Meson Full Listings

$K_1(1270)$, $K_1(1400)$

$K_1(1270)$ 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.						
75.0±15.0	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	DAUM	81C	CNTR	–	63 $K^- p \rightarrow K^- 2\pi p$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
~ 150.0	VERGEEST	79	HBC	–	4.2 $K^- p \rightarrow (\overline{K}\pi\pi)^- p$
150.00±71.0	[4] 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 $K^+ d$

[4] 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. • • •						
66 ±15	310	RODEBACK	81	HBC		4 $\pi^- p \rightarrow \Lambda K 2\pi$
60	40	CRENNELL	72	HBC	0	4.5 $\pi^- p \rightarrow \Lambda K 2\pi$
$127.0^{+\ 7.0}_{-\ 25.0}$		ASTIER	69	HBC	0	$\overline{p}p$
60	45	CRENNELL	67	HBC	0	6 $\pi^- p \rightarrow \Lambda K 2\pi$

$K_1(1270)$ 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	$K f_0(1300)$	(3.0±2.0) %

$K_1(1270)$ 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. • • •					
57.0±5.0	MAZZUCATO	79	HBC	+	4.2 $K^- p \rightarrow \Xi^-(K\pi\pi)^+$
75.0±6.0	CARNEGIE	77B	ASPK	±	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. • • •					
26.0±6.0	CARNEGIE	77B	ASPK	±	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. • • •					
14.0±11.0	MAZZUCATO	79	HBC	+	4.2 $K^- p \rightarrow \Xi^-(K\pi\pi)^+$
2.0± 2.0	CARNEGIE	77B	ASPK	±	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. • • •					
4.0±4.00	MAZZUCATO	79	HBC	+	4.2 $K^- p \rightarrow \Xi^-(K\pi\pi)^+$
24.0±3.0	CARNEGIE	77B	ASPK	±	13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$

$\Gamma(K f_0(1300))$ Γ_5

VALUE (MeV)	DOCUMENT ID		TECN	CHG	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
22.0±5.0	CARNEGIE	77B	ASPK	±	13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$

$K_1(1270)$ BRANCHING RATIOS

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.42±0.06	[5] 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 $\pi^- p \rightarrow \Lambda K 2\pi$

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.28±0.04	[5] DAUM	81C	CNTR	63 $K^- p \rightarrow K^- 2\pi p$

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.16±0.05	[5] DAUM	81C	CNTR	63 $K^- p \rightarrow K^- 2\pi p$

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

VALUE	DOCUMENT ID		TECN	COMMENT
0.11 ±0.02	[5] 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 $\pi^- p \rightarrow \Lambda K 2\pi$

$\Gamma(K f_0(1300))/\Gamma_{\text{total}}$ Γ_5/Γ

VALUE	DOCUMENT ID		TECN	COMMENT
0.03 ±0.02	[5] 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	[5] DAUM	81C	CNTR	63 $K^- p \rightarrow K^- 2\pi p$

[5] Average from low and high t data.

$K_1(1270)$ REFERENCES

TORNQVIST	82B	NP B203 268		(HELS)
DAUM	81C	NP B187 1	+Hertzberger+	(AMST, CERN, CRAC, MPIM, OXF+)
RODEBACK	81	ZPHY C9 9	+Sjogren+	(CERN, CDEF, MADR, STOH)
MAZZUCATO	79	NP B156 532	+Pennington+	(CERN, ZEEM, NIJM, OXF)
VERGEEST	79	NP B158 265	+Jongejans, Dionisi+	(NIJM, AMST, CERN, OXF)
GAVILLET	78	PL 76B 517	+Diaz, Dionisi+	(AMST, CERN, NIJM, OXF) JP
CARNEGIE	77	NP B127 509	+Cashmore, Davier, Dunwoodie, Lasinski+	(SLAC)
CARNEGIE	77B	PL 68B 287	+Cashmore, Dunwoodie, Lasinski+	(SLAC)
BRANDENB...	76	PRL 26 703	Brandenburg, Carnegie, Cashmore+	(SLAC) JP
OTTER	76	NP B106 77	+	(AACH3, BERL, CERN, LOIC, VIEN, EPOL+) JP
CRENNELL	72	PR D6 1220	+Gordon, Lai, Scarr	(BNL)
DAVIS	72	PR D5 2688	+Alston-Garnjost, Barbaro, Flatte, Friedman, Lynch+	(LBL)
FIRESTONE	72B	PR D5 505	+Goldhaber, Lissauer, Trilling	(LBL)
ASTIER	69	NP B10 65	+Marechal, Montanet+	(CDEF, CERN, IPNP, LIVP) IJP
CRENNELL	67	PRL 19 44	+Kalbfleisch, Lai, Scarr, Schumann	(BNL) I

OTHER RELATED PAPERS

SUZUKI	93	PR D47 1252		(LBL)
BAUBILLIER	82B	NP B202 21	+	(BIRM, CERN, GLAS, MSU, CURIN)
FERNANDEZ	82	ZPHY C16 95	+Aguilar-Benitez+	(MADR, CERN, CDEF, STOH) JP
GAVILLET	82	ZPHY C16 119	+Armenteros+	(CERN, CDEF, PADO, ROMA)
SHEN	66	PRL 17 726	+Butterworth, Fu, Goldhaber, Trilling	(LRL)
Also	66	Private Comm.	Goldhaber	(LRL)
ALMEIDA	65	PL 16 184	+Atherton, Byer, Dornan, Forson+	(CAVE)
ARMENTEROS	64	PL 9 207	+Edwards, D'Andlau+	(CERN, CDEF)
Also	66	PR 145 1095	Barash, Kirsch, Miller, Tan	(COLU)
ARMENTEROS	64B	Dubna Conf. 1 577	+Edwards, D'Andlau+	(CERN, CDEF)
Also	64C	Dubna Conf. 1 617	Armenteros	

$K_1(1400)$ $I(J^P) = \frac{1}{2}(1^+)$

$K_1(1400)$ MASS

VALUE (MeV)		DOCUMENT ID		TECN	CHG	COMMENT
1402 ± 7 OUR AVERAGE						
1373 ±14	±18	[1] ASTON	87	LASS	0	11 $K^- p \rightarrow \overline{K}^0\pi^+\pi^- n$
1392 ±18		BAUBILLIER	82B	HBC	0	8.25 $K^- p \rightarrow K_S^0\pi^+\pi^- n$
1410 ±25		DAUM	81C	CNTR	–	63 $K^- p \rightarrow K^- 2\pi p$
1415 ±15		ETKIN	80	MPS	0	6 $K^- p \rightarrow \overline{K}^0\pi^+\pi^- n$
1404.0±10.0		[2] CARNEGIE	77	ASPK	±	13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
~ 1350		[3] TORNQVIST	82B	RVUE		
~ 1400.0		VERGEEST	79	HBC	–	4.2 $K^- p \rightarrow (\overline{K}\pi\pi)^- p$
~ 1400		BRANDENB...	76	ASPK	±	13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$
1420		DAVIS	72	HBC	+	12 $K^+ p$
1368 ±18		FIRESTONE	72B	DBC	+	12 $K^+ d$

[1] From partial-wave analysis of $K^0\pi^+\pi^-$ system.
[2] From a model-dependent fit with Gaussian background to BRANDENBURG 76 data.
[3] From a unitarized quark-model calculation.

$K_1(1400)$ WIDTH

VALUE (MeV)		DOCUMENT ID		TECN	CHG	COMMENT
174 ±13 OUR AVERAGE		Error includes scale factor of 1.6. See the ideogram below.				
188 ±54	±60	[4] ASTON	87	LASS	0	11 $K^- p \rightarrow \overline{K}^0\pi^+\pi^- n$
276 ±65		BAUBILLIER	82B	HBC	0	8.25 $K^- p \rightarrow K_S^0\pi^+\pi^- n$
195 ±25		DAUM	81C	CNTR	–	63 $K^- p \rightarrow K^- 2\pi p$
180 ±10		ETKIN	80	MPS	0	6 $K^- p \rightarrow \overline{K}^0\pi^+\pi^- n$
142.0±16.0		[5] CARNEGIE	77	ASPK	±	13 $K^\pm p \rightarrow (K\pi\pi)^\pm p$