

$K_2(1770)$

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

See our mini-review in the 2004 edition of this Review, PDG 04.

 $K_2(1770)$ MASS

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
1773 ± 8 OUR AVERAGE					
1777 ± 35 ⁺¹²² ₋₇₇	4289	¹ AAIJ	17C	LHCB	$B^+ \rightarrow J/\psi \phi K^+$
1773 ± 8		² ASTON	93	LASS	$11K^- p \rightarrow K^- \omega p$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
1743 ± 15		TIKHOMIROV 03	SPEC		40.0 $\pi^- C \rightarrow$ $K_S^0 K_S^0 K_L^0 X$
1810 ± 20		FRAME	86	OMEG +	13 $K^+ p \rightarrow \phi K^+ p$
~ 1730		ARMSTRONG	83	OMEG -	18.5 $K^- p \rightarrow 3K p$
~ 1780		³ DAUM	81C	CNTR -	63 $K^- p \rightarrow K^- 2\pi p$
1710 ± 15	60	CHUNG	74	HBC -	7.3 $K^- p \rightarrow K^- \omega p$
1767 ± 6		BLIEDEN	72	MMS -	11-16 $K^- p$
1730 ± 20	306	⁴ FIRESTONE	72B	DBC +	12 $K^+ d$
1765 ± 40		⁵ COLLEY	71	HBC +	10 $K^+ p \rightarrow K 2\pi N$
1740		DENEGRI	71	DBC -	12.6 $K^- d \rightarrow \bar{K} 2\pi d$
1745 ± 20		AGUILAR-...	70C	HBC -	4.6 $K^- p$
1780 ± 15		BARTSCH	70C	HBC -	10.1 $K^- p$
1760 ± 15		LUDLAM	70	HBC -	12.6 $K^- p$

¹ From an amplitude analysis of the decay $B^+ \rightarrow J/\psi \phi K^+$ with a significance of 5.0σ .² From a partial wave analysis of the $K^- \omega$ system.³ From a partial wave analysis of the $K^- 2\pi$ system.⁴ Produced in conjunction with excited deuteron.⁵ Systematic errors added correspond to spread of different fits. **$K_2(1770)$ WIDTH**

<u>VALUE (MeV)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>CHG</u>	<u>COMMENT</u>
186 ± 14 OUR AVERAGE					
217 ± 116 ⁺²²¹ ₋₁₅₄	4289	⁶ AAIJ	17C	LHCB	$B^+ \rightarrow J/\psi \phi K^+$
186 ± 14		⁷ ASTON	93	LASS	$11K^- p \rightarrow K^- \omega p$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
147 ± 70		TIKHOMIROV 03	SPEC		40.0 $\pi^- C \rightarrow$ $K_S^0 K_S^0 K_L^0 X$
140 ± 40		FRAME	86	OMEG +	13 $K^+ p \rightarrow \phi K^+ p$
~ 220		ARMSTRONG	83	OMEG -	18.5 $K^- p \rightarrow 3K p$
~ 210		⁸ DAUM	81C	CNTR -	63 $K^- p \rightarrow K^- 2\pi p$
110 ± 50	60	CHUNG	74	HBC -	7.3 $K^- p \rightarrow K^- \omega p$
100 ± 26		BLIEDEN	72	MMS -	11-16 $K^- p$

210 ± 30	306	⁹ FIRESTONE	72B	DBC	+	12 $K^+ d$
90 ± 70		¹⁰ COLLEY	71	HBC	+	10 $K^+ p \rightarrow K 2\pi N$
130		DENEGRI	71	DBC	-	12.6 $K^- d \rightarrow \overline{K} 2\pi d$
100 ± 50		AGUILAR-...	70C	HBC	-	4.6 $K^- p$
138 ± 40		BARTSCH	70C	HBC	-	10.1 $K^- p$
50 ⁺ ₋ 40 20		LUDLAM	70	HBC	-	12.6 $K^- p$

⁶ From an amplitude analysis of the decay $B^+ \rightarrow J/\psi \phi K^+$ with a significance of 5.0σ .

⁷ From a partial wave analysis of the $K^- \omega$ system.

⁸ From a partial wave analysis of the $K^- 2\pi$ system.

⁹ Produced in conjunction with excited deuteron.

¹⁰ Systematic errors added correspond to spread of different fits.

$K_2(1770)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 $K \pi \pi$	
Γ_2 $K_2^*(1430) \pi$	seen
Γ_3 $K^*(892) \pi$	seen
Γ_4 $K f_2(1270)$	seen
Γ_5 $K f_0(980)$	possibly seen
Γ_6 $K \phi$	seen
Γ_7 $K \omega$	seen

$K_2(1770)$ BRANCHING RATIOS

$\Gamma(K_2^*(1430)\pi)/\Gamma(K\pi\pi)$ Γ_2/Γ_1
 $(K_2^*(1430) \rightarrow K\pi)$

VALUE	DOCUMENT ID	TECN	CHG	COMMENT	
•••				We do not use the following data for averages, fits, limits, etc. •••	
~ 0.03	DAUM	81C	CNTR	63 $K^- p \rightarrow K^- 2\pi p$	
~ 1.0	¹¹ FIRESTONE	72B	DBC	+	12 $K^+ d$
< 1.0	COLLEY	71	HBC		10 $K^+ p$
0.2 ± 0.2	AGUILAR-...	70C	HBC	-	4.6 $K^- p$
< 1.0	BARTSCH	70C	HBC	-	10.1 $K^- p$
1.0	BARBARO-...	69	HBC	+	12.0 $K^+ p$

¹¹ Produced in conjunction with excited deuteron.

$\Gamma(K^*(892)\pi)/\Gamma(K\pi\pi)$ Γ_3/Γ_1

VALUE	DOCUMENT ID	TECN	COMMENT
•••			We do not use the following data for averages, fits, limits, etc. •••
~ 0.23	DAUM	81C	CNTR 63 $K^- p \rightarrow K^- 2\pi p$

$\Gamma(K f_2(1270))/\Gamma(K\pi\pi)$ Γ_4/Γ_1
 $(f_2(1270) \rightarrow \pi\pi)$

VALUE	DOCUMENT ID	TECN	COMMENT
•••			We do not use the following data for averages, fits, limits, etc. •••
~ 0.74	DAUM	81C	CNTR 63 $K^- p \rightarrow K^- 2\pi p$

$\Gamma(K f_0(980))/\Gamma_{\text{total}}$ Γ_5/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
possibly seen	TIKHOMIROV 03	SPEC	40.0 $\pi^- C \rightarrow K_S^0 K_S^0 K_L^0 X$

$\Gamma(K \phi)/\Gamma_{\text{total}}$ Γ_6/Γ

VALUE	EVTS	DOCUMENT ID	TECN	CHG	COMMENT
seen	24k	¹² AAIJ	21E	LHCB	$B^+ \rightarrow J/\psi \phi K^+$
seen		ARMSTRONG 83	OMEG	-	18.5 $K^- p \rightarrow K^- \phi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
seen	4289	^{13,14} AAIJ	17C	LHCB	$B^+ \rightarrow J/\psi \phi K^+$

¹² From an amplitude analysis of the decay $B^+ \rightarrow J/\psi \phi K^+$ with a significance of 7.9 σ .

¹³ From an amplitude analysis of the decay $B^+ \rightarrow J/\psi \phi K^+$ with a significance of 5.0 σ .

¹⁴ Superseded by AAIJ 21E.

$\Gamma(K \omega)/\Gamma_{\text{total}}$ Γ_7/Γ

VALUE	DOCUMENT ID	TECN	CHG	COMMENT
seen	OTTER	81	HBC	\pm 8.25,10,16 $K^\pm p$
seen	CHUNG	74	HBC	- 7.3 $K^- p \rightarrow K^- \omega p$

$K_2(1770)$ REFERENCES

AAIJ	21E	PRL 127 082001	R. Aaij <i>et al.</i>	(LHCb Collab.)
AAIJ	17C	PRL 118 022003	R. Aaij <i>et al.</i>	(LHCb Collab.)
Also		PR D95 012002	R. Aaij <i>et al.</i>	(LHCb Collab.)
PDG	04	PL B592 1	S. Eidelman <i>et al.</i>	(PDG Collab.)
TIKHOMIROV	03	PAN 66 828	G.D. Tikhomirov <i>et al.</i>	
		Translated from YAF 66 860.		
ASTON	93	PL B308 186	D. Aston <i>et al.</i>	(SLAC, NAGO, CINC, INUS)
FRAME	86	NP B276 667	D. Frame <i>et al.</i>	(GLAS)
ARMSTRONG	83	NP B221 1	T.A. Armstrong <i>et al.</i>	(BARI, BIRM, CERN+)
DAUM	81C	NP B187 1	C. Daum <i>et al.</i>	(AMST, CERN, CRAC, MPIM+)
OTTER	81	NP B181 1	G. Otter	(AACH3, BERL, LOIC, VIEN, BIRM+)
CHUNG	74	PL 51B 413	S.U. Chung <i>et al.</i>	(BNL)
BLIEDEN	72	PL 39B 668	H.R. Blieden <i>et al.</i>	(STON, NEAS)
FIRESTONE	72B	PR D5 505	A. Firestone <i>et al.</i>	(LBL)
COLLEY	71	NP B26 71	D.C. Colley <i>et al.</i>	(BIRM, GLAS)
DENEGRI	71	NP B28 13	D. Denegri <i>et al.</i>	(JHU) JP
AGUILAR-...	70C	PRL 25 54	M. Aguilar-Benitez <i>et al.</i>	(BNL)
BARTSCH	70C	PL 33B 186	J. Bartsch <i>et al.</i>	(AACH, BERL, CERN+)
LUDLAM	70	PR D2 1234	T. Ludlam, J. Sandweiss, A.J. Slaughter	(YALE)
BARBARO-...	69	PRL 22 1207	A. Barbaro-Galtieri <i>et al.</i>	(LRL)