$f'_2(1525)$

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

f'_(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				
ullet $ullet$ $ullet$ We do not use the following data for averages, fits, limits, etc. $ullet$ $ullet$									
$1521\!\pm\!13$		TIKHOMIRO\	/ 03	SPEC	40.0 $\pi^- C \rightarrow \kappa^0_S \kappa^0_S \kappa^0_L X$				
$1547 {+10 \atop -2}$		¹ LONGACRE	86	MPS	$22 \pi^{-} p \rightarrow K^{0}_{S} K^{0}_{S} n$				
$1496^{+}_{-}\ {}^{9}_{8}$		² CHABAUD	81	ASPK	$6 \pi^- p \rightarrow K^+ K^- n$				
1497^{+}_{-} $^{8}_{9}$		CHABAUD	81	ASPK	18.4 $\pi^- p \rightarrow K^+ K^- n$				
$1492\!\pm\!29$		GORLICH	80	ASPK	17 $\pi^- p$ polarized $\rightarrow K^+ K^- n$				
$1502\!\pm\!25$		³ CORDEN	79	OMEG	12–15 $\pi^- p \to \pi^+ \pi^- n$				
1480	14	CRENNELL	66	HBC	$6.0 \ \pi^- p \rightarrow \ K^0_{\varsigma} K^0_{\varsigma} n$				

PRODUCED BY K^{\pm} BEAM

(MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
3± 1	.1 OUR	AVERAGE	Includes data fr	om tl	ne datab	lock that follows this one.
incluc	les scale	factor of 1.	1.			a a
8± 4	.3		ASTON	88 D	LASS	$11 \ K^- p \rightarrow \ K^0_S \ K^0_S \Lambda$
± 12			BOLONKIN	86	SPEC	$40 \ K^- p \rightarrow \ K^{\bar{0}}_{S} K^{\bar{0}}_{S} Y$
\pm 3			ARMSTRONG	83 B	OMEG	$18.5 \ K^- p \rightarrow \ K^- K^+ \Lambda$
\pm 6		650	AGUILAR	81 B	HBC	$4.2 \ K^- p \rightarrow \Lambda K^+ K^-$
\pm 3		572	ALHARRAN	81	HBC	$8.25 \ K^- p \rightarrow \Lambda K \overline{K}$
\pm 6		123	BARREIRO	77	HBC	$4.15 \ K^- p \rightarrow \Lambda K^0_S K^0_S$
± 7		166	EVANGELIS	77	OMEG	10 $K^- p \rightarrow K^+ K^- (\Lambda, \Sigma)$
\pm 3		120	BRANDENB	76 C	ASPK	13 $K^- p \rightarrow K^+ K^- (\Lambda, \Sigma)$
± 7		100	AGUILAR	7 2B	HBC	3.9,4.6 $K^- p \rightarrow K\overline{K}(\Lambda, \Sigma)$
We	do not u	se the follow	ing data for aver	rages,	fits, lim	its, etc. ● ● ●
± 8		61	BINON	07	GAMS	32.5 $K^- p \rightarrow \eta \eta (\Lambda / \Sigma^0)$
± 10			⁴ BARKOV	99	SPEC	40 $K^- p \rightarrow K^0_S K^0_S y$
	$\begin{array}{c} \underline{\text{(MeV)}} \\ 3 \pm 1 \\ \text{incluc} \\ 3 \pm 4 \\ \pm 12 \\ \pm 3 \\ \pm 6 \\ \pm 3 \\ \pm 6 \\ \pm 7 \\ \pm 3 \\ \pm 7 \\ \text{We c} \\ \pm 10 \end{array}$	$\begin{array}{c} \underline{(\text{MeV})} \\ 3\pm 1.1 \text{ OUR} \\ \text{includes scale} \\ 3\pm 4.3 \\ \pm 12 \\ \pm 3 \\ \pm 6 \\ \pm 3 \\ \pm 6 \\ \pm 3 \\ \pm 6 \\ \pm 7 \\ \pm 3 \\ \pm 7 \\ \text{We do not us} \\ \pm 8 \\ \pm 10 \end{array}$	EVTS 3 ± 1.1 OUR AVERAGE includes scale factor of 1. 3 ± 4.3 ± 12 ± 3 ± 6 572 ± 6 ± 3 ± 7 166 ± 7 ± 7 100 We do not use the follow ± 8 ± 10	$f(MeV)$ $EVTS$ $DOCUMENT ID$ 3 ± 1.1 OUR AVERAGEIncludes data frincludes scale factor of 1.1.Includes data fr 3 ± 4.3 ASTON ± 12 BOLONKIN ± 3 ARMSTRONG ± 6 650 ± 6 650 ± 6 123BARREIRO ± 7 166EVANGELIS ± 7 100AGUILAR ± 12 BINON ± 12 100 ± 10 4 BARKOV	$C(MeV)$ $EVTS$ $DOCUMENT ID$ 3 ± 1.1 OUR AVERAGEIncludes data from theincludes scale factor of 1.1.Includes data from the 3 ± 4.3 ASTON ± 12 BOLONKIN ± 3 ARMSTRONG ± 6 650 ± 3 572 ± 6 123 ± 7 166 ± 7 166 ± 7 100 ± 7 100 ± 8 61 ± 8 80 <td>$EVTS$$DOCUMENT ID$$TECN$$3 \pm 1.1$ OUR AVERAGEIncludes data from the databincludes scale factor of 1.1.Includes data from the datab8 ± 4.3ASTON88D± 12BOLONKIN86± 3ARMSTRONG83B$\pm 6$650AGUILAR$\pm 3$572ALHARRAN$\pm 6$123BARREIRO$\pm 7$166EVANGELIS$\pm 7$100AGUILAR$\pm 7$100AGUILAR$\pm 8$61BINON$\pm 10$4BARKOV99SPEC</td>	$EVTS$ $DOCUMENT ID$ $TECN$ 3 ± 1.1 OUR AVERAGEIncludes data from the databincludes scale factor of 1.1.Includes data from the datab 8 ± 4.3 ASTON88D ± 12 BOLONKIN86 ± 3 ARMSTRONG83B ± 6 650AGUILAR ± 3 572ALHARRAN ± 6 123BARREIRO ± 7 166EVANGELIS ± 7 100AGUILAR ± 7 100AGUILAR ± 8 61BINON ± 10 4BARKOV99SPEC

PRODUCED IN e+e ANNIHILATION AND PARTICLE DECAYS VALUE (MeV) EVTS DOCUMENT ID TECN COMMENT The data in this block is included in the average printed for a previous datablock.

1521.9⁺ **1.8 OUR AVERAGE** Error includes scale factor of 1.1. 13AN LHCB $\overline{B}_{s}^{0} \rightarrow J/\psi K^{+} K^{-}$ HTTP://PDG.LBL.GOV Page 1 Created: 5/30/2017 17:20

1525.3	3^{+}_{-}	$1.2 \\ 1.4$	2+ 1-	3.7 2.1			UEHARA	13	BELL	$\gamma \gamma \rightarrow \kappa^0_S \kappa^0_S$
1521	\pm	5					ABLIKIM	05	BES2	$J/\psi \rightarrow \phi K^+ K^-$
1518	±	1	±	3			ABE	04	BELL	$10.6 \ e^+ e^- \rightarrow e^+ e^- K^+ K^-$
1519	±	2	+1	15 5			BAI	03 G	BES	$J/\psi \rightarrow \gamma K \overline{K}$
1523	±	6			331	6	ACCIARRI	01н	L3	91, 183–209 $e^+e^- \rightarrow e^+e^- K^0_S K^0_S$
1535	±	5	±	4			ABREU	96 C	DLPH	$Z^0 \rightarrow K^+ K^- + X$
1516	±	5	+	9 15			BAI	96C	BES	$J/\psi \rightarrow \gamma K^+ K^-$
1531.6	5 ± 1	10.0)				AUGUSTIN	88	DM2	$J/\psi \rightarrow \gamma K^+ K^-$
1515	\pm	5				7	FALVARD	88	DM2	$J/\psi \rightarrow \phi K^+ K^-$
1525	±	10	± 1	10			BALTRUSAIT	.87	MRK3	$J/\psi \rightarrow \gamma K^+ K^-$
• • •	We	e do	o no	t use	the follo	win	g data for avera	ges, f	its, limit	s, etc. ● ● ●
1532	±	3	±	6	644	8,9	DOBBS	15		$J/\psi \rightarrow \gamma K^+ K^-$
1557	\pm	9	\pm	3	113	8,9	DOBBS	15		$\psi(2S) \rightarrow \gamma K^+ K^-$
1526	±	7			29	10	LEES	14H	BABR	$e^+e^- \rightarrow K^0_c K^0_c K^+ K^- \gamma$
1523	\pm	5			870	11	SCHEGELSKY	06A	RVUE	$\gamma \gamma \rightarrow K_{c}^{0} K_{c}^{0}$
1496	±	2				12	FALVARD	88	DM2	$J/\psi \rightarrow \phi K^+ K^-$

PRODUCED IN $\overline{p}p$ ANNIHILATION

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the fo	llowing data for av	erages	s, fits, lir	nits, etc. • • •
$\begin{array}{rrr} 1530 \pm 12 \\ 1513 \pm & 4 \\ 1508 \pm & 9 \end{array}$	¹³ ANISOVICH AMSLER ¹⁴ AMSLER	09 06 02	RVUE CBAR CBAR	$\begin{array}{l} 0.0 \ \overline{p} p, \ \pi N \\ 0.9 \ \overline{p} p \rightarrow K^+ K^- \ \pi^0 \\ 0.9 \ \overline{p} p \rightarrow \pi^0 \ \eta \eta, \ \pi^0 \ \pi^0 \ \pi^0 \end{array}$

CENTRAL PRODUCTION

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

PRODUCED IN ep COLLISIONS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
$1512 \pm 3^{+1.4}_{-0.5}$		¹⁵ CHEKANOV	08	ZEUS	$ep \rightarrow K^0_S K^0_S X$
	<u> </u>		~		

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

1537
$$^{+9}_{-8}$$
 84 16 CHEKANOV 04 ZEUS $ep \rightarrow K^0_S K^0_S X$

¹ From a partial-wave analysis of data using a K-matrix formalism with 5 poles.

²CHABAUD 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.

⁴ Systematic errors not estimated.

⁵ From partial wave analysis including all possible combinations of 0^{++} , 2^{++} , and 4^{++} resonances. 6 Supersedes ACCIARRI 95J.

⁷ From an analysis ignoring interference with $f_0(1710)$.

⁸ Using CLEO-c data but not authored by the CLEO Collaboration.

 $^9\,\text{From}$ a fit to a Breit-Wigner line shape with fixed $\Gamma=73$ MeV.

¹⁰ From a fit to a Breit-Wigner line shape with fixed 1 = 73 MeV.
 ¹⁰ From a fit to a Breit-Wigner line shape plus a second-order polynomial function. Systematic errors not evaluated.
 ¹¹ From analysis of L3 data at 91 and 183–209 GeV.
 ¹² From an analysis including interference with f₀(1710).

¹³ 4-poles, 5-channel K matrix fit. ¹⁴ T-matrix pole.

¹⁵ In the SU(3) based model with a specific interference pattern of the $f_2(1270)$, $a_2^0(1320)$,

and $f'_{2}(1525)$ mesons incoherently added to the $f_{0}(1710)$ and non-resonant background. ¹⁶Systematic errors not estimated.

			f'2(1525) W	IDTH		
VALUE (MeV)		D(OCUMENT I	D	COMMENT		
73 <u>+</u>							
76±	±10		PI	DG	90	For fitting	
PR VAL	ODUCED BY	' PIOI	N BEAM	T ID	TECN	COMMENT	
••	• We do not us	se the t	following data	for average	ges, fits,	limits, etc. • • •	
102	±42		TIKHOM	IROV 03	SPEC	$40.0 \ \pi^{-} C \rightarrow \ \kappa^{0}_{S} \ \kappa^{0}_{S} \ \kappa^{0}_{L} X$	
108	+ 5 - 2		¹⁷ LONGACI	RE 86	MPS	$22 \pi^- p \rightarrow \ K^0_S K^0_S n$	
69	$^{+22}_{-16}$		¹⁸ CHABAU	D 81	ASPK	$6 \pi^- p \rightarrow K^+ K^- n$	
137	$^{+23}_{-21}$		CHABAU	D 81	ASPK	18.4 $\pi^- p \rightarrow K^+ K^- n$	
150	+83 -50		GORLICH	80	ASPK	17 $\pi^- p$ polarized $\rightarrow K^+ K^- n$	
165	±42		¹⁹ CORDEN	79	OMEG	12–15 $\pi^- p \rightarrow \pi^+ \pi^- n$	
92	+39 -22		²⁰ POLYCH	RO 79	STRC	$7 \pi^- p \rightarrow n \kappa^0_S \kappa^0_S$	
PR VAL	ODUCED BY	΄ Κ± _{ΕVTS}	BEAM	ENT ID	TECN	COMMENT	
81.4	$+ \frac{2.2}{1.9}$ our a	VERAG	E Includes	data from	the data	block that follows this one.	
90 73 83	$\pm 12 \\ \pm 18 \\ \pm 15 \\ \pm 15$		ASTON BOLON ARMST	I 88 JKIN 86 FRONG 83	BD LASS 5 SPEC BB OME	$5 11 \ K^{-} p \rightarrow \ K_{S}^{0} \ K_{S}^{0} \Lambda$ $C 40 \ K^{-} p \rightarrow \ K_{S}^{0} \ K_{S}^{0} Y$ $EG 18.5 \ K^{-} p \rightarrow \ K^{-} \ K^{+} \Lambda$	
85	± 16 ± 14	650	AGUILA	4R 81	IB HBC	$4.2 K^- p \rightarrow \Lambda K^+ K^-$	
80	-11	572	ALHAR	RAN 81	L HBC	$8.25 \ K^{-} p \rightarrow \Lambda K K$	
72 69 • •	± 25 ± 22 • We do not us	166 100 se the 1	EVANG AGUILA following data	ELIS 77 \R 72 a for avera	7 OME 2B HBC ges, fits,	$\begin{array}{rcl} \text{EG } & 10 \ K^{-} \ p \rightarrow & K^{+} \ K^{-} \left(\Lambda, \Sigma\right) \\ & & 3.9, 4.6 \ K^{-} \ p \rightarrow & K \ \overline{K} \left(\Lambda, \Sigma\right) \\ & & \text{limits, etc. } \bullet \bullet \end{array}$	
92	+25 - 16	61	BINON	07	7 GAN	IS 32.5 $K^- p \rightarrow \eta \eta (\Lambda / \Sigma^0)$	
75	± 20		²¹ BARKC)V 90) SPE	$C 40 \ K^- p \rightarrow \ K^0_S K^0_S y$	
62	$^{+19}_{-14}$	123	BARRE	IRO 77	7 НВС	$4.15 \ K^- p \rightarrow \Lambda K^0_{\varsigma} K^0_{\varsigma}$	
61	± 8	120	BRAND)ENB 76	SC ASP	$K 13 \ K^- p \rightarrow \ K^+ \ K^- (\Lambda, \Sigma)$	
ΗТ	TP://PDG.L	BL.GO)V	Page 3		Created: 5/30/2017 17:20	

PRODUCED IN e^+e^- ANNIHILATION AND PARTICLE DECAYS

VALUE (MeV)EVTSDOCUMENT IDTECNCOMMENTThe data in this block is included in the average printed for a previous datablock.

81.4	4 <mark>+ 2.</mark> - 2.	4 OUR AN	/ERAGE					
84	± 6	$^{+10}_{-5}$			AAIJ	13AN	I LHCB	$\overline{B}^0_s \rightarrow J/\psi K^+ K^-$
75	$^{+12}_{-10}$	$^{+16}_{-8}$	5.5k	22	ABLIKIM	13N	BES3	$e^+e^- \rightarrow J/\psi \rightarrow \gamma \eta \eta$
82.9	$9^+_{-2.2}$	$1 + 3.3 \\ 2 - 2.0$			UEHARA	13	BELL	$\gamma \gamma \rightarrow \kappa^0_S \kappa^0_S$
77 82	$\pm 15 \\ \pm 2$	± 3			ABLIKIM ABE	05 04	BES2 BELL	$J/\psi \rightarrow \phi K^+ K^-$ 10.6 e^+ e^- \rightarrow e^+ e^- K^+ K^-
75	± 4	$^{+15}_{-5}$			BAI	03 G	BES	$J/\psi \rightarrow \gamma K \overline{K}$
100	± 15	-	331	23	ACCIARRI	01н	L3	91, 183–209 $e^+e^- → e^+e^- K^0_S K^0_S$
60	± 20	± 19			ABREU	96 C	DLPH	$Z^0 \rightarrow K^+ K^- + X$
60	± 23	$^{+13}_{-20}$			BAI	9 6C	BES	$J/\psi \rightarrow \gamma K^+ K^-$
103	± 30				AUGUSTIN	88	DM2	$J/\psi \rightarrow \gamma K^+ K^-$
62	± 10			24	FALVARD	88	DM2	$J/\psi \rightarrow \phi K^+ K^-$
85	± 35	do not uco	the fello		BALTRUSAIT	87	MRK3	$J/\psi \rightarrow \gamma K^+ K^-$
•••	• vve (io not use		יוויא 25	g data for avera	iges, ii		\pm $-$
37	± 12		29	25	LEES	14H	BABK	${}^{e^+e^+}_{K^0_{S}} {}^{e^+}_{K^0_{S}} K^+ K^- \gamma$
104	± 10		870	26	SCHEGELSKY	′ 06A	RVUE	$\gamma \gamma \rightarrow K_{S}^{0} K_{S}^{0}$
100	\pm 3			27	FALVARD	88	DM2	$J/\psi \rightarrow \phi K^+ K^-$
PRO	DUC		ο ΔΝΝΙ	HI	LATION			
VALU	E (MeV)))		Ĺ	DOCUMENT ID		TECN	COMMENT
79 =	E 8		:	28 /	AMSLER	02	CBAR	$0.9 \ \overline{p} p \rightarrow \pi^0 \eta \eta, \ \pi^0 \pi^0 \pi^0$
• • •	• We d	do not use	e the follow	wing	g data for avera	ges, fi	its, limit	s, etc. ● ● ●
128	±20		:	29 _/	ANISOVICH	09	RVUE	0.0 <u>p</u> p, πN
76=	E 6			A	AMSLER	06	CBAR	$0.9 \overline{p} p \rightarrow K^+ K^- \pi^0$
CEN	ITRA	l prod		N				
VALU	E (MeV))			DOCUMENT ID		TECN	COMMENT
70±	25				BARBERIS	99	OMEG	450 $pp \rightarrow p_s p_f K^+ K^-$

PRODUCED IN ep COLLISIONS

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
$83 \pm 9^{+5}_{-4}$		³⁰ CHEKANOV	08	ZEUS	$ep \rightarrow K^0_S K^0_S X$
• • • We do not use th	e followir	ng data for averages	, fits,	limits, e	tc. ● ● ●
50^{+34}_{-22}	84	³¹ CHEKANOV	04	ZEUS	$ep ightarrow \ K^0_S K^0_S X$
17				<i>c</i>	

 17 From a partial-wave analysis of data using a K-matrix formalism with 5 poles. ¹⁸ CHABAUD 81 is a reanalysis of PAWLICKI 77 data.

 19 From an amplitude analysis where the $f_2'(1525)$ width and elasticity are in complete

disagreement with the values obtained from \overline{KK} channel, making the solution dubious. ²⁰ From a fit to the *D* with $f_2(1270)-f'_2(1525)$ interference. Mass fixed at 1516 MeV.

²¹ Systematic errors not estimated.

 22 From partial wave analysis including all possible combinations of 0⁺⁺, 2⁺⁺, and 4⁺⁺ resonances. 23 Supersedes ACCIARRI 95J.

²⁴ From an analysis ignoring interference with $f_0(1710)$.

 25 From a fit to a Breit-Wigner line shape plus a second-order polynomial function. Systematic errors not evaluated. ²⁶ From analysis of L3 data at 91 and 183–209 GeV. ²⁷ From an analysis including interference with $f_0(1710)$.

²⁸ T-matrix pole.

²⁹ 4-poles, 5-channel K matrix fit.

³⁰ In the SU(3) based model with a specific interference pattern of the $f_2(1270)$, $a_2^0(1320)$,

and $f'_{2}(1525)$ mesons incoherently added to the $f_{0}(1710)$ and non-resonant background. ³¹ Systematic errors not estimated.

	Mode	Fraction (Γ_i/Γ)
Γ ₁	KK	(88.7 ±2.2)%
Γ ₂	$\eta \eta$	(10.4 ± 2.2) %
Г ₃	$\pi \pi$	(8.2 ± 1.5) $ imes 10^{-3}$
Г4	$K\overline{K}^*(892)+$ c.c.	
Γ ₅	$\pi K \overline{K}$	
Г ₆	$\pi\pi\eta$	
Γ ₇	$\pi^+\pi^+\pi^-\pi^-$	
Г ₈	$\gamma \gamma$	(1.10 ± 0.14) $ imes$ 10 ⁻⁶

$f'_{2}(1525)$ DECAY MODES

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 17 measurements and one constraint to determine 5 parameters. The overall fit has a $\chi^2 = 14.3$ for 13 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, $x_i \equiv \Gamma_i / \Gamma_{\text{total}}$. The fit constrains the x_i whose labels appear in this array to sum to one.

<i>x</i> 2	-100			
x ₃	-6	-1		
x8	-6	6	1	
Г	-23	23	-1	-56
	<i>x</i> ₁	<i>x</i> ₂	<i>x</i> 3	<i>x</i> 8

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	Mode	Rate (MeV)
Г1	KK	65 +5 -4
Г ₂	$\eta \eta$	7.6 ± 1.8
Г ₃	$\pi\pi$	0.60 ± 0.12
Г ₈	$\gamma \gamma$	(8.1 ± 0.9) $\times 10^{-5}$

f[']₂(1525) PARTIAL WIDTHS

Γ(KK) VALUE (MeV)	DOCUMENT ID	TECN	Γ ₁
65 ⁺⁵ ₋₄ OUR FIT			
63 ⁺⁶ -5	³² LONGACRE 86	MPS	$22 \pi^- p \rightarrow K^0_S K^0_S n$
$\Gamma(\eta \eta)$			Г2
VALUE (MeV) EVTS	DOCUMENT ID	TECN	COMMENT
7.0±1.8 OUR FIT	wing data for averages fits	limits (
5 0+0 8 870	³³ SCHEGELSKY 064	RVUE	$\gamma \gamma \rightarrow K^0 K^0$
24 + 3	³² LONGACRE 86	MPS	$22 \pi^{-} n \rightarrow K^{0} K^{0} n$
-1	Eond/Che of	WI 5	22 1 p 7 1 S 1 S 1
$\Gamma(\pi\pi)$			Гз
VALUE (MeV) EVTS	DOCUMENT ID	TECN	COMMENT
0.60±0.12 OUR FIT	20		
1.4 + 1.0 - 0.5	³² LONGACRE 86	MPS	$22 \pi^{-} p \rightarrow K^{0}_{S} K^{0}_{S} n$
$\bullet \bullet \bullet$ We do not use the follow	wing data for averages, fits	, limits, e	etc. • • •
$0.2 \begin{array}{c} +1.0 \\ -0.2 \end{array}$ 870	³³ SCHEGELSKY 06A	RVUE	$\gamma\gamma \rightarrow \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$
$\Gamma(\gamma\gamma)$			Гя
VALUE (keV) EVTS	DOCUMENT ID	TECN	COMMENT
0.081±0.009 OUR FIT			
• • We do not use the follo	wing data for averages, fits	, limits, e	etc. • • •
0.13 ±0.03 870	³³ SCHEGELSKY 06A	RVUE	$\gamma \gamma \rightarrow K^0_S K^0_S$
³² From a partial-wave analys	sis of data using a K-matri>	< formalis	m with 5 poles.
³³ From analysis of L3 data a and SU(3) relations.	t 91 and 183–209 GeV, usin	ng $\Gamma(f'_2(1$	$(.525) \rightarrow KK) = 68 \text{ MeV}$

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

Г(К 7	к) × Г	(γγ)/Γ	total	DOCUMENT ID		TECN	COMMENT	Γ ₁ Γ ₈ /Γ
0 072			<u>T</u>	DOCUMENT ID		TECN	COMINENT	
0.072	± 0.007	OUR A	VERAGE					
0.048	$+0.067 \\ -0.008$	$+0.108 \\ -0.012$		UEHARA	13	BELL	$\gamma\gamma \rightarrow \kappa_{2}^{0}$	ς κ ⁰ ς
0.0564	±0.0048	8 ± 0.0116	5	ABE	04	BELL	$10.6 \ e^{+} \ e^{-}$	$ \rightarrow $
0.076	± 0.006 ± 0.008	± 0.011 +0.015	331 ³ 3	⁴ ACCIARRI ⁵ AI BRECHT	01н 90g	L3 ARG	$e^+e^- \rightarrow e^+e^- \rightarrow e^- \rightarrow e^- \rightarrow e^+e^- \rightarrow e^- \rightarrow e$	$e^{+}e^{-}K_{S}^{0}K_{S}^{0}$ $e^{+}e^{-}K^{+}K^{-}$
0.11	$+0.03 \\ -0.02$	±0.02		BEHREND	89C	CELL	$e^+e^- \rightarrow$	$e^+e^-K^0_SK^0_S$
0.10	$^{+0.04}_{-0.03}$	$^{+0.03}_{-0.02}$		BERGER	88	PLUT	$e^+e^- \rightarrow$	$e^+ e^- \kappa^0_S \kappa^0_S$
0.12 0.11	± 0.07 ± 0.02	$\pm 0.04 \\ \pm 0.04$	3	⁵ AIHARA ⁵ AI THOFF	86B 83	TPC TASS	$e^+e^- \rightarrow e^+e^- \rightarrow$	$e^+e^-K^+K^-$ $e^+e^-K\overline{K}$
• • •	We do n	ot use th	e followir	ng data for avera	ages, fi	ts, limit	s, etc. • • •	•
0.0314	+±0.0050	0 ± 0.0077	, 3	⁶ ALBRECHT	90 G	ARG	$e^+e^- \rightarrow$	e ⁺ e ⁻ K ⁺ K ⁻
 ³⁵ Using an incoherent background. ³⁶ Using a coherent background. <i>f</i>'₂(1525) BRANCHING RATIOS 								
			f'_(15	25) BRANCH	IING	RATIO	S	
Γ(η η)/Г _{total}		f' ₂ (15	25) BRANCH	ling	RATIO	S	 Г ₂ /Г
Γ(ηη VALUE)/Г _{total}		f'_(15	25) BRANCH	lING	RATIO	S <u>COMMENT</u>	Г ₂ /Г
Γ(ηη <u>VALUE</u>)/F _{total} We do n	ot use th	f'_(15	25) BRANCH	IING ages, fi	RATIO <u>TECN</u> ts, limit	S <u>COMMENT</u> s, etc. • • •	Г ₂ /Г
$\Gamma(\eta \eta)$ <i>VALUE</i> ••• seen 0.10±) /F_{total} We do n 0.03	ot use th	f'_(15 e followir 37	25) BRANCH	HING ages, fi 10A N 91	TECN ts, limit BELL GAM4	S <u>COMMENT</u> s , etc. • • • 10.6 e^+e^- 300 π^-p^-	
Γ(ηη <u>VALUE</u> seen 0.10± 37 Cc of)/ F_{total} We do n 0.03 ombining CBAL, N	ot use th results o /IRK3 and	f'2(15 e followin 37 f GAM4 v d DM2 of	25) BRANCH DOCUMENT ID \log data for avera UEHARA 7 PROKOSHKIN with those of Wa $n J/\psi \rightarrow \gamma \eta \eta$.	HING ages, fi 10A N 91 A76 or	TECN ts, limit BELL GAM4 or K K ce	S $\frac{COMMENT}{s, etc. \bullet \bullet}$ $10.6 e^+ e^-$ $300 \pi^- p^-$ entral produ	Γ2/Γ
$\Gamma(\eta\eta)$ VALUE seen 0.10 \pm 37 Cc of $\Gamma(\eta\eta)$)/F _{total} We do n 0.03 ombining CBAL, N)/F(K7	ot use th results o /IRK3 an ()	f ₂ (15 e followir 37 f GAM4 v d DM2 of	25) BRANCH <u>DOCUMENT ID</u> ng data for avera UEHARA PROKOSHKIN with those of W. n $J/\psi \rightarrow \gamma \eta \eta$.	HING ages, fi 10A N 91 A76 or	RATIO <u>TECN</u> ts, limit BELL GAM4 m K K ce	S <u>COMMENT</u> s, etc. • • • $10.6 e^+ e^-$ $300 \pi^- p^-$ entral produ	$ \Gamma_2/\Gamma $ - → $e^+e^-\eta\eta$ → $\pi^-p\eta\eta$ ction and results $ \Gamma_2/\Gamma_1 $
$\Gamma(\eta\eta)$ VALUE seen 0.10 \pm 37 Cc of $\Gamma(\eta\eta)$ VALUE 0.118)/ Γ_{total} We do n 0.03 Ombining CBAL, N)/ Γ(<i>K</i>7	ot use th results o //RK3 and //RK3 and	f'_2(15 e followin 37 f GAM4 v d DM2 of <i>L% <u>EVT</u></i> .	25) BRANCH DOCUMENT ID \log data for avera UEHARA PROKOSHKIN with those of W. $m J/\psi \rightarrow \gamma \eta \eta$. S DOCUMEN	HING ages, fi 10A N 91 A76 or T ID	TECN ts, limit BELL GAM4 or K K ce	S $\frac{COMMENT}{s, etc. \bullet \bullet c}$ 10.6 e^+e^- 300 π^-p^- entral produ	$ \Gamma_2/\Gamma $ $ \rightarrow e^+e^-\eta\eta $ $ \rightarrow \pi^-p\eta\eta $ ction and results $ \Gamma_2/\Gamma_1 $ ENT
Γ(ηη <u>value</u> seen 0.10± 37 Cc of Γ(ηη <u>value</u> 0.118: 0.115:)/Γ _{total} We do n 0.03 Ombining CBAL, N)/Γ(<i>K</i> 7 ±0.028 C ±0.028 C	ot use th results or ARK3 and COUR FIT	f'_2(15 e followir 37 f GAM4 v d DM2 of <u>L% EVT.</u> RAGE	25) BRANCH <u>DOCUMENT ID</u> ng data for avera UEHARA PROKOSHKIN with those of W. n $J/\psi \rightarrow \gamma \eta \eta$. <u>DOCUMEN</u>	HING ages, fi 10A N 91 A76 or T ID	RATIO <u>TECN</u> ts, limit BELL GAM4 o K K ce	S <u>COMMENT</u> s, etc. • • • $10.6 e^+ e^-$ $300 \pi^- p^-$ entral produ	Γ_{2}/Γ $\xrightarrow{-} e^{+}e^{-}\eta\eta$ $ \pi^{-}p\eta\eta$ ction and results Γ_{2}/Γ_{1} ENT
Γ(ηη <u>VALUE</u> seen 0.10± 37 Cc of Γ(ηη <u>VALUE</u> 0.118 0.115 0.119)/ Г total We do n 0.03 Ombining CBAL, N)/ Г(К7 ±0.028 С ±0.028 С ±0.015 ±	ot use th results or ARK3 and COUR FIT OUR FIT OUR AVE 0.036	f'_2(15 e followin 37 f GAM4 v d DM2 of <u>1% EVT.</u> RAGE 6:	25) BRANCH DOCUMENT ID \log data for avera UEHARA PROKOSHKIN with those of W. $n J/\psi \rightarrow \gamma \eta \eta$. S DOCUMEN M 38 BINON	HING ages, fi 10A N 91 'A76 or	TECN ts, limit BELL GAM4 or K K ce <u>TE</u> 07 GA	S $\frac{COMMENT}{s, etc.} \bullet \bullet \phi$ 10.6 e^+e^- 300 π^-p^- entral produ	Γ_{2}/Γ $\xrightarrow{-} e^{+}e^{-}\eta\eta$ $\xrightarrow{-} \pi^{-}p\eta\eta$ ction and results Γ_{2}/Γ_{1} ENT $(-p \rightarrow (A/\Sigma^{0}))$
Γ(ηη <i>VALUE</i> •••• seen 0.10± 37 Ccc of Γ(ηη <i>VALUE</i> 0.118 0.115 0.119)/Γ _{total} We do n 0.03 ombining CBAL, N)/Γ(<i>Κ</i> 7 ±0.028 C ±0.028 C ±0.015 ±	ot use th results or ARK3 and T DUR FIT DUR FIT DUR AVE 0.036	f'_2(15 e followir 37 f GAM4 v d DM2 of <u>1% EVT.</u> RAGE 6:	25) BRANCH DOCUMENT ID and data for averations UEHARA PROKOSHKIN with those of Ward Multiply $\rightarrow \gamma \eta \eta$. S <u>DOCUMEN</u> 1 ³⁸ BINON ³⁹ PROKOS	HING ages, fi 10A V 91 A76 or T ID	TECN ts, limit BELL GAM4 KK C6 07 G1 G1	S $\frac{COMMENT}{10.6 e^+ e^-}$ 300 $\pi^- p^-$ entral produ $\frac{CCN}{2CN} = \frac{COMM}{\eta \eta}$ AMS 32.5 F $\eta \eta$	Γ_{2}/Γ F_{2}/Γ F_{2}/Γ F_{2}/Γ_{1} Γ_{2}/Γ_{1} F_{2}/Γ_{1} F_{2}/Γ_{1} F_{2}/Γ_{1} F_{2}/Γ_{1}
Γ(ηη <u>VALUE</u> seen 0.10± 37 Cc of Γ(ηη <u>VALUE</u> 0.118 0.119 0.111 0.111)/Γ _{total} We do n 0.03 Ombining CBAL, N)/Γ(<i>Κ</i> 7 ±0.028 C ±0.015 ± ±0.04 We do n	ot use th results or ARK3 and COUR FIT OUR FIT OUR AVE 0.036 ot use th	f'_2(15 e followin 37 f GAM4 v d DM2 of <i>L% <u>EVT</u>.</i> RAGE 6: e followin	25) BRANCH DOCUMENT ID \log data for avera UEHARA PROKOSHKIN with those of W. $n J/\psi \rightarrow \gamma \eta \eta$. S DOCUMEN M 38 BINON 39 PROKOS \log data for avera	HING ages, fi 10A N 91 (A76 or (A76 or))))))))))))))))))))))))))))))))))))	TECN ts, limit BELL GAM4 KK 07 91 GA 91 GA	S $\frac{COMMENT}{s, etc. \bullet \bullet 0}$ s, etc. • • • • • • • • • • • • • • • • • • •	Γ_{2}/Γ $\xrightarrow{-} e^{+}e^{-}\eta\eta$ $\xrightarrow{-} \pi^{-}p\eta\eta$ ction and results Γ_{2}/Γ_{1} ENT (Λ/Σ^{0}) $\xrightarrow{-} p \rightarrow \pi^{-}p\eta\eta$
Γ(ηη <u>value</u> ••• seen 0.10± 37 Cc of Γ(ηη <u>value</u> 0.118: 0.119: 0.111 ••• < 0.14)/Γ _{total} We do n 0.03 ombining CBAL, N)/Γ(<i>Κ</i> 7 ±0.028 C ±0.028 C ±0.015 ± ±0.04 We do n	ot use th results o ARK3 an COUR FIT OUR FIT OUR AVE 0.036 ot use th 9	f'_2(15 e followir 37 f GAM4 v d DM2 ol 20 E E E 6 C C C C C C C C C C	25) BRANCH DOCUMENT ID and data for averations UEHARA PROKOSHKIN with those of Ward m $J/\psi \rightarrow \gamma \eta \eta$. <u>5</u> <u>DOCUMEN</u> 1 ³⁸ BINON ³⁹ PROKOS and data for averations BARBER	HING ages, fi 10A V 91 A76 or A76 or T ID HKIN ages, fi IS	TECN ts, limit BELL GAM4 KK ce 07 91 GA ts, limit	S $\frac{COMMENT}{S, etc. \bullet \bullet}$ s, etc. • • • • 10.6 e ⁺ e ⁻ 300 $\pi^- p^-$ entral produ $\frac{CCN}{COMM}$ AMS 32.5 H^{-}_{0} AMS 32.5 H^{-}_{0} AMS 32.5 P^{-}_{0} AMS 32.5 P^{-}_{0} AM	Γ_{2}/Γ F_{2}/Γ F_{2}/Γ_{1} Γ_{2}/Γ_{1} Γ_{2}/Γ_{1} Γ_{2}/Γ_{1} Γ_{2}/Γ_{1} Γ_{2}/Γ_{1} Γ_{2}/Γ_{1} Γ_{2}/Γ_{1} Γ_{2}/Γ_{1}

³⁸ Using the compilation of the cross sections for $f'_2(1525)$ production in $K^- p$ collisions from ASTON 88D. ³⁹ Combining results of GAM4 with those of WA76 on $K\overline{K}$ central production and results of CBAL, MRK3 and DM2 on $J/\psi \rightarrow \gamma \eta \eta$.

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< 0.50

67 HBC 4.6,5.0 K⁻ p

Citation: C. Patrignani et al. (Particle Data Group), Chin. Phys. C, 40, 100001 (2016) and 2017 update

$\Gamma(\pi\pi)/\Gamma_{total}$					Г ₃ /Г
VALUE C	<u>.L%</u>	DOCUMENT ID		TECN	COMMENT
0.0082±0.0016 OU		-			
0.0075 ± 0.0016 OUI	K AVERAG		00		10 - k + k -
0.007 ± 0.002	40	COSTA	80	UMEG	$10 \pi p \rightarrow \kappa \kappa n$
0.027 - 0.013	40 41	GORLICH	80	ASPK	17,18 $\pi^- p$
0.0075 ± 0.0025	40,41	MARTIN	79	RVUE	
• • • We do not use t	he tollowir	ng data for aver	ages,	tits, lim	its, etc. ● ● ●
< 0.06 9	5	AGUILAR	81B	HBC	$4.2 \ K^- p \rightarrow \Lambda K^+ K^-$
0.19 ± 0.03	_	CORDEN	79	OMEG	$12-15 \pi^- p \rightarrow \pi^+ \pi^- n$
< 0.045 9	15 40	BARREIRO	((HBC	$4.15 K p \rightarrow \Lambda K_{S}^{\circ} K_{S}^{\circ}$
0.012 ±0.004	40	PAWLICKI	77	SPEC	$6 \pi N \rightarrow K^+ K^- N$
< 0.063 9	0 40	BRANDENB	76C	ASPK	$13 K^- p \rightarrow K^+ K^- (\Lambda, \Sigma)$
<0.0086		BEUSCH	19 B	USPK	$8.9 \pi p \rightarrow K^{\circ} K^{\circ} n$
40 Assuming that the	$2^{(1525)}$ i	s produced by a	n one-	pion exc	hange production mechanism
⁴¹ MARTIN 79 uses t	he PAWLI	CKI 77 data wi	th difl	ferent in	put value of the $f_2'(1525) \rightarrow$
KK branching ration	0.				
$\Gamma(\pi\pi)/\Gamma(K\overline{K})$					Гз/Г1
VALUE		<u>DOCUMENT</u>	ID	TE	CN <u>COMMENT</u>
0.0092 ± 0.0018 OUR F	ŦΓ				
0.075 ±0.035		AUGUSTIN	N 8	37 DN	$12 J/\psi \to \gamma \pi^+ \pi^-$
$\left[\Gamma(K\overline{K}^*(892) + c.c) \right]$	$(-) + \Gamma(\pi)$	<u>κ</u> κ)]/Γ(κ]	<u></u> 		([4+[5)/[1
VALUE	CL%	DOCUMENT	-) ID	TE	CN COMMENT
• • • We do not use t	he followir	ng data for aver	ages.	fits, lim	its, etc. ● ● ●
<0.35	95			728 HR	$3946 K^{-} p$
<0.4	67	AMMAR	··· /	57 HB	BC 5.5,4.0 K p
$\Gamma(\pi\pi\eta)/\Gamma(KK)$					Γ ₆ /Γ ₁
VALUE	<u>CL%</u>	<u>DOCUMENT</u>	ID	TE	<u>CN</u> <u>COMMENT</u>
• • • We do not use t	he followir	ng data for aver	ages,	fits, lim	its, etc. ● ● ●
<0.41	95	AGUILAR-	7	72в НВ	3C 3.9,4.6 K ⁻ p
<0.3	67	AMMAR	6	57 HB	BC
$\Gamma(\pi^+\pi^+\pi^-\pi^-)/\Gamma$	$(K\overline{K})$				Γ ₇ /Γ ₁
	(~~) (1%	DOCUMENT	חו	TE	• () • 1 CN COMMENT
• • • We do not use t	he followir	ng data for aver	ages	fits, lim	its. etc. • • •
< 0.32	05		-8-5,		$R = 3046 K^{-}$
<0.3∠	90	AGUILAR-	1		5.9,4.0 m p

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f'₂(1525) REFERENCES

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AAIJ	13AN	PR D87 072004	R. Aaij <i>et al.</i>	(LHCb Collab.)
ABLIKIM	13N	PR D87 092009	Ablikim M. <i>et al.</i>	(BES III Collab.)
UEHARA	13	PTEP 2013 123C01	S. Uehara <i>et al.</i>	(BELLE Collab.)
UEHARA	10A	PR D82 114031	S. Uehara <i>et al.</i>	(BELLE Collab.)
ANISOVICH	09	IJMP A24 2481	V.V. Anisovich, A.V. Sarants	ev (
CHEKANOV	08	PRL 101 112003	S. Chekanov <i>et al.</i>	(ZEUS Collab.)
BINON	07	PAN 70 1713	F. Binon <i>et al.</i>	(GAMS Collab.)
	06	DI DE20 165	LIDO. C Amelor at al	(CRAP Collab)
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ΠΛΠΟΙΝΙΙΚΟν	05	Translated from VAE 66 S	G.D. TIKNOMIROV <i>et al.</i>	
AMSLER	02	FPI C23 20	C Ameler et al	
ACCIARRI	02 01H	PI B501 173	M Acciarri et al	(13 Collab)
BARBERIS	00F	PI B479 59	D Barberis <i>et al</i>	$(W/A \ 102 \ Collab.)$
BARBERIS	00	PL B453 305	D. Barberis et al.	(Omera Expt.)
BARKOV	00	IETPI 70 248	B P Barkov et al	(Olliega Expt.)
DAILIOV	99	Translated from 7FTFP 7	0 242	
ABREU	96C	PL B379 309	P. Abreu <i>et al.</i>	(DELPHI_Collab.)
BAI	96C	PRL 77 3959	J.Z. Bai <i>et al</i> .	(BES Collab.)
ACCIARRI	951	PL B363 118	M Acciarri <i>et al</i>	(L3 Collab.)
PROKOSHKIN	91	SPD 36 155	Y.D. Prokoshkin	(GAM2, GAM4 Collab.)
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ALBRECHT	90G	ZPHY C48 183	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
PDG	90	PL B239 1	J.J. Hernandez <i>et al.</i>	(IFIĊ, BOST, CIT+)
BEHREND	89C	ZPHY C43 91	H.J. Behrend <i>et al.</i>	(CELLO Collab.)
ASTON	88D	NP B301 525	D. Aston <i>et al.</i>	(SLAC, NAGÒ, CINC, INUS)
AUGUSTIN	88	PRL 60 2238	J.E. Augustin <i>et al.</i>	(DM2 Collab.)
BERGER	88	ZPHY C37 329	C. Berger et al.	(PLUTO Collab.)
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LONGACRE	86	PL B177 223	R.S. Longacre <i>et al.</i>	(BNL, BRAN, CUNY+)
ALTHOFF	83	PL 121B 216	M. Althoff <i>et al.</i>	(TASSO Collab.)
ARMSTRONG	83B	NP B224 193	T.A. Armstrong <i>et al.</i>	(BARI, BIRM, CERN+)
AGUILAR	81B	ZPHY C8 313	M. Aguilar-Benitez <i>et al.</i>	(CERN, CDEF+)
ALHARRAN	81	NP B191 26	S. Al-Harran <i>et al.</i>	(BIRM, CERN, GLAS+)
CHABAUD	81	APP B12 575	V. Chabaud <i>et al.</i>	(CERN, CRAC, MPIM)
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AGUILAK	12B	PK U0 29	IVI. Aguilar-Benitez et al.	
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