NODE=M026

$\eta_c(1S)$

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

$\eta_c(1S)$ MASS

NODE=M026M

NODE=M026M

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
2984.09 ± 0.30 OUR AVERAGE Error includes scale factor of 1.2. [2984.1 ± 0.4 MeV OUR 2025 AVERAGE Scale factor = 1.2]					NEW
2984.14 ± 0.13 ± 0.38		[1] ABLIKIM	25R	BES3	$\psi(2S) \to \gamma\eta_c \to \gamma 2(\pi^+\pi^-)\eta$
2985.01 ± 0.17 ± 0.89	35k	AAIJ	23AH	LHCB	$B^+ \to K^+(K^0_S K\pi)$
2983.9 ± 0.7 ± 0.1		[2] AAIJ	20H	LHCB	$pp \to bX \to p\bar{p}X$
2985.9 ± 0.7 ± 2.1	1705	ABLIKIM	19AV	BES3	$J/\psi \to \gamma\omega\omega$
2984.6 ± 0.7 ± 2.2	2673	XU	18	BELL	$e^+e^- \to e^+e^-\eta'\pi^+\pi^-$
2986.7 ± 0.5 ± 0.9	11k	[3] AAIJ	17AD	LHCB	$pp \to B^+X \to p\bar{p}K^+X$
2982.8 ± 1.0 ± 0.5	6.4k	[4] AAIJ	17BB	LHCB	$pp \to b\bar{b}X \to 2(K^+K^-)X$
2982.2 ± 1.5 ± 0.1	2.0k	[5] AAIJ	15BI	LHCB	$pp \to \eta_c(1S)X$
2983.5 ± 1.4 $^{+1.6}_{-3.6}$		[6] ANASHIN	14	KEDR	$J/\psi \to \gamma\eta_c$
2979.8 ± 0.8 ± 3.5	4.5k	[7,8] LEES	14E	BABR	$\gamma\gamma \to K^+K^-\pi^0$
2984.1 ± 1.1 ± 2.1	900	[7,8,9] LEES	14E	BABR	$\gamma\gamma \to K^+K^-\eta$ OCCUR=2
2984.3 ± 0.6 ± 0.6		[10,11] ABLIKIM	12F	BES3	$\psi(2S) \to \gamma\eta_c$
2984.49 ± 1.16 ± 0.52	832	[7] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma$ hadrons
2982.7 ± 1.8 ± 2.2	486	ZHANG	12A	BELL	$e^+e^- \to e^+e^-\eta'\pi^+\pi^-$
2984.5 ± 0.8 ± 3.1	11k	DEL-AMO-SA..	11M	BABR	$\gamma\gamma \to K^+K^-\pi^+\pi^-\pi^0$
2985.4 ± 1.5 $^{+0.5}_{-2.0}$	920	[11] VINOKUROVA	11	BELL	$B^\pm \to K^\pm(K^0_S K^\pm\pi^\mp)$
2982.2 ± 0.4 ± 1.6	14k	[12] LEES	10	BABR	10.6 $e^+e^- \to e^+e^- K^0_S K^\pm\pi^\mp$
2985.8 ± 1.5 ± 3.1	0.9k	AUBERT	08AB	BABR	$B \to \eta_c(1S)K^{(*)} \to K\overline{K}\pi K^{(*)}$
2986.1 ± 1.0 ± 2.5	7.5k	UEHARA	08	BELL	$\gamma\gamma \to \eta_c \to$ hadrons
2970 ± 5 ± 6	501	[13] ABE	07	BELL	$e^+e^- \to J/\psi(c\bar{c})$
2971 ± 3 $^{+2}_{-1}$	195	WU	06	BELL	$B^+ \to p\bar{p}K^+$
2974 ± 7 $^{+2}_{-1}$	20	WU	06	BELL	$B^+ \to \Lambda\overline{\Lambda}K^+$ OCCUR=2
2981.8 ± 1.3 ± 1.5	592	ASNER	04	CLEO	$\gamma\gamma \to \eta_c' \to K^0_S K^\pm\pi^\mp$
2984.1 ± 2.1 ± 1.0	190	[14] AMBROGIANI	03	E835	$\bar{p}p \to \eta_c \to \gamma\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2982.5 ± 0.4 ± 1.4	12k	[15] DEL-AMO-SA..	11M	BABR	$\gamma\gamma \to K^0_S K^\pm\pi^\mp$ OCCUR=2
2982.2 ± 0.6		[16] MITCHELL	09	CLEO	$e^+e^- \to \gamma X$
2982 ± 5	270	[17] AUBERT	06E	BABR	$B^\pm \to K^\pm X_{c\bar{c}}$
2982.5 ± 1.1 ± 0.9	2.5k	[18] AUBERT	04D	BABR	$\gamma\gamma \to \eta_c(1S) \to K\overline{K}\pi$
2977.5 ± 1.0 ± 1.2		[16,19] BAI	03	BES	$J/\psi \to \gamma\eta_c$
2979.6 ± 2.3 ± 1.6	180	[20] FANG	03	BELL	$B \to \eta_c K$
2976.3 ± 2.3 ± 1.2		[16,21] BAI	00F	BES	$J/\psi,\ \psi(2S) \to \gamma\eta_c$
2976.6 ± 2.9 ± 1.3	140	[16,22] BAI	00F	BES	$J/\psi \to \gamma\eta_c$ OCCUR=2
2980.4 ± 2.3 ± 0.6		[23] BRANDENB...	00B	CLE2	$\gamma\gamma \to \eta_c \to K^\pm K^0_S\pi^\mp$
2975.8 ± 3.9 ± 1.2		[22] BAI	99B	BES	Sup. by BAI 00F
2999 ± 8	25	ABREU	98O	DLPH	$e^+e^- \to e^+e^-$ +hadrons
2988.3 $^{+3.3}_{-3.1}$		ARMSTRONG	95F	E760	$\bar{p}p \to \gamma\gamma$
2974.4 ± 1.9		[16,24] BISELLO	91	DM2	$J/\psi \to \eta_c\gamma$
2969 ± 4 ± 4	80	[16] BAI	90B	MRK3	$J/\psi \to \gamma K^+K^-K^+K^-$

2956	±12	±12		[16] BAI	90B	MRK3	$J/\psi \to \gamma K^+ K^- K_S^0 K_L^0$	OCCUR=3
2982.6	$^{+\ 2.7}_{-\ 2.3}$		12	BAGLIN	87B	SPEC	$\bar{p}p \to \gamma\gamma$	
2980.2	± 1.6			[16,24] BALTRUSAIT..	86	MRK3	$J/\psi \to \eta_c \gamma$	
2984	± 2.3	± 4.0		[16] GAISER	86	CBAL	$J/\psi \to \gamma$X, $\psi(2S) \to \gamma$X	
2976	± 8			[16,25] BALTRUSAIT..	84	MRK3	$J/\psi \to 2\phi\gamma$	
2982	± 8		18	[26] HIMEL	80B	MRK2	e^+e^-	
2980	± 9			[26] PARTRIDGE	80B	CBAL	e^+e^-	

[1] Average between constructive and destructive interference with background. NODE=M026M;LINKAGE=I

[2] AAIJ 20H report $m_{J/\psi} - m_{\eta_c(1S)} = 113.0 \pm 0.7 \pm 0.1$ MeV. We use the current value $m_{J/\psi} = 3096.900 \pm 0.006$ MeV to obtain the quoted mass. NODE=M026M;LINKAGE=H

[3] AAIJ 17AD report $m_{J/\psi} - m_{\eta_c(1S)} = 110.2 \pm 0.5 \pm 0.9$ MeV. We use the current value $m_{J/\psi} = 3096.900 \pm 0.006$ MeV to obtain the quoted mass. NODE=M026M;LINKAGE=F

[4] From a fit of the $\phi\phi$ invariant mass with the mass and width of $\eta_c(1S)$ as free parameters. NODE=M026M;LINKAGE=G

[5] AAIJ 15BI reports $m_{J/\psi} - m_{\eta_c(1S)} = 114.7 \pm 1.5 \pm 0.1$ MeV from a sample of $\eta_c(1S)$ and J/ψ produced in b-hadron decays. We have used current value of $m_{J/\psi} = 3096.900 \pm 0.006$ MeV to arrive at the quoted $m_{\eta_c(1S)}$ result. NODE=M026M;LINKAGE=D

[6] Taking into account an asymmetric photon lineshape. NODE=M026M;LINKAGE=E

[7] With floating width. NODE=M026M;LINKAGE=AL

[8] Ignoring possible interference with the non-resonant 0^- amplitude. NODE=M026M;LINKAGE=LS

[9] Using both, $\eta \to \gamma\gamma$ and $\eta \to \pi^+\pi^-\pi^0$ decays. NODE=M026M;LINKAGE=EL

[10] From a simultaneous fit to six decay modes of the η_c. NODE=M026M;LINKAGE=BL

[11] Accounts for interference with non-resonant continuum. NODE=M026M;LINKAGE=VA

[12] Taking into account interference with the non-resonant $J^P = 0^-$ amplitude. NODE=M026M;LINKAGE=LE

[13] From a fit of the J/ψ recoil mass spectrum. Supersedes ABE,K 02 and ABE 04G. NODE=M026M;LINKAGE=EB

[14] Using mass of $\psi(2S) = 3686.00$ MeV. NODE=M026M;LINKAGE=BG

[15] Not independent from the measurements reported by LEES 10. NODE=M026M;LINKAGE=DE

[16] MITCHELL 09 observes a significant asymmetry in the lineshapes of $\psi(2S) \to \gamma\eta_c$ and $J/\psi \to \gamma\eta_c$ transitions. If ignored, this asymmetry could lead to significant bias whenever the mass and width are measured in $\psi(2S)$ or J/ψ radiative decays. NODE=M026M;LINKAGE=MI

[17] From the fit of the kaon momentum spectrum. Systematic errors not evaluated. NODE=M026M;LINKAGE=AU

[18] Superseded by LEES 10. NODE=M026M;LINKAGE=UB

[19] From a simultaneous fit of five decay modes of the η_c. NODE=M026M;LINKAGE=AK

[20] Superseded by VINOKUROVA 11. NODE=M026M;LINKAGE=FA

[21] Weighted average of the $\psi(2S)$ and $J/\psi(1S)$ samples. Using an η_c width of 13.2 MeV. NODE=M026M;LINKAGE=KZ

[22] Average of several decay modes. Using an η_c width of 13.2 MeV. NODE=M026M;LINKAGE=C1

[23] Superseded by ASNER 04. NODE=M026M;LINKAGE=NN

[24] Average of several decay modes. NODE=M026M;LINKAGE=A

[25] $\eta_c \to \phi\phi$. NODE=M026M;LINKAGE=B

[26] Mass adjusted by us to correspond to $J/\psi(1S)$ mass = 3097 MeV. NODE=M026M;LINKAGE=M

$\eta_c(1S)$ WIDTH

NODE=M026W

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
30.0 ± 0.5 OUR FIT Error includes scale factor of 1.2. [30.5 ± 0.5 MeV OUR 2025 FIT Scale factor = 1.2]					NEW
30.2 ± 0.5 OUR AVERAGE Error includes scale factor of 1.2. [30.5 ± 0.5 MeV OUR 2025 AVERAGE Scale factor = 1.1]					NEW
28.82± 0.11±0.82		[1] ABLIKIM	25R	BES3	$\psi(2S) \to \gamma\eta_c \to \gamma 2(\pi^+\pi^-)\eta$ OCCUR=2
29.7 ± 0.5 ±0.2	35k	AAIJ	23AH	LHCB	$B^+ \to K^+(K_S^0 K\pi)$
33.8 ± 1.6 ±4.1	1705	ABLIKIM	19AV	BES3	$J/\psi \to \gamma\omega\omega$
30.8 $^{+\ 2.3}_{-\ 2.2}$ ±2.9	2673	XU	18	BELL	$e^+e^- \to e^+e^-\eta'\pi^+\pi^-$
34.0 ± 1.9 ±1.3	11k	AAIJ	17AD	LHCB	$pp \to B^+X \to p\bar{p}K^+X$
31.4 ± 3.5 ±2.0	6.4k	[2] AAIJ	17BB	LHCB	$pp \to b\bar{b}X \to 2(K^+K^-)X$
27.2 ± 3.1 $^{+5.4}_{-2.6}$		[3] ANASHIN	14	KEDR	$J/\psi \to \gamma\eta_c$
25.2 ± 2.6 ±2.4	4.5k	[4,5] LEES	14E	BABR	$\gamma\gamma \to K^+K^-\pi^0$
34.8 ± 3.1 ±4.0	900	[4,5,6] LEES	14E	BABR	$\gamma\gamma \to K^+K^-\eta$ OCCUR=2
32.0 ± 1.2 ±1.0		[7,8] ABLIKIM	12F	BES3	$\psi(2S) \to \gamma\eta_c$
36.4 ± 3.2 ±1.7	832	[4] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma$ hadrons

37.8	$^{+5.8}_{-5.3}$	±3.1	486	ZHANG	12A	BELL	$e^+e^- \to e^+e^-\eta'\pi^+\pi^-$	
36.2	± 2.8	±3.0	11k	DEL-AMO-SA..	11M	BABR	$\gamma\gamma \to K^+K^-\pi^+\pi^-\pi^0$	
35.1	± 3.1	$^{+1.0}_{-1.6}$	920	[8] VINOKUROVA	11	BELL	$B^\pm \to K^\pm(K^0_S K^\pm\pi^\mp)$	
31.7	± 1.2	±0.8	14k	[9] LEES	10	BABR	10.6 $e^+e^- \to e^+e^- K^0_S K^\pm\pi^\mp$	
36.3	$^{+3.7}_{-3.6}$	±4.4	0.9k	AUBERT	08AB	BABR	$B \to \eta_c(1S)K^{(*)} \to K\overline{K}\pi K^{(*)}$	
28.1	± 3.2	±2.2	7.5k	UEHARA	08	BELL	$\gamma\gamma \to \eta_c \to$ hadrons	
48	$^{+8}_{-7}$	±5	195	WU	06	BELL	$B^+ \to p\overline{p}K^+$	
40	±19	±5	20	WU	06	BELL	$B^+ \to \Lambda\overline{\Lambda}K^+$	OCCUR=2
24.8	± 3.4	±3.5	592	ASNER	04	CLEO	$\gamma\gamma \to \eta_c' \to K^0_S K^\pm\pi^\mp$	
20.4	$^{+7.7}_{-6.7}$	±2.0	190	AMBROGIANI	03	E835	$\overline{p}p \to \eta_c \to \gamma\gamma$	
23.9	$^{+12.6}_{-7.1}$			ARMSTRONG	95F	E760	$\overline{p}p \to \gamma\gamma$	

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

32.1	± 1.1	±1.3	12k	[10] DEL-AMO-SA..	11M	BABR	$\gamma\gamma \to K^0_S K^\pm\pi^\mp$	OCCUR=2
34.3	± 2.3	±0.9	2.5k	[11] AUBERT	04D	BABR	$\gamma\gamma \to \eta_c(1S) \to K\overline{K}\pi$	
17.0	± 3.7	±7.4		[12] BAI	03	BES	$J/\psi \to \gamma\eta_c$	
29	± 8	±6	180	[13] FANG	03	BELL	$B \to \eta_c K$	
11.0	± 8.1	±4.1		[14] BAI	00F	BES	$J/\psi \to \gamma\eta_c$ and $\psi(2S) \to \gamma\eta_c$	
27.0	± 5.8	±1.4		[15] BRANDENB...	00B	CLE2	$\gamma\gamma \to \eta_c \to K^\pm K^0_S\pi^\mp$	
7.0	$^{+7.5}_{-7.0}$		12	BAGLIN	87B	SPEC	$\overline{p}p \to \gamma\gamma$	
10.1	$^{+33.0}_{-8.2}$		23	[16] BALTRUSAIT..	86	MRK3	$J/\psi \to \gamma p\overline{p}$	
11.5	± 4.5			GAISER	86	CBAL	$J/\psi \to \gamma$X, $\psi(2S) \to \gamma$X	
< 40	90% CL		18	HIMEL	80B	MRK2	e^+e^-	
< 20	90% CL			PARTRIDGE	80B	CBAL	e^+e^-	

[1] Average between constructive and destructive interference with background. NODE=M026W;LINKAGE=D
[2] From a fit of the $\phi\phi$ invariant mass with the mass and width of $\eta_c(1S)$ as free parameters. NODE=M026W;LINKAGE=B
[3] Taking into account an asymmetric photon lineshape. NODE=M026W;LINKAGE=A
[4] With floating mass. NODE=M026W;LINKAGE=AL
[5] Ignoring possible interference with the non-resonant 0^- amplitude. NODE=M026W;LINKAGE=LS
[6] Using both, $\eta \to \gamma\gamma$ and $\eta \to \pi^+\pi^-\pi^0$ decays. NODE=M026W;LINKAGE=EL
[7] From a simultaneous fit to six decay modes of the η_c. NODE=M026W;LINKAGE=BL
[8] Accounts for interference with non-resonant continuum. NODE=M026W;LINKAGE=VA
[9] Taking into account interference with the non-resonant $J^P = 0^-$ amplitude. NODE=M026W;LINKAGE=LE
[10] Not independent from the measurements reported by LEES 10. NODE=M026W;LINKAGE=DE
[11] Superseded by LEES 10. NODE=M026W;LINKAGE=UB
[12] From a simultaneous fit of five decay modes of the η_c. NODE=M026W;LINKAGE=AK
[13] Superseded by VINOKUROVA 11. NODE=M026W;LINKAGE=FA
[14] From a fit to the 4-prong invariant mass in $\psi(2S) \to \gamma\eta_c$ and $J/\psi(1S) \to \gamma\eta_c$ decays. NODE=M026W;LINKAGE=KZ
[15] Superseded by ASNER 04. NODE=M026W;LINKAGE=NN
[16] Positive and negative errors correspond to 90% confidence level. NODE=M026W;LINKAGE=L

$\eta_c(1S)$ DECAY MODES

NODE=M026215;NODE=M026

	Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	
	Decays involving hadronic resonances			NODE=M026;CLUMP=A
Γ_1	$\eta'(958)\pi\pi$	(1.59±0.34) %	S=1.7	DESIG=24
Γ_2	$\eta'(958)K\overline{K}$	(1.37±0.31) %		DESIG=85
Γ_3	$\eta'(958)\eta\eta$	(2.7 ±0.5) × 10^{-3}		DESIG=93
Γ_4	$\rho\rho$	(1.41±0.34) %		DESIG=19
Γ_5	$K^*(892)^0K^-\pi^+$ + c.c.	(1.43±0.35) %		DESIG=26
Γ_6	$K^*(892)\overline{K}^*(892)$	(5.5 ±1.1) × 10^{-3}	S=1.2	DESIG=18
Γ_7	$K^*(892)^0\overline{K}^*(892)^0\pi^+\pi^-$	(1.1 ±0.4) %		DESIG=57
Γ_8	ϕK^+K^-	(3.0 $^{+1.2}_{-1.0}$) × 10^{-3}		DESIG=28
Γ_9	$\phi\phi$	(1.4 ±0.4) × 10^{-3}	S=2.9	DESIG=17
Γ_{10}	$\phi 2(\pi^+\pi^-)$	< 3.3 × 10^{-3}	CL=90%	DESIG=58
Γ_{11}	$a_0(980)\pi$	seen		DESIG=21
Γ_{12}	$a_2(1320)\pi$	seen		DESIG=22

Γ_{13}	$K^*(892)\overline{K}+$ c.c.	$<$ 1.28 %		CL=90%	DESIG=40
Γ_{14}	$f_2(1270)\eta$	seen			DESIG=23
Γ_{15}	$f_2(1270)\eta'$	seen			DESIG=92
Γ_{16}	$\omega\omega$	(2.1 $\pm$0.8) $\times 10^{-3}$		S=2.4	DESIG=20
Γ_{17}	$\omega\phi$	(3.0 $\pm$0.8) $\times 10^{-5}$			DESIG=47
Γ_{18}	$f_2(1270)f_2(1270)$	(8.4 $\pm$2.4) $\times 10^{-3}$		S=1.2	DESIG=46
Γ_{19}	$f_2(1270)f'_2(1525)$	(7.7 $\pm$2.5) $\times 10^{-3}$			DESIG=59
Γ_{20}	$f_0(500)\eta$	seen			DESIG=86
Γ_{21}	$f_0(500)\eta'$	seen			DESIG=87
Γ_{22}	$f_0(980)\eta$	seen			DESIG=70
Γ_{23}	$f_0(980)\eta'$	seen			DESIG=88
Γ_{24}	$f_0(1500)\eta$	seen			DESIG=71
Γ_{25}	$f_0(1710)\eta'$	seen			DESIG=90
Γ_{26}	$f_0(2100)\eta'$	seen			DESIG=91
Γ_{27}	$f_0(2200)\eta$	seen			DESIG=72
Γ_{28}	$a_0(1320)\pi$	seen			DESIG=74
Γ_{29}	$a_0(1450)\pi$	seen			DESIG=75
Γ_{30}	$a_2(1700)\pi$	seen			DESIG=94
Γ_{31}	$a_0(1710)\pi$	seen			DESIG=97
Γ_{32}	$a_0(1950)\pi$	seen			DESIG=79
Γ_{33}	$K_0^*(1430)\overline{K}+$ c.c.	seen			DESIG=76
Γ_{34}	$K_2^*(1430)\overline{K}+$ c.c.	seen			DESIG=77
Γ_{35}	$K_0^*(1950)\overline{K}+$ c.c.	seen			DESIG=78
Γ_{36}	$K_0^*(2600)\overline{K}+$ c.c.	seen			DESIG=95
	Decays into stable hadrons				NODE=M026;CLUMP=B
Γ_{37}	$K\overline{K}\pi$	(5.9 $\pm$0.5) %		S=1.8	DESIG=14
Γ_{38}	$K\overline{K}\eta$	(1.11$\pm$0.15) %		S=1.3	DESIG=25
Γ_{39}	$\eta\pi^+\pi^-$	(1.5 $\pm$0.4) %			DESIG=16
Γ_{40}	$\eta 2(\pi^+\pi^-)$	(4.0 $\pm$1.2) %			DESIG=61
Γ_{41}	$K^+K^-\pi^+\pi^-$	(6.7 $\pm$1.8) $\times 10^{-3}$		S=2.4	DESIG=15
Γ_{42}	$K^+K^-\pi^+\pi^-\pi^0$	(2.8 $\pm$0.5) %			DESIG=60
Γ_{43}	$K^0K^-\pi^+\pi^-\pi^+ +$ c.c.	(5.1 $\pm$1.4) %			DESIG=62
Γ_{44}	$K^+K^-2(\pi^+\pi^-)$	(6.9 $\pm$2.0) $\times 10^{-3}$			DESIG=55
Γ_{45}	$2(K^+K^-)$	(1.2 $\pm$0.4) $\times 10^{-3}$		S=1.6	DESIG=27
Γ_{46}	$\pi^+\pi^-\pi^0$	$<$ 4 $\times 10^{-4}$		CL=90%	DESIG=81
Γ_{47}	$\pi^+\pi^-\pi^0\pi^0$	(4.3 $\pm$1.0) %			DESIG=63
Γ_{48}	$2(\pi^+\pi^-)$	(7.5 $\pm$1.3) $\times 10^{-3}$		S=1.6	DESIG=11
Γ_{49}	$2\pi^+2\pi^-\eta$				DESIG=99
Γ_{50}	$2(\pi^+\pi^-\pi^0)$	(15.5 $\pm$2.0) %			DESIG=64
Γ_{51}	$3(\pi^+\pi^-)$	(1.55$\pm$0.28) %			DESIG=56
Γ_{52}	$p\overline{p}$	(1.11$\pm$0.12) $\times 10^{-3}$		S=1.4	DESIG=12
Γ_{53}	$p\overline{p}\pi^0$	(3.2 $\pm$1.2) $\times 10^{-3}$			DESIG=65
Γ_{54}	$p\overline{p}\pi^+\pi^-$	(3.4 $\pm$0.5) $\times 10^{-3}$		S=1.2	DESIG=13
Γ_{55}	$\Lambda\overline{\Lambda}$	(9.4 $\pm$1.8) $\times 10^{-4}$		S=1.2	DESIG=45
Γ_{56}	$K^+\overline{p}\Lambda+$ c.c.	(2.26$\pm$0.34) $\times 10^{-3}$			DESIG=82
Γ_{57}	$\overline{\Lambda}(1520)\Lambda+$ c.c.	(2.8 $\pm$1.2) $\times 10^{-3}$			DESIG=83
Γ_{58}	$\Sigma^+\overline{\Sigma}^-$	(1.98$\pm$0.35) $\times 10^{-3}$			DESIG=66
Γ_{59}	$\Xi^-\overline{\Xi}^+$	(8.3 $\pm$1.8) $\times 10^{-4}$			DESIG=67
	Radiative decays				NODE=M026;CLUMP=C
Γ_{60}	$\gamma\gamma$	(2.13$\pm$0.15) $\times 10^{-4}$		S=1.5	DESIG=31
Γ_{61}	$\gamma\phi$	($1.15^{+0.33}_{-0.40}$) $\times 10^{-5}$			DESIG=100
	Charge conjugation (C), Parity (P), Lepton Family number (LF) violating modes				NODE=M026;CLUMP=D
Γ_{62}	$\pi^+\pi^-$	P,CP $<$ 1.0 $\times 10^{-4}$		CL=90%	DESIG=51
Γ_{63}	$\pi^0\pi^0$	P,CP $<$ 3.3 $\times 10^{-5}$		CL=90%	DESIG=52
Γ_{64}	K^+K^-	P,CP $<$ 5 $\times 10^{-4}$		CL=90%	DESIG=53
Γ_{65}	$K_S^0K_S^0$	P,CP $<$ 2.9 $\times 10^{-4}$		CL=90%	DESIG=54

FIT INFORMATION

A multiparticle fit to $\eta_c(1S)$, $J/\psi(1S)$, $\psi(2S)$, $h_c(1P)$, and $B^{\pm}$ with the total width, 10 combinations of partial widths obtained from integrated cross section, and 38 branching ratios uses 115 measurements to determine 19 parameters. The overall fit has a $\chi^2 = 215.4$ for 96 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, $x_i \equiv \Gamma_i/\Gamma_{\text{total}}$.

x_6	16									
x_9	13	14								
x_{16}	8	9	8							
x_{18}	10	12	12	7						
x_{37}	32	30	26	15	20					
x_{38}	19	18	15	9	12	59				
x_{41}	9	9	8	5	6	19	12			
x_{45}	7	6	6	3	4	17	10	5		
x_{48}	14	18	18	10	15	29	17	10	6	
x_{52}	22	23	21	12	17	45	27	13	12	25
x_{54}	10	10	10	5	7	28	17	7	13	11
x_{55}	9	11	13	7	10	22	13	7	7	16
x_{60}	−41	−37	−29	−17	−22	−76	−45	−20	−16	−33
Γ	−2	−1	−1	−1	−1	−3	−2	−1	−1	−1
	x_1	x_6	x_9	x_{16}	x_{18}	x_{37}	x_{38}	x_{41}	x_{45}	x_{48}

x_{54}	22			
x_{55}	20	16		
x_{60}	−51	−23	−20	
Γ	1	−1	−1	−15
	x_{52}	x_{54}	x_{55}	x_{60}

$\eta_c(1S)$ PARTIAL WIDTHS

NODE=M026217

$\Gamma(\gamma\gamma)$ Γ_{60}

NODE=M026W1
NODE=M026W1

VALUE (keV)	EVTS	DOCUMENT ID		TECN	COMMENT
6.4± 0.5 OUR FIT		Error includes scale factor of 1.5. [5.1 ± 0.4 keV OUR 2025 FIT Scale factor = 1.2]			
• • • We do not use the following data for averages, fits, limits, etc. • • •					
5.8± 1.1	486	[1] ZHANG	12A	BELL	$e^+e^- \to e^+e^-\eta'\pi^+\pi^-$
5.2± 1.2	273 ± 43	[2,3] AUBERT	06E	BABR	$B^{\pm} \to K^{\pm} X_{c\bar{c}}$
5.5± 1.2± 1.8	157 ± 33	[4] KUO	05	BELL	$\gamma\gamma \to p\bar{p}$
7.4± 0.4± 2.3		[5] ASNER	04	CLEO	$\gamma\gamma \to \eta_c' \to K^0_S K^{\pm}\pi^{\mp}$
13.9± 2.0± 3.0	41	[6] ABDALLAH	03J	DLPH	$\gamma\gamma \to \eta_c$
$3.8^{+\ 1.1+\ 1.9}_{-\ 1.0-\ 1.0}$	190	[7] AMBROGIANI	03	E835	$\bar{p}p \to \eta_c \to \gamma\gamma$
7.6± 0.8± 2.3		[5,8] BRANDENB...	00B	CLE2	$\gamma\gamma \to \eta_c \to K^{\pm}K^0_S\pi^{\mp}$
6.9± 1.7± 2.1	76	[9] ACCIARRI	99T	L3	$e^+e^- \to e^+e^-\eta_c$
27 ±16 ±10	5	[5] SHIRAI	98	AMY	58 e^+e^-
$6.7^{+\ 2.4}_{-\ 1.7}$± 2.3		[4] ARMSTRONG	95F	E760	$\bar{p}p \to \gamma\gamma$
11.3± 4.2		[10] ALBRECHT	94H	ARG	$e^+e^- \to e^+e^-\eta_c$
8.0± 2.3± 2.4	17	[11] ADRIANI	93N	L3	$e^+e^- \to e^+e^-\eta_c$
$5.9^{+\ 2.1}_{-\ 1.8}$± 1.9		[7] CHEN	90B	CLEO	$e^+e^- \to e^+e^-\eta_c$
$6.4^{+\ 5.0}_{-\ 3.4}$		[12] AIHARA	88D	TPC	$e^+e^- \to e^+e^-X$
$4.3^{+\ 3.4}_{-\ 3.7}$± 2.4		[4] BAGLIN	87B	SPEC	$\bar{p}p \to \gamma\gamma$
28 ±15		[5,13] BERGER	86	PLUT	$\gamma\gamma \to K\overline{K}\pi$

NODE=M026W1
NEW

[1] Assuming there is no interference with the non-resonant background. NODE=M026W1;LINKAGE=ZH
[2] Calculated by us using $\Gamma(\eta_c \to K\overline{K}\pi) \times \Gamma(\eta_c \to \gamma\gamma) / \Gamma = 0.44 \pm 0.05$ keV from PDG 06 and $B(\eta_c \to K\overline{K}\pi) = (8.5 \pm 1.8)\%$ from AUBERT 06E. NODE=M026W1;LINKAGE=AU
[3] Systematic errors not evaluated. NODE=M026W1;LINKAGE=NS
[4] Normalized to $B(\eta_c \to p\overline{p}) = (1.3 \pm 0.4) \times 10^{-3}$. NODE=M026W1;LINKAGE=N3
[5] Normalized to $B(\eta_c \to K^{\pm} K^0_S \pi^{\mp})$. NODE=M026W1;LINKAGE=N2
[6] Average of $K^0_S K^{\pm}\pi^{\mp}$, $\pi^+\pi^- K^+ K^-$, and $2(K^+K^-)$ decay modes. NODE=M026W;LINKAGE=FF
[7] Normalized to the sum of $B(\eta_c \to K^{\pm} K^0_S \pi^{\mp})$, $B(\eta_c \to K^+K^-\pi^+\pi^-)$, and $B(\eta_c \to 2\pi^+2\pi^-)$. NODE=M026W1;LINKAGE=N6
[8] Superseded by ASNER 04. NODE=M026W1;LINKAGE=NN
[9] Normalized to the sum of 9 branching ratios. NODE=M026W1;LINKAGE=N1
[10] Normalized to the sum of $B(\eta_c \to K^{\pm} K^0_S \pi^{\mp})$, $B(\eta_c \to \phi\phi)$, $B(\eta_c \to K^+K^-\pi^+\pi^-)$, and $B(\eta_c \to 2\pi^+2\pi^-)$. NODE=M026W1;LINKAGE=N5
[11] Superseded by ACCIARRI 99T. NODE=M026W1;LINKAGE=WD
[12] Normalized to the sum of $B(\eta_c \to K^{\pm} K^0_S \pi^{\mp})$, $B(\eta_c \to 2K^+2K^-)$, $B(\eta_c \to K^+K^-\pi^+\pi^-)$, and $B(\eta_c \to 2\pi^+2\pi^-)$. NODE=M026W1;LINKAGE=N4
[13] Re-evaluated by AIHARA 88D. NODE=M026W1;LINKAGE=A

$\eta_c(1S)$ Γ(i)Γ(γγ)/Γ(total)

NODE=M026220

$\Gamma(\eta'(958)\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_1\Gamma_{60}/\Gamma$

NODE=M026G10
NODE=M026G10

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
102 ±18 OR FIT Error includes scale factor of 1.5. [102 ± 18 eV OUR 2025 FIT Scale factor = 1.5]					NEW
98.1± 3.9±11.7	2673	XU	18	BELL	$e^+e^- \to e^+e^-\eta'\pi^+\pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$75.8^{+\ 6.3}_{-\ 6.2} \pm 8.4$	486	[1] ZHANG	12A	BELL	$e^+e^- \to e^+e^-\eta'\pi^+\pi^-$

[1] Superseded by XU 18. NODE=M026G10;LINKAGE=A

$\Gamma(\rho\rho) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_4\Gamma_{60}/\Gamma$

NODE=M026G09
NODE=M026G09

VALUE (eV)	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<39	90	< 1556	UEHARA	08	BELL	$\gamma\gamma \to 2(\pi^+\pi^-)$

$\Gamma(K^*(892)\overline{K}^*(892)) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_6\Gamma_{60}/\Gamma$

NODE=M026G08
NODE=M026G08

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
35 ±6 OR FIT					
32.4±4.2±5.8	882 ± 115	UEHARA	08	BELL	$\gamma\gamma \to \pi^+\pi^- K^+K^-$

$\Gamma(\phi\phi) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_9\Gamma_{60}/\Gamma$

NODE=M026G07
NODE=M026G07

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
9.2 ±2.2 OR FIT Error includes scale factor of 2.7. [9.2 ± 2.2 eV OUR 2025 FIT Scale factor = 2.7]					NEW
7.75±0.66±0.62	386 ± 31	[1] LIU	12B	BELL	$\gamma\gamma \to 2(K^+K^-)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
6.8 ±1.2 ±1.3	132 ± 23	UEHARA	08	BELL	$\gamma\gamma \to 2(K^+K^-)$

[1] Supersedes UEHARA 08. Using $B(\phi \to K^+K^-) = (48.9 \pm 0.5)\%$. NODE=M026G07;LINKAGE=LI

$\Gamma(\omega\omega) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_{16}\Gamma_{60}/\Gamma$

NODE=M026G03
NODE=M026G03

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
13 ±4 OR FIT Error includes scale factor of 2.1. [13 ± 5 eV OUR 2025 FIT Scale factor = 2.2]					NEW
8.67±2.86±0.96	85 ± 29	[1] LIU	12B	BELL	$\gamma\gamma \to 2(\pi^+\pi^-\pi^0)$

[1] Using $B(\omega \to \pi^+\pi^-\pi^0) = (89.2 \pm 0.7)\%$. NODE=M026G03;LINKAGE=LI

$\Gamma(\omega\phi) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_{17}\Gamma_{60}/\Gamma$

NODE=M026G04
NODE=M026G04

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.49	90	[1] LIU	12B	BELL	$\gamma\gamma \to K^+K^-\pi^+\pi^-\pi^0$

[1] Using $B(\phi \to K^+K^-) = (48.9 \pm 0.5)\%$ and $B(\omega \to \pi^+\pi^-\pi^0) = (89.2 \pm 0.7)\%$. NODE=M026G04;LINKAGE=LI

$\Gamma(f_2(1270)f_2(1270)) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{18}\Gamma_{60}/\Gamma$

NODE=M026G19
NODE=M026G19

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
54±13 OUR FIT [55 ± 14 eV OUR 2025 FIT]					NEW
69±17±12	3182±766	UEHARA	08	BELL	$\gamma\gamma \to 2(\pi^+\pi^-)$

$\Gamma(f_2(1270)f_2'(1525)) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{19}\Gamma_{60}/\Gamma$

NODE=M026G20
NODE=M026G20

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
49±9±13	1128±206	UEHARA	08	BELL	$\gamma\gamma \to \pi^+\pi^- K^+K^-$

$\Gamma(K\overline{K}\pi) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{37}\Gamma_{60}/\Gamma$

NODE=M026G14
NODE=M026G14

VALUE (keV)	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
0.377±0.020 OUR FIT Error includes scale factor of 1.4. [0.360±0.022 keV OUR 2025 FIT Scale factor = 1.5]						NEW
0.396±0.016 OUR AVERAGE						
0.386±0.008±0.021		12k	DEL-AMO-SA..11M		BABR	$\gamma\gamma \to K^0_S K^\pm\pi^\mp$
0.374±0.009±0.031		14k	[1] LEES	10	BABR	10.6 $e^+e^- \to e^+e^- K^0_S K^\pm\pi^\mp$
0.407±0.022±0.028			[2,3] ASNER	04	CLEO	$\gamma\gamma \to \eta_c' \to K^0_S K^\pm\pi^\mp$
0.60 ±0.12 ±0.09		41	[3,4] ABDALLAH	03J	DLPH	$\gamma\gamma \to K^0_S K^\pm\pi^\mp$
1.47 ±0.87 ±0.27			[3] SHIRAI	98	AMY	$\gamma\gamma \to \eta_c \to K^\pm K^0_S\pi^\mp$
0.84 ±0.21			[3] ALBRECHT	94H	ARG	$\gamma\gamma \to K^\pm K^0_S\pi^\mp$
0.60 $^{+0.23}_{-0.20}$			[3] CHEN	90B	CLEO	$\gamma\gamma \to \eta_c K^\pm K^0_S\pi^\mp$
1.06 ±0.41 ±0.27		11	[3] BRAUNSCH...	89	TASS	$\gamma\gamma \to K\overline{K}\pi$
1.5 $^{+0.60}_{-0.45}$ ±0.3		7	[3] BERGER	86	PLUT	$\gamma\gamma \to K\overline{K}\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
0.418±0.044±0.022			[3,5] BRANDENB...	00B	CLE2	$\gamma\gamma \to \eta_c \to K^\pm K^0_S\pi^\mp$
<0.63	95		[3] BEHREND	89	CELL	$\gamma\gamma \to K^0_S K^\pm\pi^\mp$
<4.4	95		ALTHOFF	85B	TASS	$\gamma\gamma \to K\overline{K}\pi$

[1] From the corrected and unfolded mass spectrum. NODE=M026G14;LINKAGE=LE
[2] Calculated by us from the value reported in ASNER 04 that assumes B($\eta_c \to K\overline{K}\pi$) = 5.5 ± 1.7% NODE=M026G14;LINKAGE=AA
[3] We have multiplied $K^\pm K^0_S\pi^\mp$ measurement by 3 to obtain $K\overline{K}\pi$. NODE=M026G14;LINKAGE=C
[4] Calculated by us from the value reported in ABDALLAH 03J, which uses B($\eta_c \to K^0_S K^\pm\pi^\mp$) = (1.5 ± 0.4)%. NODE=M026G;LINKAGE=BB
[5] Superseded by ASNER 04. NODE=M026G14;LINKAGE=NN

$\Gamma(K^+K^-\pi^+\pi^-) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{41}\Gamma_{60}/\Gamma$

NODE=M026G15
NODE=M026G15

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
42 ± 10 OUR FIT Error includes scale factor of 2.2. [42 ± 9 eV OUR 2025 FIT Scale factor = 2.1]					NEW
27 ± 6 OUR AVERAGE					
25.7± 3.2± 4.9	2019±248	UEHARA	08	BELL	$\gamma\gamma \to \pi^+\pi^- K^+K^-$
280 ±100 ±60	42	[1] ABDALLAH	03J	DLPH	$\gamma\gamma \to \pi^+\pi^- K^+K^-$
170 ± 80 ±20	13.9 ± 6.6	ALBRECHT	94H	ARG	$\gamma\gamma \to \pi^+\pi^- K^+K^-$

[1] Calculated by us from the value reported in ABDALLAH 03J, which uses B($\eta_c \to \pi^+\pi^- K^+K^-$) = (2.0 ± 0.7)%. NODE=M026G;LINKAGE=CC

$\Gamma(K^+K^-\pi^+\pi^-\pi^0) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{42}\Gamma_{60}/\Gamma$

NODE=M026G02
NODE=M026G02

VALUE (keV)	EVTS	DOCUMENT ID		TECN	COMMENT
0.190±0.006±0.028	11k	DEL-AMO-SA..11M		BABR	$\gamma\gamma \to K^+K^-\pi^+\pi^-\pi^0$

$\Gamma(2(K^+K^-)) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{45}\Gamma_{60}/\Gamma$

NODE=M026G27
NODE=M026G27

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
7.5± 2.3 OUR FIT Error includes scale factor of 1.5. [7.2 ± 2.1 eV OUR 2025 FIT Scale factor = 1.5]					NEW
5.8± 1.9 OUR AVERAGE					
5.6± 1.1± 1.6	216 ± 42	UEHARA	08	BELL	$\gamma\gamma \to 2(K^+K^-)$
350 ±90 ±60	46	[1] ABDALLAH	03J	DLPH	$\gamma\gamma \to 2(K^+K^-)$
231 ±90 ±23	9.1 ± 3.3	[2] ALBRECHT	94H	ARG	$\gamma\gamma \to 2(K^+K^-)$

[1] Calculated by us from the value reported in ABDALLAH 03J, which uses B($\eta_c \to$) $2(K^+K^-)$ = (2.1 ± 1.2)%. NODE=M026G;LINKAGE=DD
[2] Includes all topological modes except $\eta_c \to \phi\phi$. NODE=M026G;LINKAGE=EE

$\Gamma(2(\pi^+\pi^-)) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{48}\Gamma_{60}/\Gamma$

NODE=M026G11
NODE=M026G11

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
48 ± 7 OUR FIT Error includes scale factor of 1.4. [48 ± 7 eV OUR 2025 FIT Scale factor = 1.5]					NEW
42 ± 6 OUR AVERAGE					
40.7± 3.7± 5.3	5381±492	UEHARA	08	BELL	$\gamma\gamma \to 2(\pi^+\pi^-)$
180 ±70 ±20	21.4 ± 8.6	ALBRECHT	94H	ARG	$\gamma\gamma \to 2(\pi^+\pi^-)$

$\Gamma(p\overline{p}) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{52}\Gamma_{60}/\Gamma$

NODE=M026G01
NODE=M026G01

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
7.1 ±0.6 OUR FIT Error includes scale factor of 1.2. [6.7 ± 0.6 eV OUR 2025 FIT Scale factor = 1.1]					NEW
6.2 $^{+1.1}_{-1.0}$ OUR AVERAGE Error includes scale factor of 1.1.					
$7.20\pm1.53^{+0.67}_{-0.75}$	157 ± 33	[1] KUO	05	BELL	$\gamma\gamma \to p\overline{p}$
$4.6\ ^{+1.3}_{-1.1}$ ±0.4	190	AMBROGIANI	03	E835	$\overline{p}p \to \gamma\gamma$
$8.1\ ^{+2.9}_{-2.0}$		ARMSTRONG	95F	E760	$\overline{p}p \to \gamma\gamma$

[1] Not independent from the $\Gamma_{\gamma\gamma}$ reported by the same experiment. NODE=M026G01;LINKAGE=GG

$\eta_c(1S)$ BRANCHING RATIOS

NODE=M026225

HADRONIC DECAYS

NODE=M026305

$\Gamma(\eta'(958)K\overline{K})/\Gamma(\eta'(958)\pi\pi)$ Γ_2/Γ_1

NODE=M026R55
NODE=M026R55

VALUE	DOCUMENT ID		TECN	COMMENT
0.859±0.052±0.043	[1] LEES	21A	BABR	$\gamma\gamma \to \eta' K^+K^-$, $\eta'\pi^+\pi^-$

[1] Based on Dalitz-plot analysis of the $\eta_c \to \eta' K^+K^-$, $\eta'\pi^+\pi^-$ final states where the fit fractions and relative phases are determined for numerous two-body intermediate states. NODE=M026R55;LINKAGE=A

$\Gamma(\eta'(958)\eta\eta)/\Gamma_{total}$ Γ_3/Γ

NODE=M026R63
NODE=M026R63

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
2.7±0.5 OUR AVERAGE [(3.4 ± 0.6) × 10^{-3} OUR 2025 AVERAGE]				NEW
2.7±0.4±0.2	[1] ABLIKIM	21C	BES3	$J/\psi(1S) \to \gamma\eta\eta\eta'$

[1] ABLIKIM 21C reports $[\Gamma(\eta_c(1S) \to \eta'(958)\eta\eta)/\Gamma_{total}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (4.86 \pm 0.62 \pm 0.45) \times 10^{-5}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R63;LINKAGE=A

$\Gamma(\rho\rho)/\Gamma_{total}$ Γ_4/Γ

NODE=M026R9
NODE=M026R9

VALUE (units 10^{-2})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
0.9±0.4±0.1		72	[1] ABLIKIM	05L	BES2	$J/\psi \to \pi^+\pi^-\pi^+\pi^-\gamma$
1.8±0.4±0.1		113	[2,3] BISELLO	91	DM2	$J/\psi \to \gamma\rho^0\rho^0$
1.6±0.8±0.1		32	[4,5] BISELLO	91	DM2	$J/\psi \to \gamma\rho^+\rho^-$ OCCUR=2
<14	90		[6] BALTRUSAIT..	86	MRK3	$J/\psi \to \eta_c\gamma$

[1] ABLIKIM 05L reports $[\Gamma(\eta_c(1S) \to \rho\rho)/\Gamma_{total}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (1.6 \pm 0.6 \pm 0.4) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R9;LINKAGE=F

[2] BISELLO 91 reports $[\Gamma(\eta_c(1S) \to \rho\rho)/\Gamma_{total}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (3.30 \pm 0.30 \pm 0.60) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R9;LINKAGE=A

[3] The value reported by BISELLO 91 has been multiplied by 3 to account for isospin symmetry. NODE=M026R9;LINKAGE=B

[4] BISELLO 91 reports $[\Gamma(\eta_c(1S) \to \rho\rho)/\Gamma_{total}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (3.0 \pm 1.3 \pm 0.6) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R9;LINKAGE=C

[5] The value reported by BISELLO 91 has been multiplied by 3/2 to account for isospin symmetry. NODE=M026R9;LINKAGE=D

[6] Using $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 0.0127 \pm 0.0036$. NODE=M026R9;LINKAGE=G

$\Gamma(K^*(892)^0 K^- \pi^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_5/Γ

NODE=M026R16
NODE=M026R16

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1.43 \pm 0.33 \pm 0.12$	63	[1] BALTRUSAIT..86		MRK3	$J/\psi \to \eta_c \gamma$

[1] BALTRUSAITIS 86 reports $[\Gamma(\eta_c(1S) \to K^*(892)^0 K^- \pi^+ + \text{c.c.})/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (2.6 \pm 0.6) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R16;LINKAGE=A

$\Gamma(K^*(892)^0 \overline{K}^*(892)^0 \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_7/Γ

NODE=M026R25
NODE=M026R25

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$105 \pm 44 \pm 9$	45	[1] ABLIKIM	06A	BES2	$J/\psi \to K^{*0} \overline{K}^{*0} \pi^+ \pi^- \gamma$

[1] ABLIKIM 06A reports $[\Gamma(\eta_c(1S) \to K^*(892)^0 \overline{K}^*(892)^0 \pi^+ \pi^-)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (1.91 \pm 0.64 \pm 0.48) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R25;LINKAGE=AB

$\Gamma(\phi K^+ K^-)/\Gamma_{\text{total}}$ Γ_8/Γ

NODE=M026R21
NODE=M026R21

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$2.9^{+0.9}_{-0.8} \pm 1.1$	$14.1^{+4.4}_{-3.7}$	[1,2] HUANG	03	BELL	$B^+ \to (\phi K^+ K^-)\ K^+$

[1] Using $B(B^+ \to \eta_c K^+) = (1.25 \pm 0.12^{+0.10}_{-0.12}) \times 10^{-3}$ from FANG 03 and $B(\eta_c \to K\overline{K}\pi) = (5.5 \pm 1.7) \times 10^{-2}$.

NODE=M026R;LINKAGE=BB

[2] Not used since the same experimental measurement has been used in another related quantity included elsewhere in the fit.

NODE=M026R21;LINKAGE=A

$\Gamma(\phi 2(\pi^+\pi^-))/\Gamma_{\text{total}}$ Γ_{10}/Γ

NODE=M026R26
NODE=M026R26

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<33 (CL = 90%)	[$<40 \times 10^{-4}$ (CL = 90%) OUR 2025 BEST LIMIT]				
<33	90	[1] ABLIKIM	06A	BES2	$J/\psi \to \phi 2(\pi^+\pi^-)\gamma$

[1] ABLIKIM 06A reports $[\Gamma(\eta_c(1S) \to \phi 2(\pi^+\pi^-))/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] < 0.603 \times 10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 1.82 \times 10^{-2}$.

NODE=M026R26;LINKAGE=AB

$\Gamma(a_0(980)\pi)/\Gamma_{\text{total}}$ Γ_{11}/Γ

NODE=M026R11
NODE=M026R11

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
seen		AAIJ	23AH	LHCB	$B^+ \to K^+ (K^0_S K \pi)$
seen		LEES	21A	BABR	Dalitz anal. of $\eta_c \to \pi^+\pi^-\eta$
seen		LEES	14E	BABR	Dalitz anal. of $\eta_c \to K^+K^-\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.02	90	[1,2] BALTRUSAIT..86		MRK3	$J/\psi \to \eta_c \gamma$

[1] The quoted branching ratio uses $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 0.0127 \pm 0.0036$.

NODE=M026R11;LINKAGE=E

[2] We are assuming $B(a_0(980) \to \eta\pi) > 0.5$.

NODE=M026R11;LINKAGE=F

$\Gamma(a_2(1320)\pi)/\Gamma_{\text{total}}$ Γ_{12}/Γ

NODE=M026R12
NODE=M026R12

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
seen		LEES	21A	BABR	Dalitz anal. of $\eta_c \to \pi^+\pi^-\eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.02	90	[1] BALTRUSAIT..86		MRK3	$J/\psi \to \eta_c \gamma$

[1] The quoted branching ratio uses $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 0.0127 \pm 0.0036$.

NODE=M026R12;LINKAGE=E

$\Gamma(K^*(892)\overline{K} + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{13}/Γ

NODE=M026R17
NODE=M026R17

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.0128	90	BISELLO	91	DM2	$J/\psi \to \gamma K^0_S K^\pm \pi^\mp$
<0.0132	90	[1] BISELLO	91	DM2	$J/\psi \to \gamma K^+ K^- \pi^0$

OCCUR=2

[1] The quoted branching ratios use $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 0.0127 \pm 0.0036$.

NODE=M026R17;LINKAGE=E

$\Gamma(f_2(1270)\eta)/\Gamma_{total}$ Γ_{14}/Γ

NODE=M026R13
NODE=M026R13

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
seen		LEES	21A	BABR	Dalitz anal. of $\eta_c \to \pi^+\pi^-\eta$

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

<0.011	90	[1] BALTRUSAIT...86		MRK3	$J/\psi \to \eta_c\gamma$

[1] The quoted branching ratio uses $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 0.0127 \pm 0.0036$.

NODE=M026R13;LINKAGE=E

$\Gamma(f_2(1270)\eta')/\Gamma_{total}$ Γ_{15}/Γ

NODE=M026R60
NODE=M026R60

VALUE	DOCUMENT ID		TECN	COMMENT
seen	LEES	21A	BABR	Dalitz anal. of $\eta_c \to \pi^+\pi^-\eta'$; $K^+K^-\eta'$

$\Gamma(\omega\phi)/\Gamma_{total}$ Γ_{17}/Γ

NODE=M026R22
NODE=M026R22

VALUE (units 10^{-5})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
3.0±0.8±0.2		118	[1] ABLIKIM	25AC	BES3	$J/\psi(1S) \to \gamma\eta_c$

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

< 25	90	[2] ABLIKIM	17P	BES3	$J/\psi \to \pi^+\pi^-\pi^0 K^+K^-\gamma$
<170	90	[3] ABLIKIM	05L	BES2	$J/\psi \to \pi^+\pi^-\pi^0 K^+K^-\gamma$

[1] ABLIKIM 25AC reports $(3.86\pm0.92\pm0.62)\times10^{-5}$ from a measurement of $[\Gamma(\eta_c(1S) \to \omega\phi)/\Gamma_{total}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))]$ assuming $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.41\pm0.14)\times10^{-2}$, which we rescale to our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R22;LINKAGE=B

[2] Using $B(J/\psi \to \gamma\eta_c) = 0.017 \pm 0.004$.

NODE=M026R22;LINKAGE=A

[3] The quoted branching ratio uses $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 0.0127 \pm 0.0036$.

NODE=M026R22;LINKAGE=E

$\Gamma(f_0(500)\eta)/\Gamma_{total}$ Γ_{20}/Γ

NODE=M026R57
NODE=M026R57

VALUE	DOCUMENT ID		TECN	COMMENT
seen	LEES	21A	BABR	Dalitz anal. of $\eta_c \to \pi^+\pi^-\eta$

$\Gamma(f_0(500)\eta')/\Gamma_{total}$ Γ_{21}/Γ

NODE=M026R58
NODE=M026R58

VALUE	DOCUMENT ID		TECN	COMMENT
seen	LEES	21A	BABR	Dalitz anal. of $\eta_c(1S) \to \pi^+\pi^-\eta'$

$\Gamma(f_0(980)\eta)/\Gamma_{total}$ Γ_{22}/Γ

NODE=M026R41
NODE=M026R41

VALUE	DOCUMENT ID		TECN	COMMENT
seen	LEES	21A	BABR	Dalitz anal. of $\eta_c \to \pi^+\pi^-\eta$
seen	LEES	14E	BABR	Dalitz anal. of $\eta_c \to K^+K^-\eta$

$\Gamma(f_0(980)\eta')/\Gamma_{total}$ Γ_{23}/Γ

NODE=M026R56
NODE=M026R56

VALUE	DOCUMENT ID		TECN	COMMENT
seen	LEES	21A	BABR	Dalitz anal. of $\eta_c \to \pi^+\pi^-\eta'$, $K^+K^-\eta'$

$\Gamma(f_0(1500)\eta)/\Gamma_{total}$ Γ_{24}/Γ

NODE=M026R42
NODE=M026R42

VALUE	DOCUMENT ID		TECN	COMMENT
seen	LEES	21A	BABR	Dalitz anal. of $\eta_c \to \pi^+\pi^-\eta$
seen	LEES	14E	BABR	Dalitz anal. of $\eta_c \to K^+K^-\eta$

$\Gamma(f_0(1710)\eta')/\Gamma_{total}$ Γ_{25}/Γ

NODE=M026R59
NODE=M026R59

VALUE	DOCUMENT ID		TECN	COMMENT
seen	LEES	21A	BABR	Dalitz anal. of $\eta_c \to K^+K^-\eta'$

$\Gamma(f_0(2100)\eta')/\Gamma_{total}$ Γ_{26}/Γ

NODE=M026R61
NODE=M026R61

VALUE	DOCUMENT ID		TECN	COMMENT
seen	LEES	21A	BABR	Dalitz anal. of $\eta_c \to \pi^+\pi^-\eta$

$\Gamma(f_0(2200)\eta)/\Gamma_{total}$ Γ_{27}/Γ

NODE=M026R43
NODE=M026R43

VALUE	DOCUMENT ID		TECN	COMMENT
seen	LEES	14E	BABR	Dalitz anal. of $\eta_c \to K^+K^-\eta$

$\Gamma(a_0(1320)\pi)/\Gamma_{total}$ Γ_{28}/Γ

NODE=M026R45
NODE=M026R45

VALUE	DOCUMENT ID		TECN	COMMENT
seen	AAIJ	23AH	LHCB	$B^+ \to K^+(K^0_S K\pi)$
seen	LEES	14E	BABR	Dalitz anal. of $\eta_c \to K^+K^-\pi^0$

$\Gamma(a_0(1450)\pi)/\Gamma_{total}$ Γ_{29}/Γ

NODE=M026R46
NODE=M026R46

VALUE	DOCUMENT ID		TECN	COMMENT
seen	AAIJ	23AH	LHCB	$B^+ \to K^+(K^0_S K\pi)$
seen	LEES	21A	BABR	Dalitz anal. of $\eta_c \to \pi^+\pi^-\eta$
seen	LEES	14E	BABR	Dalitz anal. of $\eta_c \to K^+K^-\pi^0$

$\Gamma(a_2(1700)\pi)/\Gamma_{total}$ Γ_{30}/Γ

NODE=M026P10
NODE=M026P10

VALUE	DOCUMENT ID		TECN	COMMENT
seen	AAIJ	23AH	LHCB	$B^+ \to K^+(K^0_S K\pi)$

$\Gamma(a_0(1710)\pi)/\Gamma_{total}$ Γ_{31}/Γ

NODE=M026P13
NODE=M026P13

VALUE	DOCUMENT ID		TECN	COMMENT
seen	AAIJ	23AH	LHCB	$B^+ \to K^+(K^0_S K\pi)$
seen	LEES	21A	BABR	Dalitz anal. of $\eta_c \to \pi^+\pi^-\eta'$

$\Gamma(a_0(1950)\pi)/\Gamma_{total}$ Γ_{32}/Γ

NODE=M026R00
NODE=M026R00

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
seen		LEES	21A	BABR	Dalitz anal. of $\eta_c(1S) \to \pi^+\pi^-\eta'$
seen	12k	[1] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K\overline{K}\pi$

[1] From a model-independant partial wave analysis.

NODE=M026R00;LINKAGE=A

$\Gamma(K^*_0(1430)\overline{K}+\text{c.c.})/\Gamma_{total}$ Γ_{33}/Γ

NODE=M026R47
NODE=M026R47

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
seen	12k	[1] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K\overline{K}\pi$
seen		LEES	14E	BABR	Dalitz anal. of $\eta_c \to K^+K^-\eta/\pi^0$

[1] From a model-independant partial wave analysis.

NODE=M026R47;LINKAGE=A

$\Gamma(K^*_2(1430)\overline{K}+\text{c.c.})/\Gamma_{total}$ Γ_{34}/Γ

NODE=M026R48
NODE=M026R48

VALUE	DOCUMENT ID		TECN	COMMENT
seen	AAIJ	23AH	LHCB	$B^+ \to K^+(K^0_S K\pi)$
seen	LEES	21A	BABR	Dalitz anal. of $\eta_c \to K^+K^-\eta'$
seen	LEES	14E	BABR	Dalitz anal. of $\eta_c \to K^+K^-\pi^0$

$\Gamma(K^*_0(1950)\overline{K}+\text{c.c.})/\Gamma_{total}$ Γ_{35}/Γ

NODE=M026R49
NODE=M026R49

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
seen		AAIJ	23AH	LHCB	$B^+ \to K^+(K^0_S K\pi)$
seen		LEES	21A	BABR	Dalitz anal. of $\eta_c \to K^+K^-\eta'$
seen	12k	[1] LEES	16A	BABR	$\gamma\gamma \to \eta_c(1S) \to K\overline{K}\pi$
seen		LEES	14E	BABR	Dalitz anal. of $\eta_c \to K^+K^-\eta/\pi^0$

[1] From a Dalitz plot analysis using an isobar model.

NODE=M026R49;LINKAGE=A

$\Gamma(K^*_0(2600)\overline{K}+\text{c.c.})/\Gamma_{total}$ Γ_{36}/Γ

NODE=M026P11
NODE=M026P11

VALUE	DOCUMENT ID		TECN	COMMENT
seen	AAIJ	23AH	LHCB	$B^+ \to K^+(K^0_S K\pi)$

$\Gamma(K\overline{K}\pi)/\Gamma_{total}$ Γ_{37}/Γ

NODE=M026R4
NODE=M026R4

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
5.9±0.5 OUR FIT Error includes scale factor of 1.8. [$(7.1 \pm 0.4) \times 10^{-2}$ OUR 2025 FIT Scale factor = 1.1]					
7.4±0.6 OUR AVERAGE					
6.9±0.7±0.6	146	[1] ABLIKIM	19AP	BES3	$h_c \to \gamma\eta_c$
7.8±0.6±0.6	267	[2] ABLIKIM	19AP	BES3	$h_c \to \gamma\eta_c$

NEW

OCCUR=2

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

$5.7\pm1.1\pm0.6$	55	[3,4,5]	ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma K^+K^-\pi^0$	
$7.2\pm1.2\pm0.8$	107	[5,6,7]	ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma K^0_S K^\mp\pi^\pm$	OCCUR=2
8.5 ± 1.8		[5,8]	AUBERT	06E	BABR	$B^\pm \to K^\pm X_{c\bar{c}}$	
$3.6\pm1.0\pm0.3$	0.6k	[5,9,10]	BAI	04	BES	$J/\psi \to \gamma K^\pm\pi^\mp K^0_S$	
$4.8\pm1.4\pm0.4$	33	[5,11,12]	BISELLO	91	DM2	$J/\psi \to \gamma K^+K^-\pi^0$	
$3.8\pm0.9\pm0.3$	68	[5,13,14]	BISELLO	91	DM2	$J/\psi \to \gamma K^\pm\pi^\mp K^0_S$	OCCUR=2
4.8 ± 1.7	95	[5,15,16]	BALTRUSAIT..	86	MRK3	$J/\psi \to \eta_c\gamma$	
$4.3\pm1.6\pm0.3$	32	[5,17,18]	BALTRUSAIT..	86	MRK3	$J/\psi \to \gamma K^+K^-\pi^0$	OCCUR=2
$3.1\pm0.8\pm0.3$	63	[5,19,20]	BALTRUSAIT..	86	MRK3	$J/\psi \to \gamma K^\pm\pi^\mp K^0_S$	OCCUR=3
$12\ {}^{+7}_{-5}\ \pm2$		[5,21]	HIMEL	80B	MRK2	$\psi(2S) \to \eta_c\gamma$	
< 10.7	90% CL	[16]	PARTRIDGE	80B	CBAL	$J/\psi \to \eta_c\gamma$	

[1] ABLIKIM 19AP quotes $B(\eta_c \to K^+K^-\pi^0) = (1.15 \pm 0.12 \pm 0.10) \times 10^{-2}$ which we multiply by 6 to account for isospin symmetry. NODE=M026R4;LINKAGE=C

[2] ABLIKIM 19AP quotes $B(\eta_c \to K^0_S K^\pm\pi^\mp) = (2.60 \pm 0.21 \pm 0.20) \times 10^{-2}$ which we multiply by 3 to account for isospin symmetry. NODE=M026R4;LINKAGE=F

[3] ABLIKIM 12N quotes $B(\psi(2S) \to \pi^0 h_c) \cdot B(h_c \to \gamma\eta_c) \cdot B(\eta_c \to K^+K^-\pi^0) = (4.54 \pm 0.76 \pm 0.48) \times 10^{-6}$ which we multiply by 6 to account for isospin symmetry. NODE=M026R4;LINKAGE=BK

[4] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] \times [B(h_c(1P) \to \gamma\eta_c(1S))] = (27.24 \pm 4.56 \pm 2.88) \times 10^{-6}$ which we divide by our best (shown rounded) values $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$, $B(h_c(1P) \to \gamma\eta_c(1S)) = (64 \pm 5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=M026R4;LINKAGE=CK

[5] Not used since the same experimental measurement has been used in another related quantity included elsewhere in the fit. NODE=M026R4;LINKAGE=U

[6] ABLIKIM 12N quotes $B(\psi(2S) \to \pi^0 h_c) \cdot B(h_c \to \gamma\eta_c) \cdot B(\eta_c \to K^0_S K^\pm\pi^\mp) = (11.35 \pm 1.25 \pm 1.50) \times 10^{-6}$ which we multiply by 3 to account for isospin symmetry. NODE=M026R4;LINKAGE=BL

[7] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] \times [B(h_c(1P) \to \gamma\eta_c(1S))] = (34.05 \pm 3.75 \pm 4.50) \times 10^{-6}$ which we divide by our best (shown rounded) values $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$, $B(h_c(1P) \to \gamma\eta_c(1S)) = (64 \pm 5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=M026R4;LINKAGE=CL

[8] Determined from the ratio of $B(B^\pm \to K^\pm\eta_c)\ B(\eta_c \to K\overline{K}\pi) = (7.4 \pm 0.5 \pm 0.7) \times 10^{-5}$ reported in AUBERT,B 04B and $B(B^\pm \to K^\pm\eta_c) = (8.7 \pm 1.5) \times 10^{-3}$ reported in AUBERT 06E. NODE=M026R4;LINKAGE=AB

[9] BAI 04 reports $B(J/\psi \to \gamma\eta_c) \cdot B(\eta_c \to K^\pm K^0_S\pi^\mp) = (2.2 \pm 0.3 \pm 0.5) \times 10^{-4}$ which we multiply by 3 to account for isospin symmetry. NODE=M026R4;LINKAGE=H

[10] BAI 04 reports $[\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (6.6 \pm 0.9 \pm 1.5) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R4;LINKAGE=I

[11] BISELLO 91 reports $[\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (8.76 \pm 1.80 \pm 1.68) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R4;LINKAGE=J

[12] BISELLO 91 reports $B(J/\psi \to \gamma\eta_c) \cdot B(\eta_c \to K^+K^-\pi^0) = (1.46 \pm 0.30 \pm 0.28) \times 10^{-4}$ which we multiply by 6 to account for isospin symmetry. NODE=M026R4;LINKAGE=M

[13] BISELLO 91 reports $[\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (6.9\pm1.2\pm1.2)\times10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R4;LINKAGE=L

[14] BISELLO 91 reports $B(J/\psi \to \gamma\eta_c) \cdot B(\eta_c \to K^\pm K^0_S\pi^\mp) = (2.3\pm0.4\pm0.4)\times10^{-4}$ which we multiply by 3 to account for isospin symmetry. NODE=M026R4;LINKAGE=N

[15] Average from $K^+K^-\pi^0$ and $K^\pm K^0_S\pi^\mp$ decay channels. NODE=M026R4;LINKAGE=D

[16] The quoted branching ratios use $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 0.0127 \pm 0.0036$. Where relevant, the error in this branching ratio is treated as a common systematic in computing averages. NODE=M026R4;LINKAGE=E

[17] BALTRUSAITIS 86 reports $[\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (7.8 \pm 3.0) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R4;LINKAGE=Q

[18] BALTRUSAITIS 86 reports $B(J/\psi \to \gamma\eta_c) \cdot B(\eta_c \to K^+K^-\pi^0) = (1.3\pm0.5)\times10^{-4}$ which we multiply by 6 to account for isospin symmetry. NODE=M026R4;LINKAGE=S

[19] BALTRUSAITIS 86 reports $[\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (5.7 \pm 1.5) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R4;LINKAGE=R

[20] BALTRUSAITIS 86 reports $B(J/\psi \to \gamma\eta_c) \cdot B(\eta_c \to K^{\pm}K^0_S\pi^{\mp}) = (1.9 \pm 0.5) \times 10^{-4}$ which we multiply by 3 to account for isospin symmetry. NODE=M026R4;LINKAGE=T

[21] HIMEL 80B reports $[\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\eta_c(1S))] = (4.5^{+2.4}_{-1.8}) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to \gamma\eta_c(1S)) = (3.6 \pm 0.5) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R4;LINKAGE=G

$\Gamma(\phi K^+K^-)/\Gamma(K\overline{K}\pi)$ Γ_8/Γ_{37}

NODE=M026R02
NODE=M026R02

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.052^{+0.016}_{-0.014} \pm 0.014}$	7	[1] HUANG	03	BELL	$B^{\pm} \to K^{\pm}\phi\phi$

[1] Using $B(B^+ \to \eta_c K^+) = (1.25 \pm 0.12^{+0.10}_{-0.12}) \times 10^{-3}$ from FANG 03 and $B(\eta_c \to K\overline{K}\pi) = (5.5 \pm 1.7) \times 10^{-2}$. NODE=M026R02;LINKAGE=BB

$\Gamma(K\overline{K}\eta)/\Gamma_{\text{total}}$ Γ_{38}/Γ

NODE=M026R15
NODE=M026R15

VALUE (units 10^{-2})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$0.9 \pm 0.4 \pm 0.1$		7	[1,2,3] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma\eta K^+K^-$
<3.1	90		[4] BALTRUSAIT..86		MRK3	$J/\psi \to \eta_c\gamma$

OCCUR=2

[1] Not used since the same experimental measurement has been used in another related quantity included elsewhere in the fit. NODE=M026R15;LINKAGE=A

[2] ABLIKIM 12N quotes $B(\psi(2S) \to \pi^0 h_c) \cdot B(h_c \to \gamma\eta_c) \cdot B(\eta_c \to K^+K^-\eta) = (2.11 \pm 1.01 \pm 0.32) \times 10^{-6}$ which we multiply by 2 to account for isospin symmetry. NODE=M026R15;LINKAGE=AK

[3] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to K\overline{K}\eta)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] \times [B(h_c(1P) \to \gamma\eta_c(1S))] = (4.22 \pm 2.02 \pm 0.64) \times 10^{-6}$ which we divide by our best (shown rounded) values $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$, $B(h_c(1P) \to \gamma\eta_c(1S)) = (64 \pm 5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=M026R15;LINKAGE=AM

[4] The quoted branching ratios use $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 0.0127 \pm 0.0036$. NODE=M026R15;LINKAGE=E

$\Gamma(K\overline{K}\eta)/\Gamma(K\overline{K}\pi)$ Γ_{38}/Γ_{37}

NODE=M026R40
NODE=M026R40

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.188±0.018 OR FIT					NEW
[0.186 ± 0.018 OUR 2025 FIT]					
0.190±0.008±0.017	5.4k	[1] LEES	14E	BABR	$\gamma\gamma \to K^+K^-\eta/\pi^0$

[1] LEES 14E reports $B(\eta_c(1S) \to K^+K^-\eta)/B(\eta_c(1S) \to K^+K^-\pi^0) = 0.571 \pm 0.025 \pm 0.051$, which we divide by 3 to account for isospin symmetry. It uses both $\eta \to \gamma\gamma$ and $\eta \to \pi^+\pi^-\pi^0$ decays. NODE=M026R40;LINKAGE=LE

$\Gamma(\eta\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{39}/Γ

NODE=M026R6
NODE=M026R6

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.5±0.4 OR AVERAGE	[(1.6 ± 0.4) × 10^{-2} OUR 2025 AVERAGE]				NEW
1.5±0.4±0.2	33	[1] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma\eta\pi^+\pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
5.4 ± 2.0	75	[2,3] BALTRUSAIT..86		MRK3	$J/\psi \to \eta_c\gamma$
$3.7 \pm 1.3 \pm 2.0$	18	[2,3] PARTRIDGE	80B	CBAL	$J/\psi \to \eta\pi^+\pi^-\gamma$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to \eta\pi^+\pi^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] \times [B(h_c(1P) \to \gamma\eta_c(1S))] = (7.22 \pm 1.47 \pm 1.11) \times 10^{-6}$ which we divide by our best (shown rounded) values $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$, $B(h_c(1P) \to \gamma\eta_c(1S)) = (64 \pm 5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=M026R6;LINKAGE=AB

[2] Not used since the same experimental measurement has been used in another related quantity. NODE=M026R6;LINKAGE=A

[3] The quoted branching ratios use $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 0.0127 \pm 0.0036$. Where relevant, the error in this branching ratio is treated as a common systematic in computing averages. NODE=M026R6;LINKAGE=E

$\Gamma(\eta 2(\pi^+\pi^-))/\Gamma_{total}$ Γ_{40}/Γ

NODE=M026R05
NODE=M026R05

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
4.0±1.2 OUR AVERAGE	[(4.3 ± 1.3) × 10^{-2} OUR 2025 AVERAGE]			NEW
4.0±1.1±0.4	39	[1] ABLIKIM	12N BES3	$\psi(2S) \to \pi^0\gamma\eta 2(\pi^+\pi^-)$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to \eta 2(\pi^+\pi^-))/\Gamma_{total}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] \times [B(h_c(1P) \to \gamma\eta_c(1S))] = (19.17 \pm 3.77 \pm 3.72) \times 10^{-6}$ which we divide by our best (shown rounded) values $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$, $B(h_c(1P) \to \gamma\eta_c(1S)) = (64 \pm 5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

NODE=M026R05;LINKAGE=AB

$\Gamma(K^+K^-\pi^+\pi^-\pi^0)/\Gamma(K\overline{K}\pi)$ Γ_{42}/Γ_{37}

NODE=M026R01
NODE=M026R01

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.477±0.017±0.070	11k	[1] DEL-AMO-SA..11M	BABR	$\gamma\gamma \to K^+K^-\pi^+\pi^-\pi^0$

[1] We have multiplied the value of $\Gamma(K^+K^-\pi^+\pi^-\pi^0)/\Gamma(K^0_S K^\pm\pi^\mp)$ reported in DEL-AMO-SANCHEZ 11M by a factor 1/3 to obtain $\Gamma(K^+K^-\pi^+\pi^-\pi^0)/\Gamma(K\overline{K}\pi)$. Not independent from other measurements reported in DEL-AMO-SANCHEZ 11M.

NODE=M026R01;LINKAGE=DE

$\Gamma(K^0K^-\pi^+\pi^-\pi^+ + \text{c.c.})/\Gamma_{total}$ Γ_{43}/Γ

NODE=M026R06
NODE=M026R06

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
5.1±1.4 OUR AVERAGE	[(5.4 ± 1.5) × 10^{-2} OUR 2025 AVERAGE]			NEW
5.1±1.3±0.5	43	[1,2] ABLIKIM	12N BES3	$\psi(2S) \to \pi^0\gamma K^0_S K^\mp\pi^\mp 2\pi^\pm$

[1] ABLIKIM 12N quotes $B(\psi(2S) \to \pi^0 h_c) \cdot B(h_c \to \gamma\eta_c) \cdot B(\eta_c \to K^0_S K^-\pi^-2\pi^+) = (12.01 \pm 2.22 \pm 2.04) \times 10^{-6}$ which we multiply by 2 to take c.c. into account.

NODE=M026R06;LINKAGE=AA

[2] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to K^0K^-\pi^+\pi^-\pi^+ + \text{c.c.})/\Gamma_{total}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] \times [B(h_c(1P) \to \gamma\eta_c(1S))] = (24.02 \pm 4.44 \pm 4.08) \times 10^{-6}$ which we divide by our best (shown rounded) values $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$, $B(h_c(1P) \to \gamma\eta_c(1S)) = (64 \pm 5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

NODE=M026R06;LINKAGE=AB

$\Gamma(K^+K^-2(\pi^+\pi^-))/\Gamma_{total}$ Γ_{44}/Γ

NODE=M026R23
NODE=M026R23

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
6.9±2.0 OUR AVERAGE				NEW
[(8.4 ± 2.4) × 10^{-3} OUR 2025 AVERAGE]				
8 ±4 ±1	10	[1] ABLIKIM	12N BES3	$\psi(2S) \to \pi^0\gamma K^+K^-2(\pi^+\pi^-)$
6.7±2.2±0.5	100	[2] ABLIKIM	06A BES2	$J/\psi \to K^+K^-2(\pi^+\pi^-)\gamma$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to K^+K^-2(\pi^+\pi^-))/\Gamma_{total}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] \times [B(h_c(1P) \to \gamma\eta_c(1S))] = (3.60 \pm 1.71 \pm 0.64) \times 10^{-6}$ which we divide by our best (shown rounded) values $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$, $B(h_c(1P) \to \gamma\eta_c(1S)) = (64 \pm 5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

NODE=M026R23;LINKAGE=AL

[2] ABLIKIM 06A reports $[\Gamma(\eta_c(1S) \to K^+K^-2(\pi^+\pi^-))/\Gamma_{total}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (1.21 \pm 0.32 \pm 0.24) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R23;LINKAGE=AB

$\Gamma(\pi^+\pi^-\pi^0)/\Gamma_{total}$ Γ_{46}/Γ

NODE=M026R51
NODE=M026R51

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<4 × 10^{-4}	90	[1] ABLIKIM	17AJ BES3	$\psi(2S) \to \gamma\pi^+\pi^-\pi^0$

[1] ABLIKIM 17AJ reports $[\Gamma(\eta_c(1S) \to \pi^+\pi^-\pi^0)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\eta_c(1S))] < 1.6 \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to \gamma\eta_c(1S)) = 3.6 \times 10^{-3}$.

NODE=M026R51;LINKAGE=A

$\Gamma(\pi^+\pi^-\pi^0\pi^0)/\Gamma_{total}$ Γ_{47}/Γ

NODE=M026R07
NODE=M026R07

VALUE (units 10^{-2})	EVTS	DOCUMENT ID	TECN	COMMENT
4.3±1.0 OUR AVERAGE	[(4.6 ± 1.0) × 10^{-2} OUR 2025 AVERAGE]			NEW
4.3±0.8±0.5	118	[1] ABLIKIM	12N BES3	$\psi(2S) \to \pi^0\gamma\pi^+\pi^-2\pi^0$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to \pi^+\pi^-\pi^0\pi^0)/\Gamma_{total}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] \times [B(h_c(1P) \to \gamma\eta_c(1S))] = (20.31 \pm 2.20 \pm 3.33) \times 10^{-6}$ which we divide by our best (shown rounded) values $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$, $B(h_c(1P) \to \gamma\eta_c(1S)) = (64 \pm 5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

NODE=M026R07;LINKAGE=AB

$\Gamma(2(\pi^+\pi^-\pi^0))/\Gamma_{total}$ Γ_{50}/Γ

NODE=M026R08
NODE=M026R08

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
15.5±2.0 OUR AVERAGE					NEW
[$(15.9 \pm 2.0) \times 10^{-2}$ OUR 2025 AVERAGE]					
15.3±1.8±1.8	333	ABLIKIM	19AP	BES3	$h_c \to \gamma\eta_c$
15.8±2.6±1.7	175	[1] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma 2(\pi^+\pi^-\pi^0)$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to 2(\pi^+\pi^-\pi^0))/\Gamma_{total}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] \times [B(h_c(1P) \to \gamma\eta_c(1S))] = (75.13 \pm 7.42 \pm 9.99) \times 10^{-6}$ which we divide by our best (shown rounded) values $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$, $B(h_c(1P) \to \gamma\eta_c(1S)) = (64 \pm 5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=M026R08;LINKAGE=AB

$\Gamma(3(\pi^+\pi^-))/\Gamma_{total}$ Γ_{51}/Γ

NODE=M026R24
NODE=M026R24

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
15.5±2.8 OUR AVERAGE					NEW
[$(18.9 \pm 3.4) \times 10^{-3}$ OUR 2025 AVERAGE]					
19 ±5 ±2	51	[1] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma 3(\pi^+\pi^-)$
14.2±3.1±1.2	479	[2] ABLIKIM	06A	BES2	$J/\psi \to 3(\pi^+\pi^-)\gamma$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to 3(\pi^+\pi^-))/\Gamma_{total}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] \times [B(h_c(1P) \to \gamma\eta_c(1S))] = (8.82 \pm 1.57 \pm 1.59) \times 10^{-6}$ which we divide by our best (shown rounded) values $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$, $B(h_c(1P) \to \gamma\eta_c(1S)) = (64 \pm 5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=M026R24;LINKAGE=AL

[2] ABLIKIM 06A reports $[\Gamma(\eta_c(1S) \to 3(\pi^+\pi^-))/\Gamma_{total}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (2.59 \pm 0.32 \pm 0.47) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R24;LINKAGE=AB

$\Gamma(p\bar{p})/\Gamma_{total}$ Γ_{52}/Γ

NODE=M026R2
NODE=M026R2

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
11.1± 1.2 OUR FIT Error includes scale factor of 1.4. [$(13.3 \pm 1.1) \times 10^{-4}$ OUR 2025 FIT Scale factor = 1.1]					NEW
12.0± 2.6±1.5	34	ABLIKIM	19AP	BES3	$h_c \to \gamma\eta_c$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
14 ± 5 ±1	15	[1,2] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma p\bar{p}$
$11.8^{+\ 1.6}_{-\ 1.9}$±0.8	195	[2,3] WU	06	BELL	$B^+ \to p\bar{p}K^+$
10.4± 2.3±0.8	213	[2,4] BAI	04	BES	$J/\psi \to \gamma p\bar{p}$
7.1± 2.7±0.6	18	[2,5] BISELLO	91	DM2	$J/\psi \to \gamma p\bar{p}$
8 ± 4 ±1	23	[2,6] BALTRUSAIT..	86	MRK3	$J/\psi \to \eta_c\gamma$
22 $^{+22}_{-11}$ ±3		[2,7] HIMEL	80B	MRK2	$\psi(2S) \to \eta_c\gamma$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to p\bar{p})/\Gamma_{total}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] \times [B(h_c(1P) \to \gamma\eta_c(1S))] = (0.65 \pm 0.19 \pm 0.10) \times 10^{-6}$ which we divide by our best (shown rounded) values $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$, $B(h_c(1P) \to \gamma\eta_c(1S)) = (64 \pm 5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values. NODE=M026R2;LINKAGE=AB

[2] Not used since the same experimental measurement has been used in another related quantity included elsewhere in the fit. NODE=M026R2;LINKAGE=H

[3] WU 06 reports $[\Gamma(\eta_c(1S) \to p\bar{p})/\Gamma_{total}] \times [B(B^+ \to \eta_c K^+)] = (1.42 \pm 0.11^{+0.16}_{-0.20}) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(B^+ \to \eta_c K^+) = (1.20 \pm 0.08) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R2;LINKAGE=WU

[4] BAI 04 reports $[\Gamma(\eta_c(1S) \to p\bar{p})/\Gamma_{total}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (1.9 \pm 0.3 \pm 0.3) \times 10^{-5}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R2;LINKAGE=C

[5] BISELLO 91 reports $[\Gamma(\eta_c(1S) \to p\bar{p})/\Gamma_{total}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (0.13 \pm 0.04 \pm 0.03) \times 10^{-4}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R2;LINKAGE=D

[6] BALTRUSAITIS 86 reports $[\Gamma(\eta_c(1S) \to p\bar{p})/\Gamma_{total}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (1.4 \pm 0.7) \times 10^{-5}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R2;LINKAGE=F

[7] HIMEL 80B reports $[\Gamma(\eta_c(1S) \to p\bar{p})/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\eta_c(1S))] = (8^{+8}_{-4}) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to \gamma\eta_c(1S)) = (3.6 \pm 0.5) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R2;LINKAGE=G

$\Gamma(p\bar{p})/\Gamma_{\text{total}} \times \Gamma(\phi\phi)/\Gamma_{\text{total}}$ $\Gamma_{52}/\Gamma \times \Gamma_9/\Gamma$

NODE=M026R33
NODE=M026R33

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
0.16±0.06 OUR FIT Error includes scale factor of 2.8. [$(0.24 \pm 0.07) \times 10^{-5}$ OUR 2025 FIT Scale factor = 1.9]				NEW
4.0 $^{+3.5}_{-3.2}$	BAGLIN	89	SPEC	$\bar{p}p \to K^+K^-K^+K^-$

$\Gamma(p\bar{p}\pi^0)/\Gamma_{\text{total}}$ Γ_{53}/Γ

NODE=M026R09
NODE=M026R09

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.32±0.11±0.03	14	[1] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma p\bar{p}\pi^0$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to p\bar{p}\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] \times [B(h_c(1P) \to \gamma\eta_c(1S))] = (1.53 \pm 0.49 \pm 0.23) \times 10^{-6}$ which we divide by our best (shown rounded) values $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$, $B(h_c(1P) \to \gamma\eta_c(1S)) = (64 \pm 5) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) values.

NODE=M026R09;LINKAGE=AB

$\Gamma(K^+\bar{p}\Lambda + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{56}/Γ

NODE=M026R53
NODE=M026R53

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.26±0.34 OUR AVERAGE [$(2.5 \pm 0.4) \times 10^{-3}$ OUR 2025 AVERAGE]					NEW
2.26 $^{+0.31}_{-0.29}$ ±0.16	157	[1] LU	19	BELL	$B^+ \to \bar{p}\Lambda K^+K^+$

[1] LU 19 reports $(2.83^{+0.36}_{-0.34} \pm 0.35) \times 10^{-3}$ from a measurement of $[\Gamma(\eta_c(1S) \to K^+\bar{p}\Lambda + \text{c.c.})/\Gamma_{\text{total}}] \times [B(B^+ \to \eta_c K^+)]$ assuming $B(B^+ \to \eta_c K^+) = (9.6 \pm 1.1) \times 10^{-4}$, which we rescale to our best (shown rounded) value $B(B^+ \to \eta_c K^+) = (1.20 \pm 0.08) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R53;LINKAGE=A

$\Gamma(\bar{\Lambda}(1520)\Lambda + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{57}/Γ

NODE=M026R54
NODE=M026R54

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.8±1.2 OUR AVERAGE [$(3.0 \pm 1.3) \times 10^{-3}$ OUR 2025 AVERAGE]					NEW
2.8±1.2±0.2	43	[1] LU	19	BELL	$B^+ \to \bar{p}\Lambda K^+K^+$

[1] LU 19 reports $(3.48 \pm 1.48 \pm 0.46) \times 10^{-3}$ from a measurement of $[\Gamma(\eta_c(1S) \to \bar{\Lambda}(1520)\Lambda + \text{c.c.})/\Gamma_{\text{total}}] \times [B(B^+ \to \eta_c K^+)]$ assuming $B(B^+ \to \eta_c K^+) = (9.6 \pm 1.1) \times 10^{-4}$, which we rescale to our best (shown rounded) value $B(B^+ \to \eta_c K^+) = (1.20 \pm 0.08) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R54;LINKAGE=A

$\Gamma(\Sigma^+\overline{\Sigma}^-)/\Gamma_{\text{total}}$ Γ_{58}/Γ

NODE=M026R28
NODE=M026R28

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.98±0.31±0.16	112	[1] ABLIKIM	13C	BES3	$J/\psi \to \gamma p\bar{p}\pi^0\pi^0$

[1] ABLIKIM 13C reports $[\Gamma(\eta_c(1S) \to \Sigma^+\overline{\Sigma}^-)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (3.60 \pm 0.48 \pm 0.31) \times 10^{-5}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R28;LINKAGE=AB

$\Gamma(\Xi^-\overline{\Xi}^+)/\Gamma_{\text{total}}$ Γ_{59}/Γ

NODE=M026R29
NODE=M026R29

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.83±0.17±0.07	78	[1] ABLIKIM	13C	BES3	$J/\psi \to \gamma\Lambda\bar{\Lambda}\pi^+\pi^-$

[1] ABLIKIM 13C reports $[\Gamma(\eta_c(1S) \to \Xi^-\overline{\Xi}^+)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (1.51 \pm 0.27 \pm 0.14) \times 10^{-5}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R29;LINKAGE=AB

RADIATIVE DECAYS

NODE=M026310

$\Gamma(\gamma\gamma)/\Gamma_{total}$ Γ_{60}/Γ

NODE=M026R31
NODE=M026R31

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
2.13±0.15 OUR FIT Error includes scale factor of 1.5. [$(1.66 \pm 0.13) \times 10^{-4}$ OUR 2025 FIT Scale factor = 1.2]						NEW
• • • We do not use the following data for averages, fits, limits, etc. • • •						
$2.5 \pm 0.7 \pm 0.2$		73	[1,2] ABLIKIM	13I	BES3	$\psi(2S) \to \pi^+\pi^- J/\psi$
$0.7\ ^{+1.5}_{-0.6} \pm 0.1$		$1.2^{+2.8}_{-1.1}$	[1,3] ADAMS	08	CLEO	$\psi(2S) \to \pi^+\pi^- J/\psi$
$1.8\ ^{+0.8}_{-0.6} \pm 0.1$		13	[1,4] WICHT	08	BELL	$B^\pm \to K^\pm\gamma\gamma$
$1.87 \pm 0.32^{+0.95}_{-0.50}$			[1] AMBROGIANI	03	E835	$\overline{p}p \to \gamma\gamma$
$2.80^{+0.67}_{-0.58} \pm 1.0$			[1] ARMSTRONG	95F	E760	$\overline{p}p \to \gamma\gamma$
< 9	90		[1,5] BISELLO	91	DM2	$J/\psi \to \gamma\gamma\gamma$
$6\ ^{+4}_{-3} \pm 4$			[1] BAGLIN	87B	SPEC	$\overline{p}p \to \gamma\gamma$
< 18	90		[6] BLOOM	83	CBAL	$J/\psi \to \eta_c\gamma$

[1] Not used since the same experimental measurement has been used in another related quantity included elsewhere in the fit.
NODE=M026R31;LINKAGE=A

[2] ABLIKIM 13I reports $[\Gamma(\eta_c(1S) \to \gamma\gamma)/\Gamma_{total}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (4.5 \pm 1.2 \pm 0.6) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.
NODE=M026R31;LINKAGE=AL

[3] ADAMS 08 reports $[\Gamma(\eta_c(1S) \to \gamma\gamma)/\Gamma_{total}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (1.2^{+2.7}_{-1.1} \pm 0.3) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.
NODE=M026R31;LINKAGE=AD

[4] WICHT 08 reports $[\Gamma(\eta_c(1S) \to \gamma\gamma)/\Gamma_{total}] \times [B(B^+ \to \eta_c K^+)] = (2.2^{+0.9}_{-0.7}{}^{+0.4}_{-0.2}) \times 10^{-7}$ which we divide by our best (shown rounded) value $B(B^+ \to \eta_c K^+) = (1.20 \pm 0.08) \times 10^{-3}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.
NODE=M026R31;LINKAGE=WI

[5] The quoted branching ratios use $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 0.0127 \pm 0.0036$.
NODE=M026R31;LINKAGE=E

[6] Using $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 0.0127 \pm 0.0036$.
NODE=M026R31;LINKAGE=C

$\Gamma(p\overline{p})/\Gamma_{total} \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{52}/\Gamma \times \Gamma_{60}/\Gamma$

NODE=M026R32
NODE=M026R32

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
0.237±0.020 OUR FIT Error includes scale factor of 1.2. [$(0.221 \pm 0.019) \times 10^{-6}$ OUR 2025 FIT Scale factor = 1.2]					NEW
0.26 ±0.05 OUR AVERAGE Error includes scale factor of 1.4.					
$0.224^{+0.038}_{-0.037} \pm 0.020$	190	AMBROGIANI	03	E835	$\overline{p}p \to \eta_c \to \gamma\gamma$
$0.336^{+0.080}_{-0.070}$		ARMSTRONG	95F	E760	$\overline{p}p \to \gamma\gamma$
$0.68\ ^{+0.42}_{-0.31}$	12	BAGLIN	87B	SPEC	$\overline{p}p \to \gamma\gamma$

$\Gamma(\gamma\phi)/\Gamma_{total}$ Γ_{61}/Γ

NODE=M026P15
NODE=M026P15

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
$\mathbf{11.5^{+3.2}_{-4.2} \pm 0.9}$	[1] ABLIKIM	25P	BES3	$J/\psi \to \phi\gamma\gamma$

[1] ABLIKIM 25P reports $[\Gamma(\eta_c(1S) \to \gamma\phi)/\Gamma_{total}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] = (2.1 \pm 0.3^{+0.5}_{-0.7}) \times 10^{-7}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = (1.82 \pm 0.15) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.
NODE=M026P15;LINKAGE=A

Charge conjugation (C), Parity (P), Lepton family number (LF) violating modes

NODE=M026320

$\Gamma(\pi^+\pi^-)/\Gamma_{total}$ Γ_{62}/Γ

NODE=M026R34
NODE=M026R34

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<10 (CL = 90%) [$< 13 \times 10^{-5}$ (CL = 90%) OUR 2025 BEST LIMIT]					
<10	90	[1] ABLIKIM	11G	BES3	$J/\psi \to \gamma\pi^+\pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<60	90	[2] ABLIKIM	06B	BES2	$J/\psi \to \pi^+\pi^-\gamma$

[1] ABLIKIM 11G reports $[\Gamma(\eta_c(1S) \to \pi^+\pi^-)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] < 1.82 \times 10^{-6}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 1.82 \times 10^{-2}$. NODE=M026R34;LINKAGE=AL

[2] ABLIKIM 06B reports $[\Gamma(\eta_c(1S) \to \pi^+\pi^-)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] < 1.1 \times 10^{-5}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 1.82 \times 10^{-2}$. NODE=M026R34;LINKAGE=AB

$\Gamma(\pi^0\pi^0)/\Gamma_{\text{total}}$ Γ_{63}/Γ

NODE=M026R35
NODE=M026R35

VALUE (units 10^{-5})	CL%	DOCUMENT ID	TECN	COMMENT
< 3.3 (CL = 90%)	[$<4 \times 10^{-5}$ (CL = 90%) OUR 2025 BEST LIMIT]			
< 3.3	90	[1] ABLIKIM	11G BES3	$J/\psi \to \gamma\pi^0\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<40	90	[2] ABLIKIM	06B BES2	$J/\psi \to \pi^0\pi^0\gamma$

[1] ABLIKIM 11G reports $[\Gamma(\eta_c(1S) \to \pi^0\pi^0)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] < 6.0 \times 10^{-7}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 1.82 \times 10^{-2}$. NODE=M026R35;LINKAGE=AL

[2] ABLIKIM 06B reports $[\Gamma(\eta_c(1S) \to \pi^0\pi^0)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] < 0.71 \times 10^{-5}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 1.82 \times 10^{-2}$. NODE=M026R35;LINKAGE=AB

$\Gamma(K^+K^-)/\Gamma_{\text{total}}$ Γ_{64}/Γ

NODE=M026R36
NODE=M026R36

VALUE (units 10^{-5})	CL%	DOCUMENT ID	TECN	COMMENT
<50 (CL = 90%)	[$<70 \times 10^{-5}$ (CL = 90%) OUR 2025 BEST LIMIT]			
<50	90	[1] ABLIKIM	06B BES2	$J/\psi \to K^+K^-\gamma$

[1] ABLIKIM 06B reports $[\Gamma(\eta_c(1S) \to K^+K^-)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] < 0.96 \times 10^{-5}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 1.82 \times 10^{-2}$. NODE=M026R36;LINKAGE=AB

$\Gamma(K^0_S K^0_S)/\Gamma_{\text{total}}$ Γ_{65}/Γ

NODE=M026R37
NODE=M026R37

VALUE (units 10^{-5})	CL%	DOCUMENT ID	TECN	COMMENT
<29 (CL = 90%)	[$<40 \times 10^{-5}$ (CL = 90%) OUR 2025 BEST LIMIT]			
<29	90	[1] ABLIKIM	06B BES2	$J/\psi \to K^0_S K^0_S\gamma$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<32	90	[2,3] UEHARA	13 BELL	$\gamma\gamma \to K^0_S K^0_S$
< 5.6	90	[4,5] UEHARA	13 BELL	$\gamma\gamma \to K^0_S K^0_S$ OCCUR=2

[1] ABLIKIM 06B reports $[\Gamma(\eta_c(1S) \to K^0_S K^0_S)/\Gamma_{\text{total}}] \times [B(J/\psi(1S) \to \gamma\eta_c(1S))] < 0.53 \times 10^{-5}$ which we divide by our best (shown rounded) value $B(J/\psi(1S) \to \gamma\eta_c(1S)) = 1.82 \times 10^{-2}$. NODE=M026R37;LINKAGE=AB

[2] Using $\Gamma(\gamma\gamma)(\eta_c) = 5.3 \pm 0.5$ keV. UEHARA 13 reports $\Gamma(\gamma\gamma) \times B(K^0_S K^0_S) < 1.6$ eV. NODE=M026R37;LINKAGE=A

[3] Taking into account interference with the non-resonant continuum. NODE=M026R37;LINKAGE=U1

[4] Using $\Gamma(\gamma\gamma)(\eta_c) = 5.3 \pm 0.5$ keV. UEHARA 13 reports $\Gamma(\gamma\gamma) \times B(K^0_S K^0_S) < 0.29$ eV. NODE=M026R37;LINKAGE=B

[5] Neglecting interference with the non-resonant continuum. NODE=M026R37;LINKAGE=U2

$\eta_c(1S)$ CROSS-PARTICLE BRANCHING RATIOS

NODE=M026230

$\Gamma(\eta_c(1S) \to \eta'(958)\pi\pi)/\Gamma_{\text{total}} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$ $\Gamma_1/\Gamma \times \Gamma^{J/\psi(1S)}_{248}/\Gamma^{J/\psi(1S)}$

NODE=M026R64
NODE=M026R64

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
2.9 ±0.6 OUR FIT Error includes scale factor of 1.5. [$(2.8 \pm 0.5) \times 10^{-4}$ OUR 2025 FIT Scale factor = 1.4]				NEW
5.25±1.65	14	[1] BALTRUSAIT..86	MRK3	$J/\psi \to \eta_c\gamma$

[1] The value reported by BALTRUSAITIS 86 has been multiplied by 3/2 to account for isospin symmetry. NODE=M026R64;LINKAGE=A

$\Gamma(\eta_c(1S) \to \rho\rho)/\Gamma_{\text{total}} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$ $\Gamma_4/\Gamma \times \Gamma^{J/\psi(1S)}_{248}/\Gamma^{J/\psi(1S)}$

NODE=M026R65
NODE=M026R65

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
2.6 ±0.6 OUR AVERAGE Error includes scale factor of 1.2.				
1.6 ±0.6 ±0.4	72	ABLIKIM	05L BES2	$J/\psi \to \pi^+\pi^-\pi^+\pi^-\gamma$
3.30±0.30±0.60	113	[1] BISELLO	91 DM2	$J/\psi \to \gamma\rho^0\rho^0$
3.0 ±1.3 ±0.6	32	[2] BISELLO	91 DM2	$J/\psi \to \gamma\rho^+\rho^-$ OCCUR=2

[1] The value reported by BISELLO 91 has been multiplied by 3 to account for isospin symmetry. NODE=M026R65;LINKAGE=A

[2] The value reported by BISELLO 91 has been multiplied by 3/2 to account for isospin symmetry. NODE=M026R65;LINKAGE=B

$\Gamma(\eta_c(1S) \to K^*(892)^0 K^- \pi^+ + \text{c.c.})/\Gamma_{\text{total}} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$ $\Gamma_5/\Gamma \times \Gamma_{248}^{J/\psi(1S)}/\Gamma^{J/\psi(1S)}$

NODE=M026R66
NODE=M026R66

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
2.6±0.6	63	BALTRUSAIT...86		MRK3	$J/\psi \to \eta_c\gamma$

$\Gamma(\eta_c(1S) \to K^*(892)\overline{K}^*(892))/\Gamma_{\text{total}} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$ $\Gamma_6/\Gamma \times \Gamma_{248}^{J/\psi(1S)}/\Gamma^{J/\psi(1S)}$

NODE=M026R67
NODE=M026R67

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.00±0.18 OUR FIT					NEW
[$(0.99 \pm 0.17) \times 10^{-4}$ OUR 2025 FIT]					
1.17±0.29 OUR AVERAGE					
1.4 ±0.3 ±0.5	60	ABLIKIM	05L	BES2	$J/\psi \to K^+K^-\pi^+\pi^-\gamma$
1.04±0.36±0.18	14	[1] BISELLO	91	DM2	$e^+e^- \to \gamma K^+K^-\pi^+\pi^-$
1.2 ±0.6	9	[1] BALTRUSAIT...86		MRK3	$J/\psi \to \eta_c\gamma$

[1] The reported value has been multiplied by 2 to account for isospin symmetry. NODE=M026R67;LINKAGE=A

$\Gamma(\eta_c(1S) \to K^*(892)^0\overline{K}^*(892)^0\pi^+\pi^-)/\Gamma_{\text{total}} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$ $\Gamma_7/\Gamma \times \Gamma_{248}^{J/\psi(1S)}/\Gamma^{J/\psi(1S)}$

NODE=M026R68
NODE=M026R68

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.91±0.64±0.48	45	ABLIKIM	06A	BES2	$J/\psi \to K^{*0}\overline{K}^{*0}\pi^+\pi^-\gamma$

$\Gamma(\eta_c(1S) \to \phi K^+K^-)/\Gamma_{\text{total}} \times \Gamma(B^+ \to \eta_c K^+)/\Gamma_{\text{total}}$ $\Gamma_8/\Gamma \times \Gamma_{274}^{B^\pm}/\Gamma^{B^\pm}$

NODE=M026R69
NODE=M026R69

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{3.6^{+1.1}_{-0.9}\pm0.8}$	$14.1^{+4.4}_{-3.7}$	HUANG	03	BELL	$B^+ \to (\phi K^+K^-)\ K^+$

$\Gamma(\eta_c(1S) \to \phi\phi)/\Gamma_{\text{total}} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$ $\Gamma_9/\Gamma \times \Gamma_{248}^{J/\psi(1S)}/\Gamma^{J/\psi(1S)}$

NODE=M026R80
NODE=M026R80

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
2.6±0.6 OUR FIT Error includes scale factor of 2.3. [$(2.6 \pm 0.6) \times 10^{-5}$ OUR 2025 FIT Scale factor = 2.2]					NEW
4.1±0.6 OUR AVERAGE Error includes scale factor of 1.2.					
$4.3\pm0.5^{+0.5}_{-1.2}$	1.2k	ABLIKIM	17P	BES3	$J/\psi \to \gamma K^+K^-K^+K^-$
3.3±0.6±0.6	72	ABLIKIM	05L	BES2	$J/\psi \to \gamma K^+K^-K^+K^-$
3.9±0.9±0.7	19	BISELLO	91	DM2	$J/\psi \to \gamma K^+K^-K^+K^-$
$3.8^{+2.3}_{-1.5}\pm0.7$	5	BISELLO	91	DM2	$J/\psi \to \gamma K^+K^-K^0_SK^0_L$ OCCUR=2
9.3±2.0±1.6	80	BAI	90B	MRK3	$J/\psi \to \gamma K^+K^-K^+K^-$
8.5±2.7±1.8		BAI	90B	MRK3	$J/\psi \to \gamma K^+K^-K^0_SK^0_L$ OCCUR=3
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3.3±0.6±0.6	357	[1] BAI	04	BES	$J/\psi \to \gamma K^+K^-K^+K^-$

[1] Superseded by ABLIKIM 05L. NODE=M026R80;LINKAGE=E

$\Gamma(\eta_c(1S) \to \phi\phi)/\Gamma_{\text{total}} \times \Gamma(B^+ \to \eta_c K^+)/\Gamma_{\text{total}}$ $\Gamma_9/\Gamma \times \Gamma_{274}^{B^\pm}/\Gamma^{B^\pm}$

NODE=M026R70
NODE=M026R70

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
1.7±0.4 OUR FIT Error includes scale factor of 2.5. [$(2.0 \pm 0.5) \times 10^{-6}$ OUR 2025 FIT Scale factor = 2.2]					NEW
$\mathbf{3.3^{+1.2}_{-1.0}}$ **OUR AVERAGE** Error includes scale factor of 1.5.					
4.7±1.2±0.5		AUBERT,B	04B	BABR	$B^\pm \to K^\pm\eta_c$
$2.2^{+1.0}_{-0.7}\pm0.5$	7	HUANG	03	BELL	$B^\pm \to K^\pm\phi\phi$

$\Gamma(\eta_c(1S) \to \omega\omega)/\Gamma_{\text{total}} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$ $\Gamma_{16}/\Gamma \times \Gamma_{248}^{J/\psi(1S)}/\Gamma^{J/\psi(1S)}$

NODE=M026R71
NODE=M026R71

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
3.8 ±1.2 OUR FIT Error includes scale factor of 2.1. [$(3.7 \pm 1.2) \times 10^{-5}$ OUR 2025 FIT Scale factor = 2.1]					NEW
4.90±0.17±0.77	1705	ABLIKIM	19AV	BES3	$J/\psi \to \gamma\omega\omega$

$\Gamma(\eta_c(1S) \to f_2(1270) f_2(1270))/\Gamma_{total} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{18}/\Gamma \times \Gamma_{248}^{J/\psi(1S)}/\Gamma^{J/\psi(1S)}$

NODE=M026R72
NODE=M026R72

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
1.5±0.4 OUR FIT				
$1.3 \pm 0.3^{+0.3}_{-0.4}$	91.2 ± 19.8	ABLIKIM	04M BES	$J/\psi \to \gamma 2\pi^+ 2\pi^-$

$\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{total} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{37}/\Gamma \times \Gamma_{248}^{J/\psi(1S)}/\Gamma^{J/\psi(1S)}$

NODE=M026R73
NODE=M026R73

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
10.7 ±1.0 OUR FIT Error includes scale factor of 1.7. [(10.1 ± 0.9) × 10^{-4} OUR 2025 FIT Scale factor = 1.5]					NEW
6.7 ±0.8 OUR AVERAGE					
6.6 ±0.9 ±1.5	0.6k	[1] BAI	04	BES	$J/\psi \to \gamma K^\pm \pi^\mp K^0_S$
8.76±1.80±1.68	33	[2] BISELLO	91	DM2	$J/\psi \to \gamma K^+ K^- \pi^0$
6.9 ±1.2 ±1.2	68	[3] BISELLO	91	DM2	$J/\psi \to \gamma K^\pm \pi^\mp K^0_S$ OCCUR=2
7.8 ±3.0	32	[4] BALTRUSAIT..86		MRK3	$J/\psi \to \gamma K^+ K^- \pi^0$
5.7 ±1.5	63	[5] BALTRUSAIT..86		MRK3	$J/\psi \to \gamma K^\pm \pi^\mp K^0_S$ OCCUR=2

[1] BAI 04 reports $B(J/\psi \to \gamma\eta_c) \cdot B(\eta_c \to K^\pm K^0_S \pi^\mp) = (2.2 \pm 0.3 \pm 0.5) \times 10^{-4}$ which we multiply by 3 to account for isospin symmetry. NODE=M026R73;LINKAGE=A

[2] BISELLO 91 reports $B(J/\psi \to \gamma\eta_c) \cdot B(\eta_c \to K^+ K^- \pi^0) = (1.46 \pm 0.30 \pm 0.28) \times 10^{-4}$ which we multiply by 6 to account for isospin symmetry. NODE=M026R73;LINKAGE=B

[3] BISELLO 91 reports $B(J/\psi \to \gamma\eta_c) \cdot B(\eta_c \to K^\pm K^0_S \pi^\mp) = (2.3 \pm 0.4 \pm 0.4) \times 10^{-4}$ which we multiply by 3 to account for isospin symmetry. NODE=M026R73;LINKAGE=C

[4] BALTRUSAITIS 86 reports $B(J/\psi \to \gamma\eta_c) \cdot B(\eta_c \to K^+ K^- \pi^0) = (1.3 \pm 0.5) \times 10^{-4}$ which we multiply by 6 to account for isospin symmetry. NODE=M026R73;LINKAGE=D

[5] BALTRUSAITIS 86 reports $B(J/\psi \to \gamma\eta_c) \cdot B(\eta_c \to K^\pm K^0_S \pi^\mp) = (1.9 \pm 0.5) \times 10^{-4}$ which we multiply by 3 to account for isospin symmetry. NODE=M026R73;LINKAGE=E

$\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{total} \times \Gamma(B^+ \to \eta_c K^+)/\Gamma_{total}$ $\Gamma_{37}/\Gamma \times \Gamma_{274}^{B^\pm}/\Gamma^{B^\pm}$

NODE=M026R74
NODE=M026R74

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
7.1 ±0.6 OUR FIT Error includes scale factor of 1.3. [(7.9 ± 0.5) × 10^{-5} OUR 2025 FIT Scale factor = 1.1]				NEW
7.5 ±0.8 OUR AVERAGE				
$8.01 \pm 0.42^{+1.71}_{-1.65}$	[1] VINOKUROVA 11		BELL	$e^+e^- \to \Upsilon(4S)$
7.4 ±0.5 ±0.7	AUBERT,B	04B	BABR	$B^\pm \to K^\pm \eta_c$

[1] VINOKUROVA 11 reports $B(B^+ \to \eta_c K^+,\ \eta_c \to K^0_S K^\pm \pi^\mp) = (26.7 \pm 1.4^{+2.9}_{-2.6} \pm 4.9) \times 10^{-6}$, where the first uncertainty is statistical, the second is due to systematics, and the third comes from interference of $\eta_c(1S) \to K^0_S K^\pm \pi^\mp$ with nonresonant $K^0_S K^\pm \pi^\mp$. We combined both systematic uncertainties to single values. We multiply the reported result by 3 to account for isospin symmetry. NODE=M026R74;LINKAGE=D

$\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{37}/\Gamma \times \Gamma_{199}^{\psi(2S)}/\Gamma^{\psi(2S)}$

NODE=M026R75
NODE=M026R75

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
2.1±0.4 OUR FIT Error includes scale factor of 1.6. [(2.6 ± 0.4) × 10^{-4} OUR 2025 FIT Scale factor = 1.3]			NEW
$4.5^{+2.4}_{-1.8}$	HIMEL	80B MRK2	$\psi(2S) \to \eta_c \gamma$

$\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{37}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$

NODE=M026R76
NODE=M026R76

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
3.8±0.4 OUR FIT Error includes scale factor of 1.3. [(4.28 ± 0.34) × 10^{-2} OUR 2025 FIT]					NEW
4.1±0.6 OUR AVERAGE					
3.7±0.7±0.3	55	[1,2] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0 \gamma K^+ K^- \pi^0$
4.6±0.8±0.3	107	[3,4] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0 \gamma K^0_S K^\mp \pi^\pm$ OCCUR=2

[1] ABLIKIM 12N quotes $B(\psi(2S) \to \pi^0 h_c) \cdot B(h_c \to \gamma\eta_c) \cdot B(\eta_c \to K^+K^-\pi^0) = (4.54 \pm 0.76 \pm 0.48) \times 10^{-6}$ which we multiply by 6 to account for isospin symmetry. NODE=M026R76;LINKAGE=A

[2] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] = (27.24 \pm 4.56 \pm 2.88) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R76;LINKAGE=B

[3] ABLIKIM 12N quotes $B(\psi(2S) \to \pi^0 h_c) \cdot B(h_c \to \gamma\eta_c) \cdot B(\eta_c \to K^0_S K^\pm \pi^\mp) = (11.35 \pm 1.25 \pm 1.50) \times 10^{-6}$ which we multiply by 3 to account for isospin symmetry. NODE=M026R76;LINKAGE=C

[4] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to K\overline{K}\pi)/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] = (34.05 \pm 3.75 \pm 4.50) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R76;LINKAGE=D

$\Gamma(\eta_c(1S) \to K\overline{K}\eta)/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$

$\Gamma_{38}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$ NODE=M026R77

NODE=M026R77

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
7.1±1.0 OR FIT Error includes scale factor of 1.2. [$(7.9 \pm 1.0) \times 10^{-3}$ OUR 2025 FIT]					NEW
5.7±2.9±0.4	7	[1,2] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma\eta K^+K^-$

[1] ABLIKIM 12N quotes $B(\psi(2S) \to \pi^0 h_c) \cdot B(h_c \to \gamma\eta_c) \cdot B(\eta_c \to K^+K^-\eta) = (2.11 \pm 1.01 \pm 0.32) \times 10^{-6}$ which we multiply by 2 to account for isospin symmetry. NODE=M026R77;LINKAGE=A

[2] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to K\overline{K}\eta)/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] = (4.22 \pm 2.02 \pm 0.64) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R77;LINKAGE=B

$\Gamma(\eta_c(1S) \to \eta\pi^+\pi^-)/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$

$\Gamma_{39}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$ NODE=M026R78

NODE=M026R78

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
9.7±2.5±0.7	33	[1] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma\eta\pi^+\pi^-$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to \eta\pi^+\pi^-)/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] = (7.22 \pm 1.47 \pm 1.11) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R78;LINKAGE=A

$\Gamma(\eta_c(1S) \to \eta\pi^+\pi^-)/\Gamma_{\text{total}} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$

$\Gamma_{39}/\Gamma \times \Gamma_{248}^{J/\psi(1S)}/\Gamma^{J/\psi(1S)}$ NODE=M026R79

NODE=M026R79

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
4.2±0.9 OUR AVERAGE					
4.6±1.1	75	BALTRUSAIT..86		MRK3	$J/\psi \to \eta_c\gamma$
3.1±1.1±1.5	18	PARTRIDGE	80B	CBAL	$J/\psi \to \eta\pi^+\pi^-\gamma$

$\Gamma(\eta_c(1S) \to \eta 2(\pi^+\pi^-))/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$

$\Gamma_{40}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$ NODE=M026R81

NODE=M026R81

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.6±0.7±0.2	39	[1] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma\eta 2(\pi^+\pi^-)$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to \eta 2(\pi^+\pi^-))/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] = (19.17 \pm 3.77 \pm 3.72) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R81;LINKAGE=A

$\Gamma(\eta_c(1S) \to K^+K^-\pi^+\pi^-)/\Gamma_{\text{total}} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$

$\Gamma_{41}/\Gamma \times \Gamma_{248}^{J/\psi(1S)}/\Gamma^{J/\psi(1S)}$ NODE=M026R84

NODE=M026R84

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.21±0.29 OUR FIT Error includes scale factor of 2.2. [$(1.17 \pm 0.26) \times 10^{-4}$ OUR 2025 FIT Scale factor = 2.0]					NEW
1.9 ±0.6 OUR AVERAGE Error includes scale factor of 2.4.					
1.5 ±0.2 ±0.2	0.4k	BAI	04	BES	$J/\psi \to \gamma K^+K^-\pi^+\pi^-$
2.7 ±0.4	110	BALTRUSAIT..86		MRK3	$J/\psi \to \eta_c\gamma$

$\Gamma(\eta_c(1S) \to K^+K^-\pi^+\pi^-)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\eta_c(1S))/\Gamma_{total}$ $\Gamma_{41}/\Gamma \times \Gamma_{199}^{\psi(2S)}/\Gamma^{\psi(2S)}$

NODE=M026R85
NODE=M026R85

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
2.4±0.8 OUR FIT Error includes scale factor of 2.1. [(3.0 ± 0.8) × 10^{-5} OUR 2025 FIT Scale factor = 1.7]			NEW
$4.0^{+6.0}_{-2.5}$	HIMEL	80B MRK2	$\psi(2S) \to \eta_c\gamma$

$\Gamma(\eta_c(1S) \to K^+K^-\pi^+\pi^-)/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}$ $\Gamma_{41}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$

NODE=M026R83
NODE=M026R83

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
4.2±1.1 OUR FIT Error includes scale factor of 2.0. [(5.0 ± 1.0) × 10^{-3} OUR 2025 FIT Scale factor = 1.7]				NEW
5.6±1.3±0.4	38	[1] ABLIKIM	12N BES3	$\psi(2S) \to \pi^0\gamma K^+K^-\pi^+\pi^-$

[1] ABLIKIM 12N reports [$\Gamma(\eta_c(1S) \to K^+K^-\pi^+\pi^-)/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}$] × [$B(\psi(2S) \to h_c(1P)\pi^0)$] = (4.16 ± 0.76 ± 0.59) × 10^{-6} which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0)$ = (7.4 ± 0.5) × 10^{-4}. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R83;LINKAGE=A

$\Gamma(\eta_c(1S) \to K^0K^-\pi^+\pi^-\pi^+ + \text{c.c.})/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}$ $\Gamma_{43}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$

NODE=M026R86
NODE=M026R86

VALUE (units 10^{-2})	DOCUMENT ID	TECN	COMMENT
3.2±0.8±0.2	[1,2] ABLIKIM	12N BES3	$\psi(2S) \to \pi^0\gamma K^0_S K^\mp\pi^\mp 2\pi^\pm$

[1] ABLIKIM 12N quotes $B(\psi(2S) \to \pi^0 h_c) \cdot B(h_c \to \gamma\eta_c) \cdot B(\eta_c \to K^0_S K^-\pi^- 2\pi^+)$ = (12.01 ± 2.22 ± 2.04) × 10^{-6} which we multiply by 2 to take c.c. into account.

NODE=M026R86;LINKAGE=A

[2] ABLIKIM 12N reports [$\Gamma(\eta_c(1S) \to K^0K^-\pi^+\pi^-\pi^+ + \text{c.c.})/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}$] × [$B(\psi(2S) \to h_c(1P)\pi^0)$] = (24.02 ± 4.44 ± 4.08) × 10^{-6} which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0)$ = (7.4 ± 0.5) × 10^{-4}. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R86;LINKAGE=B

$\Gamma(\eta_c(1S) \to K^+K^-2(\pi^+\pi^-))/\Gamma_{total} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{total}$ $\Gamma_{44}/\Gamma \times \Gamma_{248}^{J/\psi(1S)}/\Gamma^{J/\psi(1S)}$

NODE=M026R88
NODE=M026R88

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
1.21±0.32±0.24	100	ABLIKIM	06A BES2	$J/\psi \to K^+K^-2(\pi^+\pi^-)\gamma$

$\Gamma(\eta_c(1S) \to K^+K^-2(\pi^+\pi^-))/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}$ $\Gamma_{44}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$

NODE=M026R87
NODE=M026R87

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
4.8±2.5±0.3	10	[1] ABLIKIM	12N BES3	$\psi(2S) \to \pi^0\gamma K^+K^-2(\pi^+\pi^-)$

[1] ABLIKIM 12N reports [$\Gamma(\eta_c(1S) \to K^+K^-2(\pi^+\pi^-))/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}$] × [$B(\psi(2S) \to h_c(1P)\pi^0)$] = (3.60 ± 1.71 ± 0.64) × 10^{-6} which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0)$ = (7.4 ± 0.5) × 10^{-4}. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R87;LINKAGE=A

$\Gamma(\eta_c(1S) \to 2(K^+K^-))/\Gamma_{total} \times \Gamma(B^+ \to \eta_c K^+)/\Gamma_{total}$ $\Gamma_{45}/\Gamma \times \Gamma_{274}^{B^\pm}/\Gamma^{B^\pm}$

NODE=M026R90
NODE=M026R90

VALUE (units 10^{-6})	EVTS	DOCUMENT ID	TECN	COMMENT
1.4±0.4 OUR FIT Error includes scale factor of 1.5. [(1.6 ± 0.4) × 10^{-6} OUR 2025 FIT Scale factor = 1.4]				NEW
$1.8^{+0.6}_{-0.5}$	$14.5^{+4.6}_{-3.0}$	HUANG	03 BELL	$B^+ \to 2(K^+K^-)K^+$

$\Gamma(\eta_c(1S) \to 2(K^+K^-))/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}$ $\Gamma_{45}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$

NODE=M026R89
NODE=M026R89

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
0.75±0.24 OUR FIT Error includes scale factor of 1.5. [(0.85 ± 0.24) × 10^{-3} OUR 2025 FIT Scale factor = 1.3]				NEW
1.3 ±0.5 ±0.1	7	[1] ABLIKIM	12N BES3	$\psi(2S) \to \pi^0\gamma 2(K^+K^-)$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to 2(K^+K^-))/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] = (0.94 \pm 0.37 \pm 0.14) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R89;LINKAGE=A

$\Gamma(\eta_c(1S) \to \pi^+\pi^-\pi^0\pi^0)/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$ $\Gamma_{47}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$

NODE=M026R91
NODE=M026R91

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
2.7±0.5±0.2	118	[1] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma\pi^+\pi^-2\pi^0$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to \pi^+\pi^-\pi^0\pi^0)/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] = (20.31 \pm 2.20 \pm 3.33) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R91;LINKAGE=A

$\Gamma(\eta_c(1S) \to 2(\pi^+\pi^-))/\Gamma_{\text{total}} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$ $\Gamma_{48}/\Gamma \times \Gamma_{248}^{J/\psi(1S)}/\Gamma^{J/\psi(1S)}$

NODE=M026R93
NODE=M026R93

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.37±0.19 OUR FIT Error includes scale factor of 1.3. [$(1.35 \pm 0.19) \times 10^{-4}$ OUR 2025 FIT Scale factor = 1.3]					NEW
1.36±0.23 OUR AVERAGE					
1.3 ±0.2 ±0.4	0.5k	BAI	04	BES	$J/\psi \to \gamma 2(\pi^+\pi^-)$
1.33±0.22±0.20	137	BISELLO	91	DM2	$J/\psi \to \gamma 2(\pi^+\pi^-)$
1.6 ±0.6	25	BALTRUSAIT..86		MRK3	$J/\psi \to \gamma\eta_c$

$\Gamma(\eta_c(1S) \to 2(\pi^+\pi^-))/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$ $\Gamma_{48}/\Gamma \times \Gamma_{199}^{\psi(2S)}/\Gamma^{\psi(2S)}$

NODE=M026R94
NODE=M026R94

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
2.7±0.6 OUR FIT Error includes scale factor of 1.6. [$(3.4 \pm 0.7) \times 10^{-5}$ OUR 2025 FIT Scale factor = 1.3]				NEW
$\mathbf{5.7^{+3.9}_{-2.4}}$	HIMEL	80B	MRK2	$\psi(2S) \to \eta_c\gamma$

$\Gamma(\eta_c(1S) \to 2\pi^+2\pi^-\eta)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$ $\Gamma_{49}/\Gamma \times \Gamma_{199}^{\psi(2S)}/\Gamma^{\psi(2S)}$

NODE=M026P14
NODE=M026P14

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.01±0.17±0.64	[1] ABLIKIM	25R	BES3	$e^+e^- \to \psi(2S)$

[1] Destructive interference with background. The constructive interference solution is $(0.95 \pm 0.17 \pm 0.44) \times 10^{-5}$. NODE=M026P14;LINKAGE=C

$\Gamma(\eta_c(1S) \to 2(\pi^+\pi^-))/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$ $\Gamma_{48}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$

NODE=M026R92
NODE=M026R92

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.48±0.09 OUR FIT Error includes scale factor of 1.4. [$(0.58 \pm 0.09) \times 10^{-2}$ OUR 2025 FIT Scale factor = 1.3]					NEW
1.01±0.19±0.07	100	[1] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma 2(\pi^+\pi^-)$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to 2(\pi^+\pi^-))/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] = (7.51 \pm 0.85 \pm 1.11) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R92;LINKAGE=A

$\Gamma(\eta_c(1S) \to 2(\pi^+\pi^-\pi^0))/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}$ $\Gamma_{50}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$

NODE=M026R95
NODE=M026R95

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
10.1±1.7±0.7	175	[1] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma 2(\pi^+\pi^-\pi^0)$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to 2(\pi^+\pi^-\pi^0))/\Gamma_{\text{total}} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{\text{total}}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] = (75.13 \pm 7.42 \pm 9.99) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026R95;LINKAGE=A

$\Gamma(\eta_c(1S) \to 3(\pi^+\pi^-))/\Gamma_{total} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{51}/\Gamma \times \Gamma_{248}^{J/\psi(1S)}/\Gamma^{J/\psi(1S)}$

NODE=M026R97
NODE=M026R97

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
2.59±0.32±0.47	471	ABLIKIM	06A	BES2	$J/\psi \to 3(\pi^+\pi^-)\gamma$

$\Gamma(\eta_c(1S) \to 3(\pi^+\pi^-))/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{51}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$

NODE=M026R96
NODE=M026R96

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.19±0.30±0.08	51	[1] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma 3(\pi^+\pi^-)$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to 3(\pi^+\pi^-))/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] = (8.82 \pm 1.57 \pm 1.59) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R96;LINKAGE=A

$\Gamma(\eta_c(1S) \to p\bar{p})/\Gamma_{total} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{52}/\Gamma \times \Gamma_{248}^{J/\psi(1S)}/\Gamma^{J/\psi(1S)}$

NODE=M026R99
NODE=M026R99

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
2.02±0.19 OUR FIT Error includes scale factor of 1.2. [$(1.88 \pm 0.18) \times 10^{-5}$ OUR 2025 FIT Scale factor = 1.2]					NEW
1.61±0.29 OUR AVERAGE					
1.9 ±0.3 ±0.3	213	BAI	04	BES	$J/\psi \to \gamma p\bar{p}$
1.3 ±0.4 ±0.3	18	BISELLO	91	DM2	$J/\psi \to \gamma p\bar{p}$
1.4 ±0.7	23	BALTRUSAIT..	86	MRK3	$J/\psi \to \eta_c\gamma$

$\Gamma(\eta_c(1S) \to p\bar{p})/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{52}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$

NODE=M026R98
NODE=M026R98

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
7.1±0.8 OUR FIT Error includes scale factor of 1.2. [$(8.0 \pm 0.8) \times 10^{-4}$ OUR 2025 FIT]					NEW
8.7±2.9±0.6	15	[1] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma p\bar{p}$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to p\bar{p})/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] = (0.65 \pm 0.19 \pm 0.10) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026R98;LINKAGE=A

$\Gamma(\eta_c(1S) \to p\bar{p})/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{52}/\Gamma \times \Gamma_{199}^{\psi(2S)}/\Gamma^{\psi(2S)}$

NODE=M026P00
NODE=M026P00

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
4.0±0.7 OUR FIT Error includes scale factor of 1.4. [$(4.8 \pm 0.7) \times 10^{-6}$ OUR 2025 FIT Scale factor = 1.2]				NEW
$8\ ^{+8}_{-4}$	HIMEL	80B	MRK2	$\psi(2S) \to \eta_c\gamma$

$\Gamma(\eta_c(1S) \to p\bar{p})/\Gamma_{total} \times \Gamma(B^+ \to \eta_c K^+)/\Gamma_{total}$ $\Gamma_{52}/\Gamma \times \Gamma_{274}^{B^\pm}/\Gamma^{B^\pm}$

NODE=M026P01
NODE=M026P01

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
1.34±0.13 OUR FIT Error includes scale factor of 1.2. [$(1.47 \pm 0.12) \times 10^{-6}$ OUR 2025 FIT Scale factor = 1.1]					NEW
1.54±0.19 OUR AVERAGE Error includes scale factor of 1.1.					
$1.42 \pm 0.11\ ^{+0.16}_{-0.20}$	195	WU	06	BELL	$B^+ \to p\bar{p}K^+$
$1.8\ ^{+0.3}_{-0.2}$ ±0.2		AUBERT,B	05L	BABR	$e^+e^- \to \Upsilon(4S)$

$\Gamma(\eta_c(1S) \to p\bar{p}\pi^0)/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{53}/\Gamma \times \Gamma_{30}^{h_c(1P)}/\Gamma^{h_c(1P)}$

NODE=M026P02
NODE=M026P02

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
2.1±0.7±0.1	[1] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma p\bar{p}\pi^0$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to p\bar{p}\pi^0)/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] = (1.53 \pm 0.49 \pm 0.23) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M026P02;LINKAGE=A

$\Gamma(\eta_c(1S) \to p\bar{p}\pi^+\pi^-)/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{54}/\Gamma \times \Gamma^{h_c(1P)}_{30}/\Gamma^{h_c(1P)}$

NODE=M026P07
NODE=M026P07

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.15±0.31 OUR FIT	Error includes scale factor of 1.1. [(2.19 ± 0.30) × 10^{-3} OUR 2025 FIT]				NEW
3.1 ±1.0 ±0.2	19	[1] ABLIKIM	12N	BES3	$\psi(2S) \to \pi^0\gamma p\bar{p}\pi^+\pi^-$

[1] ABLIKIM 12N reports $[\Gamma(\eta_c(1S) \to p\bar{p}\pi^+\pi^-)/\Gamma_{total} \times \Gamma(h_c(1P) \to \gamma\eta_c(1S))/\Gamma_{total}] \times [B(\psi(2S) \to h_c(1P)\pi^0)] = (2.30 \pm 0.65 \pm 0.36) \times 10^{-6}$ which we divide by our best (shown rounded) value $B(\psi(2S) \to h_c(1P)\pi^0) = (7.4 \pm 0.5) \times 10^{-4}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value. NODE=M026P07;LINKAGE=A

$\Gamma(\eta_c(1S) \to p\bar{p}\pi^+\pi^-)/\Gamma_{total} \times \Gamma(B^+ \to \eta_c K^+)/\Gamma_{total}$

$\Gamma_{54}/\Gamma \times \Gamma^{B^\pm}_{274}/\Gamma^{B^\pm}$

NODE=M026R82
NODE=M026R82

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
4.0 ±0.4 OUR FIT				
$3.94^{+0.41}_{-0.39}{}^{+0.22}_{-0.18}$	CHILIKIN	19	BELL	$e^+e^- \to \Upsilon(4S)$

$\Gamma(\eta_c(1S) \to \Lambda\bar{\Lambda})/\Gamma_{total} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{55}/\Gamma \times \Gamma^{J/\psi(1S)}_{248}/\Gamma^{J/\psi(1S)}$

NODE=M026P03
NODE=M026P03

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
1.72±0.28 OUR FIT				NEW
[(1.5 ± 0.4) × 10^{-5} OUR 2025 FIT Scale factor = 1.5]				
1.98±0.21±0.32	ABLIKIM	12B	BES3	$J/\psi \to \Lambda\bar{\Lambda}\gamma$

$\Gamma(\eta_c(1S) \to \Lambda\bar{\Lambda})/\Gamma_{total} \times \Gamma(B^+ \to \eta_c K^+)/\Gamma_{total}$ $\Gamma_{55}/\Gamma \times \Gamma^{B^\pm}_{274}/\Gamma^{B^\pm}$

NODE=M026P04
NODE=M026P04

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
1.13±0.19 OUR FIT	Error includes scale factor of 1.1. [(1.21 ± 0.30) × 10^{-6} OUR 2025 FIT Scale factor = 1.5]				NEW
$0.95^{+0.25}_{-0.22}{}^{+0.08}_{-0.11}$	20	WU	06	BELL	$B^+ \to \Lambda\bar{\Lambda}K^+$

$\Gamma(\eta_c(1S) \to \Sigma^+\overline{\Sigma}{}^-)/\Gamma_{total} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{58}/\Gamma \times \Gamma^{J/\psi(1S)}_{248}/\Gamma^{J/\psi(1S)}$

NODE=M026P05
NODE=M026P05

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
3.60±0.48±0.31	112	ABLIKIM	13C	BES3	$J/\psi \to \gamma p\bar{p}\pi^0\pi^0$

$\Gamma(\eta_c(1S) \to \Xi^-\overline{\Xi}{}^+)/\Gamma_{total} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{59}/\Gamma \times \Gamma^{J/\psi(1S)}_{248}/\Gamma^{J/\psi(1S)}$

NODE=M026P06
NODE=M026P06

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
1.51±0.27±0.14	78	ABLIKIM	13C	BES3	$J/\psi \to \gamma\Lambda\bar{\Lambda}\pi^+\pi^-$

$\Gamma(\eta_c(1S) \to \gamma\gamma)/\Gamma_{total} \times \Gamma(J/\psi(1S) \to \gamma\eta_c(1S))/\Gamma_{total}$

$\Gamma_{60}/\Gamma \times \Gamma^{J/\psi(1S)}_{248}/\Gamma^{J/\psi(1S)}$

NODE=M026P08
NODE=M026P08

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
3.9 ±0.4 OUR FIT	Error includes scale factor of 1.5. [(2.34 ± 0.35) × 10^{-6} OUR 2025 FIT Scale factor = 1.2]				NEW
5.1 ±0.4 OUR AVERAGE					NEW
[$(3.8^{+1.3}_{-1.0}) \times 10^{-6}$ OUR 2025 AVERAGE Scale factor = 1.1]					
5.23±0.26±0.30	678	ABLIKIM	25D	BES3	$\psi(2S) \to \pi^+\pi^- J/\psi$
4.5 ±1.2 ±0.6	73	ABLIKIM	13I	BES3	$\psi(2S) \to \pi^+\pi^- J/\psi$
$1.2\ ^{+2.7}_{-1.1}$ ±0.3	$1.2^{+2.8}_{-1.1}$	ADAMS	08	CLEO	$\psi(2S) \to \pi^+\pi^- J/\psi$

$\Gamma(\eta_c(1S) \to \gamma\gamma)/\Gamma_{total} \times \Gamma(B^+ \to \eta_c K^+)/\Gamma_{total}$ $\Gamma_{60}/\Gamma \times \Gamma^{B^\pm}_{274}/\Gamma^{B^\pm}$

NODE=M026P09
NODE=M026P09

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
0.256±0.028 OUR FIT	Error includes scale factor of 1.4. [(0.183 ± 0.022) × 10^{-6} OUR 2025 FIT Scale factor = 1.2]				NEW
$0.22\ ^{+0.09}_{-0.07}\ ^{+0.04}_{-0.02}$	13	WICHT	08	BELL	$B^\pm \to K^\pm\gamma\gamma$

$\eta_c(1S)$ REFERENCES

NODE=M026

ABLIKIM	25AC	PR D112 012012	M. Ablikim *et al.*	(BESIII Collab.)	REFID=63274
ABLIKIM	25D	PRL 134 181901	M. Ablikim *et al.*	(BESIII Collab.)	REFID=63245
ABLIKIM	25P	PR D111 052011	M. Ablikim *et al.*	(BESIII Collab.)	REFID=63260
ABLIKIM	25R	PR D111 052013	M. Ablikim *et al.*	(BESIII Collab.)	REFID=63262
AAIJ	23AH	PR D108 032010	R. Aaij *et al.*	(LHCb Collab.)	REFID=62349
ABLIKIM	21C	PR D103 012009	M. Ablikim *et al.*	(BESIII Collab.)	REFID=61030
LEES	21A	PR D104 072002	J.P. Lees *et al.*	(BABAR Collab.)	REFID=61442
AAIJ	20H	EPJ C80 191	R. Aaij *et al.*	(LHCb Collab.)	REFID=60419
ABLIKIM	19AP	PR D100 012003	M. Ablikim *et al.*	(BESIII Collab.)	REFID=59901
ABLIKIM	19AV	PR D100 052012	M. Ablikim *et al.*	(BESIII Collab.)	REFID=59998
CHILIKIN	19	PR D100 012001	K. Chilikin *et al.*	(BELLE Collab.)	REFID=59899
LU	19	PR D99 032003	P.-C. Lu *et al.*	(BELLE Collab.)	REFID=59614
XU	18	PR D98 072001	Q.N. Xu *et al.*	(BELLE Collab.)	REFID=59453
AAIJ	17AD	PL B769 305	R. Aaij *et al.*	(LHCb Collab.)	REFID=57896
AAIJ	17BB	EPJ C77 609	R. Aaij *et al.*	(LHCb Collab.)	REFID=58191
ABLIKIM	17AJ	PR D96 112008	M. Ablikim *et al.*	(BESIII Collab.)	REFID=58322
ABLIKIM	17P	PR D95 092004	M. Ablikim *et al.*	(BESIII Collab.)	REFID=57989
LEES	16A	PR D93 012005	J.P. Lees *et al.*	(BABAR Collab.)	REFID=57125
AAIJ	15BI	EPJ C75 311	R. Aaij *et al.*	(LHCb Collab.)	REFID=57147
ANASHIN	14	PL B738 391	V.V. Anashin *et al.*	(KEDR Collab.)	REFID=56130
LEES	14E	PR D89 112004	J.P. Lees *et al.*	(BABAR Collab.)	REFID=55937
ABLIKIM	13C	PR D87 012003	M. Ablikim *et al.*	(BESIII Collab.)	REFID=54878
ABLIKIM	13I	PR D87 032003	M. Ablikim *et al.*	(BESIII Collab.)	REFID=54954
UEHARA	13	PTEP 2013 123C01	S. Uehara *et al.*	(BELLE Collab.)	REFID=55592
ABLIKIM	12B	PR D86 032008	M. Ablikim *et al.*	(BESIII Collab.)	REFID=54267
ABLIKIM	12F	PRL 108 222002	M. Ablikim *et al.*	(BESIII Collab.)	REFID=54271
ABLIKIM	12N	PR D86 092009	M. Ablikim *et al.*	(BESIII Collab.)	REFID=54741
LIU	12B	PRL 108 232001	Z.Q. Liu *et al.*	(BELLE Collab.)	REFID=54303
ZHANG	12A	PR D86 052002	C.C. Zhang *et al.*	(BELLE Collab.)	REFID=54763
ABLIKIM	11G	PR D84 032006	M. Ablikim *et al.*	(BESIII Collab.)	REFID=53711
DEL-AMO-SA...	11M	PR D84 012004	P. del Amo Sanchez *et al.*	(BABAR Collab.)	REFID=16751
VINOKUROVA	11	PL B706 139	A. Vinokurova *et al.*	(BELLE Collab.)	REFID=53927
LEES	10	PR D81 052010	J.P. Lees *et al.*	(BABAR Collab.)	REFID=53236
MITCHELL	09	PRL 102 011801	R.E. Mitchell *et al.*	(CLEO Collab.)	REFID=52676
ADAMS	08	PRL 101 101801	G.S. Adams *et al.*	(CLEO Collab.)	REFID=52261
AUBERT	08AB	PR D78 012006	B. Aubert *et al.*	(BABAR Collab.)	REFID=52267
UEHARA	08	EPJ C53 1	S. Uehara *et al.*	(BELLE Collab.)	REFID=52064
WICHT	08	PL B662 323	J. Wicht *et al.*	(BELLE Collab.)	REFID=52204
ABE	07	PRL 98 082001	K. Abe *et al.*	(BELLE Collab.)	REFID=51627
ABLIKIM	06A	PL B633 19	M. Ablikim *et al.*	(BES Collab.)	REFID=50987
ABLIKIM	06B	EPJ C45 337	M. Ablikim *et al.*	(BES Collab.)	REFID=50988
AUBERT	06E	PRL 96 052002	B. Aubert *et al.*	(BABAR Collab.)	REFID=51059
PDG	06	JP G33 1	W.-M. Yao *et al.*	(PDG Collab.)	REFID=51004
WU	06	PRL 97 162003	C.-H. Wu *et al.*	(BELLE Collab.)	REFID=51472
ABLIKIM	05L	PR D72 072005	M. Ablikim *et al.*	(BES Collab.)	REFID=50837
AUBERT,B	05L	PR D72 051101	B. Aubert *et al.*	(BABAR Collab.)	REFID=50827
KUO	05	PL B621 41	C.C. Kuo *et al.*	(BELLE Collab.)	REFID=50801
ABE	04G	PR D70 071102	K. Abe *et al.*	(BELLE Collab.)	REFID=50182
ABLIKIM	04M	PR D70 112008	M. Ablikim *et al.*	(BES Collab.)	REFID=50329
ASNER	04	PRL 92 142001	D.M. Asner *et al.*	(CLEO Collab.)	REFID=49745
AUBERT	04D	PRL 92 142002	B. Aubert *et al.*	(BABAR Collab.)	REFID=49746
AUBERT,B	04B	PR D70 011101	B. Aubert *et al.*	(BABAR Collab.)	REFID=50043
BAI	04	PL B578 16	J.Z. Bai *et al.*	(BES Collab.)	REFID=49620
ABDALLAH	03J	EPJ C31 481	J. Abdallah *et al.*	(DELPHI Collab.)	REFID=49625
AMBROGIANI	03	PL B566 45	M. Ambrogiani *et al.*	(FNAL E835 Collab.)	REFID=49465
BAI	03	PL B555 174	J.Z. Bai *et al.*	(BES Collab.)	REFID=49185
FANG	03	PRL 90 071801	F. Fang *et al.*	(BELLE Collab.)	REFID=49206
HUANG	03	PRL 91 241802	H.-C. Huang *et al.*	(BELLE Collab.)	REFID=49621
ABE,K	02	PRL 89 142001	K. Abe *et al.*	(BELLE Collab.)	REFID=49188
BAI	00F	PR D62 072001	J.Z. Bai *et al.*	(BES Collab.)	REFID=48546
BRANDENB...	00B	PRL 85 3095	G. Brandenburg *et al.*	(CLEO Collab.)	REFID=48553
ACCIARRI	99T	PL B461 155	M. Acciarri *et al.*	(L3 Collab.)	REFID=47476
BAI	99B	PR D60 072001	J.Z. Bai *et al.*	(BES Collab.)	REFID=47385
ABREU	98O	PL B441 479	P. Abreu *et al.*	(DELPHI Collab.)	REFID=46553
SHIRAI	98	PL B424 405	M. Shirai *et al.*	(AMY Collab.)	REFID=46381
ARMSTRONG	95F	PR D52 4839	T.A. Armstrong *et al.*	(FNAL, FERR, GENO+)	REFID=44623
ALBRECHT	94H	PL B338 390	H. Albrecht *et al.*	(ARGUS Collab.)	REFID=44098
ADRIANI	93N	PL B318 575	O. Adriani *et al.*	(L3 Collab.)	REFID=43670
BISELLO	91	NP B350 1	D. Bisello *et al.*	(DM2 Collab.)	REFID=41668
BAI	90B	PRL 65 1309	Z. Bai *et al.*	(Mark III Collab.)	REFID=41354
CHEN	90B	PL B243 169	W.Y. Chen *et al.*	(CLEO Collab.)	REFID=41360
BAGLIN	89	PL B231 557	C. Baglin, S. Baird, G. Bassompierre	(R704 Collab.)	REFID=41015
BEHREND	89	ZPHY C42 367	H.J. Behrend *et al.*	(CELLO Collab.)	REFID=40732
BRAUNSCH...	89	ZPHY C41 533	W. Braunschweig *et al.*	(TASSO Collab.)	REFID=40728
AIHARA	88D	PRL 60 2355	H. Aihara *et al.*	(TPC Collab.)	REFID=40588
BAGLIN	87B	PL B187 191	C. Baglin *et al.*	(R704 Collab.)	REFID=40018
BALTRUSAIT...	86	PR D33 629	R.M. Baltrusaitis *et al.*	(Mark III Collab.)	REFID=22009
BERGER	86	PL 167B 120	C. Berger *et al.*	(PLUTO Collab.)	REFID=22010
GAISER	86	PR D34 711	J. Gaiser *et al.*	(Crystal Ball Collab.)	REFID=22012
ALTHOFF	85B	ZPHY C29 189	M. Althoff *et al.*	(TASSO Collab.)	REFID=21349
BALTRUSAIT...	84	PRL 52 2126	R.M. Baltrusaitis *et al.*	(CIT, UCSC+) JP	REFID=22006
BLOOM	83	ARNS 33 143	E.D. Bloom, C. Peck	(SLAC, CIT)	REFID=21682
HIMEL	80B	PRL 45 1146	T.M. Himel *et al.*	(SLAC, LBL, UCB)	REFID=22003
PARTRIDGE	80B	PRL 45 1150	R. Partridge *et al.*	(CIT, HARV, PRIN+)	REFID=22004