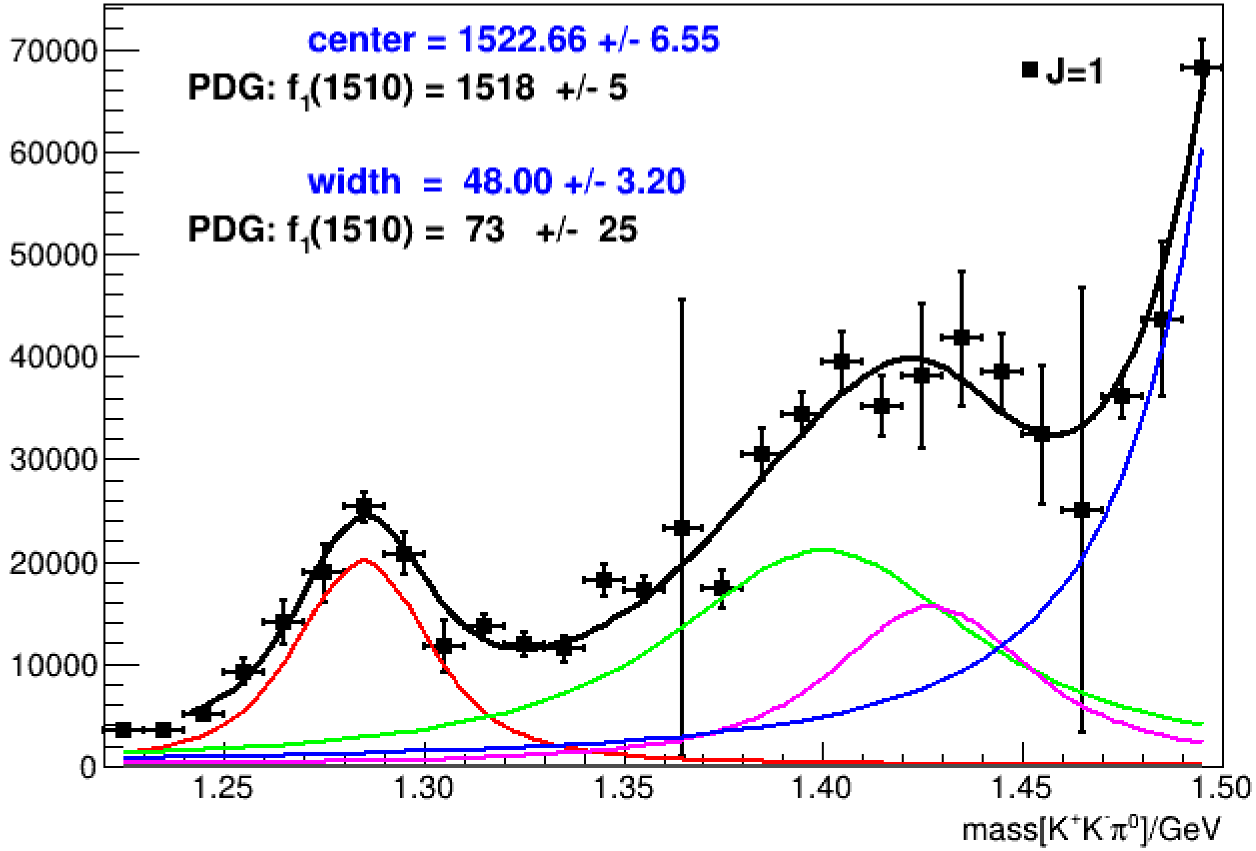
- Mass center hit limit ☹
- Width hit limit ☹

$J = 1$ fit results compared to $f_1(1420)$



- Mass center is good, but huge uncertainty 😐
- Width is good, but huge uncertainty 😐

$J = 1$ fit results compared to $f_1(1520)$



- Mass center is too good but off the figure 😐
- Width hit the limit ☹

Title