$K_1(1270)$

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

$K_1(1270)$ 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

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
The data in this block is included in the average printed for a previous datablock.						
1275±10	700	GAVILLET	78	HBC	+	4.2 $K^- p \rightarrow \Xi^- (K\pi\pi)^+$

PRODUCED BY K BEAMS

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
The data in this block is included in the average printed for a previous datablock.					
1270±10	[1] DAUM	81C	CNTR	−	63 $K^- p \rightarrow K^- 2\pi p$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
∼ 1276	[2] TORNQVIST	82B	RVUE		
∼ 1300	VERGEEST	79	HBC	−	4.2 $K^- p \rightarrow (\overline{K}\pi\pi)^- p$
1289±25	[3] CARNEGIE	77	ASPK	±	13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$
∼ 1300	BRANDENB...	76	ASPK	±	13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$
∼ 1270	OTTER	76	HBC	−	10,14,16 $K^- p \rightarrow (\overline{K}\pi\pi)^- p$
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		$J/\psi \rightarrow \overline{K}^*(892)^0 K^+ \pi^-$
1294±10	310	RODEBACK	81	HBC		4 $\pi^- p \rightarrow \Lambda K 2\pi$
1300	40	CRENNELL	72	HBC	0	4.5 $\pi^- p \rightarrow \Lambda K 2\pi$
$1242^{+\ 9}_{-10}$		[5] ASTIER	69	HBC	0	$\overline{p}p$
1300	45	CRENNELL	67	HBC	0	6 $\pi^- p \rightarrow \Lambda K 2\pi$

[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	±	$\tau^- \rightarrow K^- \pi^+ \pi^- \nu_\tau$

$K_1(1270)$ 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

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
The data in this block is included in the average printed for a previous datablock.						
75±15	700	GAVILLET	78	HBC	+	4.2 $K^- p \rightarrow \Xi^- K\pi\pi$

PRODUCED BY K BEAMS

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
The data in this block is included in the average printed for a previous datablock.					
90± 8	[6] DAUM	81C	CNTR	−	63 $K^- p \rightarrow K^- 2\pi p$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
∼ 150	VERGEEST	79	HBC	−	4.2 $K^- p \rightarrow (\overline{K}\pi\pi)^- p$
150±71	[7] CARNEGIE	77	ASPK	±	13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$
∼ 200	BRANDENB...	76	ASPK	±	13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$
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		$J/\psi \rightarrow \overline{K}^*(892)^0 K^+ \pi^-$
66±15	310	RODEBACK	81	HBC		4 $\pi^- p \rightarrow \Lambda K 2\pi$
60	40	CRENNELL	72	HBC	0	4.5 $\pi^- p \rightarrow \Lambda K 2\pi$
127^{+7}_{-25}		ASTIER	69	HBC	0	$\overline{p}p$
60	45	CRENNELL	67	HBC	0	6 $\pi^- p \rightarrow \Lambda K 2\pi$

[8] Systematic errors not estimated.

PRODUCED IN τ LEPTON DECAYS

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*CHG*	*COMMENT*
$\mathbf{260^{+\ 90}_{-\ 70}\pm80}$	7k	ASNER	00B	CLEO	±	$\tau^- \rightarrow K^-\pi^+\pi^-\nu_\tau$

$K_1(1270)$ 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	$Kf_0(1370)$	(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 $K^- p \to \Xi^- (K\pi\pi)^+$
75±6	CARNEGIE	77B	ASPK	±	13 $K^\pm p \to (K\pi\pi)^\pm p$

$\Gamma(K_0^*(1430)\pi)$ 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	±	13 $K^\pm p \to (K\pi\pi)^\pm p$

$\Gamma(K^*(892)\pi)$ 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 $K^- p \to \Xi^- (K\pi\pi)^+$
2± 2	CARNEGIE	77B	ASPK	±	13 $K^\pm p \to (K\pi\pi)^\pm p$

$\Gamma(K\omega)$ 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 $K^- p \to \Xi^- (K\pi\pi)^+$
24±3	CARNEGIE	77B	ASPK	±	13 $K^\pm p \to (K\pi\pi)^\pm p$

$\Gamma(Kf_0(1370))$ 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	±	13 $K^\pm p \to (K\pi\pi)^\pm p$

$\Gamma(\gamma K^0)$ Γ_6

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

$K_1(1270)$ BRANCHING RATIOS

$\Gamma(K\rho)/\Gamma_{total}$ Γ_1/Γ

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

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

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

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

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

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

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

$\Gamma(K\omega)/\Gamma(K\rho)$ 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 $\pi^- p \rightarrow \Lambda K 2\pi$

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

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

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

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

[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)