Reference = LEES 14H; PR D89 092002
Verifier code = RONEY

Normally we send all verifications for one experiment to one person, usually the spokesperson or data-analysis coordinator, who then distributes them to the appropriate people. Please tell us if we should send the verifications for your experiment to someone else.

PLEASE READ NOW

PLEASE REPLY WITHIN ONE WEEK

John Michael Roney

EMAIL: mroney@uvic.ca

March 20, 2017

Dear Colleague,

(1) Please check the results of your experiment carefully. They are marked.

(2) Please reply within one week.

(3) Please reply even if everything is correct.

(4) IMPORTANT!! Please tell WHICH papers you are verifying. We have lots of requests out.

(5) Feel free to make comments on our treatment of any of the results (not just yours) you see.

Thank you for helping us make the Review accurate and useful.

Sincerely,

Simon Eidelman
BINP, Budker Inst. of Nuclear Physics
Prospekt Lavrent'eva 11
RU-630090 Novosibirsk
Russian Federation

EMAIL: simon.eidelman@cern.ch

LIGHT UNFLAVORED MESONS
$(S = C = B = 0)$

NODE=MXXX005

For $I = 1$ (π, b, ρ, a): $u\overline{d}$, $(u\overline{u}-d\overline{d})/\sqrt{2}$, $d\overline{u}$;
for $I = 0$ (η, η', h, h', ω, ϕ, f, f'): $c_1(u\overline{u} + d\overline{d}) + c_2(s\overline{s})$

NODE=MXXX005

$\phi(1020)$

$I^G(J^{PC}) = 0^-(1^{--})$

NODE=M004

$\phi(1020)$ MASS

NODE=M004M

NODE=M004M

	VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT	
	1019.460±0.016 OUR AVERAGE						
	1019.457±0.061	610k	KOZYREV	16	CMD3	$e^+e^- \to K^0_S K^0_L$	
YOUR DATA	1019.462±0.042±0.056	28k	[1] LEES	14H	BABR	$e^+e^- \to K^0_S K^0_L \gamma$	
	1019.51 ±0.02 ±0.05		[2] LEES	13Q	BABR	$e^+e^- \to K^+K^-\gamma$	
	1019.30 ±0.02 ±0.10	105k	AKHMETSHIN	06	CMD2	0.98–1.06 $e^+e^- \to \pi^+\pi^-\pi^0$	
	1019.52 ±0.05 ±0.05	17.4k	AKHMETSHIN	05	CMD2	0.60-1.38 $e^+e^- \to \eta\gamma$	
	1019.483±0.011±0.025	272k	[3] AKHMETSHIN	04	CMD2	$e^+e^- \to K^0_L K^0_S$	
	1019.42 ±0.05	1900k	[4] ACHASOV	01E	SND	$e^+e^- \to K^+K^-$, $K_S K_L$, $\pi^+\pi^-\pi^0$	
	1019.40 ±0.04 ±0.05	23k	AKHMETSHIN	01B	CMD2	$e^+e^- \to \eta\gamma$	
	1019.36 ±0.12		[5] ACHASOV	00B	SND	$e^+e^- \to \eta\gamma$	
	1019.38 ±0.07 ±0.08	2200	[6] AKHMETSHIN	99F	CMD2	$e^+e^- \to \pi^+\pi^- \geq 2\gamma$	
	1019.51 ±0.07 ±0.10	11169	AKHMETSHIN	98	CMD2	$e^+e^- \to \pi^+\pi^-\pi^0$	
	1019.5 ±0.4		BARBERIS	98	OMEG	450 $pp \to pp2K^+2K^-$	
	1019.42 ±0.06	55600	AKHMETSHIN	95	CMD2	$e^+e^- \to$ hadrons	
	1019.7 ±0.3	2012	DAVENPORT	86	MPSF	400 pA $\to$ 4KX	
	1019.7 ±0.1 ±0.1	5079	ALBRECHT	85D	ARG	10 $e^+e^- \to K^+K^-$X	
	1019.3 ±0.1	1500	ARENTON	82	AEMS	11.8 polar. $pp \to KK$	
	1019.67 ±0.17	25080	[7] PELLINEN	82	RVUE		
	1019.52 ±0.13	3681	BUKIN	78C	OLYA	$e^+e^- \to$ hadrons	
	• • • We do not use the following data for averages, fits, limits, etc. • • •						
	1019.48 ±0.01		LEES	13F	BABR	$D^+ \to K^+K^-\pi^+$	
	1019.441±0.008±0.080	542k	[8] AKHMETSHIN	08	CMD2	1.02 $e^+e^- \to K^+K^-$	
	1019.63 ±0.07	12540	[9] AUBERT,B	05J	BABR	$D^0 \to \overline{K}^0 K^+K^-$	
	1019.8 ±0.7		ARMSTRONG	86	OMEG	85 $\pi^+/pp \to \pi^+/p4Kp$	
	1020.1 ±0.11	5526	[9] ATKINSON	86	OMEG	20–70 γp	
	1019.7 ±1.0		BEBEK	86	CLEO	$e^+e^- \to \Upsilon(4S)$	
	1019.411±0.008	642k	[10] DIJKSTRA	86	SPEC	100–200 $\pi^\pm$, $\overline{p}$, p, $K^\pm$, on Be	
	1020.9 ±0.2		[9] FRAME	86	OMEG	13 $K^+p \to \phi K^+p$	
	1021.0 ±0.2		[9] ARMSTRONG	83B	OMEG	18.5 $K^-p \to K^-K^+\Lambda$	
	1020.0 ±0.5		[9] ARMSTRONG	83B	OMEG	18.5 $K^-p \to K^-K^+\Lambda$	OCCUR=2
	1019.7 ±0.3		[9] BARATE	83	GOLI	190 π^-Be $\to 2\mu$X	
	1019.8 ±0.2 ±0.5	766	IVANOV	81	OLYA	1–1.4 $e^+e^- \to K^+K^-$	
	1019.4 ±0.5	337	COOPER	78B	HBC	0.7–0.8 $\overline{p}p \to K^0_S K^0_L \pi^+\pi^-$	
	1020 ±1	383	[9] BALDI	77	CNTR	10 $\pi^-p \to \pi^-\phi p$	OCCUR=2
	1018.9 ±0.6	800	COHEN	77	ASPK	6 $\pi^\pm N \to K^+K^-N$	
	1019.7 ±0.5	454	KALBFLEISCH	76	HBC	2.18 $K^-p \to \Lambda K\overline{K}$	
	1019.4 ±0.8	984	BESCH	74	CNTR	2 $\gamma p \to pK^+K^-$	

1020.3	±0.4	100		BALLAM	73	HBC	2.8–9.3 γp
1019.4	±0.7			BINNIE	73B	CNTR	$\pi^- p \rightarrow \phi n$
1019.6	±0.5	120	11	AGUILAR-...	72B	HBC	3.9,4.6 $K^- p \rightarrow \Lambda K^+ K^-$
1019.9	±0.5	100	11	AGUILAR-...	72B	HBC	3.9,4.6 $K^- p \rightarrow K^- p K^+ K^-$
1020.4	±0.5	131		COLLEY	72	HBC	10 $K^+ p \rightarrow K^+ p \phi$
1019.9	±0.3	410		STOTTLE...	71	HBC	2.9 $K^- p \rightarrow \Sigma / \Lambda K \overline{K}$

OCCUR=2

YOUR NOTE

[1] Using a vector meson dominance model with contribution from $\phi(1020)$ and higher mass excitations of $\rho(770), \omega(782)$ and $\phi(1020)$. NODE=M004M;LINKAGE=E

[2] Using a phenomenological model based on KUHN 90 with a sum of Breit-Wigner resonances for $\rho(770)$, $\omega(782)$, $\phi(1020)$ and their higher mass excitations. NODE=M004M;LINKAGE=C

[3] Update of AKHMETSHIN 99D NODE=M004M;LINKAGE=GS

[4] From the combined fit assuming that the total $\phi(1020)$ production cross section is saturated by those of $K^+ K^-$, $K_S K_L$, $\pi^+ \pi^- \pi^0$, and $\eta\gamma$ decays modes and using ACHASOV 00B for the $\eta\gamma$ decay mode. NODE=M004M;LINKAGE=AE

[5] Using a total width of 4.43 ± 0.05 MeV. Systematic uncertainty included. NODE=M004M;LINKAGE=G2

[6] Using a total width of 4.43 ± 0.05 MeV. NODE=M004M;LINKAGE=F2

[7] PELLINEN 82 review includes AKERLOF 77, DAUM 81, BALDI 77, AYRES 74, DEGROOT 74. NODE=M004M;LINKAGE=R

[8] Strongly correlated with AKHMETSHIN 04. NODE=M004M;LINKAGE=AH

[9] Systematic errors not evaluated. NODE=M004M;LINKAGE=A

[10] Weighted and scaled average of 12 measurements of DIJKSTRA 86. NODE=M004M;LINKAGE=B

[11] Mass errors enlarged by us to $\Gamma/\sqrt{N}$; see the note with the $K^*(892)$ mass. NODE=M004M;LINKAGE=D

ϕ(1020) WIDTH

NODE=M004W

NODE=M004W

VALUE (MeV)			*EVTS*		*DOCUMENT ID*		*TECN*	*COMMENT*
4.247±0.016 OUR AVERAGE					Error includes scale factor of 1.2.			
4.240	±0.017		610k		KOZYREV	16	CMD3	$e^+ e^- \rightarrow K^0_S K^0_L$
4.205	±0.103	±0.067	28k	1	LEES	14H	BABR	$e^+ e^- \rightarrow K^0_S K^0_L \gamma$
4.29	±0.04	±0.07		2	LEES	13Q	BABR	$e^+ e^- \rightarrow K^+ K^- \gamma$
4.30	±0.06	±0.17	105k		AKHMETSHIN	06	CMD2	0.98–1.06 $e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$
4.280	±0.033	±0.025	272k	3	AKHMETSHIN	04	CMD2	$e^+ e^- \rightarrow K^0_L K^0_S$
4.21	±0.04		1900k	4	ACHASOV	01E	SND	$e^+ e^- \rightarrow K^+ K^-$, $K_S K_L$, $\pi^+ \pi^- \pi^0$
4.44	±0.09		55600		AKHMETSHIN	95	CMD2	$e^+ e^- \rightarrow$ hadrons
4.5	±0.7		1500		ARENTON	82	AEMS	11.8 polar. $p p \rightarrow K K$
4.2	±0.6		766	5	IVANOV	81	OLYA	1–1.4 $e^+ e^- \rightarrow K^+ K^-$
4.3	±0.6			5	CORDIER	80	DM1	$e^+ e^- \rightarrow \pi^+ \pi^- \pi^0$
4.36	±0.29		3681	5	BUKIN	78C	OLYA	$e^+ e^- \rightarrow$ hadrons
4.4	±0.6		984	5	BESCH	74	CNTR	2 $\gamma p \rightarrow p K^+ K^-$
4.67	±0.72		681	5	BALAKIN	71	OSPK	$e^+ e^- \rightarrow$ hadrons
4.09	±0.29				BIZOT	70	OSPK	$e^+ e^- \rightarrow$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •								
4.37	±0.02				LEES	13F	BABR	$D^+ \rightarrow K^+ K^- \pi^+$
4.24	±0.02	±0.03	542k	6	AKHMETSHIN	08	CMD2	1.02 $e^+ e^- \rightarrow K^+ K^-$
4.28	±0.13		12540	7	AUBERT,B	05J	BABR	$D^0 \rightarrow \overline{K}^0 K^+ K^-$
4.45	±0.06		271k		DIJKSTRA	86	SPEC	100 π^- Be
3.6	±0.8		337	5	COOPER	78B	HBC	0.7–0.8 $\overline{p} p \rightarrow K^0_S K^0_L \pi^+ \pi^-$
4.5	±0.50		1300	5,7	AKERLOF	77	SPEC	400 pA $\rightarrow K^+ K^-$ X
4.5	±0.8		500	5,7	AYRES	74	ASPK	3–6 $\pi^- p \rightarrow K^+ K^- n$, $K^- p \rightarrow K^+ K^- \Lambda / \Sigma^0$
3.81	±0.37				COSME	74B	OSPK	$e^+ e^- \rightarrow K^0_L K^0_S$
3.8	±0.7		454	5	BORENSTEIN	72	HBC	2.18 $K^- p \rightarrow K \overline{K} n$

YOUR DATA

YOUR NOTE

[1] Using a vector meson dominance model with contribution from $\phi(1020)$ and higher mass excitations of $\rho(770), \omega(782)$ and $\phi(1020)$. NODE=M004W;LINKAGE=E

[2] Using a phenomenological model based on KUHN 90 with a sum of Breit-Wigner resonances for $\rho(770)$, $\omega(782)$, $\phi(1020)$ and their higher mass excitations. NODE=M004W;LINKAGE=C

[3] Update of AKHMETSHIN 99D NODE=M004W;LINKAGE=GS

[4] From the combined fit assuming that the total $\phi(1020)$ production cross section is saturated by those of $K^+ K^-$, $K_S K_L$, $\pi^+ \pi^- \pi^0$, and $\eta\gamma$ decays modes and using ACHASOV 00B for the $\eta\gamma$ decay mode. NODE=M004W;LINKAGE=AE

[5] Width errors enlarged by us to $4\Gamma/\sqrt{N}$; see the note with the $K^*(892)$ mass. NODE=M004W;LINKAGE=D
[6] Strongly correlated with AKHMETSHIN 04. NODE=M004W;LINKAGE=AH
[7] Systematic errors not evaluated. NODE=M004W;LINKAGE=A

$\Gamma(\phi(1020) \to K^0_L K^0_S) \times \Gamma(\phi(1020) \to e^+e^-)/\Gamma_{total}$

NODE=M004GXX

	VALUE (keV)	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**0.4200±0.0033±0.0123**	28k	[1] LEES	14H	BABR	$e^+e^- \to K^0_S K^0_L \gamma$

YOUR NOTE [1] Using a vector meson dominance model with contribution from $\phi(1020)$ and higher mass excitations of $\rho(770), \omega(782)$ and $\phi(1020)$. NODE=M004GXX;LINKAGE=A

$\phi(1020)$ BRANCHING RATIOS

NODE=M004220

$\Gamma(K^0_L K^0_S)/\Gamma_{total}$ — Γ_2/Γ

NODE=M004R2

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
	0.331±0.008 OUR AVERAGE					
YOUR DATA	0.331±0.010±0.010	28k	[1,2] LEES	14H	BABR	$e^+e^- \to K^0_S K^0_L \gamma$
	0.335±0.010	40644	AKHMETSHIN	95	CMD2	$e^+e^- \to K^0_L K^0_S$
	0.326±0.035		DOLINSKY	91	ND	$e^+e^- \to K^0_L K^0_S$
	0.310±0.024		DRUZHININ	84	ND	$e^+e^- \to K^0_L K^0_S$
	• • • We do not use the following data for averages, fits, limits, etc. • • •					
	0.336±0.002±0.006		[3] AKHMETSHIN	11	CMD2	1.02 $e^+e^- \to K^0_S K^0_L$
	0.351±0.013	500k	[4] ACHASOV	01E	SND	$e^+e^- \to K^+K^-$, $K_S K_L$, $\pi^+\pi^-\pi^0$
	0.27 ±0.03	133	KALBFLEISCH	76	HBC	2.18 $K^- p \to \Lambda K^0_L K^0_S$
	0.257±0.030	95	BALAKIN	71	OSPK	$e^+e^- \to K^0_L K^0_S$
	0.40 ±0.04	167	LINDSEY	66	HBC	2.1–2.7 $K^- p \to \Lambda K^0_L K^0_S$

ERROR=11

YOUR NOTE [1] Using a vector meson dominance model with contribution from $\phi(1020)$ and higher mass excitations of $\rho(770), \omega(782)$, and $\phi(1020)$. NODE=M004R2;LINKAGE=C

YOUR NOTE [2] LEES 14H reports $[\Gamma(\phi(1020) \to K^0_L K^0_S)/\Gamma_{total}] \times [\Gamma(\phi(1020) \to e^+e^-)] = 0.4200 \pm 0.0033 \pm 0.0123$ keV which we divide by our best value $\Gamma(\phi(1020) \to e^+e^-) = 1.27 \pm 0.04$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=M004R2;LINKAGE=E

[3] Combined analysis of the CMD-2 data on $\phi \to K^+K^-$, $K^0_S K^0_L$, $\pi^+\pi^-\pi^0$, $\eta\gamma$ assuming that the sum of their branching fractions is 0.99741 ± 0.00007. NODE=M004R1;LINKAGE=AK

[4] Using B($\phi \to e^+e^-$)= $(2.93 \pm 0.14) \times 10^{-4}$. NODE=M004R;LINKAGE=B2

$\phi(1020)$ REFERENCES

NODE=M004

	KOZYREV	16	PL B760 314	E.A. Kozyrev *et al.*	(CMD3 Collab.)	REFID=57514
YOUR PAPER	LEES	14H	PR D89 092002	J.P. Lees *et al.*	(BABAR Collab)	REFID=55940
	LEES	13F	PR D87 052010	J.P. Lees *et al.*	(BABAR Collab.)	REFID=55127
	LEES	13Q	PR D88 032013	J.P. Lees *et al.*	(BABAR Collab.)	REFID=55404
	AKHMETSHIN	11	PL B695 412	R. Akhmetshin *et al.*	(CMD2 Collab.)	REFID=53645
	AKHMETSHIN	08	PL B669 217	R.R. Akhmetshin *et al.*	(CMD-2 Collab.)	REFID=52572
	AKHMETSHIN	06	PL B642 203	R.R. Akhmetshin *et al.*	(CMD-2 Collab.)	REFID=51465
	AKHMETSHIN	05	PL B605 26	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=50330
	AUBERT,B	05J	PR D72 052008	B. Aubert *et al.*	(BABAR Collab.)	REFID=50824
	AKHMETSHIN	04	PL B578 285	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=49609
	ACHASOV	01E	PR D63 072002	M.N. Achasov *et al.*	(Novosibirsk SND Collab.)	REFID=48311
	AKHMETSHIN	01B	PL B509 217	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=48167
	ACHASOV	00B	JETP 90 17	M.N. Achasov *et al.*	(Novosibirsk SND Collab.)	REFID=47425
			Translated from ZETF 117 22.			
	AKHMETSHIN	99D	PL B466 385	R.R. Akhmetshin *et al.*		REFID=47397
	Also		PL B508 217 (errat.)	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=48328
	AKHMETSHIN	99F	PL B460 242	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=47473
	AKHMETSHIN	98	PL B434 426	R.R. Akhmetshin *et al.*	(CMD-2 Collab.)	REFID=46325
	BARBERIS	98	PL B432 436	D. Barberis *et al.*	(Omega Expt.)	REFID=46344
	AKHMETSHIN	95	PL B364 199	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=44617
	DOLINSKY	91	PRPL 202 99	S.I. Dolinsky *et al.*	(NOVO)	REFID=41369
	KUHN	90	ZPHY C48 445	J.H. Kuhn *et al.*	(MPIM)	REFID=45862
	ARMSTRONG	86	PL 166B 245	T.A. Armstrong *et al.*	(ATHU, BARI, BIRM+)	REFID=20563
	ATKINSON	86	ZPHY C30 521	M. Atkinson *et al.*	(BONN, CERN, GLAS+)	REFID=20564
	BEBEK	86	PRL 56 1893	C. Bebek *et al.*	(CLEO Collab.)	REFID=11540
	DAVENPORT	86	PR D33 2519	T.F. Davenport	(TUFTS, ARIZ, FNAL, FSU, NDAM+)	REFID=20567
	DIJKSTRA	86	ZPHY C31 375	H. Dijkstra *et al.*	(ANIK, BRIS, CERN+)	REFID=20568
	FRAME	86	NP B276 667	D. Frame *et al.*	(GLAS)	REFID=20569
	ALBRECHT	85D	PL 153B 343	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=20562
	DRUZHININ	84	PL 144B 136	V.P. Druzhinin *et al.*	(NOVO)	REFID=20561
	ARMSTRONG	83B	NP B224 193	T.A. Armstrong *et al.*	(BARI, BIRM, CERN+)	REFID=20558
	BARATE	83	PL 121B 449	R. Barate *et al.*	(SACL, LOIC, SHMP, IND)	REFID=12177
	ARENTON	82	PR D25 2241	M.W. Arenton *et al.*	(ANL, ILL)	REFID=20556
	PELLINEN	82	PS 25 599	A. Pellinen, M. Roos	(HELS)	REFID=20557
	DAUM	81	PL 100B 439	C. Daum *et al.*	(AMST, BRIS, CERN, CRAC+)	REFID=20552
	IVANOV	81	PL 107B 297	P.M. Ivanov *et al.*	(NOVO)	REFID=20553
	Also		Private Comm.	S.I. Eidelman	(NOVO)	REFID=20554
	CORDIER	80	NP B172 13	A. Cordier *et al.*	(LALO)	REFID=20240

BUKIN	78C	SJNP 27 516	A.D. Bukin *et al.*	(NOVO)	REFID=20544
		Translated from YAF 27 976.			
COOPER	78B	NP B146 1	A.M. Cooper *et al.*	(TATA, CERN, CDEF+)	REFID=20235
AKERLOF	77	PRL 39 861	C.W. Akerlof *et al.*	(FNAL, MICH, PURD)	REFID=20534
BALDI	77	PL 68B 381	R. Baldi *et al.*	(GEVA)	REFID=20536
COHEN	77	PRL 38 269	D. Cohen *et al.*	(ANL)	REFID=20538
KALBFLEISCH	76	PR D13 22	G.R. Kalbfleisch, R.C. Strand, J.W. Chapman	(BNL+)	REFID=20531
AYRES	74	PRL 32 1463	D.S. Ayres *et al.*	(ANL)	REFID=20522
BESCH	74	NP B70 257	H.J. Besch *et al.*	(BONN)	REFID=20523
COSME	74B	PL 48B 159	G. Cosme *et al.*	(ORSAY)	REFID=20526
DEGROOT	74	NP B74 77	A.J. de Groot *et al.*	(AMST, NIJM)	REFID=20527
BALLAM	73	PR D7 3150	J. Ballam *et al.*	(SLAC, LBL)	REFID=20520
BINNIE	73B	PR D8 2789	D.M. Binnie *et al.*	(LOIC, SHMP)	REFID=20216
AGUILAR-...	72B	PR D6 29	M. Aguilar-Benitez *et al.*	(BNL)	REFID=20205
BORENSTEIN	72	PR D5 1559	S.R. Borenstein *et al.*	(BNL, MICH)	REFID=20215
COLLEY	72	NP B50 1	D.C. Colley *et al.*	(BIRM, GLAS)	REFID=20519
BALAKIN	71	PL 34B 328	V.E. Balakin *et al.*	(NOVO)	REFID=20507
STOTTLE...	71	Thesis ORO 2504 170	A.R. Stottlemyer	(UMD)	REFID=20512
BIZOT	70	PL 32B 416	J.C. Bizot *et al.*	(ORSAY)	REFID=20501
Also		Liverpool Sym. 69	J.P. Perez-y-Jorba		REFID=20502
LINDSEY	66	PR 147 913	J.S. Lindsey, G. Smith	(LRL)	REFID=20481

NODE=M013

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

$f'_2(1525)$ MASS

NODE=M013205

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

NODE=M013M3
NODE=M013M3

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

	VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT	
	$1521.9^{+1.8}_{-1.5}$ OUR AVERAGE Error includes scale factor of 1.1.						
	$1522.2 \pm 2.8^{+5.3}_{-2.0}$		AAIJ	13AN	LHCB	$\overline{B}^0_s \to J/\psi K^+K^-$	
	$1513 \pm 5 ^{+4}_{-10}$	5.5k	[6] ABLIKIM	13N	BES3	$e^+e^- \to J/\psi \to \gamma\eta\eta$	
	$1525.3^{+1.2}_{-1.4}{}^{+3.7}_{-2.1}$		UEHARA	13	BELL	$\gamma\gamma \to K^0_S K^0_S$	
	1521 ± 5		ABLIKIM	05	BES2	$J/\psi \to \phi K^+K^-$	
	$1518 \pm 1 \pm 3$		ABE	04	BELL	$10.6\ e^+e^- \to e^+e^-K^+K^-$	
	$1519 \pm 2 ^{+15}_{-5}$		BAI	03G	BES	$J/\psi \to \gamma K\overline{K}$	
	1523 ± 6	331	[7] ACCIARRI	01H	L3	$91, 183–209\ e^+e^- \to e^+e^-K^0_S K^0_S$	
	$1535 \pm 5 \pm 4$		ABREU	96C	DLPH	$Z^0 \to K^+K^- + X$	
	$1516 \pm 5 ^{+9}_{-15}$		BAI	96C	BES	$J/\psi \to \gamma K^+K^-$	
	1531.6 ± 10.0		AUGUSTIN	88	DM2	$J/\psi \to \gamma K^+K^-$	
	1515 ± 5		[8] 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. • • •						
	$1532 \pm 3 \pm 6$	644	[9,10] DOBBS	15		$J/\psi \to \gamma K^+K^-$	
	$1557 \pm 9 \pm 3$	113	[9,10] DOBBS	15		$\psi(2S) \to \gamma K^+K^-$	OCCUR=2
YOUR DATA	1526 ± 7	29	[1] LEES	14H	BABR	$e^+e^- \to K^0_S K^0_S K^+K^-\gamma$	ERROR=12
	1523 ± 5	870	[11] SCHEGELSKY	06A	RVUE	$\gamma\gamma \to K^0_S K^0_S$	
	1496 ± 2		[12] FALVARD	88	DM2	$J/\psi \to \phi K^+K^-$	OCCUR=2

YOUR NOTE [1] From a fit to a Breit-Wigner line shape plus a second-order polynomial function. Systematic errors not evaluated. NODE=M013M3;LINKAGE=D

[6] From partial wave analysis including all possible combinations of 0^{++}, 2^{++}, and 4^{++} resonances. NODE=M013M3;LINKAGE=A

[7] Supersedes ACCIARRI 95J. NODE=M013M;LINKAGE=HA

[8] From an analysis ignoring interference with $f_0(1710)$. NODE=M013M;LINKAGE=F1

[9] Using CLEO-c data but not authored by the CLEO Collaboration. NODE=M013M3;LINKAGE=B

[10] From a fit to a Breit-Wigner line shape with fixed $\Gamma = 73$ MeV. NODE=M013M3;LINKAGE=C

[11] From analysis of L3 data at 91 and 183–209 GeV. NODE=M013M3;LINKAGE=SC

[12] From an analysis including interference with $f_0(1710)$. NODE=M013M;LINKAGE=F2

$f'_2(1525)$ WIDTH

NODE=M013210

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

NODE=M013W3
NODE=M013W3

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

	VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT	
	$81.4^{+2.4}_{-2.0}$ OUR AVERAGE					
	$84 \pm 6 ^{+10}_{-5}$		AAIJ 13AN	LHCB	$\overline{B}^0_s \to J/\psi K^+K^-$	
	$75 ^{+12}_{-10} ^{+16}_{-8}$	5.5k	[23] ABLIKIM 13N	BES3	$e^+e^- \to J/\psi \to \gamma\eta\eta$	
	$82.9 ^{+2.1}_{-2.2} ^{+3.3}_{-2.0}$		UEHARA 13	BELL	$\gamma\gamma \to K^0_S K^0_S$	
	77 ± 15		ABLIKIM 05	BES2	$J/\psi \to \phi K^+K^-$	
	$82 \pm 2 \pm 3$		ABE 04	BELL	$10.6\ e^+e^- \to e^+e^-K^+K^-$	
	$75 \pm 4 ^{+15}_{-5}$		BAI 03G	BES	$J/\psi \to \gamma K\overline{K}$	
	100 ± 15	331	[24] ACCIARRI 01H	L3	$91, 183\text{–}209\ e^+e^- \to e^+e^-K^0_S K^0_S$	
	$60 \pm 20 \pm 19$		ABREU 96C	DLPH	$Z^0 \to K^+K^- + X$	
	$60 \pm 23 ^{+13}_{-20}$		BAI 96C	BES	$J/\psi \to \gamma K^+K^-$	
	103 ± 30		AUGUSTIN 88	DM2	$J/\psi \to \gamma K^+K^-$	
	62 ± 10		[25] 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. • • •					
YOUR DATA	37 ± 12	29	[17] LEES 14H		$e^+e^- \to K^0_S K^0_S K^+K^-\gamma$	ERROR=13
	104 ± 10	870	[26] SCHEGELSKY 06A	RVUE	$\gamma\gamma \to K^0_S K^0_S$	
	100 ± 3		[27] FALVARD 88	DM2	$J/\psi \to \phi K^+K^-$	OCCUR=2

YOUR NOTE [17] From a fit to a Breit-Wigner line shape plus a second-order polynomial function. Systematic errors not evaluated. NODE=M013W3;LINKAGE=B

[23] From partial wave analysis including all possible combinations of 0^{++}, 2^{++}, and 4^{++} resonances. NODE=M013W3;LINKAGE=A

[24] Supersedes ACCIARRI 95J. NODE=M013W;LINKAGE=HA

[25] From an analysis ignoring interference with $f_0(1710)$. NODE=M013W;LINKAGE=F1

[26] From analysis of L3 data at 91 and 183–209 GeV. NODE=M013W3;LINKAGE=SC

[27] From an analysis including interference with $f_0(1710)$. NODE=M013W;LINKAGE=F2

$f'_2(1525)$ REFERENCES

NODE=M013

	DOBBS	15	PR D91 052006	S. Dobbs *et al.*	(NWES)	REFID=56805
YOUR PAPER	LEES	14H	PR D89 092002	J.P. Lees *et al.*	(BABAR Collab)	REFID=55940
	AAIJ	13AN	PR D87 072004	R. Aaij *et al.*	(LHCb Collab.)	REFID=55137
	ABLIKIM	13N	PR D87 092009	Ablikim M. *et al.*	(BES III Collab.)	REFID=55387
	UEHARA	13	PTEP 2013 123C01	S. Uehara *et al.*	(BELLE Collab.)	REFID=55592
	SCHEGELSKY	06A	EPJ A27 207	V.A. Schegelsky *et al.*		REFID=51185
	ABLIKIM	05	PL B607 243	M. Ablikim *et al.*	(BES Collab.)	REFID=50450
	ABE	04	EPJ C32 323	K. Abe *et al.*	(BELLE Collab.)	REFID=49650
	BAI	03G	PR D68 052003	J.Z. Bai *et al.*	(BES Collab.)	REFID=49580
	ACCIARRI	01H	PL B501 173	M. Acciarri *et al.*	(L3 Collab.)	REFID=48321
	ABREU	96C	PL B379 309	P. Abreu *et al.*	(DELPHI Collab.)	REFID=44671
	BAI	96C	PRL 77 3959	J.Z. Bai *et al.*	(BES Collab.)	REFID=45169
	ACCIARRI	95J	PL B363 118	M. Acciarri *et al.*	(L3 Collab.)	REFID=44615
	AUGUSTIN	88	PRL 60 2238	J.E. Augustin *et al.*	(DM2 Collab.)	REFID=40574
	FALVARD	88	PR D38 2706	A. Falvard *et al.*	(CLER, FRAS, LALO+)	REFID=40576
	BALTRUSAIT...	87	PR D35 2077	R.M. Baltrusaitis *et al.*	(Mark III Collab.)	REFID=40010

NODE=M067

$\phi(1680)$

$I^G(J^{PC}) = 0^-(1^{--})$

$\phi(1680)$ MASS

NODE=M067205

e^+e^- PRODUCTION

NODE=M067M1
NODE=M067M1

	VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
	1680±20 OUR ESTIMATE				→ UNCHECKED ←
YOUR DATA	$1674 \pm 12 \pm 6$	6264	[1] LEES 14H	BABR	$e^+e^- \to K^0_S K^0_L \gamma$
	• • • We do not use the following data for averages, fits, limits, etc. • • •				
	$1733 \pm 10 \pm 10$		[2] LEES 12F	BABR	$10.6\ e^+e^- \to \phi\pi^+\pi^-\gamma$
	$1689 \pm 7 \pm 10$	4.8k	[3] SHEN 09	BELL	$10.6\ e^+e^- \to K^+K^-\pi^+\pi^-\gamma$
	$1709 \pm 20 \pm 43$		[4] AUBERT 08S	BABR	$10.6\ e^+e^- \to$ hadrons
	1623 ± 20	948	[5] AKHMETSHIN 03	CMD2	$1.05\text{–}1.38\ e^+e^- \to K^0_L K^0_S$

∼ 1500		[6] ACHASOV	98H	RVUE	$e^+e^- \to \pi^+\pi^-\pi^0$, $\omega\pi^+\pi^-$, K^+K^-	
∼ 1900		[7] ACHASOV	98H	RVUE	$e^+e^- \to K^0_S K^\pm \pi^\mp$	OCCUR=4
1700±20		[8] CLEGG	94	RVUE	$e^+e^- \to K^+K^-$, $K^0_S K\pi$	
1657±27	367	BISELLO	91C	DM2	$e^+e^- \to K^0_S K^\pm \pi^\mp$	
1655±17		[9] BISELLO	88B	DM2	$e^+e^- \to K^+K^-$	
1680±10		[10] BUON	82	DM1	$e^+e^- \to$ hadrons	
1677±12		[11] MANE	82	DM1	$e^+e^- \to K^0_S K\pi$	

YOUR NOTE

[1] Using a vector meson dominance model with contribution from $\phi(1020)$, $\phi(1680)$ and higher mass excitations of $\rho(770)$ and $\omega(782)$. NODE=M067M1;LINKAGE=B

[2] Using events with $\pi\pi$ invariant mass less than 0.85 GeV. NODE=M067M1;LINKAGE=A

[3] From a fit with two incoherent Breit-Wigners. NODE=M067M1;LINKAGE=SH

[4] From the simultaneous fit to the $K\overline{K}^*(892)+$ c.c. and $\phi\eta$ data from AUBERT 08S using the results of AUBERT 07AK. NODE=M067M1;LINKAGE=AU

[5] From the combined fit of AKHMETSHIN 03 and MANE 81 also including ρ, ω, and ϕ. Neither isospin nor flavor structure known. NODE=M067M;LINKAGE=HK

[6] Using data from IVANOV 81, BARKOV 87, BISELLO 88B, DOLINSKY 91, and ANTONELLI 92. NODE=M067M1;LINKAGE=L1

[7] Using the data from BISELLO 91C. NODE=M067M1;LINKAGE=L4

[8] Using BISELLO 88B and MANE 82 data. NODE=M067M;LINKAGE=A

[9] From global fit including ρ, ω, ϕ and $\rho(1700)$ assume mass 1570 MeV and width 510 MeV for ρ radial excitation. NODE=M067M;LINKAGE=E

[10] From global fit of ρ, ω, ϕ and their radial excitations to channels $\omega\pi^+\pi^-$, K^+K^-, $K^0_S K^0_L$, $K^0_S K^\pm\pi^\mp$. Assume mass 1570 MeV and width 510 MeV for ρ radial excitations, mass 1570 and width 500 MeV for ω radial excitation. NODE=M067M;LINKAGE=C

[11] Fit to one channel only, neglecting interference with ω, $\rho(1700)$. NODE=M067M;LINKAGE=D

$\phi(1680)$ WIDTH

NODE=M067210

e^+e^- PRODUCTION

NODE=M067W1
NODE=M067W1

150±50 OUR ESTIMATE This is only an educated guess; the error given is larger than the error on the average of the published values. → UNCHECKED ←

	VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	165±38± 70	6264	[14] LEES	14H	BABR	$e^+e^- \to K^0_S K^0_L \gamma$

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

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
300±15± 37		[15] LEES	12F	BABR	10.6 $e^+e^- \to \phi\pi^+\pi^-\gamma$
211±14± 19	4.8k	[16] SHEN	09	BELL	10.6 $e^+e^- \to K^+K^-\pi^+\pi^-\gamma$
322±77±160		[17] AUBERT	08S	BABR	10.6 $e^+e^- \to$ hadrons
139±60	948	[18] AKHMETSHIN	03	CMD2	1.05–1.38 $e^+e^- \to K^0_L K^0_S$
300±60		[19] CLEGG	94	RVUE	$e^+e^- \to K^+K^-$, $K^0_S K\pi$
146±55	367	BISELLO	91C	DM2	$e^+e^- \to K^0_S K^\pm\pi^\mp$
207±45		[20] BISELLO	88B	DM2	$e^+e^- \to K^+K^-$
185±22		[21] BUON	82	DM1	$e^+e^- \to$ hadrons
102±36		[22] MANE	82	DM1	$e^+e^- \to K^0_S K\pi$

YOUR NOTE

[14] Using a vector meson dominance model with contribution from $\phi(1020)$, $\phi(1680)$ and higher mass excitations of $\rho(770)$ and $\omega(782)$. NODE=M067W1;LINKAGE=B

[15] Using events with $\pi\pi$ invariant mass less than 0.85 GeV. NODE=M067W1;LINKAGE=A

[16] From a fit with two incoherent Breit-Wigners. NODE=M067W1;LINKAGE=SH

[17] From the simultaneous fit to the $K\overline{K}^*(892)+$ c.c. and $\phi\eta$ data from AUBERT 08S using the results of AUBERT 07AK. NODE=M067W1;LINKAGE=AU

[18] From the combined fit of AKHMETSHIN 03 and MANE 81 also including ρ, ω, and ϕ. Neither isospin nor flavor structure known. NODE=M067W;LINKAGE=HK

[19] Using BISELLO 88B and MANE 82 data. NODE=M067W;LINKAGE=A

[20] From global fit including ρ, ω, ϕ and $\rho(1700)$ NODE=M067W;LINKAGE=E

[21] From global fit of ρ, ω, ϕ and their radial excitations to channels $\omega\pi^+\pi^-$, K^+K^-, $K^0_S K^0_L$, $K^0_S K^\pm\pi^\mp$. Assume mass 1570 MeV and width 510 MeV for ρ radial excitations, mass 1570 and width 500 MeV for ω radial excitation. NODE=M067W;LINKAGE=C

[22] Fit to one channel only, neglecting interference with ω, $\rho(1700)$. NODE=M067W;LINKAGE=D

$\Gamma(\phi(1680) \to K^0_L K^0_S) \times \Gamma(\phi(1680) \to e^+e^-)/\Gamma_{total}$

NODE=M067A00
NODE=M067A00

	VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**14.3±2.4±6.2**	6.2k	[23] LEES	14H	BABR	$e^+e^- \to K^0_S K^0_L \gamma$

YOUR NOTE

[23] Using a vector meson dominance model with contribution from $\phi(1020)$, $\phi(1680)$, and higher mass excitations of $\rho(770)$ and $\omega(782)$. NODE=M067A00;LINKAGE=A

$\phi(1680)$ REFERENCES

NODE=M067

YOUR PAPER	LEES 14H	PR D89 092002	J.P. Lees *et al.*	(BABAR Collab)	REFID=55940
	LEES 12F	PR D86 012008	J.P. Lees *et al.*	(BABAR Collab.)	REFID=54298
	SHEN 09	PR D80 031101	C.P. Shen *et al.*	(BELLE Collab.)	REFID=53000
	AUBERT 08S	PR D77 092002	B. Aubert *et al.*	(BABAR Collab.)	REFID=52242
	AUBERT 07AK	PR D76 012008	B. Aubert *et al.*	(BABAR Collab.)	REFID=51908
	AKHMETSHIN 03	PL B551 27	R.R. Akhmetshin *et al.*	(Novosibirsk CMD-2 Collab.)	REFID=49172
	Also	PAN 65 1222	E.V. Anashkin, V.M. Aulchenko, R.R. Akhmetshin		REFID=48827
		Translated from YAF 65 1255.			
	ACHASOV 98H	PR D57 4334	N.N. Achasov, A.A. Kozhevnikov		REFID=46323
	CLEGG 94	ZPHY C62 455	A.B. Clegg, A. Donnachie	(LANC, MCHS)	REFID=44081
	ANTONELLI 92	ZPHY C56 15	A. Antonelli *et al.*	(DM2 Collab.)	REFID=43168
	BISELLO 91C	ZPHY C52 227	D. Bisello *et al.*	(DM2 Collab.)	REFID=41867
	DOLINSKY 91	PRPL 202 99	S.I. Dolinsky *et al.*	(NOVO)	REFID=41369
	BISELLO 88B	ZPHY C39 13	D. Bisello *et al.*	(PADO, CLER, FRAS+)	REFID=40581
	BARKOV 87	JETPL 46 164	L.M. Barkov *et al.*	(NOVO)	REFID=40280
		Translated from ZETFP 46 132.			
	BUON 82	PL 118B 221	J. Buon *et al.*	(LALO, MONP)	REFID=21494
	MANE 82	PL 112B 178	F. Mane *et al.*	(LALO)	REFID=21590
	IVANOV 81	PL 107B 297	P.M. Ivanov *et al.*	(NOVO)	REFID=20553
	MANE 81	PL 99B 261	F. Mane *et al.*	(ORSAY)	REFID=21588

$c\bar{c}$ MESONS

NODE=MXXX025

NODE=M070

$J/\psi(1S)$

$I^G(J^{PC}) = 0^-(1^{--})$

$\Gamma(J/\psi(1S) \to \pi^+\pi^- K^0_S K^0_L) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}$

NODE=M070GY1
NODE=M070GY1

	VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**20.8±2.3±2.1**	248	LEES	14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_L \gamma$

$\Gamma(J/\psi(1S) \to \pi^+\pi^- K^0_S K^0_S) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}$

NODE=M070GY2
NODE=M070GY2

	VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**9.3±0.9±0.5**	133	LEES	14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_S \gamma$

$\Gamma(J/\psi(1S) \to K^+K^- K^0_S K^0_S) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}$

NODE=M070GY3
NODE=M070GY3

	VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**2.3±0.4±0.1**	29	LEES	14H	BABR	$e^+e^- \to K^0_S K^0_S K^+K^- \gamma$

$\Gamma(J/\psi(1S) \to K^0_S \pi^- K^*(892)^+ + c.c.) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}$

NODE=M070GY4
NODE=M070GY4

	VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**14.8±4.8±1.2**	53	[1] LEES	14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_S \gamma$

YOUR NOTE [1] Dividing by 1/4 to take into account $B(K^*(892) \to K^0_S \pi) = 1/4$.

NODE=M070GY4;LINKAGE=A

$\Gamma(J/\psi(1S) \to K^0_S \pi^- K^*(892)^+ + c.c. \to K^0_S K^0_S \pi^+\pi^-) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}$

NODE=M070GY5
NODE=M070GY5

	VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**3.7±1.2±0.3**	53	LEES	14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_S \gamma$

$\Gamma(J/\psi(1S) \to K^0_S \pi^- K^*_2(1430)^+ + c.c.) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}$

NODE=M070GY6
NODE=M070GY6

	VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**20.1±9.8±0.5**	35	[1,2] LEES	14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_S \gamma$

YOUR NOTE [1] Dividing by 1/4 to take into account $B(K^*(1430) \to K^0_S \pi) = 1/4 B(K^*(1430) \to K\pi)$

NODE=M070GY6;LINKAGE=A

YOUR NOTE [2] LEES 14H reports $[\Gamma(J/\psi(1S) \to K^0_S \pi^- K^*_2(1430)^+ + c.c.) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}] \times [B(K^*_2(1430) \to K\pi)] = 10.0 \pm 4.8 \pm 0.8$ eV which we divide by our best value $B(K^*_2(1430) \to K\pi) = (49.9 \pm 1.2) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M070GY6;LINKAGE=B

$\Gamma(J/\psi(1S) \to K^0_S \pi^- K^*_2(1430)^+ + c.c. \to K^0_S K^0_S \pi^+ \pi^-) \times \Gamma(J/\psi(1S) \to e^+ e^-)/\Gamma_{total}$

NODE=M070GY7
NODE=M070GY7

	VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
YOUR DATA	**2.5±1.2±0.2**	35	LEES 14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_S \gamma$

$\Gamma(J/\psi(1S) \to K^*(892)^\pm K^*(892)^\mp) \times \Gamma(J/\psi(1S) \to e^+ e^-)/\Gamma_{total}$

NODE=M070GY8
NODE=M070GY8

	VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
YOUR DATA	**0.80±0.48±0.32**	1+-5	[1] LEES 14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_S \gamma$

YOUR NOTE [1] Dividing by $(1/4)^2$ to take twice into account $B(K^*(892) \to K^0_S \pi) = 1/4$. NODE=M070GY8;LINKAGE=A

$\Gamma(J/\psi(1S) \to K^*(892)^+ K^*_2(1430)^- + c.c.) \times \Gamma(J/\psi(1S) \to e^+ e^-)/\Gamma_{total}$

NODE=M070GY9
NODE=M070GY9

	VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
YOUR DATA	**18.6±16.1±0.4**	8+-8	[1,2] LEES 14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_S \gamma$

YOUR NOTE [1] Dividing by 1/16 to take into account $B(K^*(892) \to K^0_S \pi) = 1/4$ and $B(K^*(1430) \to K^0_S \pi) = 1/4 B(K^*(1430) \to K\pi)$. NODE=M070GY9;LINKAGE=A

YOUR NOTE [2] LEES 14H reports $[\Gamma(J/\psi(1S) \to K^*(892)^+ K^*_2(1430)^- + c.c.) \times \Gamma(J/\psi(1S) \to e^+ e^-)/\Gamma_{total}] \times [B(K^*_2(1430) \to K\pi)] = 9.28 \pm 8.0 \pm 0.32$ eV which we divide by our best value $B(K^*_2(1430) \to K\pi) = (49.9 \pm 1.2) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=M070GY9;LINKAGE=B

$\Gamma(J/\psi(1S) \to K^*(892)^+ K^*_2(1430)^- + c.c. \to K^*(892)^+ K^0_S \pi^- + c.c.) \times \Gamma(J/\psi(1S) \to e^+ e^-)/\Gamma_{total}$

NODE=M070GZ0
NODE=M070GZ0

	VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
YOUR DATA	**2.32±2.00±0.08**	8+-8	[1] LEES 14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_S \gamma$

YOUR NOTE [1] Dividing by 1/4 to take into account $B(K^*(892) \to K^0_S \pi) = 1/4$. NODE=M070GZ0;LINKAGE=A

$\Gamma(J/\psi(1S) \to \phi(1020) K^0_S K^0_S) \times \Gamma(J/\psi(1S) \to e^+ e^-)/\Gamma_{total}$

NODE=M070GZ1
NODE=M070GZ1

	VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
YOUR DATA	**3.27±0.84±0.03**	29	[1] LEES 14H	BABR	$e^+e^- \to K^0_S K^0_S K^+ K^- \gamma$

YOUR NOTE [1] LEES 14H reports $[\Gamma(J/\psi(1S) \to \phi(1020) K^0_S K^0_S) \times \Gamma(J/\psi(1S) \to e^+ e^-)/\Gamma_{total}] \times [B(\phi(1020) \to K^+ K^-)] = 1.6 \pm 0.4 \pm 0.1$ eV which we divide by our best value $B(\phi(1020) \to K^+ K^-) = (49.0 \pm 0.5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=M070GZ1;LINKAGE=A

$\Gamma(J/\psi(1S) \to \phi(1020) f'_2(1525)) \times \Gamma(J/\psi(1S) \to e^+ e^-)/\Gamma_{total}$

NODE=M070GZ2
NODE=M070GZ2

	VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
YOUR DATA	**8.1±3.2±0.2**	11	[1,2] LEES 14H	BABR	$e^+e^- \to K^0_S K^0_S K^+ K^- \gamma$

YOUR NOTE [1] Dividing by 1/4 to take into account $B(f'_2(1525) \to K^0_S K^0_S) = 1/4 B(f'_2(1525) \to K\overline{K})$ and using $B(\phi(1020) \to K^+ K^-) = (48.9 \pm 0.5)\%$. NODE=M070GZ2;LINKAGE=A

YOUR NOTE [2] LEES 14H reports $[\Gamma(J/\psi(1S) \to \phi(1020) f'_2(1525)) \times \Gamma(J/\psi(1S) \to e^+ e^-)/\Gamma_{total}] \times [B(f'_2(1525) \to K\overline{K})] = 7.2 \pm 2.8 \pm 0.3$ eV which we divide by our best value $B(f'_2(1525) \to K\overline{K}) = (88.7 \pm 2.2) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=M070GZ2;LINKAGE=B

$\Gamma(J/\psi(1S) \to \phi(1020) f'_2(1525) \to \phi(1020) K^0_S K^0_S) \times \Gamma(J/\psi(1S) \to e^+ e^-)/\Gamma_{total}$

NODE=M070GZ3
NODE=M070GZ3
NODE=M070GZ3

	VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
YOUR DATA	**1.80±0.70±0.08**	11	[1] LEES 14H	BABR	$e^+e^- \to K^0_S K^0_S K^+ K^- \gamma$

YOUR NOTE [1] Using $B(\phi(1020) \to K^+ K^-) = (48.9 \pm 0.5)\%$. NODE=M070GZ3;LINKAGE=A

$\Gamma(J/\psi(1S) \to K^+K^- f_2'(1525)) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}$

NODE=M070GZ4
NODE=M070GZ4

	VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT	NODE=M070GZ4
YOUR DATA	**5.8±1.9±0.1**	16	[1,2] LEES 14H	BABR	$e^+e^- \to K^0_S K^0_S K^+ K^- \gamma$	

YOUR NOTE [1] Dividing by 1/4 to take into account $B(f_2'(1525) \to K^0_S K^0_S) = 1/4 B(f_2'(1525) \to K\overline{K})$. NODE=M070GZ4;LINKAGE=A

YOUR NOTE [2] LEES 14H reports $[\Gamma(J/\psi(1S) \to K^+K^- f_2'(1525)) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}] \times [B(f_2'(1525) \to K\overline{K})] = 5.12 \pm 1.68 \pm 0.20$ eV which we divide by our best value $B(f_2'(1525) \to K\overline{K}) = (88.7 \pm 2.2) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=M070GZ4;LINKAGE=B

$\Gamma(J/\psi(1S) \to K^+K^- f_2'(1525) \to K^+K^- K^0_S K^0_S) \times \Gamma(J/\psi(1S) \to e^+e^-)/\Gamma_{total}$

NODE=M070GZ5
NODE=M070GZ5

	VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
YOUR DATA	**1.28±0.42±0.05**	16	LEES 14H	BABR	$e^+e^- \to K^0_S K^0_S K^+ K^- \gamma$

$J/\psi(1S)$ BRANCHING RATIOS

NODE=M070230

HADRONIC DECAYS

NODE=M070305

$\Gamma(K^*(892)^\pm K^*(892)^\mp)/\Gamma_{total}$ Γ_{16}/Γ

NODE=M070S73
NODE=M070S73

	VALUE (units 10^{-3})	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
YOUR DATA	**<1700**	90	0.7+-5	[1] LEES 14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_S \gamma$
	$1.00 \pm 0.19^{+0.11}_{-0.32}$		323	ABLIKIM 10E	BES2	$J/\psi \to K^\pm K^0_S \pi^\mp \pi^0$

YOUR NOTE [1] Using $\Gamma((J/\psi(1S) \to e^+e^-) = 5.5 \pm 0.14 \pm 0.02$ keV. NODE=M070S73;LINKAGE=A

$\Gamma(K^*(892)^+ K_2^*(1430)^- + c.c.)/\Gamma_{total}$ Γ_{22}/Γ

NODE=M070P11
NODE=M070P11

	VALUE	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
YOUR DATA	<7.8	90	8+-8	[1] LEES 14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_S \gamma$

YOUR NOTE [1] Using $\Gamma((J/\psi(1S) \to e^+e^-) = 5.5 \pm 0.14 \pm 0.02$ keV. NODE=M070P11;LINKAGE=A

$\Gamma(K^*(892)^+ K_2^*(1430)^- + c.c. \to K^*(892)^+ K^0_S \pi^- + c.c.)/\Gamma_{total}$ Γ_{23}/Γ

NODE=M070P12
NODE=M070P12

	VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
YOUR DATA	**0.42±0.36±0.01**	8	[1,2] LEES 14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_S \gamma$

YOUR NOTE [1] Dividing by 1/4 to take into account $B(K^*(892) \to K^0_S \pi) = 1/4$. NODE=M070P12;LINKAGE=A

YOUR NOTE [2] LEES 14H reports $[\Gamma(J/\psi(1S) \to K^*(892)^+ K_2^*(1430)^- + c.c. \to K^*(892)^+ K^0_S \pi^- + c.c.)/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \to e^+e^-)] = 2.32 \pm 2.00 \pm 0.08$ keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=M070P12;LINKAGE=B

$\Gamma(K^0_S \pi^- K^*(892)^+ + c.c.)/\Gamma_{total}$ Γ_{18}/Γ

NODE=M070P07
NODE=M070P07

	VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
YOUR DATA	**2.7±0.9±0.1**	53	[1,2] LEES 14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_S \gamma$

YOUR NOTE [1] Dividing by 1/4 to take into account $B(K^*(892) \to K^0_S \pi) = 1/4$. NODE=M070P07;LINKAGE=A

YOUR NOTE [2] LEES 14H reports $[\Gamma(J/\psi(1S) \to K^0_S \pi^- K^*(892)^+ + c.c.)/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \to e^+e^-)] = 14.8 \pm 4.8 \pm 1.2$ keV which we divide by our best value $\Gamma(J/\psi(1S) \to e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=M070P07;LINKAGE=B

$\Gamma(K^0_S \pi^- K^*(892)^+ + c.c. \to K^0_S K^0_S \pi^+ \pi^-)/\Gamma_{total}$ Γ_{19}/Γ

NODE=M070P08
NODE=M070P08

	VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
YOUR DATA	**0.67±0.22±0.02**	53	[1] LEES 14H	BABR	$e^+e^- \to \pi^+\pi^- K^0_S K^0_S \gamma$

YOUR NOTE [1] LEES 14H reports [$\Gamma(J/\psi(1S) \rightarrow K^0_S \pi^- K^*(892)^+ +$ c.c. $\rightarrow K^0_S K^0_S \pi^+ \pi^-)/\Gamma_{total}$] $\times$ [$\Gamma(J/\psi(1S) \rightarrow e^+ e^-)$] = 3.7 ± 1.2 ± 0.3 keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+ e^-)$ = 5.55 ± 0.14 ± 0.02 keV. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=M070P08;LINKAGE=A

$\Gamma(\phi K^0_S K^0_S)/\Gamma_{total}$ Γ_{45}/Γ

NODE=M070P13

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**0.59±0.15±0.02**	29	[1,2] LEES	14H	BABR	$e^+e^- \rightarrow \pi^+\pi^- K^0_S K^0_S \gamma$

YOUR NOTE [1] Using $B(\phi(1020) \rightarrow K^+K^-) = (48.9 \pm 0.5)\%$. NODE=M070P13;LINKAGE=A

YOUR NOTE [2] LEES 14H reports [$\Gamma(J/\psi(1S) \rightarrow \phi K^0_S K^0_S)/\Gamma_{total}$] $\times$ [$\Gamma(J/\psi(1S) \rightarrow e^+ e^-)$] = 3.27 ± 0.82 ± 0.20 keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+ e^-)$ = 5.55 ± 0.14 ± 0.02 keV. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=M070P13;LINKAGE=B

$\Gamma(\phi f'_2(1525))/\Gamma_{total}$ Γ_{53}/Γ

NODE=M070R40

	VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
	8.4±2.8 OUR AVERAGE	Error includes scale factor of 2.1. See the ideogram below.				
YOUR DATA	14.6±5.7±0.4	11	[1,2] LEES	14H	BABR	$e^+e^- \rightarrow K^0_S K^0_S K^+ K^- \gamma$
	12.3±0.6±2.0		[3,4] FALVARD	88	DM2	$J/\psi \rightarrow$ hadrons
	4.8±1.8	46	[3] GIDAL	81	MRK2	$J/\psi \rightarrow K^+ K^- K^+ K^-$

YOUR NOTE [1] Dividing by 1/4 to take into account $B(f'_2(1525) \rightarrow K^0_S K^0_S) = 1/4 B(f'_2(1525) \rightarrow K\overline{K})$ and using $B(\phi(1020) \rightarrow K^+K^-) = (48.9 \pm 0.5)\%$ and $B(f'_2(1525) \rightarrow K\overline{K}) = (88.7 \pm 2.2)\%$. NODE=M070R40;LINKAGE=A

YOUR NOTE [2] LEES 14H reports [$\Gamma(J/\psi(1S) \rightarrow \phi f'_2(1525))/\Gamma_{total}$] $\times$ [$\Gamma(J/\psi(1S) \rightarrow e^+ e^-)$] = (8.12 ± 3.13 ± 0.37) $\times 10^{-3}$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+ e^-)$ = 5.55 ± 0.14 ± 0.02 keV. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=M070R40;LINKAGE=E

[3] Re-evaluated using B($f'_2(1525) \rightarrow K\overline{K}$) = 0.713. NODE=M070R40;LINKAGE=B

[4] Including interference with $f_0(1710)$. NODE=M070R40;LINKAGE=C

$\Gamma(\phi f'_2(1525) \rightarrow \phi K^0_S K^0_S)/\Gamma_{total}$ Γ_{54}/Γ

NODE=M070P14

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**0.32±0.13±0.01**	11	[1,2] LEES	14H	BABR	$e^+e^- \rightarrow K^0_S K^0_S K^+ K^- \gamma$

YOUR NOTE [1] Using $B(\phi(1020) \rightarrow K^+K^-) = (48.9 \pm 0.5)\%$. NODE=M070P14;LINKAGE=A

YOUR NOTE [2] LEES 14H reports [$\Gamma(J/\psi(1S) \rightarrow \phi f'_2(1525) \rightarrow \phi K^0_S K^0_S)/\Gamma_{total}$] $\times$ [$\Gamma(J/\psi(1S) \rightarrow e^+ e^-)$] = 1.80 ± 0.70 ± 0.08 keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+ e^-)$ = 5.55 ± 0.14 ± 0.02 keV. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=M070P14;LINKAGE=B

$\Gamma(K^0_S \pi^- K^*_2(1430)^+ + \text{c.c.})/\Gamma_{total}$ Γ_{85}/Γ

NODE=M070P09

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**3.6±1.8±0.1**	35	[1,2] LEES	14H	BABR	$e^+e^- \rightarrow \pi^+\pi^- K^0_S K^0_S \gamma$

YOUR NOTE [1] Dividing by 1/4 to take into account $B(K^*(1430) \rightarrow K^0_S \pi) = 1/4 B(K^*_2(1430) \rightarrow K\pi)$ and using $B(K^*_2(1430) \rightarrow K\pi) = (49.9 \pm 1.2)\%$. NODE=M070P09;LINKAGE=A

YOUR NOTE [2] LEES 14H reports [$\Gamma(J/\psi(1S) \rightarrow K^0_S \pi^- K^*_2(1430)^+ +$ c.c.$)/\Gamma_{total}$] $\times$ [$\Gamma(J/\psi(1S) \rightarrow e^+ e^-)$] = 20 ± 9.6 ± 1.7 keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+ e^-)$ = 5.55 ± 0.14 ± 0.02 keV. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=M070P09;LINKAGE=B

$\Gamma(K^0_S \pi^- K^*_2(1430)^+ + \text{c.c.} \rightarrow K^0_S K^0_S \pi^+ \pi^-)/\Gamma_{total}$ Γ_{86}/Γ

NODE=M070P10

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**0.45±0.22±0.01**	35	[1] LEES	14H	BABR	$e^+e^- \rightarrow \pi^+\pi^- K^0_S K^0_S \gamma$

YOUR NOTE [1] LEES 14H reports [$\Gamma(J/\psi(1S) \rightarrow K^0_S \pi^- K^*_2(1430)^+ +$ c.c. $\rightarrow K^0_S K^0_S \pi^+ \pi^-)/\Gamma_{total}$] $\times$ [$\Gamma(J/\psi(1S) \rightarrow e^+ e^-)$] = 2.5 ± 1.2 ± 0.2 keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+ e^-)$ = 5.55 ± 0.14 ± 0.02 keV. Our first error is their experiment's error and our second error is the systematic error from using our best value. NODE=M070P10;LINKAGE=A

STABLE HADRONS

NODE=M070307

$\Gamma(\pi^+\pi^- K^0_S K^0_L)/\Gamma_{total}$ — Γ_{112}/Γ

NODE=M070P04
NODE=M070P04

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**3.7±0.6±0.1**	248	[1] LEES	14H	BABR	$e^+e^- \rightarrow \pi^+\pi^- K^0_S K^0_L \gamma$

YOUR NOTE [1] LEES 14H reports $[\Gamma(J/\psi(1S) \rightarrow \pi^+\pi^- K^0_S K^0_L)/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \rightarrow e^+e^-)] = 20.8 \pm 2.3 \pm 2.1$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M070P04;LINKAGE=A

$\Gamma(\pi^+\pi^- K^0_S K^0_S)/\Gamma_{total}$ — Γ_{113}/Γ

NODE=M070P05
NODE=M070P05

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**1.68±0.19±0.04**	133	[1] LEES	14H	BABR	$e^+e^- \rightarrow \pi^+\pi^- K^0_S K^0_S \gamma$

YOUR NOTE [1] LEES 14H reports $[\Gamma(J/\psi(1S) \rightarrow \pi^+\pi^- K^0_S K^0_S)/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \rightarrow e^+e^-)] = 9.3 \pm 0.9 \pm 0.5$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M070P05;LINKAGE=A

$\Gamma(K^+K^- K^0_S K^0_S)/\Gamma_{total}$ — Γ_{114}/Γ

NODE=M070P06
NODE=M070P06

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**0.41±0.07±0.01**	29	[1] LEES	14H	BABR	$e^+e^- \rightarrow K^0_S K^0_S K^+K^-\gamma$

YOUR NOTE [1] LEES 14H reports $[\Gamma(J/\psi(1S) \rightarrow K^+K^- K^0_S K^0_S)/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \rightarrow e^+e^-)] = 2.3 \pm 0.4 \pm 0.1$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M070P06;LINKAGE=A

$\Gamma(K^+K^- f'_2(1525))/\Gamma_{total}$ — Γ_{51}/Γ

NODE=M070P15
NODE=M070P15

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**1.04±0.34±0.03**	16	[1,2] LEES	14H	BABR	$e^+e^- \rightarrow K^0_S K^0_S K^+K^-\gamma$

YOUR NOTE [1] Dividing by 1/4 to take into account $B(f'_2(1525) \rightarrow K^0_S K^0_S) = 1/4 B(f'_2(1525) \rightarrow K\overline{K})$ and using $B(f'_2(1525) \rightarrow K\overline{K}) = (88.7 \pm 2.2)\%$.

NODE=M070P15;LINKAGE=A

YOUR NOTE [2] LEES 14H reports $[\Gamma(J/\psi(1S) \rightarrow K^+K^- f'_2(1525))/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \rightarrow e^+e^-)] = 5.77 \pm 1.89 \pm 0.23$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M070P15;LINKAGE=B

$\Gamma(K^+K^- f'_2(1525) \rightarrow K^+K^- K^0_S K^0_S)/\Gamma_{total}$ — Γ_{52}/Γ

NODE=M070P16
NODE=M070P16

	VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
YOUR DATA	**0.23±0.08±0.01**	16	[1] LEES	14H	BABR	$e^+e^- \rightarrow K^0_S K^0_S K^+K^-\gamma$

YOUR NOTE [1] LEES 14H reports $[\Gamma(J/\psi(1S) \rightarrow K^+K^- f'_2(1525) \rightarrow K^+K^- K^0_S K^0_S)/\Gamma_{total}] \times [\Gamma(J/\psi(1S) \rightarrow e^+e^-)] = 1.28 \pm 0.42 \pm 0.05$ keV which we divide by our best value $\Gamma(J/\psi(1S) \rightarrow e^+e^-) = 5.55 \pm 0.14 \pm 0.02$ keV. Our first error is their experiment's error and our second error is the systematic error from using our best value.

NODE=M070P16;LINKAGE=A

$J/\psi(1S)$ REFERENCES

NODE=M070

YOUR PAPER

LEES	14H	PR D89 092002	J.P. Lees *et al.*	(BABAR Collab)	REFID=55940
ABLIKIM	10E	PL B693 88	M. Ablikim *et al.*	(BES II Collab.)	REFID=53361
FALVARD	88	PR D38 2706	A. Falvard *et al.*	(CLER, FRAS, LALO+)	REFID=40576
GIDAL	81	PL 107B 153	G. Gidal *et al.*	(SLAC, LBL)	REFID=20386