

$K^*(1680)$

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

 $K^*(1680)$ MASS

VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
1717 ± 27 OUR AVERAGE	Error includes scale factor of 1.4.			
$1677 \pm 10 \pm 32$	ASTON	88	LASS	0 11 $K^- p \rightarrow K^- \pi^+ n$
$1735 \pm 10 \pm 20$	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
322 ± 110 OUR AVERAGE	Error includes scale factor of 4.2.			
$205 \pm 16 \pm 34$	ASTON	88	LASS	0 11 $K^- p \rightarrow K^- \pi^+ n$
$423 \pm 18 \pm 30$	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 (Γ_i/Γ)
Γ_1 $K\pi$	$(38.7 \pm 2.5) \%$
Γ_2 $K\rho$	$(31.4^{+5.0}_{-2.1}) \%$
Γ_3 $K^*(892)\pi$	$(29.9^{+2.2}_{-5.0}) \%$

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.

$$\begin{array}{c} x_2 \\ x_3 \end{array} \begin{array}{|c|cc} \hline -36 & & \\ \hline -39 & -72 & \\ \hline \end{array} \begin{array}{c} x_1 \\ x_2 \end{array}$$

$K^*(1680)$ BRANCHING RATIOS

$\Gamma(K\pi)/\Gamma_{\text{total}}$					Γ_1/Γ
VALUE	DOCUMENT ID	TECN	CHG	COMMENT	
0.387 ± 0.026 OUR FIT					
$0.388 \pm 0.014 \pm 0.022$	ASTON	88	LASS	0	11 $K^- p \rightarrow K^- \pi^+ n$
$\Gamma(K\pi)/\Gamma(K^*(892)\pi)$					Γ_1/Γ_3
VALUE	DOCUMENT ID	TECN	CHG	COMMENT	
$1.30^{+0.23}_{-0.14}$ OUR FIT					
2.8 ± 1.1	ASTON	84	LASS	0	11 $K^- p \rightarrow \bar{K}^0 2\pi n$
$\Gamma(K\rho)/\Gamma(K\pi)$					Γ_2/Γ_1
VALUE	DOCUMENT ID	TECN	CHG	COMMENT	
$0.81^{+0.14}_{-0.09}$ OUR FIT					
1.2 ± 0.4	ASTON	84	LASS	0	11 $K^- p \rightarrow \bar{K}^0 2\pi n$
$\Gamma(K\rho)/\Gamma(K^*(892)\pi)$					Γ_2/Γ_3
VALUE	DOCUMENT ID	TECN	CHG	COMMENT	
$1.05^{+0.27}_{-0.11}$ OUR FIT					
$0.97 \pm 0.09^{+0.30}_{-0.10}$	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