$$\boxed{f'_2(1525)} \qquad\qquad I^G(J^{PC}) = 0^+(2^{++})$$

$f'_2(1525)$ MASS

VALUE (MeV)		DOCUMENT ID		
1525±5 OUR ESTIMATE		This is only an educated guess; the error given is larger than the error on the average of the published values.		

PRODUCED BY PION BEAM

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$1547^{+10}_{-\ 2}$		[1] LONGACRE	86 MPS	$22\ \pi^- p \to\ K^0_S K^0_S n$
$1496^{+\ 9}_{-\ 8}$		[2] CHABAUD	81 ASPK	$6\ \pi^- p \to\ K^+ K^- n$
$1497^{+\ 8}_{-\ 9}$		CHABAUD	81 ASPK	$18.4\ \pi^- p \to\ K^+ K^- n$
1492 ± 29		GORLICH	80 ASPK	$17\ \pi^- p$ polarized $\to$ $K^+ K^- n$
1502 ± 25		[3] CORDEN	79 OMEG	12–$15\ \pi^- p \to$ $\pi^+ \pi^- n$
1480	14	CRENNELL	66 HBC	$6.0\ \pi^- p \to\ K^0_S K^0_S n$

[1] From a partial-wave analysis of data using a K-matrix formalism with 5 poles.
[2] CHABAUD 81 is a reanalysis of PAWLICKI 77 data.
[3] From an amplitude analysis where the $f'_2(1525)$ width and elasticity are in complete disagreement with the values obtained from $K\overline{K}$ channel, making the solution dubious.

PRODUCED BY $K^\pm$ BEAM

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
1524.6± 1.4 OUR AVERAGE		Includes data from the datablock that follows this one. Error includes scale factor of 1.1.		
1526.8 ± 4.3		ASTON	88D LASS	$11\ K^- p \to\ K^0_S K^0_S \Lambda$
$1504\ \pm12$		BOLONKIN	86 SPEC	$40\ K^- p \to\ K^0_S K^0_S Y$
$1529\ \pm\ 3$		ARMSTRONG	83B OMEG	$18.5\ K^- p \to\ K^- K^+ \Lambda$
$1521\ \pm\ 6$	650	AGUILAR-...	81B HBC	$4.2\ K^- p \to\ \Lambda K^+ K^-$
$1521\ \pm\ 3$	572	ALHARRAN	81 HBC	$8.25\ K^- p \to\ \Lambda K\overline{K}$
$1522\ \pm\ 6$	123	BARREIRO	77 HBC	$4.15\ K^- p \to\ \Lambda K^0_S K^0_S$
$1528\ \pm\ 7$	166	EVANGELISTA	77 OMEG	$10\ K^- p \to$ $K^+ K^- (\Lambda, \Sigma)$
$1527\ \pm\ 3$	120	BRANDENB...	76C ASPK	$13\ K^- p \to$ $K^+ K^- (\Lambda, \Sigma)$
$1519\ \pm\ 7$	100	AGUILAR-...	72B HBC	$3.9, 4.6\ K^- p \to$ $K\overline{K}(\Lambda, \Sigma)$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$1513\ \pm10$		[4] BARKOV	99 SPEC	$40\ K^- p \to\ K^0_S K^0_S y$

[4] Systematic errors not estimated.

PRODUCED IN e^+e^- ANNIHILATION

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
The data in this block is included in the average printed for a previous datablock.				

1524 ± 4   OUR AVERAGE   Error includes scale factor of 1.2.

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
$1535 \pm 5 \pm 4$	ABREU		96C DLPH	$Z^0 \to K^+ K^-$
$1516 \pm 5 {}^{+9}_{-15}$	BAI		96C BES	$J/\psi \to \gamma K^+ K^-$
1529 ± 10	ACCIARRI		95J L3	$\gamma\gamma \to K^0_S K^0_S \ E^{ee}_{cm}=$ 88–94 GeV
1531.6 ± 10.0	AUGUSTIN		88 DM2	$J/\psi \to \gamma K^+ K^-$
1515 ± 5	[5] FALVARD		88 DM2	$J/\psi \to \phi K^+ K^-$
$1525 \pm 10 \pm 10$	BALTRUSAIT...87		MRK3	$J/\psi \to \gamma K^+ K^-$

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

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
1496 ± 2	[6] FALVARD		88 DM2	$J/\psi \to \phi K^+ K^-$

CENTRAL PRODUCTION

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
1515±15	BARBERIS	99 OMEG	450 $pp \to$ $p_s p_f K^+ K^-$

[5] From an analysis ignoring interference with $f_0(1710)$.
[6] From an analysis including interference with $f_0(1710)$.

$f'_2(1525)$ WIDTH

VALUE (MeV)	DOCUMENT ID	COMMENT
76±10 OUR ESTIMATE		This is only an educated guess; the error given is larger than the error on the average of the published values.

73^{+6}_{-5} OUR FIT

VALUE (MeV)	DOCUMENT ID	COMMENT
76±10	PDG 90	For fitting

PRODUCED BY PION BEAM

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
108^{+5}_{-2}	[7] LONGACRE		86 MPS	$22 \ \pi^- p \to K^0_S K^0_S n$
69^{+22}_{-16}	[8] CHABAUD		81 ASPK	$6 \ \pi^- p \to K^+ K^- n$
137^{+23}_{-21}	CHABAUD		81 ASPK	$18.4 \ \pi^- p \to K^+ K^- n$
150^{+83}_{-50}	GORLICH		80 ASPK	$17 \ \pi^- p$ polarized $\to$ $K^+ K^- n$
165 ± 42	[9] CORDEN		79 OMEG	12–$15 \ \pi^- p \to$ $\pi^+ \pi^- n$
92^{+39}_{-22}	[10] POLYCHRO...		79 STRC	$7 \ \pi^- p \to n K^0_S K^0_S$

[7] From a partial-wave analysis of data using a K-matrix formalism with 5 poles.
[8] CHABAUD 81 is a reanalysis of PAWLICKI 77 data.
[9] From an amplitude analysis where the $f'_2(1525)$ width and elasticity are in complete disagreement with the values obtained from $K\overline{K}$ channel, making the solution dubious.
[10] From a fit to the D with $f_2(1270)$-$f'_2(1525)$ interference. Mass fixed at 1516 MeV.

PRODUCED BY $K^{\pm}$ BEAM

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
76± 5 OUR AVERAGE		Includes data from the datablock that follows this one.			
90±12		ASTON	88D	LASS	11 $K^- p \to K^0_S K^0_S \Lambda$
73±18		BOLONKIN	86	SPEC	40 $K^- p \to K^0_S K^0_S Y$
83±15		ARMSTRONG	83B	OMEG	18.5 $K^- p \to K^- K^+ \Lambda$
85±16	650	AGUILAR-...	81B	HBC	4.2 $K^- p \to \Lambda K^+ K^-$
80^{+14}_{-11}	572	ALHARRAN	81	HBC	8.25 $K^- p \to \Lambda K \overline{K}$
72±25	166	EVANGELISTA	77	OMEG	10 $K^- p \to$ $K^+ K^- (\Lambda, \Sigma)$
69±22	100	AGUILAR-...	72B	HBC	3.9,4.6 $K^- p \to$ $K \overline{K} (\Lambda, \Sigma)$

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

75±20		11 BARKOV	99	SPEC	40 $K^- p \to K^0_S K^0_S y$
62^{+19}_{-14}	123	BARREIRO	77	HBC	4.15 $K^- p \to \Lambda K^0_S K^0_S$
61± 8	120	BRANDENB...	76C	ASPK	13 $K^- p \to$ $K^+ K^- (\Lambda, \Sigma)$

11 Systematic errors not estimated.

PRODUCED IN $e^+ e^-$ ANNIHILATION

VALUE (MeV)   DOCUMENT ID   TECN   COMMENT

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

66± 8 OUR AVERAGE	DOCUMENT ID		TECN	COMMENT
60±20±19	ABREU	96C	DLPH	$Z^0 \to K^+ K^-$
$60±23^{+13}_{-20}$	BAI	96C	BES	$J/\psi \to \gamma K^+ K^-$
103±30	AUGUSTIN	88	DM2	$J/\psi \to \gamma K^+ K^-$
62±10	12 FALVARD	88	DM2	$J/\psi \to \phi K^+ K^-$
85±35	BALTRUSAIT...	87	MRK3	$J/\psi \to \gamma K^+ K^-$

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

76±40	ACCIARRI	95J	L3	$\gamma\gamma \to K_S K_S$ $E^{ee}_{cm}=$ 88–94 GeV
100± 3	13 FALVARD	88	DM2	$J/\psi \to \phi K^+ K^-$

CENTRAL PRODUCTION

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
70±25	BARBERIS	99	OMEG	450 $pp \to$ $p_s p_f K^+ K^-$

12 From an analysis ignoring interference with $f_0(1710)$.
13 From an analysis including interference with $f_0(1710)$.

$f'_2(1525)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	$K\overline{K}$	$(88.8 \pm 3.1\ )\ \%$
Γ_2	$\eta\eta$	$(10.3 \pm 3.1\ )\ \%$
Γ_3	$\pi\pi$	$(\ 8.2 \pm 1.5\ ) \times 10^{-3}$
Γ_4	$\gamma\gamma$	$(\ 1.32 \pm 0.21) \times 10^{-6}$
Γ_5	$K\overline{K}^*(892)+$ c.c.	
Γ_6	$\pi\pi\eta$	
Γ_7	$\pi K\overline{K}$	
Γ_8	$\pi^+\pi^+\pi^-\pi^-$	

CONSTRAINED FIT INFORMATION

An overall fit to the total width, 2 partial widths, a combination of partial widths obtained from integrated cross sections, and 3 branching ratios uses 14 measurements and one constraint to determine 5 parameters. The overall fit has a $\chi^2 = 11.4$ for 10 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\left\langle \delta p_i \delta p_j \right\rangle/(\delta p_i \cdot \delta p_j)$, in percent, from the fit to parameters p_i, including the branching fractions, $x_i \equiv \Gamma_i/\Gamma_{\text{total}}$. The fit constrains the x_i whose labels appear in this array to sum to one.

x_2	-100			
x_3	-3	-1		
x_4	-7	7	1	
Γ	-32	32	-1	-42
	x_1	x_2	x_3	x_4

	Mode	Rate (MeV)
Γ_1	$K\overline{K}$	$65\ {}^{+5}_{-4}$
Γ_2	$\eta\eta$	7.6 ± 2.6
Γ_3	$\pi\pi$	0.60 ± 0.12
Γ_4	$\gamma\gamma$	$(\ 9.7 \pm 1.4\ ) \times 10^{-5}$

$f'_2(1525)$ PARTIAL WIDTHS

$\Gamma(K\overline{K})$ $\hfill \Gamma_1$

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
65^{+5}_{-4} **OUR FIT**				
63^{+6}_{-5}	[14] LONGACRE	86	MPS	$22\ \pi^- p \rightarrow K^0_S K^0_S n$

$\Gamma(\pi\pi)$ Γ_3

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
0.60±0.12 OUR FIT				
1.4 $^{+1.0}_{-0.5}$	[14] LONGACRE	86	MPS	22 $\pi^- p \to K^0_S K^0_S n$

$\Gamma(\eta\eta)$ Γ_2

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
7.6±2.5 OUR FIT				
• • • We do not use the following data for averages, fits, limits, etc. • • •				
24 $^{+3}_{-1}$	[14] LONGACRE	86	MPS	22 $\pi^- p \to K^0_S K^0_S n$

[14] From a partial-wave analysis of data using a K-matrix formalism with 5 poles.

$f'_2(1525)$ $\Gamma(\mathrm{i})\Gamma(\gamma\gamma)/\Gamma(\mathrm{total})$

$\Gamma(K\overline{K}) \times \Gamma(\gamma\gamma)/\Gamma_{\mathrm{total}}$ $\Gamma_1\Gamma_4/\Gamma$

VALUE (keV)		DOCUMENT ID		TECN	COMMENT
0.086 ±0.012	**OUR FIT**				
0.086 ±0.012	**OUR AVERAGE**				
0.093 ±0.018 ±0.022		[15] ACCIARRI	95J	L3	E^{ee}_{cm}= 88–94 GeV
0.067 ±0.008 ±0.015		[15] ALBRECHT	90G	ARG	$e^+ e^- \to$ $e^+ e^- K^+ K^-$
0.11 $^{+0.03}_{-0.02}$ ±0.02		BEHREND	89C	CELL	$e^+ e^- \to$ $e^+ e^- K^0_S K^0_S$
0.10 $^{+0.04}_{-0.03}$ $^{+0.03}_{-0.02}$		BERGER	88	PLUT	$e^+ e^- \to$ $e^+ e^- K^0_S K^0_S$
0.12 ±0.07 ±0.04		[15] AIHARA	86B	TPC	$e^+ e^- \to$ $e^+ e^- K^+ K^-$
0.11 ±0.02 ±0.04		[15] ALTHOFF	83	TASS	$e^+ e^- \to e^+ e^- K\overline{K}$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.0314±0.0050±0.0077		[16] ALBRECHT	90G	ARG	$e^+ e^- \to$ $e^+ e^- K^+ K^-$

[15] Using an incoherent background.
[16] Using a coherent background.

$f'_2(1525)$ BRANCHING RATIOS

$\Gamma(\eta\eta)/\Gamma(K\overline{K})$ Γ_2/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
0.12±0.04 OUR FIT				
0.11±0.04	[17] PROKOSHKIN	91	GAM4	300 $\pi^- p \to \pi^- p\eta\eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.50	BARNES	67	HBC	4.6,5.0 $K^- p$

[17] Combining results of GAM4 with those of WA76 on $K\overline{K}$ central production and results of CBAL, MRK3 and DM2 on $J/\psi \to \gamma\eta\eta$.

$\Gamma(\pi\pi)/\Gamma_{total}$ $\qquad$ Γ_3/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
0.0082±0.0016 OUR FIT					
0.0075±0.0016 OUR AVERAGE					
0.007 ±0.002		COSTA...		80 OMEG	$10\ \pi^- p \to\ K^+ K^- n$
0.027 $^{+0.071}_{-0.013}$		[18] GORLICH		80 ASPK	$17,18\ \pi^- p$
0.0075±0.0025		[18,19] MARTIN		79 RVUE	
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.06	95	AGUILAR-...		81B HBC	$4.2\ K^- p \to\ \Lambda K^+ K^-$
0.19 ±0.03		CORDEN		79 OMEG	$12\text{–}15\ \pi^- p \to$ $\pi^+ \pi^- n$
<0.045	95	BARREIRO		77 HBC	$4.15\ K^- p \to\ \Lambda K^0_S K^0_S$
0.012 ±0.004		[18] PAWLICKI		77 SPEC	$6\ \pi N \to\ K^+ K^- N$
<0.063	90	BRANDENB...		76C ASPK	$13\ K^- p \to$ $K^+ K^- (\Lambda, \Sigma)$
<0.0086		[18] BEUSCH		75B OSPK	$8.9\ \pi^- p \to\ K^0 \overline{K}^0 n$

[18] Assuming that the $f'_2(1525)$ is produced by an one-pion exchange production mechanism.

[19] MARTIN 79 uses the PAWLICKI 77 data with different input value of the $f'_2(1525) \to K\overline{K}$ branching ratio.

$\Gamma(\pi\pi)/\Gamma(K\overline{K})$ $\qquad$ Γ_3/Γ_1

VALUE	DOCUMENT ID	TECN	COMMENT
0.0092±0.0018 OUR FIT			
0.075 ±0.035	AUGUSTIN	87 DM2	$J/\psi \to\ \gamma\pi^+ \pi^-$

$\Gamma(\pi\pi\eta)/\Gamma(K\overline{K})$ $\qquad$ Γ_6/Γ_1

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.41	95	AGUILAR-...	72B HBC	$3.9,4.6\ K^- p$
<0.3	67	AMMAR	67 HBC	

$\left[\Gamma(K\overline{K}{}^*(892)+\text{c.c.}) + \Gamma(\pi K\overline{K})\right]/\Gamma(K\overline{K})$ $\qquad$ $(\Gamma_5+\Gamma_7)/\Gamma_1$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.35	95	AGUILAR-...	72B HBC	$3.9,4.6\ K^- p$
<0.4	67	AMMAR	67 HBC	

$\Gamma(\pi^+ \pi^+ \pi^- \pi^-)/\Gamma(K\overline{K})$ $\qquad$ Γ_8/Γ_1

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<0.32	95	AGUILAR-...	72B HBC	$3.9,4.6\ K^- p$

$\Gamma(\eta\eta)/\Gamma_{total}$ $\qquad$ Γ_2/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.10±0.03	[20] PROKOSHKIN 91	GAM4	$300\ \pi^- p \to\ \pi^- p\eta\eta$

[20] Combining results of GAM4 with those of WA76 on $K\overline{K}$ central production and results of CBAL, MRK3 and DM2 on $J/\psi \to\ \gamma\eta\eta$.

$f_2'(1525)$ REFERENCES

BARBERIS	99	PL B453 305	D. Barberis *et al.*	(Omega expt.)
BARKOV	99	JETPL 70 248	B.P. Barkov *et al.*	
		Translated from ZETFP 70 242.		
ABREU	96C	PL B379 309	P. Abreu *et al.*	(DELPHI Collab.)
BAI	96C	PRL 77 3959	J.Z. Bai *et al.*	(BES Collab.)
ACCIARRI	95J	PL B363 118	M. Acciarri *et al.*	(L3 Collab.)
PROKOSHKIN	91	SPD 36 155	Y.D. Prokoshkin	(GAM2, GAM4 Collab.)
		Translated from DANS 316 900.		
ALBRECHT	90G	ZPHY C48 183	H. Albrecht *et al.*	(ARGUS Collab.)
PDG	90	PL B239	J.J. Hernandez *et al.*	(IFIC, BOST, CIT+)
BEHREND	89C	ZPHY C43 91	H.J. Behrend *et al.*	(CELLO Collab.)
ASTON	88D	NP B301 525	D. Aston *et al.*	(SLAC, NAGO, CINC, INUS)
AUGUSTIN	88	PRL 60 2238	J.E. Augustin *et al.*	(DM2 Collab.)
BERGER	88	ZPHY C37 329	C. Berger *et al.*	(PLUTO Collab.)
FALVARD	88	PR D38 2706	A. Falvard *et al.*	(CLER, FRAS, LALO+)
AUGUSTIN	87	ZPHY C36 369	J.E. Augustin *et al.*	(LALO, CLER, FRAS+)
BALTRUSAIT...	87	PR D35 2077	R.M. Baltrusaitis *et al.*	(Mark III Collab.)
AIHARA	86B	PRL 57 404	H. Aihara *et al.*	(TPC-2γ Collab.)
BOLONKIN	86	SJNP 43 776	B.V. Bolonkin *et al.*	(ITEP) JP
		Translated from YAF 43 1211.		
LONGACRE	86	PL B177 223	R.S. Longacre *et al.*	(BNL, BRAN, CUNY+)
ALTHOFF	83	PL 121B 216	M. Althoff *et al.*	(TASSO Collab.)
ARMSTRONG	83B	NP B224 193	T.A. Armstrong *et al.*	(BARI, BIRM, CERN+)
AGUILAR-...	81B	ZPHY C8 313	M. Aguilar-Benitez *et al.*	(CERN, CDEF+)
ALHARRAN	81	NP B191 26	S. Al-Harran *et al.*	(BIRM, CERN, GLAS+)
CHABAUD	81	APP B12 575	V. Chabaud *et al.*	(CERN, CRAC, MPIM)
COSTA...	80	NP B175 402	G. Costa de Beauregard *et al.*	(BARI, BONN+)
GORLICH	80	NP B174 16	L. Gorlich *et al.*	(CRAC, MPIM, CERN+)
CORDEN	79	NP B157 250	M.J. Corden *et al.*	(BIRM, RHEL, TELA+) JP
MARTIN	79	NP B158 520	A.D. Martin, E.N. Ozmutlu	(DURH)
POLYCHRO...	79	PR D19 1317	V.A. Polychronakos *et al.*	(NDAM, ANL)
BARREIRO	77	NP B121 237	F. Barreiro *et al.*	(CERN, AMST, NIJM+)
EVANGELISTA	77	NP B127 384	C. Evangelista *et al.*	(BARI, BONN, CERN+)
PAWLICKI	77	PR D15 3196	A.J. Pawlicki *et al.*	(ANL) IJP
BRANDENB...	76C	NP B104 413	G.W. Brandenburg *et al.*	(SLAC)
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