

$K^*(1680)$

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

 $K^*(1680)$ MASS

VALUE (MeV)	DOCUMENT ID	TECN	CHG	COMMENT
1717±27 OUR AVERAGE	Error includes scale factor of 1.4.			
1677±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
322±110 OUR AVERAGE	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 (Γ_i/Γ)
Γ_1 $K\pi$	(38.7±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.

$$\begin{array}{r|l} x_2 & -36 \\ x_3 & -39 \quad -72 \\ & x_1 \quad x_2 \end{array}$$

$K^*(1680)$ 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