

**$K_2^*(1430)$** 

$$I(J^P) = \frac{1}{2}(2^+)$$

We consider that phase-shift analyses provide more reliable determinations of the mass and width.

 **$K_2^*(1430)$  MASS****CHARGED ONLY, WITH FINAL STATE  $K\pi$** 

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
<b>1425.6 ± 1.5</b>	<b>OUR AVERAGE</b>	Error includes scale factor of 1.1.			
1420 ± 4	1587	BAUBILLIER 84B	HBC	−	8.25 $K^- p \rightarrow \bar{K}^0 \pi^- p$
1436 ± 5.5	400	<sup>1,2</sup> CLELAND 82	SPEC	+	30 $K^+ p \rightarrow K_S^0 \pi^+ p$
1430 ± 3.2	1500	<sup>1,2</sup> CLELAND 82	SPEC	+	50 $K^+ p \rightarrow K_S^0 \pi^+ p$
1430 ± 3.2	1200	<sup>1,2</sup> CLELAND 82	SPEC	−	50 $K^+ p \rightarrow K_S^0 \pi^- p$
1423 ± 5	935	TOAFF 81	HBC	−	6.5 $K^- p \rightarrow \bar{K}^0 \pi^- p$
1428.0 ± 4.6		<sup>3</sup> MARTIN 78	SPEC	+	10 $K^\pm p \rightarrow K_S^0 \pi p$
1423.8 ± 4.6		<sup>3</sup> MARTIN 78	SPEC	−	10 $K^\pm p \rightarrow K_S^0 \pi p$
1420.0 ± 3.1	1400	AGUILAR-... 71B	HBC	−	3.9,4.6 $K^- p$
1425 ± 8.0	225	<sup>1,2</sup> BARNHAM 71C	HBC	+	$K^+ p \rightarrow K^0 \pi^+ p$
1416 ± 10	220	CRENNELL 69D	DBC	−	3.9 $K^- N \rightarrow \bar{K}^0 \pi^- N$
1414 ± 13.0	60	<sup>1</sup> LIND 69	HBC	+	9 $K^+ p \rightarrow K^0 \pi^+ p$
1427 ± 12	63	<sup>1</sup> SCHWEING... 68	HBC	−	5.5 $K^- p \rightarrow \bar{K} \pi N$
1423 ± 11.0	39	<sup>1</sup> BASSANO 67	HBC	−	4.6–5.0 $K^- p \rightarrow \bar{K}^0 \pi^- p$

• • • We do not use the following data for averages, fits, limits, etc. • • •

1423.4 ± 2 ± 3	24809 ± 820	<sup>4</sup> BIRD 89	LASS	−	11 $K^- p \rightarrow \bar{K}^0 \pi^- p$
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**NEUTRAL ONLY**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>1432.4 ± 1.3</b>	<b>OUR AVERAGE</b>			
1431.2 ± 1.8 ± 0.7		<sup>5</sup> ASTON 88	LASS	11 $K^- p \rightarrow K^- \pi^+ n$
1434 ± 4 ± 6		<sup>5</sup> ASTON 87	LASS	11 $K^- p \rightarrow \bar{K}^0 \pi^+ \pi^- n$
1433 ± 6 ± 10		<sup>5</sup> ASTON 84B	LASS	11 $K^- p \rightarrow \bar{K}^0 2\pi n$
1471 ± 12		<sup>5</sup> BAUBILLIER 82B	HBC	8.25 $K^- p \rightarrow NK_S^0 \pi\pi$
1428 ± 3		<sup>5</sup> ASTON 81C	LASS	11 $K^- p \rightarrow K^- \pi^+ n$
1434 ± 2		<sup>5</sup> ESTABROOKS 78	ASPK	13 $K^\pm p \rightarrow pK\pi$
1440 ± 10		<sup>5</sup> BOWLER 77	DBC	5.5 $K^+ d \rightarrow K\pi pp$

• • • We do not use the following data for averages, fits, limits, etc. • • •

1428.5 ± 3.9	1786 ± 127	<sup>6</sup> AUBERT 07AK	BABR	10.6 $e^+ e^- \rightarrow K^{*0} K^\pm \pi^\mp \gamma$
1420 ± 7	300	HENDRICK 76	DBC	8.25 $K^+ N \rightarrow K^+ \pi N$
1421.6 ± 4.2	800	MCCUBBIN 75	HBC	3.6 $K^- p \rightarrow K^- \pi^+ n$
1420.1 ± 4.3		<sup>7</sup> LINGLIN 73	HBC	2–13 $K^+ p \rightarrow K^+ \pi^- X$
1419.1 ± 3.7	1800	AGUILAR-... 71B	HBC	3.9,4.6 $K^- p$
1416 ± 6	600	CORDS 71	DBC	9 $K^+ n \rightarrow K^+ \pi^- p$
1421.1 ± 2.6	2200	DAVIS 69	HBC	12 $K^+ p \rightarrow K^+ \pi^- X$

- <sup>1</sup> Errors enlarged by us to  $\Gamma/\sqrt{N}$ ; see the note with the  $K^*(892)$  mass.  
<sup>2</sup> Number of events in peak re-evaluated by us.  
<sup>3</sup> Systematic error added by us.  
<sup>4</sup> From a partial wave amplitude analysis.  
<sup>5</sup> From phase shift or partial-wave analysis.  
<sup>6</sup> Systematic errors not estimated.  
<sup>7</sup> From pole extrapolation, using world  $K^+ p$  data summary tape.

## $K_2^*(1430)$ WIDTH

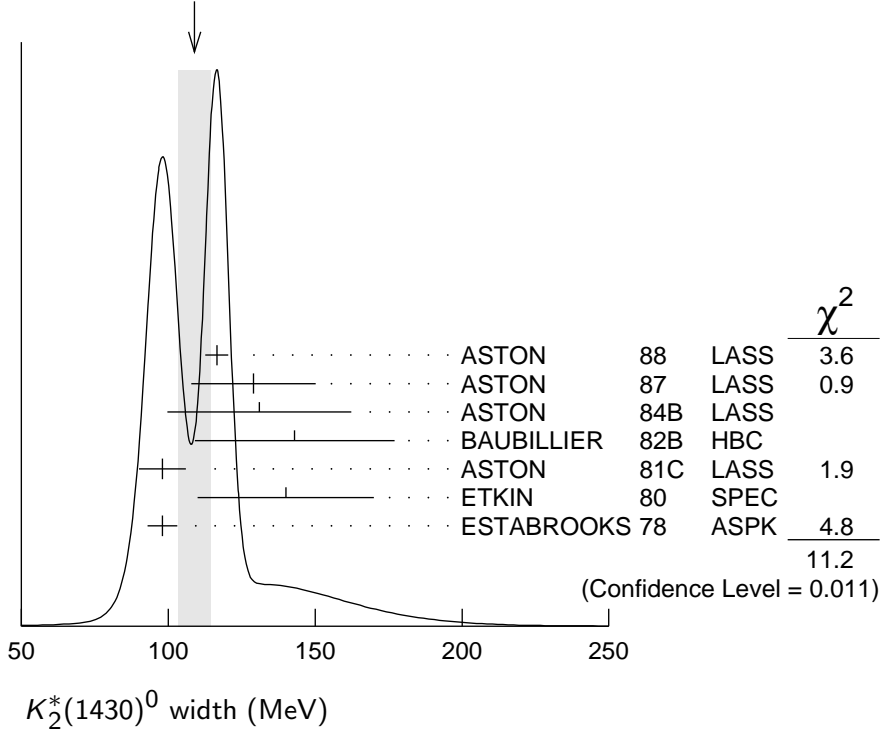
### CHARGED ONLY, WITH FINAL STATE $K\pi$

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
<b>98.5 ± 2.7 OUR FIT</b>	Error includes scale factor of 1.1.				
<b>98.5 ± 2.9 OUR AVERAGE</b>	Error includes scale factor of 1.1.				
109 ± 22	400	<sup>8,9</sup> CLELAND	82	SPEC +	30 $K^+ p \rightarrow K_S^0 \pi^+ p$
124 ± 12.8	1500	<sup>8,9</sup> CLELAND	82	SPEC +	50 $K^+ p \rightarrow K_S^0 \pi^+ p$
113 ± 12.8	1200	<sup>8,9</sup> CLELAND	82	SPEC -	50 $K^+ p \rightarrow K_S^0 \pi^- p$
85 ± 16	935	TOAFF	81	HBC -	6.5 $K^- p \rightarrow \bar{K}^0 \pi^- p$
96.5 ± 3.8		MARTIN	78	SPEC +	10 $K^\pm p \rightarrow K_S^0 \pi p$
97.7 ± 4.0		MARTIN	78	SPEC -	10 $K^\pm p \rightarrow K_S^0 \pi p$
94.7 <sup>+15.1</sup> <sub>-12.5</sub>	1400	AGUILAR-...	71B	HBC -	3.9,4.6 $K^- p$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
98 ± 4 ± 4	25k	<sup>10</sup> BIRD	89	LASS -	11 $K^- p \rightarrow \bar{K}^0 \pi^- p$

### NEUTRAL ONLY

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>109 ± 5 OUR AVERAGE</b>	Error includes scale factor of 1.9. See the ideogram below.			
116.5 ± 3.6 ± 1.7		<sup>11</sup> ASTON	88	LASS 11 $K^- p \rightarrow K^- \pi^+ n$
129 ± 15 ± 15		<sup>11</sup> ASTON	87	LASS 11 $K^- p \rightarrow \bar{K}^0 \pi^+ \pi^- n$
131 ± 24 ± 20		<sup>11</sup> ASTON	84B	LASS 11 $K^- p \rightarrow \bar{K}^0 2\pi n$
143 ± 34		<sup>11</sup> BAUBILLIER	82B	HBC 8.25 $K^- p \rightarrow NK_S^0 \pi \pi$
98 ± 8		<sup>11</sup> ASTON	81C	LASS 11 $K^- p \rightarrow K^- \pi^+ n$
140 ± 30		<sup>11</sup> ETKIN	80	SPEC 6 $K^- p \rightarrow \bar{K}^0 \pi^+ \pi^- n$
98 ± 5		<sup>11</sup> ESTABROOKS	78	ASPK 13 $K^\pm p \rightarrow pK\pi$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
113.7 ± 9.2	1786 ± 127	<sup>12</sup> AUBERT	07AK	BABR 10.6 $e^+ e^- \rightarrow K^{*0} K^\pm \pi^\mp \gamma$
125 ± 29	300	<sup>8</sup> HENDRICK	76	DBC 8.25 $K^+ N \rightarrow K^+ \pi N$
116 ± 18	800	MCCUBBIN	75	HBC 3.6 $K^- p \rightarrow K^- \pi^+ n$
61 ± 14		<sup>13</sup> LINGLIN	73	HBC 2-13 $K^+ p \rightarrow K^+ \pi^- X$
116.6 <sup>+10.3</sup> <sub>-15.5</sub>	1800	AGUILAR-...	71B	HBC 3.9,4.6 $K^- p$
144 ± 24.0	600	<sup>8</sup> CORDS	71	DBC 9 $K^+ n \rightarrow K^+ \pi^- p$
101 ± 10	2200	DAVIS	69	HBC 12 $K^+ p \rightarrow K^+ \pi^- \pi^+ p$

WEIGHTED AVERAGE  
 $109 \pm 5$  (Error scaled by 1.9)



<sup>8</sup> Errors enlarged by us to  $4\Gamma/\sqrt{N}$ ; see the note with the  $K^*(892)$  mass.

<sup>9</sup> Number of events in peak re-evaluated by us.

<sup>10</sup> From a partial wave amplitude analysis.

<sup>11</sup> From phase shift or partial-wave analysis.

<sup>12</sup> Systematic errors not estimated.

<sup>13</sup> From pole extrapolation, using world  $K^+ p$  data summary tape.

### $K_2^*(1430)$ DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )	Scale factor/ Confidence level
$\Gamma_1$ $K\pi$	$(49.9 \pm 1.2) \%$	
$\Gamma_2$ $K^*(892)\pi$	$(24.7 \pm 1.5) \%$	
$\Gamma_3$ $K^*(892)\pi\pi$	$(13.4 \pm 2.2) \%$	
$\Gamma_4$ $K\rho$	$(8.7 \pm 0.8) \%$	S=1.2
$\Gamma_5$ $K\omega$	$(2.9 \pm 0.8) \%$	
$\Gamma_6$ $K^+\gamma$	$(2.4 \pm 0.5) \times 10^{-3}$	S=1.1
$\Gamma_7$ $K\eta$	$(1.5^{+3.4}_{-1.0}) \times 10^{-3}$	S=1.3
$\Gamma_8$ $K\omega\pi$	$< 7.2 \times 10^{-4}$	CL=95%
$\Gamma_9$ $K^0\gamma$	$< 9 \times 10^{-4}$	CL=90%

## CONSTRAINED FIT INFORMATION

An overall fit to the total width, a partial width, and 10 branching ratios uses 31 measurements and one constraint to determine 8 parameters. The overall fit has a  $\chi^2 = 20.2$  for 24 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients  $\langle \delta p_i \delta p_j \rangle / (\delta p_i \cdot \delta p_j)$ , in percent, from the fit to parameters  $p_i$ , including the branching fractions,  $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$ . The fit constrains the  $x_i$  whose labels appear in this array to sum to one.

$x_2$	-9						
$x_3$	-40	-73					
$x_4$	-8	36	-52				
$x_5$	-11	-3	-26	-7			
$x_6$	-1	-1	-1	-1	0		
$x_7$	-4	-7	-5	-5	-2	0	
$\Gamma$	0	0	0	0	0	-13	0
	$x_1$	$x_2$	$x_3$	$x_4$	$x_5$	$x_6$	$x_7$

	Mode	Rate (MeV)	Scale factor
$\Gamma_1$	$K\pi$	$49.1 \pm 1.8$	
$\Gamma_2$	$K^*(892)\pi$	$24.3 \pm 1.6$	
$\Gamma_3$	$K^*(892)\pi\pi$	$13.2 \pm 2.2$	
$\Gamma_4$	$K\rho$	$8.5 \pm 0.8$	1.2
$\Gamma_5$	$K\omega$	$2.9 \pm 0.8$	
$\Gamma_6$	$K^+\gamma$	$0.24 \pm 0.05$	1.1
$\Gamma_7$	$K\eta$	$0.15^{+0.33}_{-0.10}$	1.3

### $K_2^*(1430)$ PARTIAL WIDTHS

#### $\Gamma(K^+\gamma)$ $\Gamma_6$

VALUE (keV)	DOCUMENT ID	TECN	CHG	COMMENT
<b><math>241 \pm 50</math> OUR FIT</b>	Error includes scale factor of 1.1.			
<b><math>240 \pm 45</math></b>	CIHANGIR	82	SPEC	+
				200 $K^+ Z \rightarrow Z K^+ \pi^0$ , $Z K_S^0 \pi^+$

#### $\Gamma(K^0\gamma)$ $\Gamma_9$

VALUE (keV)	CL%	DOCUMENT ID	TECN	CHG	COMMENT
<b>&lt; 5.4</b>	90	ALAVI-HARATI02B	KTEV		$K + A \rightarrow K^* + A$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
<84	90	CARLSMITH	87	SPEC	0
					60-200 $K_L^0 A \rightarrow$ $K_S^0 \pi^0 A$

**$K_2^*(1430)$  BRANCHING RATIOS** **$\Gamma(K\pi)/\Gamma_{\text{total}}$   $\Gamma_1/\Gamma$** 

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>	
<b>0.499±0.012 OUR FIT</b>					
<b>0.488±0.014 OUR AVERAGE</b>					
0.485±0.006±0.020	<sup>14</sup> ASTON	88	LASS	0	11 $K^- p \rightarrow K^- \pi^+ n$
0.49 ±0.02	<sup>14</sup> ESTABROOKS	78	ASPK	±	13 $K^\pm p \rightarrow p K \pi$

 **$\Gamma(K^*(892)\pi)/\Gamma(K\pi)$   $\Gamma_2/\Gamma_1$** 

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>	
<b>0.496±0.034 OUR FIT</b>					
<b>0.47 ±0.04 OUR AVERAGE</b>					
0.44 ±0.09	ASTON	84B	LASS	0	11 $K^- p \rightarrow \bar{K}^0 2\pi n$
0.62 ±0.19	LAUSCHER	75	HBC	0	10,16 $K^- p \rightarrow K^- \pi^+ n$
0.54 ±0.16	DEHM	74	DBC	0	4.6 $K^+ N$
0.47 ±0.08	AGUILAR-...	71B	HBC		3.9,4.6 $K^- p$
0.47 ±0.10	BASSANO	67	HBC	-0	4.6,5.0 $K^- p$
0.45 ±0.13	BADIER	65C	HBC	-	3 $K^- p$

 **$\Gamma(K\omega)/\Gamma(K\pi)$   $\Gamma_5/\Gamma_1$** 

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>	
<b>0.059±0.017 OUR FIT</b>					
<b>0.070±0.035 OUR AVERAGE</b>					
0.05 ±0.04	AGUILAR-...	71B	HBC		3.9,4.6 $K^- p$
0.13 ±0.07	BASSOMPIE...	69	HBC	0	5 $K^+ p$

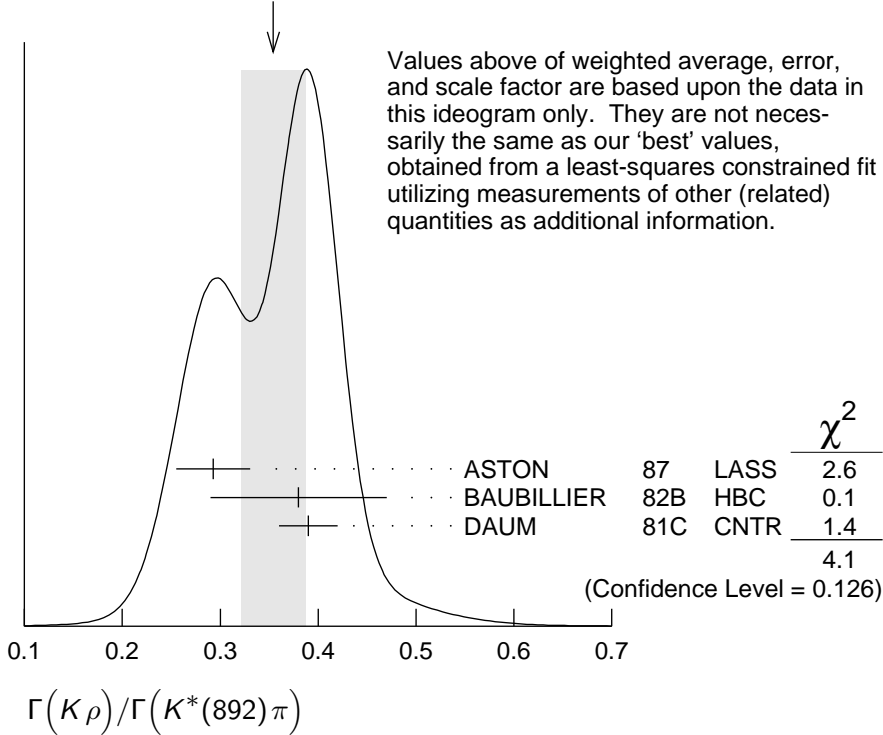
 **$\Gamma(K\rho)/\Gamma(K\pi)$   $\Gamma_4/\Gamma_1$** 

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>	
<b>0.174±0.017 OUR FIT</b>	Error includes scale factor of 1.2.				
<b>0.150<sup>+0.029</sup><sub>-0.017</sub> OUR AVERAGE</b>					
0.18 ±0.05	ASTON	84B	LASS	0	11 $K^- p \rightarrow \bar{K}^0 2\pi n$
0.02 <sup>+0.10</sup> <sub>-0.02</sub>	DEHM	74	DBC	0	4.6 $K^+ N$
0.16 ±0.05	AGUILAR-...	71B	HBC		3.9,4.6 $K^- p$
0.14 ±0.10	BASSANO	67	HBC	-0	4.6,5.0 $K^- p$
0.14 ±0.07	BADIER	65C	HBC	-	3 $K^- p$

 **$\Gamma(K\rho)/\Gamma(K^*(892)\pi)$   $\Gamma_4/\Gamma_2$** 

<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>	
<b>0.350±0.031 OUR FIT</b>	Error includes scale factor of 1.4.				
<b>0.354±0.033 OUR AVERAGE</b>	Error includes scale factor of 1.4. See the ideogram below.				
0.293±0.032±0.020	ASTON	87	LASS	0	11 $K^- p \rightarrow \bar{K}^0 \pi^+ \pi^- n$
0.38 ±0.09	BAUBILLIER	82B	HBC	0	8.25 $K^- p \rightarrow N K_S^0 \pi \pi$
0.39 ±0.03	DAUM	81C	CNTR		63 $K^- p \rightarrow K^- 2\pi p$

WEIGHTED AVERAGE  
 $0.354 \pm 0.033$  (Error scaled by 1.4)



**$\Gamma(K\omega)/\Gamma(K^*(892)\pi)$**   **$\Gamma_5/\Gamma_2$**

VALUE	DOCUMENT ID	TECN	CHG	COMMENT
<b><math>0.118 \pm 0.034</math> OUR FIT</b>				
<b><math>0.10 \pm 0.04</math></b>	FIELD	67	HBC	— 3.8 $K^- p$

**$\Gamma(K\eta)/\Gamma(K^*(892)\pi)$**   **$\Gamma_7/\Gamma_2$**

VALUE	DOCUMENT ID	TECN	CHG	COMMENT
<b><math>0.006^{+0.014}_{-0.004}</math> OUR FIT</b>	Error includes scale factor of 1.2.			
<b><math>0.07 \pm 0.04</math></b>	FIELD	67	HBC	— 3.8 $K^- p$

**$\Gamma(K\eta)/\Gamma(K\pi)$**   **$\Gamma_7/\Gamma_1$**

VALUE	CL%	DOCUMENT ID	TECN	CHG	COMMENT
<b><math>0.0030^{+0.0070}_{-0.0020}</math> OUR FIT</b>		Error includes scale factor of 1.3.			
<b>0 ± 0.0056</b>		<sup>15</sup> ASTON	88B	LASS	— 11 $K^- p \rightarrow K^- \eta p$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.04	95	AGUILAR-...	71B	HBC	3.9,4.6 $K^- p$
<0.065		<sup>16</sup> BASSOMPIE...	69	HBC	5.0 $K^+ p$
<0.02		BISHOP	69	HBC	3.5 $K^+ p$

**$\Gamma(K^*(892)\pi\pi)/\Gamma_{total}$**   **$\Gamma_3/\Gamma$**

VALUE	DOCUMENT ID	TECN	CHG	COMMENT
<b><math>0.134 \pm 0.022</math> OUR FIT</b>				
<b><math>0.12 \pm 0.04</math></b>	<sup>17</sup> GOLDBERG	76	HBC	— 3 $K^- p \rightarrow p \bar{K}^0 \pi \pi$

$\Gamma(K^*(892)\pi\pi)/\Gamma(K\pi)$  $\Gamma_3/\Gamma_1$ 

VALUE	DOCUMENT ID	TECN	CHG	COMMENT
<b>0.27±0.05 OUR FIT</b>				
<b>0.21±0.08</b>	<sup>16,17</sup> JONGEJANS	78	HBC	– 4 $K^- p \rightarrow p \bar{K}^0 \pi \pi \pi$

 $\Gamma(K\omega\pi)/\Gamma_{\text{total}}$  $\Gamma_8/\Gamma$ 

VALUE (units $10^{-3}$ )	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<b>&lt;0.72</b>	95	0	JONGEJANS	78	HBC 4 $K^- p \rightarrow p \bar{K}^0 4\pi$

<sup>14</sup> From phase shift analysis.<sup>15</sup> ASTON 88B quote < 0.0092 at CL=95%. We convert this to a central value and 1 sigma error in order to be able to use it in our constrained fit.<sup>16</sup> Restated by us.<sup>17</sup> Assuming  $\pi\pi$  system has isospin 1, which is supported by the data. $K_2^*(1430)$  REFERENCES

AUBERT	07AK	PR D76 012008	B. Aubert <i>et al.</i>	(BABAR Collab.)
ALAVI-HARATI	02B	PRL 89 072001	A. Alavi-Harati <i>et al.</i>	(FNAL KTeV Collab.)
BIRD	89	SLAC-332	P.F. Bird	(SLAC)
ASTON	88	NP B296 493	D. Aston <i>et al.</i>	(SLAC, NAGO, CINC, INUS)
ASTON	88B	PL B201 169	D. Aston <i>et al.</i>	(SLAC, NAGO, CINC, INUS)
ASTON	87	NP B292 693	D. Aston <i>et al.</i>	(SLAC, NAGO, CINC, INUS)
CARLSMITH	87	PR D36 3502	D. Carlsmith <i>et al.</i>	(EFI, SACL)
ASTON	84B	NP B247 261	D. Aston <i>et al.</i>	(SLAC, CARL, OTTA)
BAUBILLIER	84B	ZPHY C26 37	M. Baubillier <i>et al.</i>	(BIRM, CERN, GLAS+)
BAUBILLIER	82B	NP B202 21	M. Baubillier <i>et al.</i>	(BIRM, CERN, GLAS+)
CIHANGIR	82	PL 117B 123	S. Cihangir <i>et al.</i>	(FNAL, MINN, ROCH)
CLELAND	82	NP B208 189	W.E. Cleland <i>et al.</i>	(DURH, GEVA, LAUS+)
ASTON	81C	PL 106B 235	D. Aston <i>et al.</i>	(SLAC, CARL, OTTA) JP
DAUM	81C	NP B187 1	C. Daum <i>et al.</i>	(AMST, CERN, CRAC, MPIM+)
TOAFF	81	PR D23 1500	S. Toaff <i>et al.</i>	(ANL, KANS)
ETKIN	80	PR D22 42	A. Etkin <i>et al.</i>	(BNL, CUNY) JP
ESTABROOKS	78	NP B133 490	P.G. Estabrooks <i>et al.</i>	(MCGI, CARL, DURH+)
Also		PR D17 658	P.G. Estabrooks <i>et al.</i>	(MCGI, CARL, DURH+)
JONGEJANS	78	NP B139 383	B. Jongejans <i>et al.</i>	(ZEEM, CERN, NIJM+)
MARTIN	78	NP B134 392	A.D. Martin <i>et al.</i>	(DURH, GEVA)
BOWLER	77	NP B126 31	M.G. Bowler <i>et al.</i>	(OXF)
GOLDBERG	76	LNC 17 253	J. Goldberg	(HAIF)
HENDRICK	76	NP B112 189	K. Hendrickx <i>et al.</i>	(MONS, SACL, PARIS+)
LAUSCHER	75	NP B86 189	P. Lauscher <i>et al.</i>	(ABCLV Collab.) JP
MCCUBBIN	75	NP B86 13	N.A. McCubbin, L. Lyons	(OXF)
DEHM	74	NP B75 47	G. Dehm <i>et al.</i>	(MPIM, BRUX, MONS, CERN)
LINGLIN	73	NP B55 408	D. Linglin	(CERN)
AGUILAR-...	71B	PR D4 2583	M. Aguilar-Benitez, R.L. Eisner, J.B. Kinson	(BNL)
BARNHAM	71C	NP B28 171	K.W.J. Barnham <i>et al.</i>	(BIRM, GLAS)
CORDS	71	PR D4 1974	D. Cords <i>et al.</i>	(PURD, UCD, IUUP)
BASSOMPIE...	69	NP B13 189	G. Bassompierre <i>et al.</i>	(CERN, BRUX) JP
BISHOP	69	NP B9 403	J.M. Bishop <i>et al.</i>	(WISC)
CRENNELL	69D	PRL 22 487	D.J. Crennell <i>et al.</i>	(BNL)
DAVIS	69	PRL 23 1071	P.J. Davis <i>et al.</i>	(LRL)
LIND	69	NP B14 1	V.G. Lind <i>et al.</i>	(LRL) JP
SCHWEING...	68	PR 166 1317	F. Schweingruber <i>et al.</i>	(ANL, NWES)
Also		Thesis	F.L. Schweingruber	(NWES, NWES)
BASSANO	67	PRL 19 968	D. Bassano <i>et al.</i>	(BNL, SYRA)
FIELD	67	PL 24B 638	J.H. Field <i>et al.</i>	(UCSD)
BADIER	65C	PL 19 612	J. Badier <i>et al.</i>	(EPOL, SACL, AMST)