$f'_2(1525)$

$I^G(J^{PC}) = 0^+(2^{++})$

$f'_2(1525)$ 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 ±12		BOLONKIN	86	SPEC	40 $K^- p \to K^0_S K^0_S Y$
1529 ± 3		ARMSTRONG	83B	OMEG	18.5 $K^- p \to K^- K^+ \Lambda$
1521 ± 6	650	AGUILAR-...	81B	HBC	4.2 $K^- p \to \Lambda K^+ K^-$
1521 ± 3	572	ALHARRAN	81	HBC	8.25 $K^- p \to \Lambda K \overline{K}$
1522 ± 6	123	BARREIRO	77	HBC	4.15 $K^- p \to \Lambda K^0_S K^0_S$
1528 ± 7	166	EVANGELISTA	77	OMEG	10 $K^- p \to K^+ K^- (\Lambda, \Sigma)$
1527 ± 3	120	BRANDENB...	76C	ASPK	13 $K^- p \to K^+ K^- (\Lambda, \Sigma)$
1519 ± 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 ±10		[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.				
1535 ± 5 ± 4	ABREU	96C	DLPH	$Z^0 \to K^+K^-$
1516 ± 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 ±10 ±10	BALTRUSAIT...	87	MRK3	$J/\psi \to \gamma K^+K^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
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			
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		BARKOV [11]	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				
60±20±19	ABREU	96C	DLPH	$Z^0 \to K^+ K^-$
$60\pm23^{+13}_{-20}$	BAI	96C	BES	$J/\psi \to \gamma K^+ K^-$
103±30	AUGUSTIN	88	DM2	$J/\psi \to \gamma K^+ K^-$
62±10	FALVARD [12]	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	FALVARD [13]	88	DM2	$J/\psi \to \phi K^+ K^-$

CENTRAL PRODUCTION

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

[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 ± 3.1) %
Γ_2	$\eta\eta$	(10.3 ± 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 $\langle \delta p_i \delta p_j \rangle/(\delta p_i \cdot \delta p_j)$, in percent, from the fit to parameters p_i, including the branching fractions, $x_i \equiv \Gamma_i/\Gamma_{total}$. 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 ± 2.5
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

$\Gamma(K\overline{K})$ Γ_1

VALUE (MeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{65^{+5}_{-4}}$ **OUR FIT**				
$\mathbf{63^{+6}_{-5}}$	[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.

$f_2'(1525)$ $\Gamma(i)\Gamma(\gamma\gamma)/\Gamma(\text{total})$

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

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	CL%	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. • • •					
<0.14	90	BARBERIS	00E		450 $pp \to p_f \eta\eta p_s$
<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 $J/\psi \to \gamma\eta\eta$.

$\Gamma(\pi\pi)/\Gamma_{total}$ — 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	12–15 $\pi^- p \to \pi^+\pi^- n$
<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.

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

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

$\Gamma(\pi\pi\eta)/\Gamma(K\overline{K})$ — 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	

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

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	

$\Gamma(\pi^+\pi^+\pi^-\pi^-)/\Gamma(K\overline{K})$ — 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 $K^- p$

$\Gamma(\eta\eta)/\Gamma_{total}$ — 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	00E	PL B479 59	D. Barberis *et al.*	(WA 102 Collab.)	
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)	
BEUSCH	75B	PL 60B 101	W. Beusch *et al.*	(CERN, ETH)	
AGUILAR-...	72B	PR D6 29	M. Aguilar-Benitez *et al.*	(BNL)	
AMMAR	67	PRL 19 1071	R. Ammar *et al.*	(NWES, ANL)	JP
BARNES	67	PRL 19 964	V.E. Barnes *et al.*	(BNL, SYRA)	IJPC
CRENNELL	66	PRL 16 1025	D.J. Crennell *et al.*	(BNL)	I

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ALBERICO	98	PL B438 430	A. Alberico *et al.*	(Obelix Collab.)
JENNI	83	PR D27 1031	P. Jenni *et al.*	(SLAC, LBL)
ARMSTRONG	82	PL 110B 77	T.A. Armstrong *et al.*	(BARI, BIRM, CERN+)
ETKIN	82B	PR D25 1786	A. Etkin *et al.*	(BNL, CUNY, TUFTS, VAND)
ABRAMS	67B	PRL 18 620	G.S. Abrams *et al.*	(UMD)
BARNES	65	PRL 15 322	V.E. Barnes *et al.*	(BNL, SYRA)