NODE=M028

$K_1(1270)$

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

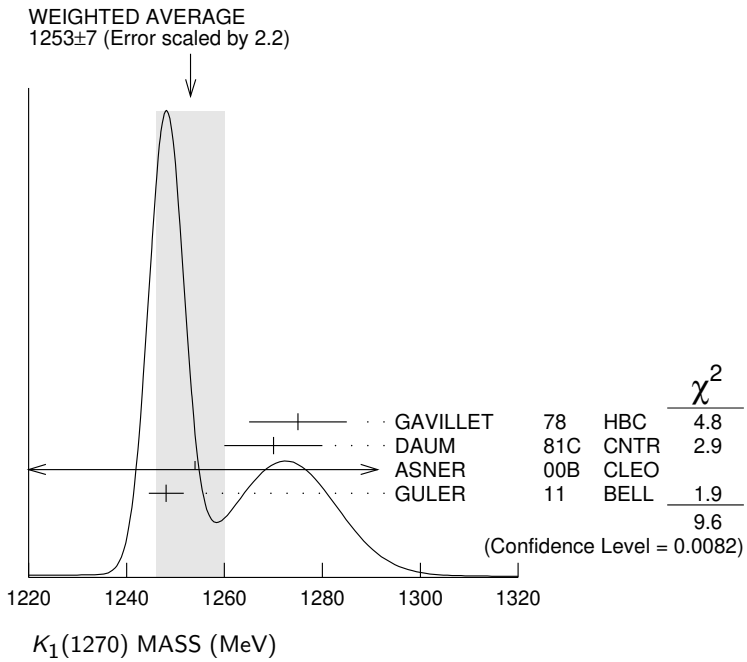
$K_1(1270)$ MASS

NODE=M028MX

NODE=M028MX

VALUE (MeV)	DOCUMENT ID

1253±7 OUR AVERAGE Includes data from the 4 datablocks that follow this one. Error includes scale factor of 2.2. See the ideogram below.



PRODUCED BY K^-, BACKWARD SCATTERING, HYPERON EXCHANGE

NODE=M028M2
NODE=M028M2

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 $K^- p \to \Xi^- (K\pi\pi)^+$

PRODUCED BY K BEAMS

NODE=M028M3
NODE=M028M3

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 $K^- p \to K^- 2\pi p$
• • • 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. NODE=M028M3;LINKAGE=DA

[2] From a unitarized quark-model calculation. NODE=M028M3;LINKAGE=T

[3] From a model-dependent fit with Gaussian background to BRANDENBURG 76 data. NODE=M028M3;LINKAGE=E

PRODUCED BY BEAMS OTHER THAN K MESONS

NODE=M028M1
NODE=M028M1

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT

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

1248.1 ± 3.3 ±1.4		GULER	11	BELL	$B^+ \to J/\psi K^+ \pi^+ \pi^-$

• • • We do not use the following data for averages, fits, limits, etc. • • •

1289.81 ± 0.56 ± 1.66	894k		AAIJ	18AI	LHCB	$D^0 \to K^\mp \pi^\pm \pi^\pm \pi^\mp$
1279 ± 10	25k	[1]	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	$4.5\ \pi^- p \to \Lambda K 2\pi$
1242 $^{+9}_{-10}$		[2]	ASTIER	69	HBC	$\overline{p} p$
1300	45		CRENNELL	67	HBC	$6\ \pi^- p \to \Lambda K 2\pi$

[1] Systematic errors not estimated. NODE=M028M1;LINKAGE=AB
[2] This was called the C meson. NODE=M028M1;LINKAGE=A

PRODUCED IN τ LEPTON DECAYS

NODE=M028MT
NODE=M028MT

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
The data in this block is included in the average printed for a previous datablock.						
1250±50 OUR AVERAGE [1254 ± 50 MeV OUR 2023 AVERAGE]						NEW
1254±33±34	7k	ASNER	00B	CLEO	±	$\tau^- \to K^- \pi^+ \pi^- \nu_\tau$

$K_1(1270)$ WIDTH

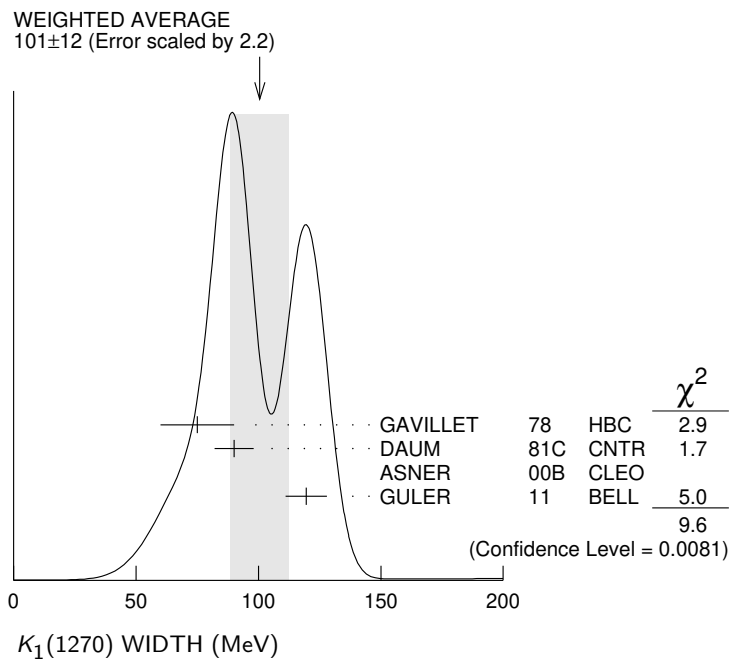
NODE=M028WX

NODE=M028WX

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. → UNCHECKED ←

101±12 OUR AVERAGE Includes data from the 4 datablocks that follow this one. Error includes scale factor of 2.2. See the ideogram below.



PRODUCED BY K^-, BACKWARD SCATTERING, HYPERON EXCHANGE

NODE=M028W2
NODE=M028W2

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	+	$4.2\ K^- p \to \Xi^- K \pi \pi$

PRODUCED BY K BEAMS

NODE=M028W3
NODE=M028W3

VALUE (MeV)		DOCUMENT ID		TECN	CHG	COMMENT
The data in this block is included in the average printed for a previous datablock.						
90± 8	[1]	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	[2]	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	+	$12\ K^+ d$

[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. NODE=M028W3;LINKAGE=DA
[2] From a model-dependent fit with Gaussian background to BRANDENBURG 76 data. NODE=M028W3;LINKAGE=E

PRODUCED BY BEAMS OTHER THAN K MESONS

NODE=M028W1
NODE=M028W1

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
The data in this block is included in the average printed for a previous datablock.					
119.5 ± 5.2 ±6.7		GULER	11	BELL	$B^+ \to J/\psi K^+ \pi^+ \pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
116.11± 1.65±2.96	894k	AAIJ	18AI	LHCB	$D^0 \to K^\mp \pi^\pm \pi^\pm \pi^\mp$
131 ±21	25k	[1] 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	$4.5\ \pi^- p \to \Lambda K 2\pi$
127 $^{+7}_{-25}$		ASTIER	69	HBC	$\overline{p} p$
60	45	CRENNELL	67	HBC	$6\ \pi^- p \to \Lambda K 2\pi$

[1] Systematic errors not estimated.

NODE=M028W1;LINKAGE=AB

PRODUCED IN τ LEPTON DECAYS

NODE=M028WT
NODE=M028WT

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	CHG	COMMENT
The data in this block is included in the average printed for a previous datablock.						
260^{+90}_{-70}±80	7k	ASNER	00B	CLEO	±	$\tau^- \to K^- \pi^+ \pi^- \nu_\tau$

$K_1(1270)$ DECAY MODES

NODE=M028215;NODE=M028

	Mode	Fraction (Γ_i/Γ)	Scale factor	
Γ_1	$K\rho$	(38 ±13) %	2.2	DESIG=2
Γ_2	$K_0^*(1430)\pi$	(28 ± 4) %		DESIG=7
Γ_3	$K^*(892)\pi$	(21 ±10) %	2.2	DESIG=1
Γ_4	$K\omega$	(11.0± 2.0) %		DESIG=5
Γ_5	$K f_0(1370)$	(3.0± 2.0) %		DESIG=8
Γ_6	γK^0	seen		DESIG=9;OUR EST;→ UNCHECKED ←

$K_1(1270)$ PARTIAL WIDTHS

NODE=M028220

$\Gamma(K\rho)$ — Γ_1

NODE=M028W5
NODE=M028W5

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

NODE=M028W7
NODE=M028W7

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

NODE=M028W4
NODE=M028W4

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

NODE=M028W6
NODE=M028W6

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	±	$13\ K^\pm p \to (K\pi\pi)^\pm p$

$\Gamma(K f_0(1370))$ — Γ_5

NODE=M028W8
NODE=M028W8

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

NODE=M028W9
NODE=M028W9

VALUE (keV)	DOCUMENT ID	TECN	COMMENT
73.2±6.1±28.3	ALAVI-HARATI02B	KTEV	$K + A \to K^* + A$

$K_1(1270)$ BRANCHING RATIOS

NODE=M028225

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

NODE=M028R2
NODE=M028R2

VALUE	DOCUMENT ID		TECN	COMMENT
0.38 ±0.13 OUR FIT	Error includes scale factor of 2.2.			
0.42 ±0.06	[1] DAUM	81C	CNTR	63 $K^- p \to K^- 2\pi p$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.584±0.043	[2] GULER	11	BELL	$B^+ \to J/\psi K^+ \pi^+ \pi^-$
dominant	RODEBACK	81	HBC	4 $\pi^- p \to \Lambda K 2\pi$

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

NODE=M028R4
NODE=M028R4

VALUE	DOCUMENT ID		TECN	COMMENT
0.28 ±0.04	[1] DAUM	81C	CNTR	63 $K^- p \to K^- 2\pi p$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.0201±0.0064	[2] GULER	11	BELL	$B^+ \to J/\psi K^+ \pi^+ \pi^-$

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

NODE=M028R1
NODE=M028R1

VALUE	DOCUMENT ID		TECN	COMMENT
0.21 ±0.10 OUR FIT	Error includes scale factor of 2.2.			
0.16 ±0.05	[1] DAUM	81C	CNTR	63 $K^- p \to K^- 2\pi p$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.171±0.023	[2] GULER	11	BELL	$B^+ \to J/\psi K^+ \pi^+ \pi^-$

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

NODE=M028R00
NODE=M028R00

VALUE	DOCUMENT ID		TECN	COMMENT
0.56±0.29 OUR FIT	Error includes scale factor of 2.2.			
0.99±0.15±0.18	ABLIKIM	21U	BES3	$D_s^+ \to \overline{K}_1(1270)^0 K^+$

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

NODE=M028R3
NODE=M028R3

VALUE	DOCUMENT ID		TECN	COMMENT
0.11 ±0.02	[1] DAUM	81C	CNTR	63 $K^- p \to K^- 2\pi p$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.225±0.052	[2] GULER	11	BELL	$B^+ \to J/\psi K^+ \pi^+ \pi^-$

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

NODE=M028R6
NODE=M028R6

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

NODE=M028R5
NODE=M028R5

VALUE	DOCUMENT ID		TECN	COMMENT
0.03±0.02	[1] DAUM	81C	CNTR	63 $K^- p \to K^- 2\pi p$

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

NODE=M028R9
NODE=M028R9

VALUE	DOCUMENT ID		TECN	COMMENT
1.0±0.7	[1] DAUM	81C	CNTR	63 $K^- p \to K^- 2\pi p$

[1] Average from low and high t data. NODE=M028R;LINKAGE=F

[2] Assuming that decays are saturated by the $K\rho$, $K_0^*(1430)\pi$, $K^*(892)\pi$, $K\omega$ decay modes and neglecting interference between them. The values $B(\omega \to \pi^+\pi^-) = (1.53^{+0.11}_{-0.13})\%$ and $B(K_0^*(1430) \to K\pi) = (93 \pm 10)\%$ are used. Systematic uncertainties not estimated. NODE=M028R1;LINKAGE=GU

$K_1(1270)$ REFERENCES

NODE=M028

ABLIKIM	21U	PR D104 032011	M. Ablikim *et al.*	(BESIII Collab.)	REFID=61155
AAIJ	18AI	EPJ C78 443	R. Aaij *et al.*	(LHCb Collab.)	REFID=59187
GULER	11	PR D83 032005	H. Guler *et al.*	(BELLE Collab.)	REFID=53668
GENG	07	PR D75 014017	L.S. Geng *et al.*		REFID=51623
ABLIKIM	06C	PL B633 681	M. Ablikim *et al.*	(BES Collab.)	REFID=51037
ALAVI-HARATI	02B	PRL 89 072001	A. Alavi-Harati *et al.*	(FNAL KTeV Collab.)	REFID=48822
ASNER	00B	PR D62 072006	D.M. Asner *et al.*	(CLEO Collab.)	REFID=47766
TORNQVIST	82B	NP B203 268	N.A. Tornqvist	(HELS)	REFID=20573
DAUM	81C	NP B187 1	C. Daum *et al.*	(AMST, CERN, CRAC, MPIM+)	REFID=22548
RODEBACK	81	ZPHY C9 9	S. Rodeback *et al.*	(CERN, CDEF, MADR+)	REFID=22550
MAZZUCATO	79	NP B156 532	M. Mazzucato *et al.*	(CERN, ZEEM, NIJM+)	REFID=20867
VERGEEST	79	NP B158 265	J.S.M. Vergeest *et al.*	(NIJM, AMST, CERN+)	REFID=22542
GAVILLET	78	PL 76B 517	P. Gavillet *et al.*	(AMST, CERN, NIJM+) JP	REFID=22538
CARNEGIE	77	NP B127 509	R.K. Carnegie *et al.*	(SLAC)	REFID=22535
CARNEGIE	77B	PL 68B 287	R.K. Carnegie *et al.*	(SLAC)	REFID=22536
BRANDENB...	76	PRL 36 703	G.W. Brandenburg *et al.*	(SLAC) JP	REFID=22532
OTTER	76	NP B106 77	G. Otter *et al.*	(AACH3, BERL, CERN, LOIC+) JP	REFID=22533
CRENNELL	72	PR D6 1220	D.J. Crennell *et al.*	(BNL)	REFID=22419
DAVIS	72	PR D5 2688	P.J. Davis *et al.*	(LBL)	REFID=22505
FIRESTONE	72B	PR D5 505	A. Firestone *et al.*	(LBL)	REFID=22506
ASTIER	69	NP B10 65	A. Astier *et al.*	(CDEF, CERN, IPNP, LIVP) IJP	REFID=22482
CRENNELL	67	PRL 19 44	D.J. Crennell *et al.*	(BNL) I	REFID=22473