$K_1(1270)$

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

K_1(1270) MASS

VALUE (MeV)	DOCUMENT ID
1272±7 OUR AVERAGE	Includes data from the 2 datablocks that follow this one.

PRODUCED BY K^-, BACKWARD SCATTERING, HYPERON EXCHANGE

The data in this block is included in the average printed for a previous datablock.

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
1275±10	700	GAVILLET	78	HBC	+	4.2 $K^- p \to \Xi^- (K\pi\pi)^+$

PRODUCED BY K BEAMS

The data in this block is included in the average printed for a previous datablock.

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
1270±10	[1] DAUM	81C	CNTR	−	63 $K^- p \to K^- 2\pi p$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
∼ 1276	[2] TORNQVIST	82B	RVUE		
∼ 1300	VERGEEST	79	HBC	−	4.2 $K^- p \to (\overline{K}\pi\pi)^- p$
1289±25	[3] CARNEGIE	77	ASPK	±	13 $K^\pm p \to (K\pi\pi)^\pm p$
∼ 1300	BRANDENB...	76	ASPK	±	13 $K^\pm p \to (K\pi\pi)^\pm p$
∼ 1270	OTTER	76	HBC	−	10,14,16 $K^- p \to (\overline{K}\pi\pi)^- p$
1260	DAVIS	72	HBC	+	12 $K^+ p$
1234±12	FIRESTONE	72B	DBC	+	12 $K^+ d$

[1] Well described in the chiral unitary approach of GENG 07 with two poles at 1195 and 1284 MeV and widths of 246 and 146 MeV, respectively.
[2] From a unitarized quark-model calculation.
[3] From a model-dependent fit with Gaussian background to BRANDENBURG 76 data.

PRODUCED BY BEAMS OTHER THAN K MESONS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
1279±10	25k	[4] ABLIKIM	06C	BES2		$J/\psi \to \overline{K}^*(892)^0 K^+ \pi^-$
1294±10	310	RODEBACK	81	HBC		4 $\pi^- p \to \Lambda K 2\pi$
1300	40	CRENNELL	72	HBC	0	4.5 $\pi^- p \to \Lambda K 2\pi$
1242^{+9}_{-10}		[5] ASTIER	69	HBC	0	$\overline{p} p$
1300	45	CRENNELL	67	HBC	0	6 $\pi^- p \to \Lambda K 2\pi$

[4] Systematic errors not estimated.
[5] This was called the C meson.

PRODUCED IN τ LEPTON DECAYS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
1254±33±34	7k	ASNER	00B	CLEO	±	$\tau^- \to K^- \pi^+ \pi^- \nu_\tau$

$K_1(1270)$ WIDTH

VALUE (MeV)	DOCUMENT ID

90±20 OUR ESTIMATE This is only an educated guess; the error given is larger than the error on the average of the published values.

87± 7 OUR AVERAGE Includes data from the 2 datablocks that follow this one.

PRODUCED BY K^-, BACKWARD SCATTERING, HYPERON EXCHANGE

The data in this block is included in the average printed for a previous datablock.

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
75±15	700	GAVILLET	78	HBC	+	4.2 $K^- p \to \Xi^- K \pi\pi$

PRODUCED BY K BEAMS

The data in this block is included in the average printed for a previous datablock.

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
90± 8	[6] DAUM	81C	CNTR	−	63 $K^- p \to K^- 2\pi p$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
∼ 150	VERGEEST	79	HBC	−	4.2 $K^- p \to (\overline{K}\pi\pi)^- p$
150±71	[7] CARNEGIE	77	ASPK	±	13 $K^{\pm} p \to (K\pi\pi)^{\pm} p$
∼ 200	BRANDENB...	76	ASPK	±	13 $K^{\pm} p \to (K\pi\pi)^{\pm} p$
120	DAVIS	72	HBC	+	12 $K^+ p$
188±21	FIRESTONE	72B	DBC	+	12 $K^+ d$

[6] Well described in the chiral unitary approach of GENG 07 with two poles at 1195 and 1284 MeV and widths of 246 and 146 MeV, respectively.

[7] From a model-dependent fit with Gaussian background to BRANDENBURG 76 data.

PRODUCED BY BEAMS OTHER THAN K MESONS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
131±21	25k	[8] ABLIKIM	06C	BES2		$J/\psi \to \overline{K}^*(892)^0 K^+ \pi^-$
66±15	310	RODEBACK	81	HBC		4 $\pi^- p \to \Lambda K 2\pi$
60	40	CRENNELL	72	HBC	0	4.5 $\pi^- p \to \Lambda K 2\pi$
127^{+7}_{-25}		ASTIER	69	HBC	0	$\overline{p} p$
60	45	CRENNELL	67	HBC	0	6 $\pi^- p \to \Lambda K 2\pi$

[8] Systematic errors not estimated.

PRODUCED IN τ LEPTON DECAYS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
260^{+90}_{-70}±80	7k	ASNER	00B	CLEO	±	$\tau^- \to K^- \pi^+ \pi^- \nu_\tau$

$K_1(1270)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$K\rho$	(42 ± 6) %
Γ_2	$K_0^*(1430)\pi$	(28 ± 4) %
Γ_3	$K^*(892)\pi$	(16 ± 5) %
Γ_4	$K\omega$	(11.0 ± 2.0) %
Γ_5	$K f_0(1370)$	(3.0 ± 2.0) %
Γ_6	γK^0	seen

$K_1(1270)$ PARTIAL WIDTHS

$\Gamma(K\rho)$ — Γ_1

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
57 ± 5	MAZZUCATO	79	HBC	$+$	$4.2\ K^- p \rightarrow \Xi^- (K\pi\pi)^+$
75 ± 6	CARNEGIE	77B	ASPK	$\pm$	$13\ K^\pm p \rightarrow (K\pi\pi)^\pm p$

$\Gamma(K_0^*(1430)\pi)$ — Γ_2

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
26 ± 6	CARNEGIE	77B	ASPK	$\pm$	$13\ K^\pm p \rightarrow (K\pi\pi)^\pm p$

$\Gamma(K^*(892)\pi)$ — Γ_3

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
14 ± 11	MAZZUCATO	79	HBC	$+$	$4.2\ K^- p \rightarrow \Xi^- (K\pi\pi)^+$
2 ± 2	CARNEGIE	77B	ASPK	$\pm$	$13\ K^\pm p \rightarrow (K\pi\pi)^\pm p$

$\Gamma(K\omega)$ — Γ_4

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
4 ± 4	MAZZUCATO	79	HBC	$+$	$4.2\ K^- p \rightarrow \Xi^- (K\pi\pi)^+$
24 ± 3	CARNEGIE	77B	ASPK	$\pm$	$13\ K^\pm p \rightarrow (K\pi\pi)^\pm p$

$\Gamma(K f_0(1370))$ — Γ_5

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
• • • We do not use the following data for averages, fits, limits, etc. • • •					
22 ± 5	CARNEGIE	77B	ASPK	$\pm$	$13\ K^\pm p \rightarrow (K\pi\pi)^\pm p$

$\Gamma(\gamma K^0)$ — Γ_6

VALUE (keV)	*DOCUMENT ID*		*TECN*	*COMMENT*
$73.2 \pm 6.1 \pm 28.3$	ALAVI-HARATI	02B	KTEV	$K + A \rightarrow K^* + A$

$K_1(1270)$ BRANCHING RATIOS

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.42±0.06	[9] DAUM	81C	CNTR	63 $K^- p \to K^- 2\pi p$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
dominant	RODEBACK	81	HBC	4 $\pi^- p \to \Lambda K 2\pi$

$\Gamma(K_0^*(1430)\pi)/\Gamma_{total}$ — Γ_2/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.28±0.04	[9] DAUM	81C	CNTR	63 $K^- p \to K^- 2\pi p$

$\Gamma(K^*(892)\pi)/\Gamma_{total}$ — Γ_3/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.16±0.05	[9] DAUM	81C	CNTR	63 $K^- p \to K^- 2\pi p$

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.11±0.02	[9] DAUM	81C	CNTR	63 $K^- p \to K^- 2\pi p$

$\Gamma(K\omega)/\Gamma(K\rho)$ — Γ_4/Γ_1

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.30	95	RODEBACK	81	HBC	4 $\pi^- p \to \Lambda K 2\pi$

$\Gamma(K f_0(1370))/\Gamma_{total}$ — Γ_5/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.03±0.02	[9] DAUM	81C	CNTR	63 $K^- p \to K^- 2\pi p$

D-wave/S-wave RATIO FOR $K_1(1270) \to K^*(892)\pi$

VALUE	DOCUMENT ID		TECN	COMMENT
1.0±0.7	[9] DAUM	81C	CNTR	63 $K^- p \to K^- 2\pi p$

[9] Average from low and high t data.

$K_1(1270)$ REFERENCES

GENG	07	PR D75 014017	L.S. Geng et al.		
ABLIKIM	06C	PL B633 681	M. Ablikim et al.	(BES Collab.)	
ALAVI-HARATI	02B	PRL 89 072001	A. Alavi-Harati et al.	(FNAL KTeV Collab.)	
ASNER	00B	PR D62 072006	D.M. Asner et al.	(CLEO Collab.)	
TORNQVIST	82B	NP B203 268	N.A. Tornqvist	(HELS)	
DAUM	81C	NP B187 1	C. Daum et al.	(AMST, CERN, CRAC, MPIM+)	
RODEBACK	81	ZPHY C9 9	S. Rodeback et al.	(CERN, CDEF, MADR+)	
MAZZUCATO	79	NP B156 532	M. Mazzucato et al.	(CERN, ZEEM, NIJM+)	
VERGEEST	79	NP B158 265	J.S.M. Vergeest et al.	(NIJM, AMST, CERN+)	
GAVILLET	78	PL 76B 517	P. Gavillet et al.	(AMST, CERN, NIJM+)	JP
CARNEGIE	77	NP B127 509	R.K. Carnegie et al.	(SLAC)	
CARNEGIE	77B	PL 68B 287	R.K. Carnegie et al.	(SLAC)	
BRANDENB...	76	PRL 26 703	G.W. Brandenburg et al.	(SLAC)	JP
OTTER	76	NP B106 77	G. Otter et al.	(AACH3, BERL, CERN, LOIC+)	JP
CRENNELL	72	PR D6 1220	D.J. Crennell et al.	(BNL)	
DAVIS	72	PR D5 2688	P.J. Davis et al.	(LBL)	
FIRESTONE	72B	PR D5 505	A. Firestone et al.	(LBL)	
ASTIER	69	NP B10 65	A. Astier et al.	(CDEF, CERN, IPNP, LIVP)	IJP
CRENNELL	67	PRL 19 44	D.J. Crennell et al.	(BNL)	I

OTHER RELATED PAPERS

ABLIKIM	05Q	PR D72 092002	M. Ablikim *et al.*	(BES Collab.)
ROCA	05	PR D72 014002	L. Roca *et al.*	
SUZUKI	93	PR D47 1252	M. Suzuki	(LBL)
BAUBILLIER	82B	NP B202 21	M. Baubillier *et al.*	(BIRM, CERN, GLAS+)
FERNANDEZ	82	ZPHY C16 95	C. Fernandez *et al.*	(MADR, CERN, CDEF+) JP
GAVILLET	82	ZPHY C16 119	P. Gavillet *et al.*	(CERN, CDEF, PADO+)
SHEN	66	PRL 17 726	B.C. Shen *et al.*	(LRL)
Also		Private Comm.	G. Goldhaber	(LRL)
ALMEIDA	65	PL 16 184	S.P. Almeida *et al.*	(CAVE)
ARMENTEROS	64	PL 9 207	R. Armenteros *et al.*	(CERN, CDEF)
Also		PR 145 1095	N. Barash *et al.*	(COLU)