$K^*(1680)$

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

K*(1680) MASS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
1718±18 OUR AVERAGE						
$1722 \pm 20 ^{+33}_{-109}$	4289	[1] AAIJ	17C	LHCB		$B^+ \to J/\psi \phi K^+$
$1677 \pm 10 \pm 32$		ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$
$1735 \pm 10 \pm 20$		ASTON	87	LASS	0	11 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1678 ± 64		BIRD	89	LASS	−	11 $K^- p \to \overline{K}^0 \pi^- p$
1800 ± 70		ETKIN	80	MPS	0	6 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$
~ 1650		ESTABROOKS	78	ASPK	0	13 $K^\pm p \to K^\pm \pi^\pm n$

[1] From an amplitude analysis of the decay $B^+ \to J/\psi \phi K^+$ with a significance of 8.5 σ.

K*(1680) WIDTH

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
322±110 OUR AVERAGE Error includes scale factor of 4.2.						
$354 \pm 75 ^{+140}_{-181}$	4289	[2] AAIJ	17C	LHCB		$B^+ \to J/\psi \phi K^+$
$205 \pm 16 \pm 34$		ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$
$423 \pm 18 \pm 30$		ASTON	87	LASS	0	11 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
454 ± 270		BIRD	89	LASS	−	11 $K^- p \to \overline{K}^0 \pi^- p$
170 ± 30		ETKIN	80	MPS	0	6 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$
250 to 300		ESTABROOKS	78	ASPK	0	13 $K^\pm p \to K^\pm \pi^\pm n$

[2] From an amplitude analysis of the decay $B^+ \to J/\psi \phi K^+$ with a significance of 8.5 σ.

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	$K^*(892)\pi$	$(29.9 ^{+2.2}_{-5.0})$ %
Γ_4	$K\phi$	seen

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 $\left\langle\delta x_i \delta x_j\right\rangle/(\delta x_i \cdot \delta x_j)$, in percent, from the fit to the branching fractions, $x_i \equiv \Gamma_i/\Gamma_{\rm total}$. 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

$\Gamma(K\pi)/\Gamma_{\rm total}$ — Γ_1/Γ

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
0.387±0.026 OUR FIT					
0.388±0.014±0.022	ASTON	88	LASS	0	11 $K^- p \to K^- \pi^+ n$

$\Gamma(K\pi)/\Gamma(K^*(892)\pi)$ — 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 $K^- p \to \overline{K}^0 2\pi n$

$\Gamma(K\rho)/\Gamma(K\pi)$ — 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 $K^- p \to \overline{K}^0 2\pi n$

$\Gamma(K\rho)/\Gamma(K^*(892)\pi)$ — Γ_2/Γ_3

VALUE	DOCUMENT ID		TECN	CHG	COMMENT
$1.05^{+0.27}_{-0.11}$ OUR FIT					
$0.97\pm0.09^{+0.30}_{-0.10}$	ASTON	87	LASS	0	11 $K^- p \to \overline{K}^0 \pi^+ \pi^- n$

$\Gamma(K\phi)/\Gamma_{\rm total}$ — Γ_4/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
seen	4289	[3] AAIJ	17C	LHCB	$B^+ \to J/\psi \phi K^+$

[3] From an amplitude analysis of the decay $B^+ \to J/\psi \phi K^+$ with a significance of 8.5 σ.

$K^*(1680)$ REFERENCES

AAIJ	17C	PRL 118 022003	R. Aaij *et al.*	(LHCb Collab.)	
Also		PR D95 012002	R. Aaij *et al.*	(LHCb Collab.)	
BIRD	89	SLAC-332	P.F. Bird	(SLAC)	
ASTON	88	NP B296 493	D. Aston *et al.*	(SLAC, NAGO, CINC, INUS)	
ASTON	87	NP B292 693	D. Aston *et al.*	(SLAC, NAGO, CINC, INUS)	
ASTON	84	PL 149B 258	D. Aston *et al.*	(SLAC, CARL, OTTA)	JP
ETKIN	80	PR D22 42	A. Etkin *et al.*	(BNL, CUNY)	JP
ESTABROOKS	78	NP B133 490	P.G. Estabrooks *et al.*	(MCGI, CARL, DURH+)	JP