

# K\*(1680)

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

## K\*(1680) MASS

VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
<b>1717±27 OUR AVERAGE</b> Error includes scale factor of 1.4.				
1677±10±32	ASTON	88	LASS	0 11 $K^- p \rightarrow K^- \pi^+ n$
1735±10±20	ASTON	87	LASS	0 11 $K^- p \rightarrow \bar{K}^0 \pi^+ \pi^- n$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
1678±64	BIRD	89	LASS	- 11 $K^- p \rightarrow \bar{K}^0 \pi^- p$
1800±70	ETKIN	80	MPS	0 6 $K^- p \rightarrow \bar{K}^0 \pi^+ \pi^- n$
~ 1650	ESTABROOKS	78	ASPK	0 13 $K^\pm p \rightarrow K^\pm \pi^\pm n$

## K\*(1680) WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
<b>322±110 OUR AVERAGE</b> Error includes scale factor of 4.2.				
205± 16±34	ASTON	88	LASS	0 11 $K^- p \rightarrow K^- \pi^+ n$
423± 18±30	ASTON	87	LASS	0 11 $K^- p \rightarrow \bar{K}^0 \pi^+ \pi^- n$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
454±270	BIRD	89	LASS	- 11 $K^- p \rightarrow \bar{K}^0 \pi^- p$
170± 30	ETKIN	80	MPS	0 6 $K^- p \rightarrow \bar{K}^0 \pi^+ \pi^- n$
250 to 300	ESTABROOKS	78	ASPK	0 13 $K^\pm p \rightarrow K^\pm \pi^\pm n$

## K\*(1680) DECAY MODES

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $K\pi$	(38.7±2.5) %
$\Gamma_2$ $K\rho$	(31.4 <sup>+4.7</sup> <sub>-2.1</sub> ) %
$\Gamma_3$ $K^*(892)\pi$	(29.9 <sup>+2.2</sup> <sub>-4.7</sub> ) %

## CONSTRAINED FIT INFORMATION

An overall fit to 4 branching ratios uses 4 measurements and one constraint to determine 3 parameters. The overall fit has a  $\chi^2 = 2.9$  for 2 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients  $\langle \delta x_i \delta x_j \rangle / (\delta x_i \delta x_j)$ , in percent, from the fit to 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.

$x_2$	-36	
$x_3$	-39	-72
	$x_1$	$x_2$

### $K^*(1680)$ BRANCHING RATIOS

$\Gamma(K\pi) / \Gamma_{\text{total}} \qquad \qquad \qquad \Gamma_1 / \Gamma$

VALUE	DOCUMENT ID	TECN	CHG	COMMENT
<b><math>0.387 \pm 0.026</math> OUR FIT</b>				
<b><math>0.388 \pm 0.014 \pm 0.022</math></b>	ASTON	88	LASS	0 11 $K^- p \rightarrow K^- \pi^+ n$

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

VALUE	DOCUMENT ID	TECN	CHG	COMMENT
<b><math>1.30^{+0.23}_{-0.14}</math> OUR FIT</b>				
<b><math>2.8 \pm 1.1</math></b>	ASTON	84	LASS	0 11 $K^- p \rightarrow \bar{K}^0 2\pi n$

$\Gamma(K\rho) / \Gamma(K\pi) \qquad \qquad \qquad \Gamma_2 / \Gamma_1$

VALUE	DOCUMENT ID	TECN	CHG	COMMENT
<b><math>0.81^{+0.14}_{-0.09}</math> OUR FIT</b>				
<b><math>1.2 \pm 0.4</math></b>	ASTON	84	LASS	0 11 $K^- p \rightarrow \bar{K}^0 2\pi n$

$\Gamma(K\rho) / \Gamma(K^*(892)\pi) \qquad \qquad \qquad \Gamma_2 / \Gamma_3$

VALUE	DOCUMENT ID	TECN	CHG	COMMENT
<b><math>1.05^{+0.27}_{-0.11}</math> OUR FIT</b>				
<b><math>0.97 \pm 0.09^{+0.30}_{-0.10}</math></b>	ASTON	87	LASS	0 11 $K^- p \rightarrow \bar{K}^0 \pi^+ \pi^- n$

### $K^*(1680)$ REFERENCES

BIRD	89	SLAC-332	P.F. Bird	(SLAC)
ASTON	88	NP B296 493	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)
ASTON	84	PL 149B 258	D. Aston <i>et al.</i>	(SLAC, CARL, OTTA) JP
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+) JP

### OTHER RELATED PAPERS

ABLIKIM	05Q	PR D72 092002	M. Ablikim <i>et al.</i>	(BES Collab.)
EBERT	05	MPL A20 1887	D. Ebert, R.N. Faustov, V.O. Galkin	
LI	05E	MPL A20 2497	D.-M. Li <i>et al.</i>	