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

Recent PWA

Included waves

- Uniform background

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- $J = 0$:
  - $a_0\pi^0$
  - $K^{*+}K^-$
  - $K^{*-}K^+$

Included waves

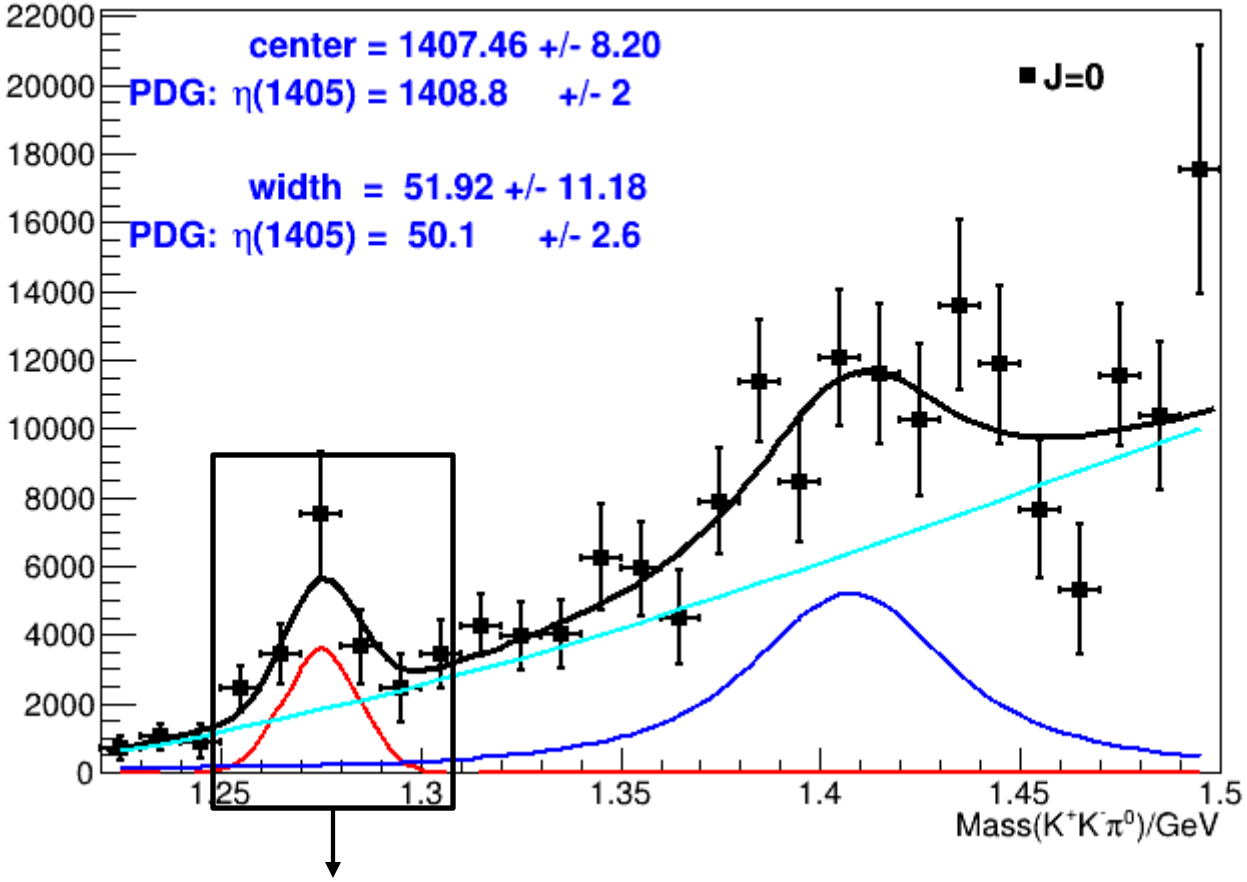
- Uniform background

- $J = 0$:
  - $a_0\pi^0$
  - $K^{*+}K^-$
  - $K^{*-}K^+$

- $J = 1$:
  - $a_0\pi^0$
  - $K^{*+}K^-$ (L=0, and L=1)
  - $K^{*-}K^+$ (L=0, and L=1)

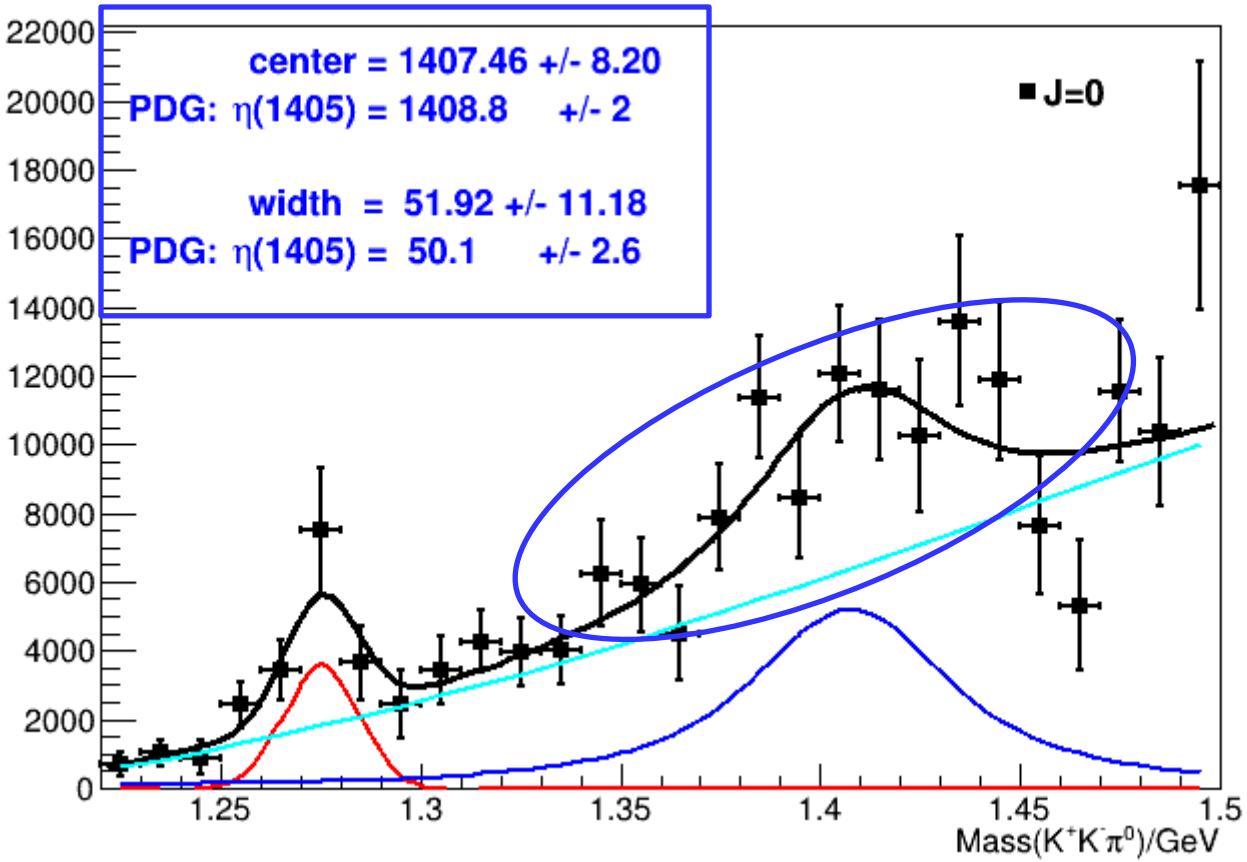
PWA Results for $J = 0,1$ and background

PWA Results for $J = 0$



The leakage from J=1

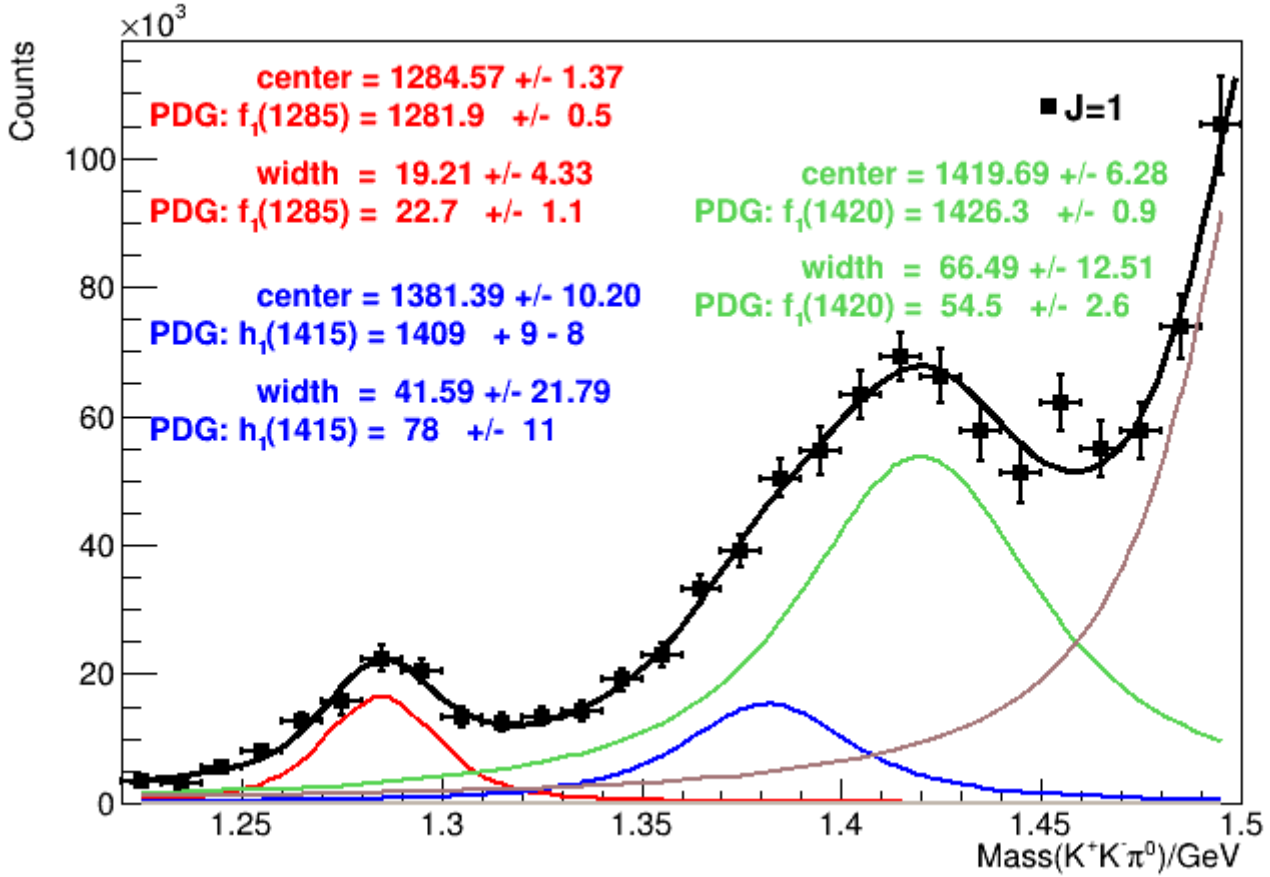
PWA Results for $J = 0$



- The $\eta(1405)$ looks reasonable

PWA Results for $J = 1$

PWA Results for $J = 1$



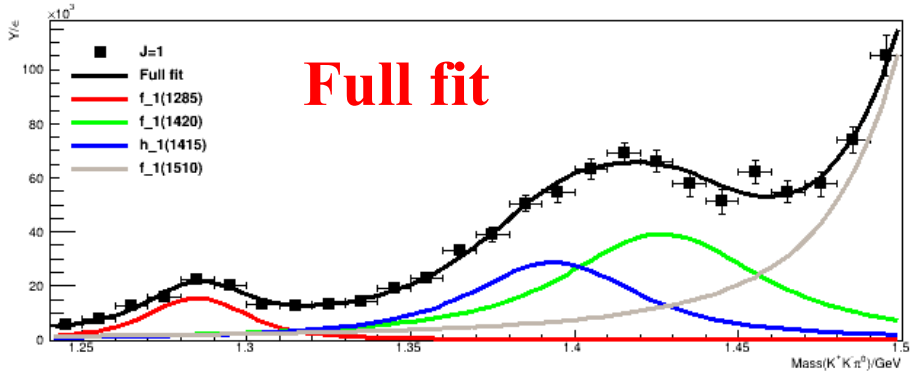
- Each of the f_1 states are close to PDG values
- Note: The most recent BESIII has mass(h_1)= $1384 \pm 6 \,^{+9}_{-0}$ and width = $66 \pm 10 \,^{+12}_{-10}$

Separating f_1 and h_1 states

- G parity :
  - $f_1 = +$
  - $h_1 = -$
  - $a_0 = -$
  - $\pi^0 = -$
  - Kaons are not eigenstate of G parity

- So
  - f_1 can decay $a_0\pi^0$ and K^*K
  - h_1 can only decay K^*K

Simultaneous fit to $J=1$ isobars



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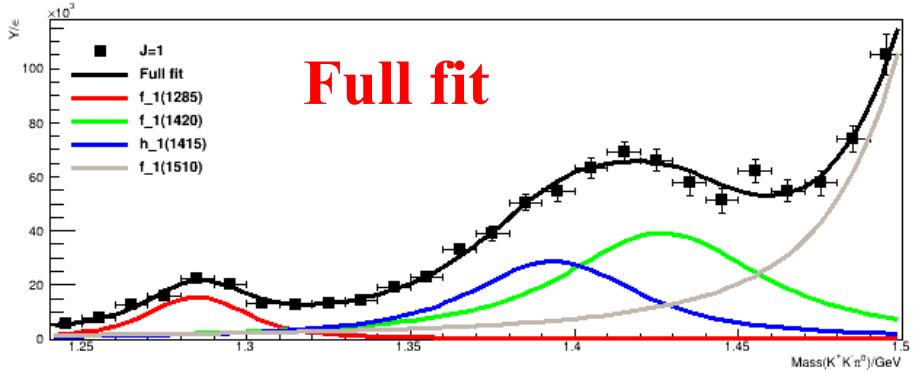

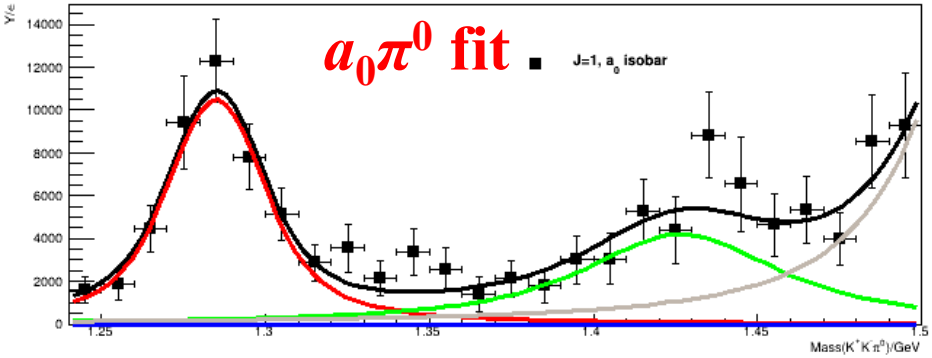

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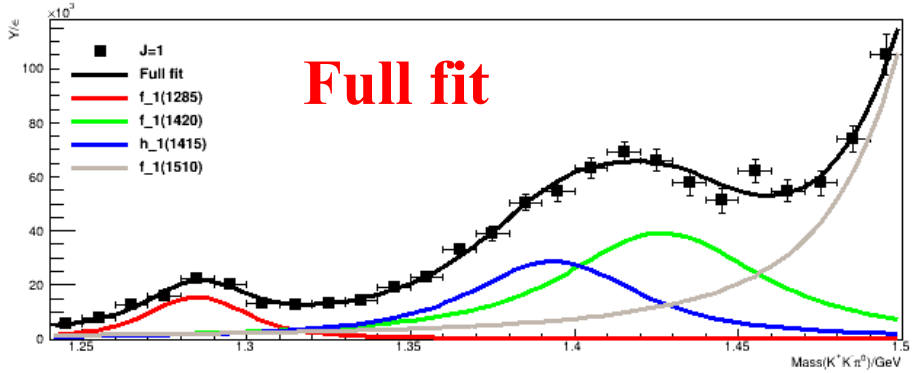
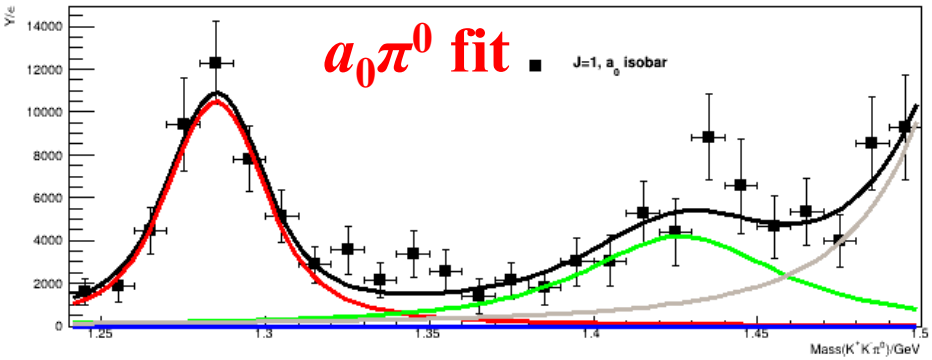
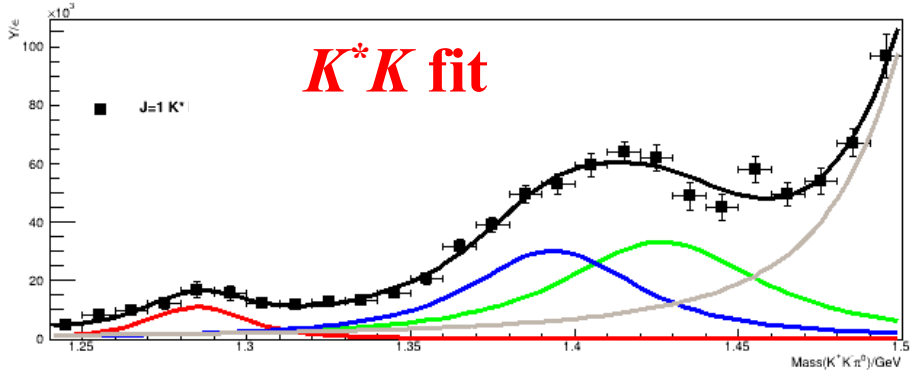
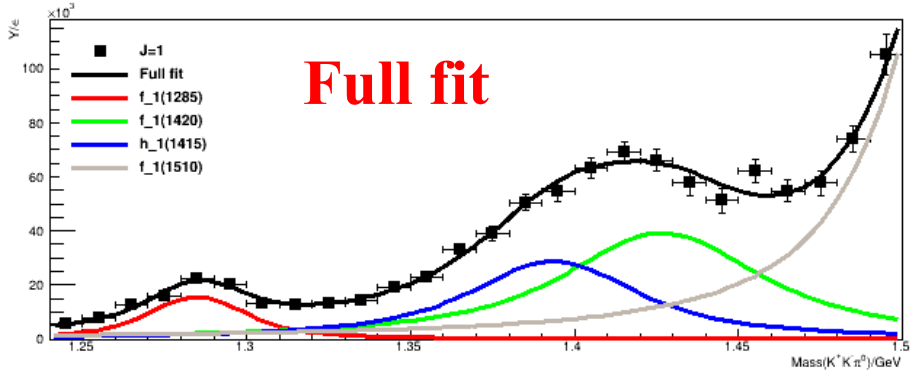


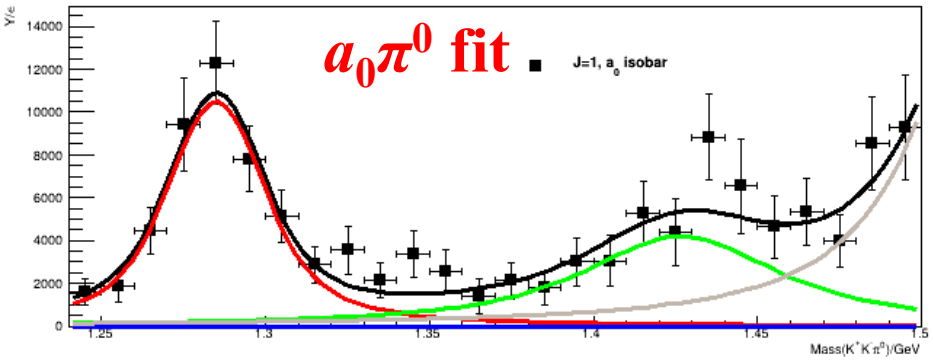


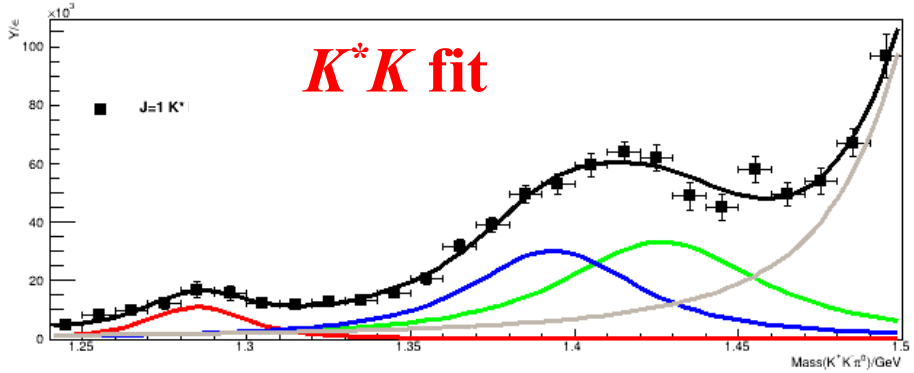


The blue line does not exist in the $a_0\pi^0$

Simultaneous fit to $J=1$ isobars





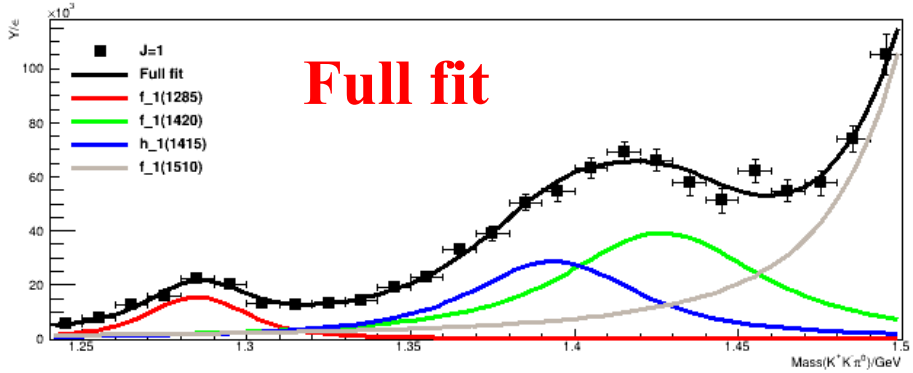


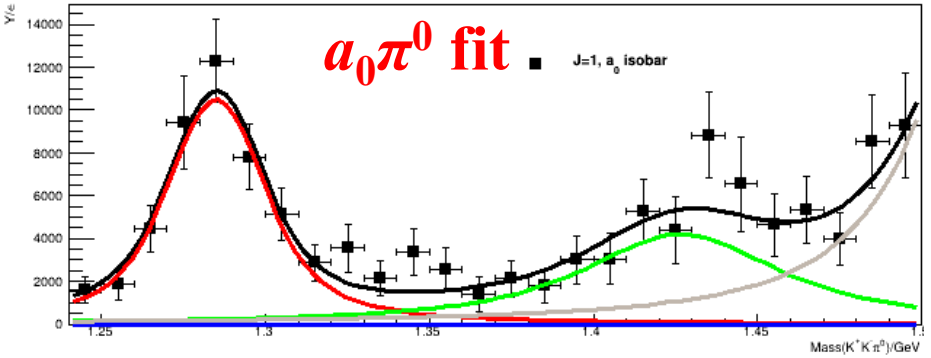
The blue line does not exist in the $a_0\pi^0$

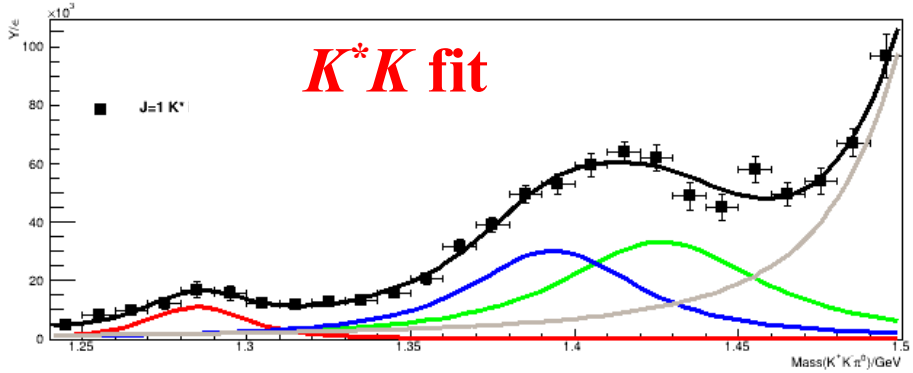
$\Rightarrow$

the blue line is consistent with being an h_1

Simultaneous fit to $J=1$ isobars

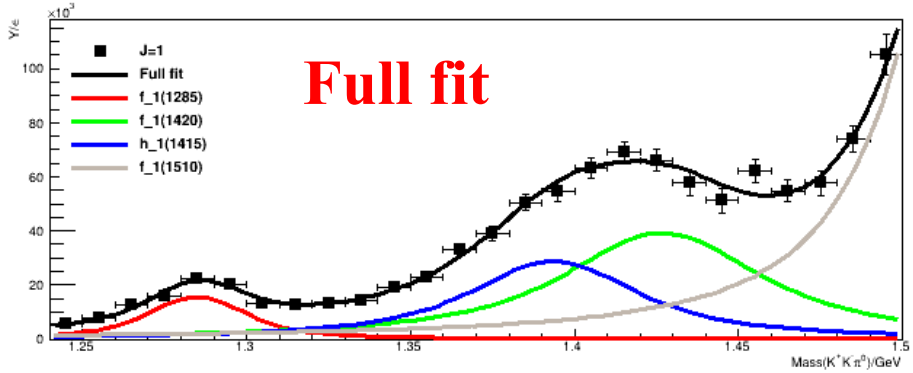


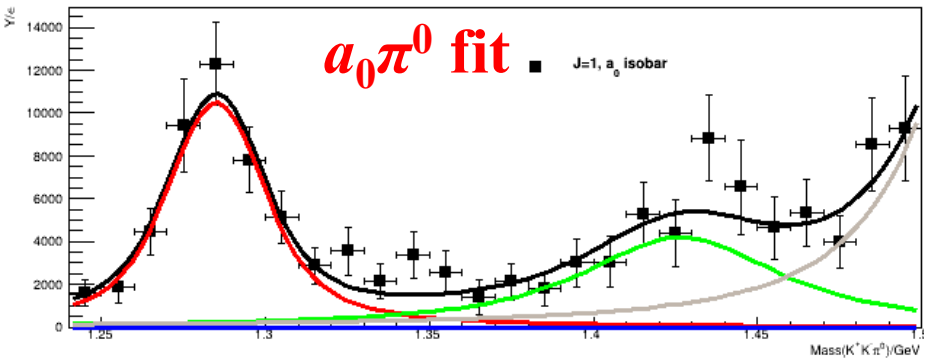


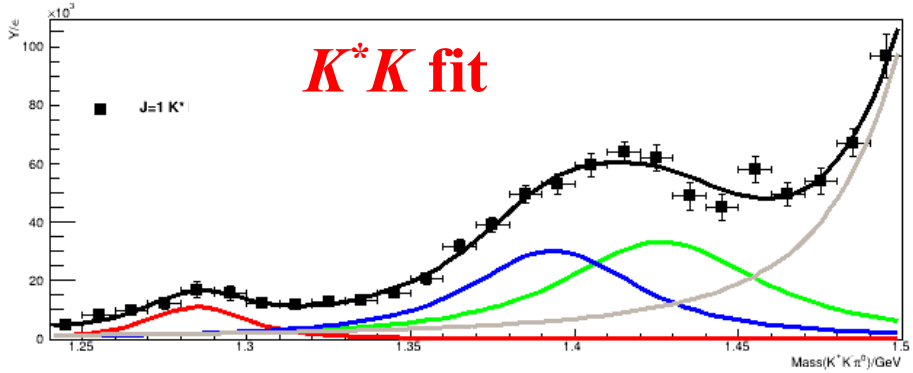


f_1 (green line) branching ratio:

Simultaneous fit to $J=1$ isobars





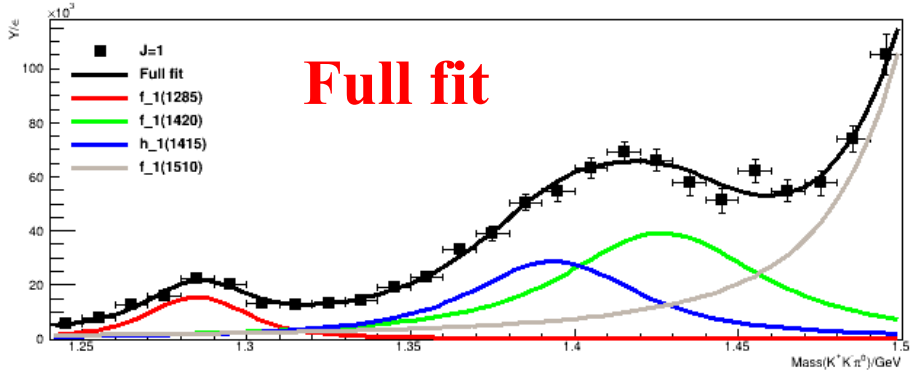


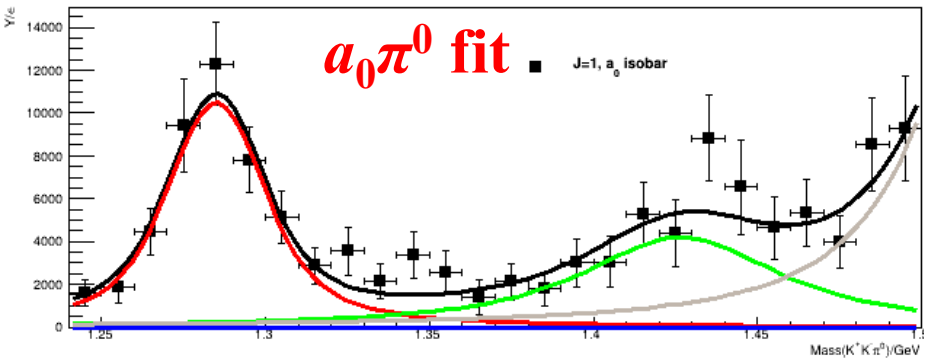
f_1 (green line) branching ratio:

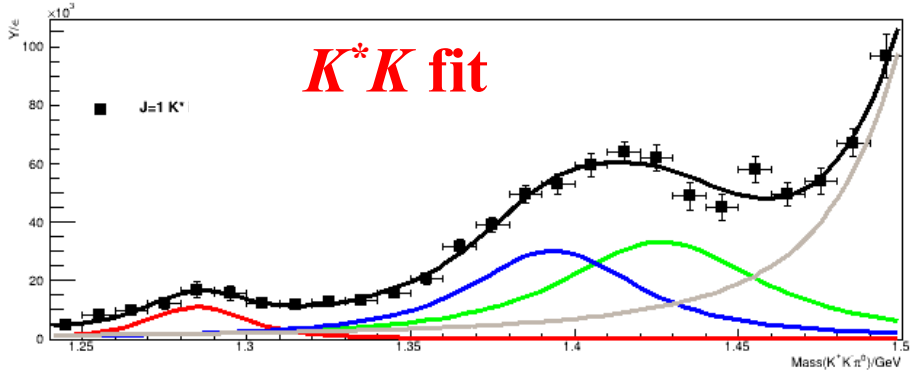
- From fit :

$\Gamma(K^*K)/\Gamma(KK\pi) = 0.85$ +/- 0.13

Simultaneous fit to $J=1$ isobars







f_1 (green line) branching ratio:

- From fit :

$\Gamma(K^*K)/\Gamma(KK\pi) = 0.85 +/- 0.13$

- From PDG:

$f_1(1420)$ BRANCHING RATIOS

$\Gamma(K\overline{K}^*(892)+\text{c.c.})/\Gamma(K\overline{K}\pi)$ **Γ_2/Γ_1**

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.76 ± 0.06	BROMBERG	80	SPEC	$100\ \pi^- p \rightarrow K\overline{K}\pi X$
0.86 ± 0.12	DIONISI	80	HBC	$4\ \pi^- p \rightarrow K\overline{K}\pi n$