$\chi_{c0}(1P)$

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

$\chi_{c0}(1P)$ MASS

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
3414.71± 0.30 OUR AVERAGE					
3413.0 ± 1.9 ±0.6	933	[1] AAIJ	17BB	LHCB	$pp \to b\overline{b}X \to 2(K^+K^-)X$
3414.2 ± 0.5 ±2.3	5.4k	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to$ hadrons
3406 ± 7 ±6	230	[2] ABE	07	BELL	$e^+e^- \to J/\psi(c\overline{c})$
3414.21± 0.39±0.27		ABLIKIM	05G	BES2	$\psi(2S) \to \gamma\chi_{c0}$
3414.7 $^{+\ 0.7}_{-\ 0.6}$ ±0.2		[3] ANDREOTTI	03	E835	$\overline{p}p \to \chi_{c0} \to \pi^0\pi^0$
3415.5 ± 0.4 ±0.4	392	[4] BAGNASCO	02	E835	$\overline{p}p \to \chi_{c0} \to J/\psi\gamma$
3417.4 $^{+\ 1.8}_{-\ 1.9}$ ±0.2		[3] AMBROGIANI	99B	E835	$\overline{p}p \to e^+e^-\gamma$
3414.1 ± 0.6 ±0.8		BAI	99B	BES	$\psi(2S) \to \gamma$X
3417.8 ± 0.4 ±4		[3] GAISER	86	CBAL	$\psi(2S) \to \gamma$X
3416 ± 3 ±4		[5] TANENBAUM	78	MRK1	e^+e^-
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3414.6 ± 1.1	266	UEHARA	13	BELL	$\gamma\gamma \to K^0_S K^0_S$
3416.5 ± 3.0		EISENSTEIN	01	CLE2	$e^+e^- \to e^+e^-\chi_{c0}$
3422 ±10		[5] BARTEL	78B	CNTR	$e^+e^- \to J/\psi 2\gamma$
3415 ± 9		[5] BIDDICK	77	CNTR	$e^+e^- \to \gamma$X

[1] From a fit of the $\phi\phi$ invariant mass with the width of $\chi_{c0}(1P)$ fixed to the PDG 16 value.
[2] From a fit of the J/ψ recoil mass spectrum. Supersedes ABE,K 02 and ABE 04G.
[3] Using mass of $\psi(2S) = 3686.0$ MeV.
[4] Recalculated by ANDREOTTI 05A, using the value of $\psi(2S)$ mass from AULCHENKO 03.
[5] Mass value shifted by us by amount appropriate for $\psi(2S)$ mass = 3686 MeV and $J/\psi(1S)$ mass = 3097 MeV.

$\chi_{c0}(1P)$ WIDTH

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
10.8±0.6 OUR FIT					
10.5±0.8 OUR AVERAGE Error includes scale factor of 1.1.					
10.6±1.9±2.6	5.4k	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to$ hadrons
$12.6^{+1.5+0.9}_{-1.6-1.1}$		ABLIKIM	05G	BES2	$\psi(2S) \to \gamma\chi_{c0}$
$8.6^{+1.7}_{-1.3}$±0.1		ANDREOTTI	03	E835	$\overline{p}p \to \chi_{c0} \to \pi^0\pi^0$
9.7±1.0	392	[1] BAGNASCO	02	E835	$\overline{p}p \to \chi_{c0} \to J/\psi\gamma$
$16.6^{+5.2}_{-3.7}$±0.1		AMBROGIANI	99B	E835	$\overline{p}p \to e^+e^-\gamma$
14.3±2.0±3.0		BAI	98I	BES	$\psi(2S) \to \gamma\pi^+\pi^-$
13.5±3.3±4.2		GAISER	86	CBAL	$\psi(2S) \to \gamma$X, $\gamma\pi^0\pi^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
13.2±2.1	266	UEHARA	13	BELL	$\gamma\gamma \to K^0_S K^0_S$

[1] Recalculated by ANDREOTTI 05A.

$\chi_{c0}(1P)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
	Hadronic decays		
Γ_1	$2(\pi^+\pi^-)$	(2.34 ± 0.18) %	
Γ_2	$\rho^0\pi^+\pi^-$	$(9.1\ \pm2.9\ )\times10^{-3}$	
Γ_3	$\rho^0\rho^0$		
Γ_4	$f_0(980)\,f_0(980)$	$(6.6\ \pm2.1\ )\times10^{-4}$	
Γ_5	$\pi^+\pi^-\pi^0\pi^0$	$(3.3\ \pm0.4\ )$ %	
Γ_6	$\rho^+\pi^-\pi^0+$ c.c.	$(2.9\ \pm0.4\ )$ %	
Γ_7	$4\pi^0$	$(3.3\ \pm0.4\ )\times10^{-3}$	
Γ_8	$\pi^+\pi^-K^+K^-$	(1.81 ± 0.14) %	
Γ_9	$K_0^*(1430)^0\overline{K}_0^*(1430)^0\to$ $\pi^+\pi^-K^+K^-$	$(9.8\ ^{+4.0}_{-2.8}\ )\times10^{-4}$	
Γ_{10}	$K_0^*(1430)^0\overline{K}_2^*(1430)^0+$ c.c. $\to$ $\pi^+\pi^-K^+K^-$	$(8.0\ ^{+2.0}_{-2.4}\ )\times10^{-4}$	
Γ_{11}	$K_1(1270)^+K^-+$ c.c. $\to$ $\pi^+\pi^-K^+K^-$	$(6.3\ \pm1.9\ )\times10^{-3}$	
Γ_{12}	$K_1(1400)^+K^-+$ c.c. $\to$ $\pi^+\pi^-K^+K^-$	$<2.7\times10^{-3}$	CL=90%
Γ_{13}	$f_0(980)\,f_0(980)$	$(1.6\ ^{+1.0}_{-0.9}\ )\times10^{-4}$	
Γ_{14}	$f_0(980)\,f_0(2200)$	$(7.9\ ^{+2.0}_{-2.5}\ )\times10^{-4}$	
Γ_{15}	$f_0(1370)\,f_0(1370)$	$<2.7\times10^{-4}$	CL=90%
Γ_{16}	$f_0(1370)\,f_0(1500)$	$<1.7\times10^{-4}$	CL=90%
Γ_{17}	$f_0(1370)\,f_0(1710)$	$(6.7\ ^{+3.5}_{-2.3}\ )\times10^{-4}$	
Γ_{18}	$f_0(1500)\,f_0(1370)$	$<1.3\times10^{-4}$	CL=90%
Γ_{19}	$f_0(1500)\,f_0(1500)$	$<5\times10^{-5}$	CL=90%
Γ_{20}	$f_0(1500)\,f_0(1710)$	$<7\times10^{-5}$	CL=90%
Γ_{21}	$K^+K^-\pi^+\pi^-\pi^0$	$(8.6\ \pm0.9\ )\times10^{-3}$	
Γ_{22}	$K_S^0K^\pm\pi^\mp\pi^+\pi^-$	$(4.2\ \pm0.4\ )\times10^{-3}$	
Γ_{23}	$K^+K^-\pi^0\pi^0$	$(5.6\ \pm0.9\ )\times10^{-3}$	
Γ_{24}	$K^+\pi^-\overline{K}^0\pi^0+$ c.c.	(2.49 ± 0.33) %	
Γ_{25}	$\rho^+K^-K^0+$ c.c.	(1.21 ± 0.21) %	
Γ_{26}	$K^*(892)^-K^+\pi^0\to$ $K^+\pi^-\overline{K}^0\pi^0+$ c.c.	$(4.6\ \pm1.2\ )\times10^{-3}$	
Γ_{27}	$K_S^0K_S^0\pi^+\pi^-$	$(5.7\ \pm1.1\ )\times10^{-3}$	
Γ_{28}	$K^+K^-\eta\pi^0$	$(3.0\ \pm0.7\ )\times10^{-3}$	
Γ_{29}	$3(\pi^+\pi^-)$	(1.20 ± 0.18) %	
Γ_{30}	$K^+\overline{K}^*(892)^0\pi^-+$ c.c.	$(7.5\ \pm1.6\ )\times10^{-3}$	
Γ_{31}	$K^*(892)^0\overline{K}^*(892)^0$	$(1.7\ \pm0.6\ )\times10^{-3}$	
Γ_{32}	$\pi\pi$	$(8.51\pm0.33)\times10^{-3}$	

Γ_{33}	$\pi^0\eta$	< 1.8	$\times 10^{-4}$	
Γ_{34}	$\pi^0\eta'$	< 1.1	$\times 10^{-3}$	
Γ_{35}	$\pi^0\eta_c$	< 1.6	$\times 10^{-3}$	CL=90%
Γ_{36}	$\eta\eta$	(3.01 ± 0.19)	$\times 10^{-3}$	
Γ_{37}	$\eta\eta'$	$(9.1\ \pm1.1\ )$	$\times 10^{-5}$	
Γ_{38}	$\eta'\eta'$	(2.17 ± 0.12)	$\times 10^{-3}$	
Γ_{39}	$\omega\omega$	$(9.7\ \pm1.1\ )$	$\times 10^{-4}$	
Γ_{40}	$\omega\phi$	(1.41 ± 0.13)	$\times 10^{-4}$	
Γ_{41}	ωK^+K^-	(1.94 ± 0.21)	$\times 10^{-3}$	
Γ_{42}	K^+K^-	(6.05 ± 0.31)	$\times 10^{-3}$	
Γ_{43}	$K^0_SK^0_S$	(3.16 ± 0.17)	$\times 10^{-3}$	
Γ_{44}	$\pi^+\pi^-\eta$	< 2.0	$\times 10^{-4}$	CL=90%
Γ_{45}	$\pi^+\pi^-\eta'$	< 4	$\times 10^{-4}$	CL=90%
Γ_{46}	$\overline{K}^0K^+\pi^-+$ c.c.	< 9	$\times 10^{-5}$	CL=90%
Γ_{47}	$K^+K^-\pi^0$	< 6	$\times 10^{-5}$	CL=90%
Γ_{48}	$K^+K^-\eta$	< 2.3	$\times 10^{-4}$	CL=90%
Γ_{49}	$K^+K^-K^0_SK^0_S$	$(1.4\ \pm0.5\ )$	$\times 10^{-3}$	
Γ_{50}	$K^0_SK^0_SK^0_SK^0_S$	$(5.8\ \pm0.5\ )$	$\times 10^{-4}$	
Γ_{51}	$K^+K^-K^+K^-$	(2.82 ± 0.29)	$\times 10^{-3}$	
Γ_{52}	$K^+K^-\phi$	$(9.7\ \pm2.5\ )$	$\times 10^{-4}$	
Γ_{53}	$\overline{K}^0K^+\pi^-\phi+$ c.c.	$(3.7\ \pm0.6\ )$	$\times 10^{-3}$	
Γ_{54}	$K^+K^-\pi^0\phi$	(1.90 ± 0.35)	$\times 10^{-3}$	
Γ_{55}	$\phi\pi^+\pi^-\pi^0$	(1.18 ± 0.15)	$\times 10^{-3}$	
Γ_{56}	$\phi\phi$	$(8.0\ \pm0.7\ )$	$\times 10^{-4}$	
Γ_{57}	$\phi\phi\eta$	$(8.4\ \pm1.0\ )$	$\times 10^{-4}$	
Γ_{58}	$p\overline{p}$	(2.21 ± 0.08)	$\times 10^{-4}$	
Γ_{59}	$p\overline{p}\pi^0$	$(7.0\ \pm0.7\ )$	$\times 10^{-4}$	S=1.3
Γ_{60}	$p\overline{p}\eta$	$(3.5\ \pm0.4\ )$	$\times 10^{-4}$	
Γ_{61}	$p\overline{p}\omega$	$(5.2\ \pm0.6\ )$	$\times 10^{-4}$	
Γ_{62}	$p\overline{p}\phi$	$(6.0\ \pm1.4\ )$	$\times 10^{-5}$	
Γ_{63}	$p\overline{p}\pi^+\pi^-$	$(2.1\ \pm0.7\ )$	$\times 10^{-3}$	S=1.4
Γ_{64}	$p\overline{p}\pi^0\pi^0$	(1.04 ± 0.28)	$\times 10^{-3}$	
Γ_{65}	$p\overline{p}K^+K^-$ (non-resonant)	(1.22 ± 0.26)	$\times 10^{-4}$	
Γ_{66}	$p\overline{p}K^0_SK^0_S$	< 8.8	$\times 10^{-4}$	CL=90%
Γ_{67}	$p\overline{n}\pi^-$	(1.27 ± 0.11)	$\times 10^{-3}$	
Γ_{68}	$\overline{p}n\pi^+$	(1.37 ± 0.12)	$\times 10^{-3}$	
Γ_{69}	$p\overline{n}\pi^-\pi^0$	(2.34 ± 0.21)	$\times 10^{-3}$	
Γ_{70}	$\overline{p}n\pi^+\pi^0$	(2.21 ± 0.18)	$\times 10^{-3}$	
Γ_{71}	$\Lambda\overline{\Lambda}$	(3.59 ± 0.15)	$\times 10^{-4}$	
Γ_{72}	$\Lambda\overline{\Lambda}\pi^+\pi^-$	(1.18 ± 0.13)	$\times 10^{-3}$	
Γ_{73}	$\quad\Lambda\overline{\Lambda}\pi^+\pi^-$ (non-resonant)	< 5	$\times 10^{-4}$	CL=90%
Γ_{74}	$\quad\Sigma(1385)^+\overline{\Lambda}\pi^-+$ c.c.	< 5	$\times 10^{-4}$	CL=90%
Γ_{75}	$\quad\Sigma(1385)^-\overline{\Lambda}\pi^++$ c.c.	< 5	$\times 10^{-4}$	CL=90%
Γ_{76}	$K^+\overline{p}\Lambda+$ c.c.	(1.25 ± 0.12)	$\times 10^{-3}$	S=1.3

Γ_{77}	$nK^0_S\overline{\Lambda}$ + c.c.	$(6.6 \pm 0.5) \times 10^{-4}$		
Γ_{78}	$K^*(892)^+\overline{p}\Lambda$+ c.c.	$(4.8 \pm 0.9) \times 10^{-4}$		
Γ_{79}	$K^+\overline{p}\Lambda(1520)$+ c.c.	$(2.9 \pm 0.7) \times 10^{-4}$		
Γ_{80}	$\Lambda(1520)\overline{\Lambda}(1520)$	$(3.1 \pm 1.2) \times 10^{-4}$		
Γ_{81}	$\Sigma^0\overline{\Sigma}^0$	$(4.68\pm0.32) \times 10^{-4}$		
Γ_{82}	$\Sigma^+\overline{p}K^0_S$+ c.c.	$(3.52\pm0.27) \times 10^{-4}$		
Γ_{83}	$\Sigma^0\overline{p}K^+$+ c.c.	$(3.03\pm0.20) \times 10^{-4}$		
Γ_{84}	$\Sigma^+\overline{\Sigma}^-$	$(4.6 \pm 0.8) \times 10^{-4}$		S=2.6
Γ_{85}	$\Sigma^-\overline{\Sigma}^+$	$(5.1 \pm 0.5) \times 10^{-4}$		
Γ_{86}	$\Sigma(1385)^+\overline{\Sigma}(1385)^-$	$(1.6 \pm 0.6) \times 10^{-4}$		
Γ_{87}	$\Sigma(1385)^-\overline{\Sigma}(1385)^+$	$(2.3 \pm 0.7) \times 10^{-4}$		
Γ_{88}	$K^-\Lambda\overline{\Xi}^+$+ c.c.	$(1.94\pm0.35) \times 10^{-4}$		
Γ_{89}	$\Xi^0\overline{\Xi}^0$	$(3.1 \pm 0.8) \times 10^{-4}$		
Γ_{90}	$\Xi^-\overline{\Xi}^+$	$(4.8 \pm 0.7) \times 10^{-4}$		
Γ_{91}	$\eta_c\pi^+\pi^-$	$< 7 \times 10^{-4}$		CL=90%

Radiative decays

Γ_{92}	$\gamma J/\psi(1S)$	(1.40 ± 0.05) %		
Γ_{93}	$\gamma\rho^0$	$< 9 \times 10^{-6}$		CL=90%
Γ_{94}	$\gamma\omega$	$< 8 \times 10^{-6}$		CL=90%
Γ_{95}	$\gamma\phi$	$< 6 \times 10^{-6}$		CL=90%
Γ_{96}	$\gamma\gamma$	$(2.04\pm0.09) \times 10^{-4}$		
Γ_{97}	$e^+e^-J/\psi(1S)$	$(1.33\pm0.29) \times 10^{-4}$		
Γ_{98}	$\mu^+\mu^-J/\psi(1S)$	$< 1.9 \times 10^{-5}$		CL=90%

CONSTRAINED FIT INFORMATION

A multiparticle fit to $\chi_{c1}(1P)$, $\chi_{c0}(1P)$, $\chi_{c2}(1P)$, and $\psi(2S)$ with 4 total widths, a partial width, 25 combinations of partial widths obtained from integrated cross section, and 84 branching ratios uses 248 measurements to determine 49 parameters. The overall fit has a $\chi^2 = 379.8$ for 199 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, $x_i \equiv \Gamma_i/\Gamma_{\rm total}$.

x_2	24									
x_8	9	2								
x_{30}	5	1	28							
x_{32}	8	2	10	3						
x_{36}	4	1	5	1	14					
x_{42}	8	2	8	3	18	11				
x_{43}	7	2	8	2	18	10	14			
x_{51}	5	1	5	2	9	5	7	7		
x_{56}	7	2	6	2	9	5	7	7	4	
x_{58}	3	1	4	1	3	−1	7	7	3	3
x_{71}	7	2	9	2	23	13	18	18	8	9
x_{92}	5	1	6	2	17	11	13	12	6	6
x_{96}	−8	−2	−2	−3	14	9	10	10	3	1
Γ	−26	−6	−19	−10	−15	−7	−14	−12	−10	−13
	x_1	x_2	x_8	x_{30}	x_{32}	x_{36}	x_{42}	x_{43}	x_{51}	x_{56}

x_{71}	9			
x_{92}	−19	16		
x_{96}	6	15	13	
Γ	−4	−13	−9	−38
	x_{58}	x_{71}	x_{92}	x_{96}

$\chi_{c0}(1P)$ PARTIAL WIDTHS

$\chi_{c0}(1P)$ Γ(i)Γ($\gamma J/\psi(1S)$)/Γ(total)

$\Gamma(p\overline{p}) \times \Gamma(\gamma J/\psi(1S))/\Gamma_{total}$ **$\Gamma_{58}\Gamma_{92}/\Gamma$**

VALUE (eV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
33.6± 2.3 OUR FIT					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
26.6± 2.6±1.4	392	[1,2] BAGNASCO	02	E835	$\overline{p}p \to \chi_{c0} \to J/\psi\gamma$
$48.7^{+11.3}_{-8.9}$±2.4		[1,2] AMBROGIANI	99B	E835	$\overline{p}p \to \gamma J/\psi$

[1] Calculated by us using $B(J/\psi(1S) \to e^+e^-) = 0.0593 \pm 0.0010$.

[2] Values in $(\Gamma(p\overline{p}) \times \Gamma(\gamma J/\psi(1S))/\Gamma_{total})$ and $(\Gamma(p\overline{p})/\Gamma_{total} \times \Gamma(\gamma J/\psi(1S))/\Gamma_{total})$ are not independent. The latter is used in the fit since it is less correlated to the total width.

$\chi_{c0}(1P)$ Γ(i)Γ($\gamma\gamma$)/Γ(total)

$\Gamma(2(\pi^+\pi^-)) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ **$\Gamma_1\Gamma_{96}/\Gamma$**

VALUE (eV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
52 ± 4 OUR FIT					
49 ±10 OUR AVERAGE Error includes scale factor of 1.8.					
44.7± 3.6±4.9	3.6k	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to 2(\pi^+\pi^-)$
75 ±13 ±8		EISENSTEIN	01	CLE2	$e^+e^- \to e^+e^-\chi_{c0}$

$\Gamma(\rho^0\rho^0) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_3\Gamma_{96}/\Gamma$

VALUE (eV)	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<12	90	<252	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to 2(\pi^+\pi^-)$

$\Gamma(\pi^+\pi^- K^+K^-) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_8\Gamma_{96}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
40.0±3.5 OUR FIT					
38.8±3.7±4.7	1.7k	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to K^+K^-\pi^+\pi^-$

$\Gamma(K^+K^-\pi^+\pi^-\pi^0) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{21}\Gamma_{96}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
26±4±4	1094	DEL-AMO-SA..11M		BABR	$\gamma\gamma \to K^+K^-\pi^+\pi^-\pi^0$

$\Gamma(K^+\overline{K}^*(892)^0\pi^- + \text{c.c.}) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{30}\Gamma_{96}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
16 ±4 OUR FIT					
16.7±6.1±3.0	495 ± 182	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to K^+K^-\pi^+\pi^-$

$\Gamma(K^*(892)^0\overline{K}^*(892)^0) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{31}\Gamma_{96}/\Gamma$

VALUE (eV)	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<6	90	<148	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to K^+K^-\pi^+\pi^-$

$\Gamma(\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{32}\Gamma_{96}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
18.8± 1.3 OUR FIT					
23 ± 5 OUR AVERAGE					
$29.7^{+17.4}_{-12.0}\pm4.8$	103^{+60}_{-42}	[1] UEHARA	09	BELL	10.6 $e^+e^- \to e^+e^-\pi^0\pi^0$
22.7± 3.2±3.5	129 ± 18	[2] NAKAZAWA	05	BELL	10.6 $e^+e^- \to e^+e^-\pi^+\pi^-$

[1] We multiplied the measurement by 3 to convert from $\pi^0\pi^0$ to $\pi\pi$. Interference with the continuum included.
[2] We have multiplied $\pi^+\pi^-$ measurement by 3/2 to obtain $\pi\pi$.

$\Gamma(\eta\eta) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{36}\Gamma_{96}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
9.4±2.3±1.2	22	[1] UEHARA	10A	BELL	10.6 $e^+e^- \to e^+e^-\eta\eta$

[1] Interference with the continuum not included.

$\Gamma(\omega\omega) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ $\Gamma_{39}\Gamma_{96}/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<3.9	90	[1] LIU	12B	BELL	$\gamma\gamma \to 2(\pi^+\pi^-\pi^0)$

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

$\Gamma(\omega\phi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_{40}\Gamma_{96}/\Gamma$

VALUE (eV)	CL%	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<0.34	90	[1] LIU	12B	BELL	$\gamma\gamma \to K^+K^-\pi^+\pi^-\pi^0$

[1] Using B($\phi \to K^+K^-$) = (48.9 ± 0.5)% and B($\omega \to \pi^+\pi^-\pi^0$) = (89.2 ± 0.7)%.

$\Gamma(K^+K^-) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_{42}\Gamma_{96}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
13.4±1.0 OUR FIT					
14.3±1.6±2.3	153 ± 17	NAKAZAWA	05	BELL	10.6 $e^+e^- \to e^+e^-K^+K^-$

$\Gamma(K^0_S K^0_S) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_{43}\Gamma_{96}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
7.0 ±0.5 OUR FIT					
8.7 ±1.7 ±0.9	266	[1] UEHARA	13	BELL	$\gamma\gamma \to K^0_S K^0_S$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
7.00±0.65±0.71	134 ± 12	CHEN	07B	BELL	$e^+e^- \to e^+e^-\chi_{c0}$

[1] Supersedes CHEN 07B.

$\Gamma(K^+K^-K^+K^-) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_{51}\Gamma_{96}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
6.2±0.7 OUR FIT					
7.9±1.3±1.1	215 ± 36	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to 2(K^+K^-)$

$\Gamma(\phi\phi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_{56}\Gamma_{96}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
1.76±0.18 OUR FIT					
1.72±0.33±0.14	56 ± 11	[1] LIU	12B	BELL	$\gamma\gamma \to 2(K^+K^-)$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.3 ±0.9 ±0.4	23.6 ± 9.6	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to 2(K^+K^-)$

[1] Supersedes UEHARA 08. Using B($\phi \to K^+K^-$) = (48.9 ± 0.5)%.

$\chi_{c0}(1P)$ BRANCHING RATIOS

HADRONIC DECAYS

$\Gamma(2(\pi^+\pi^-))/\Gamma_{\text{total}}$ Γ_1/Γ

VALUE	DOCUMENT ID
0.0234±0.0018 OUR FIT	

$\Gamma(\rho^0\pi^+\pi^-)/\Gamma(2(\pi^+\pi^-))$ Γ_2/Γ_1

VALUE	DOCUMENT ID		TECN	COMMENT
0.39±0.12 OUR FIT				
0.39±0.12	TANENBAUM	78	MRK1	$\psi(2S) \to \gamma\chi_{c0}$

$\Gamma(\rho^0\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_2/Γ

VALUE	DOCUMENT ID
0.0091±0.0029 OUR FIT	

$\Gamma(f_0(980)f_0(980))/\Gamma_{total}$ Γ_4/Γ

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
6.6±2.1±0.1	36 ± 9	[1] ABLIKIM	04G	BES	$\psi(2S) \to \gamma 2\pi^+ 2\pi^-$

[1] ABLIKIM 04G reports $[\Gamma(\chi_{c0}(1P) \to f_0(980)f_0(980))/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (6.5 \pm 1.6 \pm 1.3) \times 10^{-5}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\pi^+\pi^-\pi^0\pi^0)/\Gamma_{total}$ Γ_5/Γ

VALUE (%)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
3.3±0.4±0.1	1751.4	[1] HE	08B	CLEO	$e^+e^- \to \gamma h^+ h^- h^0 h^0$

[1] HE 08B reports 3.54 ± 0.10 ± 0.43 ± 0.18 % from a measurement of $[\Gamma(\chi_{c0}(1P) \to \pi^+\pi^-\pi^0\pi^0)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\rho^+\pi^-\pi^0 + \text{c.c.})/\Gamma_{total}$ Γ_6/Γ

VALUE (%)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2.9±0.4±0.1	1358.5	[1,2] HE	08B	CLEO	$e^+e^- \to \gamma h^+ h^- h^0 h^0$

[1] HE 08B reports 3.04 ± 0.18 ± 0.42 ± 0.16 % from a measurement of $[\Gamma(\chi_{c0}(1P) \to \rho^+\pi^-\pi^0 + \text{c.c.})/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] Calculated by us. We have added the values from HE 08B for $\rho^+\pi^-\pi^0$ and $\rho^-\pi^+\pi^0$ decays assuming uncorrelated statistical and fully correlated systematic uncertainties.

$\Gamma(4\pi^0)/\Gamma_{total}$ Γ_7/Γ

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
3.3±0.4±0.1	3296	[1] ABLIKIM	11A	BES3	$e^+e^- \to \psi(2S) \to \gamma\chi_{c0}$

[1] ABLIKIM 11A reports $(3.34 \pm 0.06 \pm 0.44) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to 4\pi^0)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

VALUE (units 10^{-3})	*DOCUMENT ID*
18.1±1.4 OUR FIT	

$\Gamma(K^+\overline{K}^*(892)^0\pi^- + \text{c.c.})/\Gamma(\pi^+\pi^- K^+ K^-)$ Γ_{30}/Γ_8

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.41±0.09 OUR FIT				
0.41±0.10	TANENBAUM	78	MRK1	$\psi(2S) \to \gamma\chi_{c0}$

$\Gamma(K_0^*(1430)^0\overline{K}_0^*(1430)^0 \to \pi^+\pi^- K^+K^-)/\Gamma_{total}$ Γ_9/Γ

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{9.8^{+3.6}_{-2.8}\pm0.2}$	83	[1] ABLIKIM	05Q	BES2	$\psi(2S) \to \gamma\pi^+\pi^- K^+K^-$

[1] ABLIKIM 05Q reports $(10.44 \pm 2.37^{+3.05}_{-1.90}) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to K_0^*(1430)^0\overline{K}_0^*(1430)^0 \to \pi^+\pi^- K^+K^-)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K_0^*(1430)^0\overline{K}_2^*(1430)^0 + \text{c.c.} \to \pi^+\pi^- K^+K^-)/\Gamma_{total}$ Γ_{10}/Γ

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{8.0^{+2.0}_{-2.4}\pm0.2}$	62	[1] ABLIKIM	05Q	BES2	$\psi(2S) \to \gamma\pi^+\pi^- K^+K^-$

[1] ABLIKIM 05Q reports $(8.49 \pm 1.66^{+1.32}_{-1.99}) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to K_0^*(1430)^0\overline{K}_2^*(1430)^0 + \text{c.c.} \to \pi^+\pi^- K^+K^-)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K_1(1270)^+K^- + \text{c.c.} \to \pi^+\pi^- K^+K^-)/\Gamma_{total}$ Γ_{11}/Γ

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{6.3\pm1.9\pm0.1}$	68	[1] ABLIKIM	05Q	BES2	$\psi(2S) \to \gamma\pi^+\pi^- K^+K^-$

[1] ABLIKIM 05Q reports $(6.66 \pm 1.31^{+1.60}_{-1.51}) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to K_1(1270)^+K^- + \text{c.c.} \to \pi^+\pi^- K^+K^-)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. The measurement assumes $B(K_1(1270) \to K\rho(770)) = 42 \pm 6\%$.

$\Gamma(K_1(1400)^+K^- + \text{c.c.} \to \pi^+\pi^- K^+K^-)/\Gamma_{total}$ Γ_{12}/Γ

VALUE (units 10^{-3})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<2.7	90	[1] ABLIKIM	05Q	BES2	$\psi(2S) \to \gamma\pi^+\pi^- K^+K^-$

[1] ABLIKIM 05Q reports $< 2.85 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to K_1(1400)^+K^- + \text{c.c.} \to \pi^+\pi^- K^+K^-)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$. The measurement assumes $B(K_1(1400) \to K^*(892)\pi) = 94 \pm 6\%$.

$\Gamma(f_0(980)f_0(980))/\Gamma_{total}$ Γ_{13}/Γ

VALUE (units 10^{-5})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{16.2^{+10.4}_{-9.0}\pm0.3}$	28	[1] ABLIKIM	05Q	BES2	$\psi(2S)\to\gamma\pi^+\pi^-K^+K^-$

[1] ABLIKIM 05Q reports $[\Gamma(\chi_{c0}(1P)\to f_0(980)f_0(980))/\Gamma_{total}]\times[B(\psi(2S)\to\gamma\chi_{c0}(1P))]=(1.59\pm0.50^{+0.89}_{-0.72})\times10^{-5}$ which we divide by our best value $B(\psi(2S)\to\gamma\chi_{c0}(1P))=(9.79\pm0.20)\times10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. One of the $f_0(980)$ mesons is identified via decay to $\pi^+\pi^-$ while the other via K^+K^- decay.

$\Gamma(f_0(980)f_0(2200))/\Gamma_{total}$ Γ_{14}/Γ

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{7.9^{+2.0}_{-2.5}\pm0.2}$	77	[1] ABLIKIM	05Q	BES2	$\psi(2S)\to\gamma\pi^+\pi^-K^+K^-$

[1] ABLIKIM 05Q reports $(8.42\pm1.42^{+1.65}_{-2.29})\times10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P)\to f_0(980)f_0(2200))/\Gamma_{total}]\times[B(\psi(2S)\to\gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S)\to\gamma\chi_{c0}(1P))=(9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value $B(\psi(2S)\to\gamma\chi_{c0}(1P))=(9.79\pm0.20)\times10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. The f_0 mesons are identified via $f_0(980)\to\pi^+\pi^-$ and $f_0(2200)\to K^+K^-$ decays.

$\Gamma(f_0(1370)f_0(1370))/\Gamma_{total}$ Γ_{15}/Γ

VALUE (units 10^{-4})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{<2.7}$	90	[1] ABLIKIM	05Q	BES2	$\psi(2S)\to\gamma\pi^+\pi^-K^+K^-$

[1] ABLIKIM 05Q reports $<2.9\times10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P)\to f_0(1370)f_0(1370))/\Gamma_{total}]\times[B(\psi(2S)\to\gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S)\to\gamma\chi_{c0}(1P))=(9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value $B(\psi(2S)\to\gamma\chi_{c0}(1P))=9.79\times10^{-2}$. One of the $f_0(1370)$ mesons is identified via decay to $\pi^+\pi^-$ while the other via K^+K^- decay. Both branching fractions for these f_0 decays are implicitly included in the quoted result.

$\Gamma(f_0(1370)f_0(1500))/\Gamma_{total}$ Γ_{16}/Γ

VALUE (units 10^{-4})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{<1.7}$	90	[1] ABLIKIM	05Q	BES2	$\psi(2S)\to\gamma\pi^+\pi^-K^+K^-$

[1] ABLIKIM 05Q reports $<1.8\times10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P)\to f_0(1370)f_0(1500))/\Gamma_{total}]\times[B(\psi(2S)\to\gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S)\to\gamma\chi_{c0}(1P))=(9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value $B(\psi(2S)\to\gamma\chi_{c0}(1P))=9.79\times10^{-2}$. The f_0 mesons are identified via $f_0(1370)\to\pi^+\pi^-$ and $f_0(1500)\to K^+K^-$ decays. Both branching fractions for these f_0 decays are implicitly included in the quoted result.

$\Gamma(f_0(1370)f_0(1710))/\Gamma_{total}$ Γ_{17}/Γ

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
$\mathbf{6.7^{+3.5}_{-2.3}\pm0.1}$	61	[1] ABLIKIM	05Q	BES2	$\psi(2S)\to\gamma\pi^+\pi^-K^+K^-$

[1] ABLIKIM 05Q reports $(7.12\pm1.85^{+3.28}_{-1.68})\times10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P)\to f_0(1370)f_0(1710))/\Gamma_{total}]\times[B(\psi(2S)\to\gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S)\to$

$\gamma\chi_{c0}(1P)) = (9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. The f_0 mesons are identified via $f_0(1370) \to \pi^+\pi^-$ and $f_0(1710) \to K^+K^-$ decays. Both branching fractions for these f_0 decays are implicitly included in the quoted result.

$\Gamma(f_0(1500)f_0(1370))/\Gamma_{total}$ Γ_{18}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<1.3	90	[1] ABLIKIM	05Q	BES2	$\psi(2S) \to \gamma\pi^+\pi^-K^+K^-$

[1] ABLIKIM 05Q reports $< 1.4 \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to f_0(1500)f_0(1370))/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$. The f_0 mesons are identified via $f_0(1500) \to \pi^+\pi^-$ and $f_0(1370) \to K^+K^-$ decays. Both branching fractions for these f_0 decays are implicitly included in the quoted result.

$\Gamma(f_0(1500)f_0(1500))/\Gamma_{total}$ Γ_{19}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<0.5	90	[1] ABLIKIM	05Q	BES2	$\psi(2S) \to \gamma\pi^+\pi^-K^+K^-$

[1] ABLIKIM 05Q reports $< 0.55 \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to f_0(1500)f_0(1500))/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$. One of the $f_0(1500)$ is identified via decay to $\pi^+\pi^-$ while the other via K^+K^- decay. Both branching fractions for these f_0 decays are implicitly included in the quoted result.

$\Gamma(f_0(1500)f_0(1710))/\Gamma_{total}$ Γ_{20}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<0.7	90	[1] ABLIKIM	05Q	BES2	$\psi(2S) \to \gamma\pi^+\pi^-K^+K^-$

[1] ABLIKIM 05Q reports $< 0.73 \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to f_0(1500)f_0(1710))/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$. The f_0 mesons are identified via $f_0(1500) \to \pi^+\pi^-$ and $f_0(1710) \to K^+K^-$ decays. Both branching fractions for these f_0 decays are implicitly included in the quoted result.

$\Gamma(K^+K^-\pi^+\pi^-\pi^0)/\Gamma_{total}$ Γ_{21}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
8.61±0.13±0.94	9.0k	[1] ABLIKIM	13B	BES3	$e^+e^- \to \psi(2S) \to \gamma\chi_{c0}$

[1] Using 1.06×10^8 $\psi(2S)$ mesons and $B(\psi(2S) \to \chi_{c0}\gamma) = (9.68 \pm 0.31)\%$.

$\Gamma(K^0_S K^\pm\pi^\mp\pi^+\pi^-)/\Gamma_{total}$ Γ_{22}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
4.22±0.10±0.43	2.7k	[1] ABLIKIM	13B	BES3	$e^+e^- \to \psi(2S) \to \gamma\chi_{c0}$

[1] Using 1.06×10^8 $\psi(2S)$ mesons and $B(\psi(2S) \to \chi_{c0}\gamma) = (9.68 \pm 0.31)\%$.

$\Gamma(K^+K^-\pi^0\pi^0)/\Gamma_{total}$ Γ_{23}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.56±0.09±0.01	213.5	[1] HE	08B	CLEO	$e^+e^- \to \gamma h^+ h^- h^0 h^0$

[1] HE 08B reports 0.59 ± 0.05 ± 0.08 ± 0.03 % from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^+K^-\pi^0\pi^0)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^+\pi^-\overline{K}^0\pi^0 + \text{c.c.})/\Gamma_{total}$ Γ_{24}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
2.49±0.33±0.05	401.7	[1] HE	08B	CLEO	$e^+e^- \to \gamma h^+ h^- h^0 h^0$

[1] HE 08B reports 2.64 ± 0.15 ± 0.31 ± 0.14 % from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^+\pi^-\overline{K}^0\pi^0 + \text{ c.c.})/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\rho^+K^-K^0 + \text{c.c.})/\Gamma_{total}$ Γ_{25}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.21±0.21±0.02	179.7	[1] HE	08B	CLEO	$e^+e^- \to \gamma h^+ h^- h^0 h^0$

[1] HE 08B reports 1.28 ± 0.16 ± 0.15 ± 0.07 % from a measurement of $[\Gamma(\chi_{c0}(1P) \to \rho^+K^-K^0 + \text{ c.c.})/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^*(892)^-K^+\pi^0 \to K^+\pi^-\overline{K}^0\pi^0 + \text{c.c.})/\Gamma_{total}$ Γ_{26}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.46±0.12±0.01	64.1	[1] HE	08B	CLEO	$e^+e^- \to \gamma h^+ h^- h^0 h^0$

[1] HE 08B reports 0.49 ± 0.10 ± 0.07 ± 0.03 % from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^*(892)^-K^+\pi^0 \to K^+\pi^-\overline{K}^0\pi^0 + \text{ c.c.})/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^0_SK^0_S\pi^+\pi^-)/\Gamma_{total}$ Γ_{27}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
5.7±1.0±0.1	152 ± 14	[1] ABLIKIM	05O	BES2	$\psi(2S) \to \gamma\chi_{c0}$

[1] ABLIKIM 05O reports $[\Gamma(\chi_{c0}(1P) \to K^0_SK^0_S\pi^+\pi^-)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (0.558 \pm 0.051 \pm 0.089) \times 10^{-3}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^+K^-\eta\pi^0)/\Gamma_{\text{total}}$ Γ_{28}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.30±0.07±0.01	56.4	[1] HE	08B	CLEO	$e^+e^- \to \gamma h^+ h^- h^0 h^0$

[1] HE 08B reports 0.32 ± 0.05 ± 0.05 ± 0.02 % from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^+K^-\eta\pi^0)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(3(\pi^+\pi^-))/\Gamma_{\text{total}}$ Γ_{29}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
12.0±1.8 OUR EVALUATION	Treating systematic error as correlated.			
12.0±1.7 OUR AVERAGE				
11.7±1.0±1.9	[1] BAI	99B	BES	$\psi(2S) \to \gamma\chi_{c0}$
12.5±2.9±0.5	[1] TANENBAUM	78	MRK1	$\psi(2S) \to \gamma\chi_{c0}$

[1] Rescaled by us using $\text{B}(\psi(2S) \to \gamma\chi_{c0}) = (9.4 \pm 0.4)\%$ and $\text{B}(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) = (32.6 \pm 0.5)\%$.

$\Gamma(K^+\overline{K}^*(892)^0\pi^- + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{30}/Γ

VALUE	DOCUMENT ID
0.0075±0.0016 OUR FIT	

$\Gamma(K^*(892)^0\overline{K}^*(892)^0)/\Gamma_{\text{total}}$ Γ_{31}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{1.72^{+0.60}_{-0.54}\pm0.04}$	64	[1] ABLIKIM	05Q	BES2	$\psi(2S) \to \gamma\pi^+\pi^- K^+K^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.56±0.40±0.03	30 ± 6	[2,3] ABLIKIM	04H	BES	Repl. by ABLIKIM 05Q

[1] ABLIKIM 05Q reports $[\Gamma(\chi_{c0}(1P) \to K^*(892)^0\overline{K}^*(892)^0)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))] = (0.168 \pm 0.035^{+0.047}_{-0.040}) \times 10^{-3}$ which we divide by our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] Assumes $\text{B}(K^*(892)^0 \to K^-\pi^+) = 2/3$.

[3] ABLIKIM 04H reports $[\Gamma(\chi_{c0}(1P) \to K^*(892)^0\overline{K}^*(892)^0)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))] = (1.53 \pm 0.29 \pm 0.26) \times 10^{-4}$ which we divide by our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

VALUE (units 10^{-3})	DOCUMENT ID
8.51±0.33 OUR FIT	

$\Gamma(\pi^0\eta_c)/\Gamma_{\text{total}}$ Γ_{35}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{<1.6\times10^{-3}}$	90	[1] ABLIKIM	15N	BES3	$\psi(2s)e^+e^- \to \gamma\pi^0\eta_c$

[1] Using $\text{B}(\eta_c \to K^0_S K^\pm\pi^\mp) \times \text{B}(K^0_S \to \pi^+\pi^-) \times \text{B}(\pi^0 \to \gamma\gamma) = (1.66 \pm 0.11) \times 10^{-2}$.

$\Gamma(\eta\eta)/\Gamma_{\text{total}}$ Γ_{36}/Γ

VALUE (units 10^{-3})	DOCUMENT ID
3.01±0.19 OUR FIT	

$\Gamma(\eta\eta)/\Gamma(\pi\pi)$ Γ_{36}/Γ_{32}

VALUE	DOCUMENT ID	TECN	COMMENT
0.353±0.025 OUR FIT			

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

0.26 ±0.09 $^{+0.03}_{-0.02}$	[1] ANDREOTTI	05C	E835	$\overline{p}p \to$ 2 mesons
0.24 ±0.10 ±0.08	[1] BAI	03C	BES	$\psi(2S) \to 5\gamma$

[1] We have multiplied $\pi^0\pi^0$ measurement by 3 to obtain $\pi\pi$.

$\Gamma(\eta\eta')/\Gamma_{\text{total}}$ Γ_{37}/Γ

VALUE (units 10^{-5})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
9.1±1.1±0.2		85	[1] ABLIKIM	17AI	BES3	$\psi(2S) \to \gamma\eta'\eta$

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

<24	90	35 ± 13	[2] ASNER	09	CLEO	$\psi(2S) \to \gamma\eta'\eta$
<50	90		[3] ADAMS	07	CLEO	$\psi(2S) \to \gamma\chi_{c0}$

[1] ABLIKIM 17AI reports $(8.92\pm0.84\pm0.65)\times10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \eta\eta')/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] ASNER 09 reports $< 0.25 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \eta\eta')/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

[3] Superseded by ASNER 09. ADAMS 07 reports $< 0.5 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \eta\eta')/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

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

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
2.17±0.12 OUR AVERAGE					
2.23±0.13±0.05	2.5k	[1] ABLIKIM	17AI	BES3	$\psi(2S) \to \gamma\eta'\eta'$
2.00±0.21±0.04	0.4k	[2] ASNER	09	CLEO	$\psi(2S) \to \gamma\eta'\eta'$

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

1.60±0.41±0.03	23	[3] ADAMS	07	CLEO	$\psi(2S) \to \gamma\chi_{c0}$

[1] ABLIKIM 17AI reports $(2.19\pm0.03\pm0.14)\times10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \eta'\eta')/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] ASNER 09 reports $(2.12 \pm 0.13 \pm 0.21) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \eta'\eta')/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) =$

$(9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[3] Superseded by ASNER 09. ADAMS 07 reports $(1.7 \pm 0.4 \pm 0.2) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \eta'\eta')/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = 0.0922 \pm 0.0011 \pm 0.0046$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\omega\omega)/\Gamma_{\text{total}}$ Γ_{39}/Γ

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.97±0.11 OUR AVERAGE					
$0.93 \pm 0.11 \pm 0.02$	991	[1] ABLIKIM	11K	BES3	$\psi(2S) \to \gamma$ hadrons
$2.16 \pm 0.66 \pm 0.04$	38.1 ± 9.6	[2] ABLIKIM	05N	BES2	$\psi(2S) \to \gamma\chi_{c0} \to \gamma 6\pi$

[1] ABLIKIM 11K reports $(0.95 \pm 0.03 \pm 0.11) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \omega\omega)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] ABLIKIM 05N reports $[\Gamma(\chi_{c0}(1P) \to \omega\omega)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))] = (0.212 \pm 0.053 \pm 0.037) \times 10^{-3}$ which we divide by our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\omega\phi)/\Gamma_{\text{total}}$ Γ_{40}/Γ

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.41±0.13±0.03	486	[1] ABLIKIM	19J	BES3	$\psi(2S) \to \gamma$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$1.18 \pm 0.22 \pm 0.02$	76	[2,3] ABLIKIM	11K	BES3	$\psi(2S) \to \gamma$ hadrons

[1] ABLIKIM 19J reports $[\Gamma(\chi_{c0}(1P) \to \omega\phi)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))] = (13.83 \pm 0.70 \pm 1.01) \times 10^{-6}$ which we divide by our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] ABLIKIM 11K reports $(1.2 \pm 0.1 \pm 0.2) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \omega\phi)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[3] Superseded by ABLIKIM 19J.

$\Gamma(\omega K^+ K^-)/\Gamma_{\text{total}}$ Γ_{41}/Γ

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.94±0.06±0.20	1.4k	[1] ABLIKIM	13B	BES3	$e^+e^- \to \psi(2S) \to \gamma\chi_{c0}$

[1] Using 1.06×10^8 $\psi(2S)$ mesons and $\text{B}(\psi(2S) \to \chi_{c0}\gamma) = (9.68 \pm 0.31)\%$.

$\Gamma(K^+ K^-)/\Gamma_{\text{total}}$ Γ_{42}/Γ

VALUE (units 10^{-3})	*DOCUMENT ID*
6.05±0.31 OUR FIT	

$\Gamma(K^0_S K^0_S)/\Gamma_{\text{total}}$ Γ_{43}/Γ

VALUE (units 10^{-3})	*DOCUMENT ID*
3.16±0.17 OUR FIT	

$\Gamma(K^0_S K^0_S)/\Gamma(\pi\pi)$ Γ_{43}/Γ_{32}

VALUE	*DOCUMENT ID*	*TECN*	*COMMENT*
0.371±0.023 OUR FIT			
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.31 ±0.05 ±0.05	[1,2] CHEN	07B BELL	$e^+e^- \to e^+e^-\chi_{c0}$

[1] Using $\Gamma(\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ from the $\pi^+\pi^-$ measurement of NAKAZAWA 05 rescaled by 3/2 to convert to $\pi\pi$.

[2] Not independent from other measurements.

$\Gamma(K^0_S K^0_S)/\Gamma(K^+K^-)$ Γ_{43}/Γ_{42}

VALUE	*DOCUMENT ID*	*TECN*	*COMMENT*
0.52±0.04 OUR FIT			
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.49±0.07±0.08	[1,2] CHEN	07B BELL	$e^+e^- \to e^+e^-\chi_{c0}$

[1] Using $\Gamma(K^+K^-) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ from NAKAZAWA 05.

[2] Not independent from other measurements.

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

VALUE (units 10^{-3})	*CL%*	*DOCUMENT ID*	*TECN*	*COMMENT*
<0.20	90	[1] ATHAR	07 CLEO	$\psi(2S) \to \gamma h^+ h^- h^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
<1.0	90	[2] ABLIKIM	06R BES2	$\psi(2S) \to \gamma\chi_{c0}$

[1] ATHAR 07 reports $< 0.21 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \pi^+\pi^-\eta)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

[2] ABLIKIM 06R reports $< 1.1 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \pi^+\pi^-\eta)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

$\Gamma(\pi^+\pi^-\eta')/\Gamma_{\text{total}}$ Γ_{45}/Γ

VALUE (units 10^{-3})	*CL%*	*DOCUMENT ID*	*TECN*	*COMMENT*
<0.4	90	[1] ATHAR	07 CLEO	$\psi(2S) \to \gamma h^+ h^- h^0$

[1] ATHAR 07 reports $< 0.38 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \pi^+\pi^-\eta')/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

$\Gamma(\overline{K^0}K^+\pi^- + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{46}/Γ

VALUE (units 10^{-3})	*CL%*	*DOCUMENT ID*	*TECN*	*COMMENT*
<0.09	90	[1] ATHAR	07 CLEO	$\psi(2S) \to \gamma h^+ h^- h^0$

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

<0.7	90	[2,3] ABLIKIM	06R	BES2	$\psi(2S) \to \gamma\chi_{c0}$	
<0.7	90	[3,4] BAI	99B	BES	$\psi(2S) \to \gamma\chi_{c0}$	

[1] ATHAR 07 reports $< 0.10 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \overline{K}^0 K^+\pi^- + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

[2] ABLIKIM 06R reports $< 0.70 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \overline{K}^0 K^+\pi^- + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

[3] We have multiplied the $K^0_S K^+\pi^-$ measurement by a factor of 2 to convert to $K^0 K^+\pi^-$.

[4] Rescaled by us using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.4 \pm 0.4)\%$ and $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) = (32.6 \pm 0.5)\%$.

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

VALUE (units 10^{-3})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<0.06	90	[1] ATHAR	07	CLEO	$\psi(2S) \to \gamma h^+ h^- h^0$

[1] ATHAR 07 reports $< 0.06 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^+K^-\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

$\Gamma(K^+K^-\eta)/\Gamma_{\text{total}}$ Γ_{48}/Γ

VALUE (units 10^{-3})	*CL%*	*DOCUMENT ID*		*TECN*	*COMMENT*
<0.23	90	[1] ATHAR	07	CLEO	$\psi(2S) \to \gamma h^+ h^- h^0$

[1] ATHAR 07 reports $< 0.24 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^+K^-\eta)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

$\Gamma(K^+K^-K^0_SK^0_S)/\Gamma_{\text{total}}$ Γ_{49}/Γ

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.41±0.47±0.03	16.8 ± 4.8	[1] ABLIKIM	05O	BES2	$\psi(2S) \to \gamma\chi_{c0}$

[1] ABLIKIM 05O reports $[\Gamma(\chi_{c0}(1P) \to K^+K^-K^0_SK^0_S)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (0.138 \pm 0.039 \pm 0.025) \times 10^{-3}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^0_SK^0_SK^0_SK^0_S)/\Gamma_{\text{total}}$ Γ_{50}/Γ

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
5.8±0.5±0.1	319	[1] ABLIKIM	19AA	BES3	$\psi(2S) \to \gamma 4K^0_S$

[1] Using $B(K^0_S \to \pi^+\pi^-) = (69.20 \pm 0.05)\%$. ABLIKIM 19AA reports $[\Gamma(\chi_{c0}(1P) \to K^0_SK^0_SK^0_SK^0_S)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (5.64 \pm 0.33 \pm 0.37) \times 10^{-5}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value..

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

VALUE (units 10^{-3})	DOCUMENT ID
2.82±0.29 OUR FIT	

$\Gamma(K^+K^-\phi)/\Gamma_{total}$ Γ_{52}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.97±0.25±0.02	38	[1] ABLIKIM	06T	BES2	$\psi(2S) \to \gamma 2K^+2K^-$

[1] ABLIKIM 06T reports $(1.03\pm0.22\pm0.15)\times10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^+K^-\phi)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\overline{K}^0K^+\pi^-\phi + c.c.)/\Gamma_{total}$ Γ_{53}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
3.68±0.30±0.50	ABLIKIM	15M	BES3	$\psi(2S) \to \gamma\chi_{c0}$

$\Gamma(K^+K^-\pi^0\phi)/\Gamma_{total}$ Γ_{54}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
1.90±0.14±0.32	ABLIKIM	15M	BES3	$\psi(2S) \to \gamma\chi_{c0}$

$\Gamma(\phi\pi^+\pi^-\pi^0)/\Gamma_{total}$ Γ_{55}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.18±0.07±0.13	538	[1] ABLIKIM	13B	BES3	$e^+e^- \to \psi(2S) \to \gamma\chi_{c0}$

[1] Using 1.06×10^8 $\psi(2S)$ mesons and $B(\psi(2S) \to \chi_{c0}\gamma) = (9.68 \pm 0.31)\%$.

$\Gamma(\phi\phi)/\Gamma_{total}$ Γ_{56}/Γ

VALUE (units 10^{-3})	DOCUMENT ID
0.80±0.07 OUR FIT	

$\Gamma(\phi\phi\eta)/\Gamma_{total}$ Γ_{57}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
8.4±0.7±0.6	186.6	[1] ABLIKIM	20B	BES3	$\psi(2S) \to \gamma\phi\phi\eta$

[1] ABLIKIM 20B reports $(8.41\pm0.74\pm0.62)\times10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \phi\phi\eta)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$.

$\Gamma(p\overline{p})/\Gamma_{total}$ Γ_{58}/Γ

VALUE (units 10^{-4})	DOCUMENT ID
2.21±0.08 OUR FIT	

$\Gamma(p\overline{p}\pi^0)/\Gamma_{total}$ Γ_{59}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.70±0.07 OUR AVERAGE Error includes scale factor of 1.3.				
$0.73\pm0.06\pm0.01$	[1] ONYISI	10	CLE3	$\psi(2S) \to \gamma p\overline{p}X$
$0.56\pm0.12\pm0.01$	[2] ATHAR	07	CLEO	$\psi(2S) \to \gamma h^+h^-h^0$

[1] ONYISI 10 reports $(7.76 \pm 0.37 \pm 0.51 \pm 0.39) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to p\overline{p}\pi^0)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to$

$\gamma\chi_{c0}(1P)) = (9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value B($\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] ATHAR 07 reports $(0.59 \pm 0.10 \pm 0.08) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to p\overline{p}\pi^0)/\Gamma_{\text{total}}] \times$ [B($\psi(2S) \to \gamma\chi_{c0}(1P)$)] assuming B($\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46)\times10^{-2}$, which we rescale to our best value B($\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(p\overline{p}\eta)/\Gamma_{\text{total}}$ Γ_{60}/Γ

VALUE (units 10^{-3})	*DOCUMENT ID*		*TECN*	*COMMENT*
0.35±0.04 OUR AVERAGE				
0.35±0.04±0.01	[1] ONYISI	10	CLE3	$\psi(2S) \to \gamma p\overline{p}X$
0.37±0.11±0.01	[2] ATHAR	07	CLEO	$\psi(2S) \to \gamma h^+ h^- h^0$

[1] ONYISI 10 reports $(3.73 \pm 0.38 \pm 0.28 \pm 0.19) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to p\overline{p}\eta)/\Gamma_{\text{total}}] \times$ [B($\psi(2S) \to \gamma\chi_{c0}(1P)$)] assuming B($\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value B($\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] ATHAR 07 reports $(0.39 \pm 0.11 \pm 0.04) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to p\overline{p}\eta)/\Gamma_{\text{total}}] \times$ [B($\psi(2S) \to \gamma\chi_{c0}(1P)$)] assuming B($\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value B($\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(p\overline{p}\omega)/\Gamma_{\text{total}}$ Γ_{61}/Γ

VALUE (units 10^{-3})	*DOCUMENT ID*		*TECN*	*COMMENT*
0.52±0.06±0.01	[1] ONYISI	10	CLE3	$\psi(2S) \to \gamma p\overline{p}X$

[1] ONYISI 10 reports $(5.57 \pm 0.48 \pm 0.42 \pm 0.14) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to p\overline{p}\omega)/\Gamma_{\text{total}}] \times$ [B($\psi(2S) \to \gamma\chi_{c0}(1P)$)] assuming B($\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value B($\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(p\overline{p}\phi)/\Gamma_{\text{total}}$ Γ_{62}/Γ

VALUE (units 10^{-5})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
6.0±1.4±0.1	42 ± 8	[1] ABLIKIM	11F	BES3	$\psi(2S) \to \gamma p\overline{p}K^+K^-$

[1] ABLIKIM 11F reports $(6.12\pm1.18\pm0.86)\times10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to p\overline{p}\phi)/\Gamma_{\text{total}}] \times$ [B($\psi(2S) \to \gamma\chi_{c0}(1P)$)] assuming B($\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value B($\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(p\overline{p}\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{63}/Γ

VALUE (units 10^{-3})	*DOCUMENT ID*		*TECN*	*COMMENT*
2.1 ±0.7 OUR EVALUATION Error includes scale factor of 1.4. Treating systematic error as correlated.				
2.1 ±1.0 OUR AVERAGE Error includes scale factor of 2.0.				
1.57±0.21±0.53	[1] BAI	99B	BES	$\psi(2S) \to \gamma\chi_{c0}$

$4.20 \pm 1.15 \pm 0.18$		[1] TANENBAUM	78	MRK1	$\psi(2S) \to \gamma\chi_{c0}$

[1] Rescaled by us using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.4 \pm 0.4)\%$ and $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) = (32.6 \pm 0.5)\%$.

$\Gamma(p\bar{p}\pi^0\pi^0)/\Gamma_{total}$ Γ_{64}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
$0.104 \pm 0.028 \pm 0.002$	39.5	[1] HE	08B	CLEO	$e^+e^- \to \gamma h^+ h^- h^0 h^0$

[1] HE 08B reports $0.11 \pm 0.02 \pm 0.02 \pm 0.01$ % from a measurement of $[\Gamma(\chi_{c0}(1P) \to p\bar{p}\pi^0\pi^0)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(p\bar{p}K^+K^-(\text{non-resonant}))/\Gamma_{total}$ Γ_{65}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
$1.22 \pm 0.26 \pm 0.02$	48 ± 8	[1] ABLIKIM	11F	BES3	$\psi(2S) \to \gamma p\bar{p}K^+K^-$

[1] ABLIKIM 11F reports $(1.24 \pm 0.20 \pm 0.18) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to p\bar{p}K^+K^-(\text{non-resonant}))/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(p\bar{p}K^0_S K^0_S)/\Gamma_{total}$ Γ_{66}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
<8.8	90	[1] ABLIKIM	06D	BES2	$\psi(2S) \to \chi_{c0}\gamma$

[1] Using $B(\psi(2S) \to \chi_{c0}\gamma) = (9.2 \pm 0.5)\%$

$\Gamma(p\bar{n}\pi^-)/\Gamma_{total}$ Γ_{67}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
12.7 ± 1.1 OUR AVERAGE					
$12.9 \pm 1.1 \pm 0.3$	5150	[1] ABLIKIM	12J	BES3	$\psi(2S) \to \gamma p\bar{n}\pi^-$
$11.2 \pm 3.1 \pm 0.2$		[2] ABLIKIM	06I	BES2	$\psi(2S) \to \gamma p\pi^- X$

[1] ABLIKIM 12J reports $[\Gamma(\chi_{c0}(1P) \to p\bar{n}\pi^-)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (1.26 \pm 0.02 \pm 0.11) \times 10^{-4}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] ABLIKIM 06I reports $[\Gamma(\chi_{c0}(1P) \to p\bar{n}\pi^-)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (1.10 \pm 0.24 \pm 0.18) \times 10^{-4}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\bar{p}n\pi^+)/\Gamma_{total}$ Γ_{68}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
$13.7 \pm 1.2 \pm 0.3$	5808	[1] ABLIKIM	12J	BES3	$\psi(2S) \to \gamma\bar{p}n\pi^+$

[1] ABLIKIM 12J reports $[\Gamma(\chi_{c0}(1P) \to \bar{p}n\pi^+)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (1.34 \pm 0.03 \pm 0.11) \times 10^{-4}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(p\overline{n}\pi^-\pi^0)/\Gamma_{total}$ Γ_{69}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
23.4±2.0±0.5	2480	[1] ABLIKIM	12J	BES3	$\psi(2S) \to \gamma p\overline{n}\pi^-\pi^0$

[1] ABLIKIM 12J reports $[\Gamma(\chi_{c0}(1P) \to p\overline{n}\pi^-\pi^0)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (2.29 \pm 0.08 \pm 0.18) \times 10^{-4}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\overline{p}n\pi^+\pi^0)/\Gamma_{total}$ Γ_{70}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
22.1±1.8±0.5	2757	[1] ABLIKIM	12J	BES3	$\psi(2S) \to \gamma\overline{p}n\pi^+\pi^0$

[1] ABLIKIM 12J reports $[\Gamma(\chi_{c0}(1P) \to \overline{p}n\pi^+\pi^0)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (2.16 \pm 0.07 \pm 0.16) \times 10^{-4}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Lambda\overline{\Lambda})/\Gamma_{total}$ Γ_{71}/Γ

VALUE (units 10^{-4})	DOCUMENT ID
3.59±0.15 OUR FIT	

$\Gamma(\Lambda\overline{\Lambda}\pi^+\pi^-)/\Gamma_{total}$ Γ_{72}/Γ

VALUE (units 10^{-5})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
118±12±2		426	[1] ABLIKIM	12I	BES3	$\psi(2S) \to \gamma\Lambda\overline{\Lambda}\pi^+\pi^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<400	90		[2] ABLIKIM	06D	BES2	$\psi(2S) \to \chi_{c0}\gamma$

[1] ABLIKIM 12I reports $(119.0 \pm 6.4 \pm 11.4) \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Lambda\overline{\Lambda}\pi^+\pi^-)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] Using $B(\psi(2S) \to \chi_{c0}\gamma) = (9.2 \pm 0.5)\%$

$\Gamma(\Lambda\overline{\Lambda}\pi^+\pi^-(\text{non-resonant}))/\Gamma_{total}$ Γ_{73}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<50	90	[1] ABLIKIM	12I	BES3	$\psi(2S) \to \gamma\Lambda\overline{\Lambda}\pi^+\pi^-$

[1] ABLIKIM 12I reports $< 54 \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Lambda\overline{\Lambda}\pi^+\pi^-(\text{non-resonant}))/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

$\Gamma(\Sigma(1385)^+\overline{\Lambda}\pi^- + \text{c.c.})/\Gamma_{total}$ Γ_{74}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<50	90	[1] ABLIKIM	12I	BES3	$\psi(2S) \to \gamma\Sigma(1385)^+\overline{\Lambda}\pi^-$

[1] ABLIKIM 12I reports $< 55 \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Sigma(1385)^+\overline{\Lambda}\pi^- + \text{c.c.})/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

$\Gamma(\Sigma(1385)^-\overline{\Lambda}\pi^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{75}/Γ

VALUE (units 10^{-5})	CL%	DOCUMENT ID		TECN	COMMENT
<50	90	[1] ABLIKIM	12I	BES3	$\psi(2S) \to \gamma\Sigma(1385)^-\overline{\Lambda}\pi^+$

[1] ABLIKIM 12I reports $< 50 \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Sigma(1385)^-\overline{\Lambda}\pi^+ + \text{c.c.})/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

$\Gamma(K^+\overline{p}\Lambda + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{76}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.25±0.12 OUR AVERAGE Error includes scale factor of 1.3.					
$1.30 \pm 0.09 \pm 0.03$	9k	[1,2] ABLIKIM	13D	BES3	$\psi(2S) \to \gamma\Lambda\overline{p}K^+$
$1.01 \pm 0.19 \pm 0.02$		[3] ATHAR	07	CLEO	$\psi(2S) \to \gamma h^+ h^- h^0$

[1] ABLIKIM 13D reports $(1.32 \pm 0.03 \pm 0.10) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^+\overline{p}\Lambda + \text{c.c.})/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] Using $\text{B}(\Lambda \to p\pi^-) = 63.9\%$.

[3] ATHAR 07 reports $(1.07 \pm 0.17 \pm 0.12) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^+\overline{p}\Lambda + \text{c.c.})/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^*(892)^+\overline{p}\Lambda + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{78}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
4.8±0.9±0.1	254	[1] ABLIKIM	19AU	BES3	$\psi(2S) \to \gamma K^{*+}\overline{p}\Lambda$

[1] ABLIKIM 19AU reports $[\Gamma(\chi_{c0}(1P) \to K^*(892)^+\overline{p}\Lambda + \text{c.c.})/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))] = (4.7 \pm 0.7 \pm 0.5) \times 10^{-5}$ which we divide by our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^+\overline{p}\Lambda(1520) + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{79}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
2.9±0.7±0.1	62 ± 12	[1] ABLIKIM	11F	BES3	$\psi(2S) \to \gamma p\overline{p}K^+K^-$

[1] ABLIKIM 11F reports $(3.00 \pm 0.58 \pm 0.50) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^+\overline{p}\Lambda(1520) + \text{c.c.})/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(nK^0_S\overline{\Lambda}+\text{c.c.})/\Gamma_{\text{total}}$ Γ_{77}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
6.7±0.3±0.4	1284	[1] ABLIKIM	21AV	BES3	$\psi(2S)\to\ \gamma nK^0_S\overline{\Lambda}$ + c.c.

[1] ABLIKIM 21AV reports $(6.65\pm0.26\pm0.41)\times10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P)\to\ nK^0_S\overline{\Lambda}$ + c.c.$)/\Gamma_{\text{total}}]\times[\text{B}(\psi(2S)\to\ \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S)\to\ \gamma\chi_{c0}(1P))=0.0979\pm0.0020$. Also uses $\text{B}(\overline{\Lambda}\to\ \overline{p}\pi^+)=(63.9\pm0.5)\%$ and $\text{B}(K^0_S\to\ \pi^+\pi^-)=(69.20\pm0.05)\%$.

$\Gamma(\Lambda(1520)\overline{\Lambda}(1520))/\Gamma_{\text{total}}$ Γ_{80}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
3.1±1.2±0.1	28 ± 10	[1] ABLIKIM	11F	BES3	$\psi(2S)\to\ \gamma p\overline{p}K^+K^-$

[1] ABLIKIM 11F reports $(3.18\pm1.11\pm0.53)\times10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P)\to\ \Lambda(1520)\overline{\Lambda}(1520))/\Gamma_{\text{total}}]\times[\text{B}(\psi(2S)\to\ \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S)\to\ \gamma\chi_{c0}(1P))=(9.62\pm0.31)\times10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S)\to\ \gamma\chi_{c0}(1P))=(9.79\pm0.20)\times10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Sigma^0\overline{\Sigma}^0)/\Gamma_{\text{total}}$ Γ_{81}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
4.68±0.32 OUR AVERAGE					
4.82±0.34±0.10	1046	[1] ABLIKIM	18V	BES3	$\psi(2S)\to\ \gamma\Sigma^0\overline{\Sigma}^0$
4.2 ±0.7 ±0.1	78 ± 10	[2] NAIK	08	CLEO	$\psi(2S)\to\ \gamma\Sigma^0\overline{\Sigma}^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
4.7 ±0.5 ±0.1	243	[3,4] ABLIKIM	13H	BES3	$\psi(2S)\to\ \gamma\Sigma^0\overline{\Sigma}^0$

[1] ABLIKIM 18V reports $[\Gamma(\chi_{c0}(1P)\to\ \Sigma^0\overline{\Sigma}^0)/\Gamma_{\text{total}}]\times[\text{B}(\psi(2S)\to\ \gamma\chi_{c0}(1P))]=(4.72\pm0.18\pm0.28)\times10^{-5}$ which we divide by our best value $\text{B}(\psi(2S)\to\ \gamma\chi_{c0}(1P))=(9.79\pm0.20)\times10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] NAIK 08 reports $(4.41\pm0.56\pm0.47)\times10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P)\to\ \Sigma^0\overline{\Sigma}^0)/\Gamma_{\text{total}}]\times[\text{B}(\psi(2S)\to\ \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S)\to\ \gamma\chi_{c0}(1P))=(9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S)\to\ \gamma\chi_{c0}(1P))=(9.79\pm0.20)\times10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[3] ABLIKIM 13H reports $(4.78\pm0.34\pm0.39)\times10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P)\to\ \Sigma^0\overline{\Sigma}^0)/\Gamma_{\text{total}}]\times[\text{B}(\psi(2S)\to\ \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S)\to\ \gamma\chi_{c0}(1P))=(9.62\pm0.31)\times10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S)\to\ \gamma\chi_{c0}(1P))=(9.79\pm0.20)\times10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[4] Superseded by ABLIKIM 18V

$\Gamma(\Sigma^+\overline{\Sigma}^-)/\Gamma_{\text{total}}$ Γ_{84}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
4.6 ±0.8 OUR AVERAGE Error includes scale factor of 2.6.					
5.10±0.35±0.10	747	[1] ABLIKIM	18V	BES3	$\psi(2S)\to\ \gamma\Sigma^+\overline{\Sigma}^-$
3.1 ±0.7 ±0.1	39 ± 7	[2] NAIK	08	CLEO	$\psi(2S)\to\ \gamma\Sigma^+\overline{\Sigma}^-$

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

4.5 ±0.5 ±0.1	148	[3,4] ABLIKIM	13H	BES3	$\psi(2S) \to \gamma\Sigma^+\overline{\Sigma}^-$	

[1] ABLIKIM 18V reports $[\Gamma(\chi_{c0}(1P) \to \Sigma^+\overline{\Sigma}^-)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))] = (4.99 \pm 0.24 \pm 0.24) \times 10^{-5}$ which we divide by our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] NAIK 08 reports $(3.25 \pm 0.57 \pm 0.43) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Sigma^+\overline{\Sigma}^-)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[3] ABLIKIM 13H reports $(4.54 \pm 0.42 \pm 0.30) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Sigma^+\overline{\Sigma}^-)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[4] Superseded by ABLIKIM 18V

$\Gamma(\Sigma^-\overline{\Sigma}^+)/\Gamma_{\text{total}}$ Γ_{85}/Γ

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
5.1±0.2±0.4	2143	[1] ABLIKIM	20I	BES3	$\psi(2S) \to \gamma\Sigma^-\overline{\Sigma}^+$

[1] ABLIKIM 20I reports $(5.13 \pm 0.24 \pm 0.41) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Sigma^-\overline{\Sigma}^+)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$.

$\Gamma(\Sigma(1385)^+\overline{\Sigma}(1385)^-)/\Gamma_{\text{total}}$ Γ_{86}/Γ

VALUE (units 10^{-5})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
16.2±5.8±0.3	27	[1] ABLIKIM	12I	BES3	$\psi(2S) \to \gamma\Lambda\overline{\Lambda}\pi^+\pi^-$

[1] ABLIKIM 12I reports $(16.4 \pm 5.7 \pm 1.6) \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Sigma(1385)^+\overline{\Sigma}(1385)^-)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Sigma(1385)^-\overline{\Sigma}(1385)^+)/\Gamma_{\text{total}}$ Γ_{87}/Γ

VALUE (units 10^{-5})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
23.2±6.5±0.5	33	[1] ABLIKIM	12I	BES3	$\psi(2S) \to \gamma\Lambda\overline{\Lambda}\pi^+\pi^-$

[1] ABLIKIM 12I reports $(23.5 \pm 6.2 \pm 2.3) \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Sigma(1385)^-\overline{\Sigma}(1385)^+)/\Gamma_{\text{total}}] \times [\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $\text{B}(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^- \Lambda \overline{\Xi}^+ + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{88}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.94±0.35±0.04	57	[1] ABLIKIM	15I	BES3	$\psi(2S) \to \gamma K^- \Lambda \overline{\Xi}^+ + \text{c.c.}$

[1] ABLIKIM 15I reports $[\Gamma(\chi_{c0}(1P) \to K^- \Lambda \overline{\Xi}^+ + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (1.90 \pm 0.30 \pm 0.16) \times 10^{-5}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Xi^0 \overline{\Xi}^0)/\Gamma_{\text{total}}$ Γ_{89}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
3.1±0.8±0.1	23.3 ± 4.9	[1] NAIK	08	CLEO	$\psi(2S) \to \gamma \Xi^0 \overline{\Xi}^0$

[1] NAIK 08 reports $(3.34 \pm 0.70 \pm 0.48) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Xi^0 \overline{\Xi}^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Xi^- \overline{\Xi}^+)/\Gamma_{\text{total}}$ Γ_{90}/Γ

VALUE (units 10^{-4})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
4.8±0.7±0.1	95 ± 11		[1] NAIK	08	CLEO	$\psi(2S) \to \gamma \Xi^+ \overline{\Xi}^-$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<10.3	90		[2] ABLIKIM	06D	BES2	$\psi(2S) \to \chi_{c0}\gamma$

[1] NAIK 08 reports $(5.14 \pm 0.60 \pm 0.47) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Xi^- \overline{\Xi}^+)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] Using $B(\psi(2S) \to \chi_{c0}\gamma) = (9.2 \pm 0.5)\%$

$\Gamma(\eta_c \pi^+ \pi^-)/\Gamma_{\text{total}}$ Γ_{91}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 7 × 10⁻⁴	90	[1,2] ABLIKIM	13B	BES3	$e^+e^- \to \psi(2S) \to \gamma\chi_{c0}$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$<41 \times 10^{-4}$	90	[1,3] ABLIKIM	13B	BES3	$e^+e^- \to \psi(2S) \to \gamma\chi_{c0}$

[1] Using 1.06×10^8 $\psi(2S)$ mesons and $B(\psi(2S) \to \chi_{c0}\gamma) = (9.68 \pm 0.31)\%$.

[2] From the $\eta_c \to K^0_S K^\pm \pi^\mp$ decays.

[3] From the $\eta_c \to K^+ K^- \pi^0$ decays.

$\Gamma(p\overline{p})/\Gamma_{\text{total}} \times \Gamma(\pi\pi)/\Gamma_{\text{total}}$ $\Gamma_{58}/\Gamma \times \Gamma_{32}/\Gamma$

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
18.8±1.0 OUR FIT				
15.3±2.4±0.8	[1] ANDREOTTI	03	E835	$\overline{p}p \to \chi_{c0} \to \pi^0\pi^0$

[1] We have multiplied $B(p\overline{p})\cdot B(\pi^0\pi^0)$ measurement by 3 to obtain $B(p\overline{p})\cdot B(\pi\pi)$.

$\Gamma(p\overline{p})/\Gamma_{\text{total}} \times \Gamma(\pi^0\eta)/\Gamma_{\text{total}}$ $\Gamma_{58}/\Gamma \times \Gamma_{33}/\Gamma$

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
<0.4	ANDREOTTI	05C	E835	$\overline{p}p \to \pi^0\eta$

$\Gamma(p\overline{p})/\Gamma_{total} \times \Gamma(\pi^0\eta')/\Gamma_{total}$ $\Gamma_{58}/\Gamma \times \Gamma_{34}/\Gamma$

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
<2.5	ANDREOTTI	05C	E835	$\overline{p}p \rightarrow \pi^0\eta$

$\Gamma(p\overline{p})/\Gamma_{total} \times \Gamma(\eta\eta)/\Gamma_{total}$ $\Gamma_{58}/\Gamma \times \Gamma_{36}/\Gamma$

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
6.7±0.5 OR FIT				
$4.0\pm1.2^{+0.5}_{-0.3}$	ANDREOTTI	05C	E835	$\overline{p}p \rightarrow \eta\eta$

$\Gamma(p\overline{p})/\Gamma_{total} \times \Gamma(\eta\eta')/\Gamma_{total}$ $\Gamma_{58}/\Gamma \times \Gamma_{37}/\Gamma$

VALUE (units 10^{-6})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$2.1^{+2.3}_{-1.5}$	ANDREOTTI	05C	E835	$\overline{p}p \rightarrow \pi^0\eta$

RADIATIVE DECAYS

$\Gamma(\gamma J/\psi(1S))/\Gamma_{total}$ Γ_{92}/Γ

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
1.40±0.05 OR FIT					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.25±0.16±2.15	12k	[1] ABLIKIM	17U	BES3	$e^+e^- \rightarrow \gamma X$
2.0 ±0.2 ±0.2		[2] ADAM	05A	CLEO	$e^+e^- \rightarrow \psi(2S) \rightarrow \gamma\chi_{c0}$

[1] Not independent from B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$) and the product B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$) × B($\chi_{c0}(1P) \rightarrow \gamma J/\psi(1S)$) also measured in ABLIKIM 17U.

[2] Uses B($\psi(2S) \rightarrow \gamma\chi_{c0} \rightarrow \gamma\gamma J/\psi$) from ADAM 05A and B($\psi(2S) \rightarrow \gamma\chi_{c0}$) from ATHAR 04.

$\Gamma(\gamma\rho^0)/\Gamma_{total}$ Γ_{93}/Γ

VALUE (units 10^{-6})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
< 9	90	1.2 ± 4.5	[1] BENNETT	08A	CLEO	$\psi(2S) \rightarrow \gamma\gamma\rho^0$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<10	90	6 ± 12	[2] ABLIKIM	11E	BES3	$\psi(2S) \rightarrow \gamma\gamma\rho^0$

[1] BENNETT 08A reports $< 9.6 \times 10^{-6}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\rho^0)/\Gamma_{total}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

[2] ABLIKIM 11E reports $< 10.5 \times 10^{-6}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \gamma\rho^0)/\Gamma_{total}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

$\Gamma(\gamma\omega)/\Gamma_{total}$ Γ_{94}/Γ

VALUE (units 10^{-6})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
< 8	90	0.0 ± 2.8	[1] BENNETT	08A	CLEO	$\psi(2S) \rightarrow \gamma\gamma\omega$

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

<13	90	5 ± 11	[2] ABLIKIM	11E	BES3	$\psi(2S) \to \gamma\gamma\omega$

[1] BENNETT 08A reports $< 8.8 \times 10^{-6}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \gamma\omega)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

[2] ABLIKIM 11E reports $< 12.9 \times 10^{-6}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \gamma\omega)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

$\Gamma(\gamma\phi)/\Gamma_{\text{total}}$ Γ_{95}/Γ

VALUE (units 10^{-6})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
< 6	90	0.1 ± 1.6	[1] BENNETT	08A	CLEO	$\psi(2S) \to \gamma\gamma\phi$

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

<16	90	15 ± 7	[2] ABLIKIM	11E	BES3	$\psi(2S) \to \gamma\gamma\phi$

[1] BENNETT 08A reports $< 6.4 \times 10^{-6}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \gamma\phi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

[2] ABLIKIM 11E reports $< 16.2 \times 10^{-6}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \gamma\phi)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.79 \times 10^{-2}$.

$\Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ Γ_{96}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
2.04±0.09 OUR FIT					

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

<7	90	[1] WICHT	08	BELL	$B^{\pm} \to K^{\pm}\gamma\gamma$	

[1] WICHT 08 reports $[\Gamma(\chi_{c0}(1P) \to \gamma\gamma)/\Gamma_{\text{total}}] \times [B(B^+ \to \chi_{c0}K^+)] < 0.11 \times 10^{-6}$ which we divide by our best value $B(B^+ \to \chi_{c0}K^+) = 1.51 \times 10^{-4}$.

$\Gamma(e^+e^- J/\psi(1S))/\Gamma_{\text{total}}$ Γ_{97}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.54±0.33±0.03	56	[1,2] ABLIKIM	17I	BES3	$\psi(2S) \to \gamma e^+e^- J/\psi$

[1] ABLIKIM 17I reports $(1.51 \pm 0.30 \pm 0.13) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to e^+e^- J/\psi(1S))/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.79 \pm 0.20) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] Not independent from other measurements reported by ABLIKIM 17I

$\Gamma(e^+e^- J/\psi(1S))/\Gamma(\gamma J/\psi(1S))$ Γ_{97}/Γ_{92}

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
9.5±1.9±0.7	56	[1] ABLIKIM	17I	BES3	$\psi(2S) \to e^+e^-\gamma J/\psi$

[1] Uses $B(\psi(2S) \to \gamma\chi_{c0}(1P)) \times B(\chi_{c0}(1P) \to \gamma J/\psi(1S)) = (15.8 \pm 0.3 \pm 0.6) \times 10^{-4}$ from ABLIKIM 17N and accounts for common systematic errors.

$\Gamma(\mu^+\mu^- J/\psi(1S))/\Gamma(e^+e^- J/\psi(1S))$ Γ_{98}/Γ_{97}

VALUE	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
<0.14	90	<9.5	ABLIKIM	19Z	BES3	$\psi(2S) \to \gamma\chi_c \to \gamma(\mu^+\mu^- J/\psi)$

$\Gamma(\gamma\gamma)/\Gamma(\gamma J/\psi(1S))$ Γ_{96}/Γ_{92}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
1.45±0.08 OUR FIT				
2.0 ±0.4 OUR AVERAGE				
$2.2 \pm 0.4\ ^{+0.1}_{-0.2}$	[1] ANDREOTTI	04	E835	$p\overline{p} \to \chi_{c0} \to \gamma\gamma$
1.45±0.74	[2] AMBROGIANI	00B	E835	$\overline{p}p \to \chi_{c2} \to \gamma\gamma, \gamma J/\psi$

[1] The values of $B(p\overline{p})B(\gamma\gamma)$ and $B(\gamma\gamma)B(\gamma J/\psi)$ measured by ANDREOTTI 04 are not independent. The latter is used in the fit because of smaller systematics.
[2] Calculated by us using $B(J/\psi(1S) \to e^+e^-) = 0.0593 \pm 0.0010$.

$\Gamma(p\overline{p})/\Gamma_{\text{total}} \times \Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}}$ $\Gamma_{58}/\Gamma \times \Gamma_{92}/\Gamma$

VALUE (units 10^{-7})	EVTS	DOCUMENT ID		TECN	COMMENT
31.1±1.5 OUR FIT					
28.2±2.1 OUR AVERAGE					
28.0±1.9±1.3	392	[1,2,3] BAGNASCO	02	E835	$\overline{p}p \to \chi_{c0} \to J/\psi\gamma$
$29.3^{+5.7}_{-4.7}\pm1.5$	89	[1,2] AMBROGIANI	99B		$\overline{p}p \to \chi_{c0} \to J/\psi\gamma$

[1] Values in $(\Gamma(p\overline{p}) \times \Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}})$ and $(\Gamma(p\overline{p})/\Gamma_{\text{total}} \times \Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}})$ are not independent. The latter is used in the fit since it is less correlated to the total width.
[2] Calculated by us using $B(J/\psi(1S) \to e^+e^-) = 0.0593 \pm 0.0010$.
[3] Recalculated by ANDREOTTI 05A.

$\Gamma(p\overline{p})/\Gamma_{\text{total}} \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ $\Gamma_{58}/\Gamma \times \Gamma_{96}/\Gamma$

VALUE (units 10^{-8})	DOCUMENT ID		TECN	COMMENT
4.52±0.27 OUR FIT				
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$6.52\pm1.18^{+0.48}_{-0.72}$	[1] ANDREOTTI	04	E835	$p\overline{p} \to \chi_{c0} \to \gamma\gamma$

[1] The values of $B(p\overline{p})B(\gamma\gamma)$ and $B(\gamma\gamma)B(\gamma J/\psi)$ measured by ANDREOTTI 04 are not independent. The latter is used in the fit because of smaller systematics.

$\chi_{c0}(1P)$ CROSS-PARTICLE BRANCHING RATIOS

$\Gamma(\chi_{c0}(1P) \to p\overline{p})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$ $\Gamma_{58}/\Gamma \times \Gamma^{\psi(2S)}_{162}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-6})	EVTS	DOCUMENT ID		TECN	COMMENT
21.7±0.9 OUR FIT					
23.7±1.0 OUR AVERAGE					
23.7±0.8±0.9	1222	ABLIKIM	13V	BES3	$\psi(2S) \to \gamma p\overline{p}$
23.7±1.4±1.4	383 ± 22	[1] NAIK	08	CLEO	$\psi(2S) \to \gamma p\overline{p}$
$23.6^{+3.7}_{-3.4}\pm3.4$	89.5^{+14}_{-13}	BAI	04F	BES	$\psi(2S) \to \gamma\chi_{c0}(1P) \to \gamma\overline{p}p$

[1] Calculated by us. NAIK 08 reports $B(\chi_{c0} \to p\overline{p}) = (25.7 \pm 1.5 \pm 1.5 \pm 1.3) \times 10^{-5}$ using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$.

$\Gamma(\chi_{c0}(1P) \to p\overline{p})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_{58}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$

VALUE (units 10^{-5})	*DOCUMENT ID*		*TECN*	*COMMENT*
6.25±0.26 OUR FIT				
4.6 ±1.9	[1] BAI	98I	BES	$\psi(2S) \to \gamma\chi_{c0} \to \gamma\overline{p}p$

[1] Calculated by us. The value for $B(\chi_{c0} \to p\overline{p})$ reported in BAI 98I is derived using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.3 \pm 0.8)\%$ and $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) = (32.4 \pm 2.6)\%$ [BAI 98D].

$\Gamma(\chi_{c0}(1P) \to \Lambda\overline{\Lambda})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$ $\Gamma_{71}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-6})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
35.2±1.3 OUR FIT					
35.1±1.4 OUR AVERAGE Error includes scale factor of 1.1.					
35.6±1.0±1.0	1486	ABLIKIM	21L	BES3	$\psi(2S) \to \gamma p\pi^-\overline{p}\pi^+$
31.2±3.3±2.0	131	[1] NAIK	08	CLEO	$\psi(2S) \to \gamma\Lambda\overline{\Lambda}$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
32.0±1.9±2.2	369	[2,3] ABLIKIM	13H	BES3	$\psi(2S) \to \gamma\Lambda\overline{\Lambda}$

[1] Calculated by us. NAIK 08 reports $B(\chi_{c0} \to \Lambda\overline{\Lambda}) = (33.8 \pm 3.6 \pm 2.2 \pm 1.7) \times 10^{-5}$ using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$.

[2] Superseded by ABLIKIM 21L

[3] Calculated by us. ABLIKIM 13H reports $B(\chi_{c0} \to \Lambda\overline{\Lambda}) = (33.3 \pm 2.0 \pm 2.6) \times 10^{-5}$ from a measurement of $B(\chi_{c0} \to \Lambda\overline{\Lambda}) \times B(\psi(2S) \to \gamma\chi_{c0})$ assuming $B(\psi(2S) \to \gamma\chi_{c0}) = (9.62 \pm 0.31)\%$.

$\Gamma(\chi_{c0}(1P) \to \Lambda\overline{\Lambda})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_{71}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$

VALUE (units 10^{-5})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
10.1±0.4 OUR FIT					
$\mathbf{13.0^{+3.6}_{-3.5} \pm 2.5}$	$15.2^{+4.2}_{-4.0}$	[1] BAI	03E	BES	$\psi(2S) \to \gamma\Lambda\overline{\Lambda}$

[1] BAI 03E reports [$B(\chi_{c0} \to \Lambda\overline{\Lambda})\ B(\psi(2S) \to \gamma\chi_{c0})$ / $B(\psi(2S) \to J/\psi\pi^+\pi^-)$] × [$B^2(\Lambda \to \pi^- p)$ / $B(J/\psi \to p\overline{p})$] = $(2.45^{+0.68}_{-0.65} \pm 0.46)\%$. We calculate from this measurement the presented value using $B(\Lambda \to \pi^- p) = (63.9 \pm 0.5)\%$ and $B(J/\psi \to p\overline{p}) = (2.17 \pm 0.07) \times 10^{-3}$.

$\Gamma(\chi_{c0}(1P) \to \gamma J/\psi(1S))/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$ $\Gamma_{92}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-2})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.138±0.005 OUR FIT					
0.147±0.029 OUR AVERAGE Error includes scale factor of 4.6.					
0.158±0.003±0.006	4.8k	[1] ABLIKIM	17N	BES3	$\psi(2S) \to \gamma\gamma J/\psi$
0.024±0.015±0.205	12k	ABLIKIM	17U	BES3	$e^+e^- \to \gamma X$
0.069±0.018		[2] OREGLIA	82	CBAL	$\psi(2S) \to \gamma\chi_{c0}$
0.4 ±0.3		[3] BRANDELIK	79B	DASP	$\psi(2S) \to \gamma\chi_{c0}$
0.16 ±0.11		[3] BARTEL	78B	CNTR	$\psi(2S) \to \gamma\chi_{c0}$
3.3 ±1.7		[4] BIDDICK	77	CNTR	$e^+e^- \to \gamma X$

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

0.151±0.003±0.010	4.3k	[5] ABLIKIM	12O	BES3	$\psi(2S) \to \gamma\chi_{c0}$
0.125±0.007±0.013	560	[6] MENDEZ	08	CLEO	$\psi(2S) \to \gamma\chi_{c0}$
0.18 ±0.01 ±0.02	172	[7] ADAM	05A	CLEO	Repl. by MENDEZ 08

[1] Uses B($J/\psi \to e^+e^-$) = (5.971 ± 0.032)% and B($J/\psi \to \mu^+\mu^-$) = (5.961 ± 0.033)%.
[2] Recalculated by us using B($J/\psi(1S) \to \ell^+\ell^-$) = 0.1181 ± 0.0020.
[3] Recalculated by us using B($J/\psi(1S) \to \mu^+\mu^-$) = 0.0588 ± 0.0010.
[4] Assumes isotropic gamma distribution.
[5] Superseded by ABLIKIM 17N.
[6] Not independent from other measurements of MENDEZ 08.
[7] Not independent from other values reported by ADAM 05A.

$\Gamma(\chi_{c0}(1P) \to \gamma J/\psi(1S))/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\text{anything})$ $\Gamma_{92}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma_{10}^{\psi(2S)}$

$\Gamma_{92}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma_{10}^{\psi(2S)} = \Gamma_{92}/\Gamma \times \Gamma_{162}^{\psi(2S)}/(\Gamma_{12}^{\psi(2S)}+\Gamma_{13}^{\psi(2S)}+\Gamma_{14}^{\psi(2S)}+0.343\Gamma_{163}^{\psi(2S)}+0.190\Gamma_{164}^{\psi(2S)})$

VALUE (units 10^{-2})	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
0.224±0.009 OUR FIT				

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

0.201±0.011±0.021	560	[1] MENDEZ	08	CLEO	$\psi(2S) \to \gamma\chi_{c0}$
0.31 ±0.02 ±0.03	172	ADAM	05A	CLEO	Repl. by MENDEZ 08

[1] Not independent from other measurements of MENDEZ 08.

$\Gamma(\chi_{c0}(1P) \to \gamma J/\psi(1S))/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_{92}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$

VALUE (units 10^{-2})	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
0.397±0.015 OUR FIT				
0.358±0.020±0.037	560	MENDEZ	08	CLEO	$\psi(2S) \to \gamma\chi_{c0}$

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

0.55 ±0.04 ±0.06	172	[1] ADAM	05A	CLEO	Repl. by MENDEZ 08

[1] Not independent from other values reported by ADAM 05A.

$\Gamma(\chi_{c0}(1P) \to \gamma\gamma)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$ $\Gamma_{96}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-5})	*EVTS*	*DOCUMENT ID*	*TECN*	*COMMENT*
2.00±0.08 OUR FIT				
1.95±0.09 OUR AVERAGE				
1.93±0.08±0.05	3.5k	ABLIKIM	17AE	BES3	$\psi(2S) \to \gamma\chi_{c0} \to 3\gamma$
2.17±0.32±0.10	0.2k	ECKLUND	08A	CLEO	$\psi(2S) \to \gamma\chi_{c0} \to 3\gamma$
3.7 ±1.8 ±1.0		LEE	85	CBAL	$\psi(2S) \to \gamma\chi_{c0}$

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

2.17±0.17±0.12	0.8k	[1] ABLIKIM	12A	BES3	$\psi(2S) \to \gamma\chi_{c0} \to 3\gamma$

[1] Superseded by ABLIKIM 17AE.

$\Gamma(\chi_{c0}(1P) \to \pi\pi)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$ $\Gamma_{32}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
8.34±0.29 OUR FIT					
8.80±0.34 OUR AVERAGE					
9.11±0.08±0.65	17k	[1] ABLIKIM	10A	BES3	$e^+e^- \to \psi(2S) \to \gamma\chi_{c0}$
8.81±0.11±0.43	8.9k	[2] ASNER	09	CLEO	$\psi(2S) \to \gamma\pi^+\pi^-$
8.13±0.19±0.89	2.8k	[3] ASNER	09	CLEO	$\psi(2S) \to \gamma\pi^0\pi^0$

[1] Calculated by us. ABLIKIM 10A reports $B(\chi_{c0} \to \pi^0\pi^0) = (3.23 \pm 0.03 \pm 0.23 \pm 0.14) \times 10^{-3}$ using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.4 \pm 0.4)\%$. We have multiplied the $\pi^0\pi^0$ measurement by 3 to obtain $\pi\pi$.

[2] Calculated by us. ASNER 09 reports $B(\chi_{c0} \to \pi^+\pi^-) = (6.37 \pm 0.08 \pm 0.31 \pm 0.32) \times 10^{-3}$ using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$. We have multiplied the $\pi^+\pi^-$ measurement by 3/2 to obtain $\pi\pi$.

[3] Calculated by us. ASNER 09 reports $B(\chi_{c0} \to \pi^0\pi^0) = (2.94 \pm 0.07 \pm 0.32 \pm 0.15) \times 10^{-3}$ using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$. We have multiplied the $\pi^0\pi^0$ measurement by 3 to obtain $\pi\pi$.

$\Gamma(\chi_{c0}(1P) \to \pi\pi)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_{32}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
24.0±0.8 OUR FIT					
20.7±1.7 OUR AVERAGE					
23.9±2.7±4.1	97 ± 11	[1] BAI	03C	BES	$\psi(2S) \to \gamma\chi_{c0} \to \gamma\pi^0\pi^0$
20.2±1.1±1.5	720 ± 32	[2] BAI	98I	BES	$\psi(2S) \to \gamma\chi_{c0} \to \gamma\pi^+\pi^-$

[1] We have multiplied $\pi^0\pi^0$ measurement by 3 to obtain $\pi\pi$.

[2] Calculated by us. The value for $B(\chi_{c0} \to \pi^+\pi^-)$ reported in BAI 98I is derived using $B(\psi' \to \gamma\chi_{c0}) = (9.3 \pm 0.8)\%$ and $B(\psi' \to J/\psi\pi^+\pi^-) = (32.4 \pm 2.6)\%$ [BAI 98D]. We have multiplied $\pi^+\pi^-$ measurement by 3/2 to obtain $\pi\pi$.

$\Gamma(\chi_{c0}(1P) \to \eta\eta)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$ $\Gamma_{36}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2.95±0.18 OUR FIT					
3.12±0.19 OUR AVERAGE					
3.23±0.09±0.23	2132	[1] ABLIKIM	10A	BES3	$e^+e^- \to \psi(2S) \to \gamma\chi_{c0}$
2.93±0.12±0.29	0.9k	[2] ASNER	09	CLEO	$\psi(2S) \to \gamma\eta\eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
2.86±0.46±0.37	48	[3] ADAMS	07	CLEO	$\psi(2S) \to \gamma\chi_{c0}$

[1] Calculated by us. ABLIKIM 10A reports $B(\chi_{c0} \to \eta\eta) = (3.44 \pm 0.10 \pm 0.24 \pm 0.13) \times 10^{-3}$ using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.4 \pm 0.4)\%$.

[2] Calculated by us. ASNER 09 reports $B(\chi_{c0} \to \eta\eta) = (3.18 \pm 0.13 \pm 0.31 \pm 0.16) \times 10^{-3}$ using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$.

[3] Superseded by ASNER 09. Calculated by us. The value of $B(\chi_{c0}(1P) \to \eta\eta)$ reported by ADAMS 07 was derived using $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46)\%$ (ATHAR 04).

$\Gamma(\chi_{c0}(1P) \to \eta\eta)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_{36}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.85 ±0.05 OUR FIT				
0.578±0.241±0.158	BAI	03C	BES	$\psi(2S) \to \gamma\eta\eta$

$\Gamma(\chi_{c0}(1P) \to K^+K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$ $\Gamma_{42}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
5.92±0.28 OUR FIT					
5.97±0.07±0.32	8.1k	[1] ASNER	09	CLEO	$\psi(2S) \to \gamma K^+K^-$

[1] Calculated by us. ASNER 09 reports $B(\chi_{c0} \to K^+K^-) = (6.47 \pm 0.08 \pm 0.35 \pm 0.32) \times 10^{-3}$ using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$.

$\Gamma(\chi_{c0}(1P) \to K^+K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_{42}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.71±0.08 OUR FIT					
1.63±0.10±0.15	774 ± 38	[1] BAI	98I	BES	$\psi(2S) \to \gamma K^+K^-$

[1] Calculated by us. The value for $B(\chi_{c0} \to K^+K^-)$ reported by BAI 98I is derived using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.3 \pm 0.8)\%$ and $B(\psi(2S) \to J/\psi\pi^+\pi^-) = (32.4 \pm 2.6)\%$ [BAI 98D].

$\Gamma(\chi_{c0}(1P) \to K_S^0K_S^0)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$ $\Gamma_{43}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
3.10±0.16 OUR FIT					
3.18±0.17 OUR AVERAGE					
3.22±0.07±0.17	2.1k	[1] ASNER	09	CLEO	$\psi(2S) \to \gamma K_S^0K_S^0$
3.02±0.19±0.33	322	ABLIKIM	05O	BES2	$\psi(2S) \to \gamma K_S^0K_S^0$

[1] Calculated by us. ASNER 09 reports $B(\chi_{c0} \to K_S^0K_S^0) = (3.49 \pm 0.08 \pm 0.18 \pm 0.17) \times 10^{-3}$ using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$.

$\Gamma(\chi_{c0}(1P) \to K_S^0K_S^0)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_{43}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
8.9±0.5 OUR FIT				
5.6±0.8±1.3	[1] BAI	99B	BES	$\psi(2S) \to \gamma K_S^0K_S^0$

[1] Calculated by us. The value of $B(\chi_{c0} \to K_S^0K_S^0)$ reported by BAI 99B was derived using $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.3 \pm 0.8)\%$ and $B(\psi(2S) \to J/\psi\pi^+\pi^-) = (32.4 \pm 2.6)\%$ [BAI 98D].

$\Gamma(\chi_{c0}(1P) \to 2(\pi^+\pi^-))/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_1/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$

VALUE (units 10^{-3})	*DOCUMENT ID*		*TECN*	*COMMENT*
6.6±0.5 OUR FIT				
6.9±2.4 OUR AVERAGE Error includes scale factor of 3.8.				
4.4±0.1±0.9	[1] BAI	99B	BES	$\psi(2S) \to \gamma\chi_{c0}$
9.3±0.9	[2] TANENBAUM	78	MRK1	$\psi(2S) \to \gamma\chi_{c0}$

[1] Calculated by us. The value for $B(\chi_{c0} \to 2\pi^+2\pi^-)$ reported in BAI 99B is derived using $B(\psi(2S) \to \gamma\chi_{c0}) = (9.3 \pm 0.8)\%$ and $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) = (32.4 \pm 2.6)\%$ [BAI 98D].

[2] The value $B(\psi(1S) \to \gamma\chi_{c0}) \times B(\chi_{c0} \to 2\pi^+2\pi^-)$ reported in TANENBAUM 78 is derived using $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) \times B(J/\psi(1S) \to \ell^+\ell^-) = (4.6 \pm 0.7)\%$. Calculated by us using $B(J/\psi(1S) \to \ell^+\ell^-) = 0.1181 \pm 0.0020$.

$\Gamma(\chi_{c0}(1P) \to \pi^+\pi^-K^+K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$ $\Gamma_8/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-3})	*DOCUMENT ID*		*TECN*	*COMMENT*
1.78±0.14 OUR FIT				
1.64±0.05±0.2	ABLIKIM	05Q	BES2	$\psi(2S) \to \gamma\chi_{c0}$

$\Gamma(\chi_{c0}(1P) \to \pi^+\pi^-K^+K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_8/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$

VALUE (units 10^{-3})	*DOCUMENT ID*		*TECN*	*COMMENT*
5.1 ±0.4 OUR FIT				
5.8 ±1.6 OUR AVERAGE Error includes scale factor of 2.3.				
4.22±0.20±0.97	BAI	99B	BES	$\psi(2S) \to \gamma\chi_{c0}$
7.4 ±1.0	[1] TANENBAUM	78	MRK1	$\psi(2S) \to \gamma\chi_{c0}$

[1] The reported value is derived using $B(\psi(2S) \to \pi^+\pi^- J/\psi) \times B(J/\psi \to \ell^+\ell^-) = (4.6 \pm 0.7)\%$. Calculated by us using $B(J/\psi \to \ell^+\ell^-) = 0.1181 \pm 0.0020$.

$\Gamma(\chi_{c0}(1P) \to K^+K^-K^+K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$ $\Gamma_{51}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2.76±0.28 OUR FIT					
3.20±0.11±0.41	278	[1] ABLIKIM	06T	BES2	$\psi(2S) \to \gamma 2K^+2K^-$

[1] Calculated by us. The value of $B(\chi_{c0} \to 2K^+2K^-)$ reported by ABLIKIM 06T was derived using $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4)\%$.

$\Gamma(\chi_{c0}(1P) \to K^+K^-K^+K^-)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_{51}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$

VALUE (units 10^{-4})	*DOCUMENT ID*		*TECN*	*COMMENT*
8.0±0.8 OUR FIT				
6.1±0.8±0.9	[1] BAI	99B	BES	$\psi(2S) \to \gamma 2K^+2K^-$

[1] Calculated by us. The value of $B(\chi_{c0} \to 2K^+2K^-)$ reported by BAI 99B was derived using $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.3 \pm 0.8)\%$ and $B(\psi(2S) \to J/\psi\pi^+\pi^-) = (32.4 \pm 2.6)\%$ [BAI 98D].

$\Gamma(\chi_{c0}(1P) \to \phi\phi)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$ $\Gamma_{56}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-4})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
0.78±0.07 OUR FIT					
0.78±0.08 OUR AVERAGE					
0.77±0.03±0.08	612	[1] ABLIKIM	11K	BES3	$\psi(2S) \to \gamma$ hadrons
0.86±0.19±0.12	26	[2] ABLIKIM	06T	BES2	$\psi(2S) \to \gamma 2K^+ 2K^-$

[1] Calculated by us. The value of $B(\chi_{c0} \to \phi\phi)$ reported by ABLIKIM 11K was derived using $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31)\%$.

[2] Calculated by us. The value of $B(\chi_{c0} \to \phi\phi)$ reported by ABLIKIM 06T was derived using $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4)\%$.

$\Gamma(\chi_{c0}(1P) \to \phi\phi)/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_{56}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma_{12}^{\psi(2S)}$

VALUE (units 10^{-4})	*DOCUMENT ID*		*TECN*	*COMMENT*
2.25±0.21 OUR FIT				
2.6 ±1.0 ±1.1	[1] BAI	99B	BES	$\psi(2S) \to \gamma 2K^+ 2K^-$

[1] Calculated by us. The value of $B(\chi_{c0} \to \phi\phi)$ reported by BAI 99B was derived using $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.3 \pm 0.8)\%$ and $B(\psi(2S) \to J/\psi\pi^+\pi^-) = (32.4 \pm 2.6)\%$ [BAI 98D].

$\Gamma(\chi_{c0}(1P) \to \Sigma^+\overline{p}K_S^0 + \text{c.c.})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$ $\Gamma_{82}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-5})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
3.45±0.17±0.19	493	[1] ABLIKIM	19BB	BES3	$\psi(2S) \to \gamma\Sigma^+\overline{p}K_S^0$ + c.c.

[1] Calculated by us. ABLIKIM 19BB reports $B(\chi_c^0 \to \Sigma^+\overline{p}K_S^0 + \text{c.c.}) = (3.52 \pm 0.19 \pm 0.21) \times 10^{-4}$ using $B(\psi(2S) \to \gamma\chi_c^0) = (9.79 \pm 0.20)\%$ and other branching fractions from PDG 18.

$\Gamma(\chi_{c0}(1P) \to \Sigma^0\overline{p}K^+ + \text{c.c.})/\Gamma_{\text{total}} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{\text{total}}$ $\Gamma_{83}/\Gamma \times \Gamma_{162}^{\psi(2S)}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-5})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2.97±0.12±0.14	871	[1] ABLIKIM	20AE	BES3	$\psi(2S) \to \gamma\Sigma^0\overline{p}K^+$ + c.c.

[1] Calculated by us. ABLIKIM 20AE reports $B(\chi_c^0 \to \Sigma^0\overline{p}K^+ + \text{c.c.}) = (3.03 \pm 0.12 \pm 0.15) \times 10^{-4}$ using $B(\psi(2S) \to \gamma\chi_c^0) = (9.79 \pm 0.20)\%$ and other branching fractions from PDG 20.

$\chi_{c0}(1P)$ REFERENCES

ABLIKIM	21AV	JHEP 2111 217	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	21L	PR D103 112004	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	20AE	PR D102 092006	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	20B	PR D101 012012	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	20I	PR D101 092002	M. Ablikim *et al.*	(BESIII Collab.)
PDG	20	PTEP 2020 083C01	P.A. Zyla *et al.*	(PDG Collab.)
ABLIKIM	19AA	PR D99 052008	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	19AU	PR D100 052010	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	19BB	PR D100 092006	M. Ablikim *et al.*	(BESIII Collab.)

ABLIKIM	19J	PR D99 012015	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	19Z	PR D99 051101	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	18V	PR D97 052011	M. Ablikim *et al.*	(BESIII Collab.)
PDG	18	PR D98 030001	M. Tanabashi *et al.*	(PDG Collab.)
AAIJ	17BB	EPJ C77 609	R. Aaij *et al.*	(LHCb Collab.)
ABLIKIM	17AE	PR D96 092007	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	17AI	PR D96 112006	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	17I	PRL 118 221802	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	17N	PR D95 072004	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	17U	PR D96 032001	M. Ablikim *et al.*	(BESIII Collab.)
PDG	16	CP C40 100001	C. Patrignani *et al.*	(PDG Collab.)
ABLIKIM	15I	PR D91 092006	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	15M	PR D91 112008	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	15N	PR D91 112018	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	13B	PR D87 012002	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	13D	PR D87 012007	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	13H	PR D87 032007	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	13V	PR D88 112001	M. Ablikim *et al.*	(BESIII Collab.)
UEHARA	13	PTEP 2013 123C01	S. Uehara *et al.*	(BELLE Collab.)
ABLIKIM	12A	PR D85 112008	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	12I	PR D86 052004	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	12J	PR D86 052011	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	12O	PRL 109 172002	M. Ablikim *et al.*	(BESIII Collab.)
LIU	12B	PRL 108 232001	Z.Q. Liu *et al.*	(BELLE Collab.)
ABLIKIM	11A	PR D83 012006	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	11E	PR D83 112005	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	11F	PR D83 112009	M. Ablikim *et al.*	(BESIII Collab.)
ABLIKIM	11K	PRL 107 092001	M. Ablikim *et al.*	(BESIII Collab.)
DEL-AMO-SA...	11M	PR D84 012004	P. del Amo Sanchez *et al.*	(BABAR Collab.)
ABLIKIM	10A	PR D81 052005	M. Ablikim *et al.*	(BESIII Collab.)
ONYISI	10	PR D82 011103	P.U.E. Onyisi *et al.*	(CLEO Collab.)
UEHARA	10A	PR D82 114031	S. Uehara *et al.*	(BELLE Collab.)
ASNER	09	PR D79 072007	D.M. Asner *et al.*	(CLEO Collab.)
UEHARA	09	PR D79 052009	S. Uehara *et al.*	(BELLE Collab.)
BENNETT	08A	PRL 101 151801	J.V. Bennett *et al.*	(CLEO Collab.)
ECKLUND	08A	PR D78 091501	K.M. Ecklund *et al.*	(CLEO Collab.)
HE	08B	PR D78 092004	Q. He *et al.*	(CLEO Collab.)
MENDEZ	08	PR D78 011102	H. Mendez *et al.*	(CLEO Collab.)
NAIK	08	PR D78 031101	P. Naik *et al.*	(CLEO Collab.)
UEHARA	08	EPJ C53 1	S. Uehara *et al.*	(BELLE Collab.)
WICHT	08	PL B662 323	J. Wicht *et al.*	(BELLE Collab.)
ABE	07	PRL 98 082001	K. Abe *et al.*	(BELLE Collab.)
ADAMS	07	PR D75 071101	G.S. Adams *et al.*	(CLEO Collab.)
ATHAR	07	PR D75 032002	S.B. Athar *et al.*	(CLEO Collab.)
CHEN	07B	PL B651 15	W.T. Chen *et al.*	(BELLE Collab.)
ABLIKIM	06D	PR D73 052006	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06I	PR D74 012004	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06R	PR D74 072001	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	06T	PL B642 197	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	05G	PR D71 092002	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	05N	PL B630 7	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	05O	PL B630 21	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	05Q	PR D72 092002	M. Ablikim *et al.*	(BES Collab.)
ADAM	05A	PRL 94 232002	N.E. Adam *et al.*	(CLEO Collab.)
ANDREOTTI	05A	NP B717 34	M. Andreotti *et al.*	(FNAL E835 Collab.)
ANDREOTTI	05C	PR D72 112002	M. Andreotti *et al.*	(FNAL E835 Collab.)
NAKAZAWA	05	PL B615 39	H. Nakazawa *et al.*	(BELLE Collab.)
ABE	04G	PR D70 071102	K. Abe *et al.*	(BELLE Collab.)
ABLIKIM	04G	PR D70 092002	M. Ablikim *et al.*	(BES Collab.)
ABLIKIM	04H	PR D70 092003	M. Ablikim *et al.*	(BES Collab.)
ANDREOTTI	04	PL B584 16	M. Andreotti *et al.*	(E835 Collab.)
ATHAR	04	PR D70 112002	S.B. Athar *et al.*	(CLEO Collab.)
BAI	04F	PR D69 092001	J.Z. Bai *et al.*	(BES Collab.)
ANDREOTTI	03	PRL 91 091801	M. Andreotti *et al.*	(FNAL E835 Collab.)
AULCHENKO	03	PL B573 63	V.M. Aulchenko *et al.*	(KEDR Collab.)
BAI	03C	PR D67 032004	J.Z. Bai *et al.*	(BES Collab.)
BAI	03E	PR D67 112001	J.Z. Bai *et al.*	(BES Collab.)
ABE,K	02	PRL 89 142001	K. Abe *et al.*	(BELLE Collab.)
BAGNASCO	02	PL B533 237	S. Bagnasco *et al.*	(FNAL E835 Collab.)
EISENSTEIN	01	PRL 87 061801	B.I. Eisenstein *et al.*	(CLEO Collab.)
AMBROGIANI	00B	PR D62 052002	M. Ambrogiani *et al.*	(FNAL E835 Collab.)

AMBROGIANI	99B	PRL 83 2902	M. Ambrogiani *et al.*	(FNAL E835 Collab.)
BAI	99B	PR D60 072001	J.Z. Bai *et al.*	(BES Collab.)
BAI	98D	PR D58 092006	J.Z. Bai *et al.*	(BES Collab.)
BAI	98I	PRL 81 3091	J.Z. Bai *et al.*	(BES Collab.)
GAISER	86	PR D34 711	J. Gaiser *et al.*	(Crystal Ball Collab.)
LEE	85	SLAC 282	R.A. Lee	(SLAC)
OREGLIA	82	PR D25 2259	M.J. Oreglia *et al.*	(SLAC, CIT, HARV+)
BRANDELIK	79B	NP B160 426	R. Brandelik *et al.*	(DASP Collab.)
BARTEL	78B	PL 79B 492	W. Bartel *et al.*	(DESY, HEIDP)
TANENBAUM	78	PR D17 1731	W.M. Tanenbaum *et al.*	(SLAC, LBL)
Also		Private Comm.	G. Trilling	(LBL, UCB)
BIDDICK	77	PRL 38 1324	C.J. Biddick *et al.*	(UCSD, UMD, PAVI+)