$\chi_{c0}(1P)$

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

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

VALUE (MeV)	EVTS	DOCUMENT ID		TECN	COMMENT
3414.75 ± 0.31 OUR AVERAGE					
3414.2 ± 0.5 ± 2.3	5.4k	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to$ hadrons
3406 ± 7 ± 6	230	[1] 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		[2] ANDREOTTI	03	E835	$\overline{p}p \to \chi_{c0} \to \pi^0\pi^0$
3415.5 ± 0.4 ± 0.4	392	[3] BAGNASCO	02	E835	$\overline{p}p \to \chi_{c0} \to J/\psi\gamma$
3417.4 $^{+1.8}_{-1.9}$ ± 0.2		[2] 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		[2] GAISER	86	CBAL	$\psi(2S) \to \gamma X$
3416 ± 3 ± 4		[4] 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		[4] BARTEL	78B	CNTR	$e^+e^- \to J/\psi 2\gamma$
3415 ± 9		[4] BIDDICK	77	CNTR	$e^+e^- \to \gamma X$

[1] From a fit of the J/ψ recoil mass spectrum. Supersedes ABE,K 02 and ABE 04G.
[2] Using mass of $\psi(2S)$ = 3686.0 MeV.
[3] Recalculated by ANDREOTTI 05A, using the value of $\psi(2S)$ mass from AULCHENKO 03.
[4] 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
10.5 ± 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 $^{+1.5}_{-1.6}$ $^{+0.9}_{-1.1}$		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	$2(\pi^+\pi^-)$	(2.24 ± 0.18) %	
Γ_2	$\rho^0\pi^+\pi^-$	$(8.7\ \pm2.8\ )\times10^{-3}$	
Γ_3	$\rho^0\rho^0$		
Γ_4	$f_0(980)f_0(980)$	$(6.5\ \pm2.1\ )\times10^{-4}$	
Γ_5	$\pi^+\pi^-\pi^0\pi^0$	$(3.3\ \pm0.4\ )$ %	
Γ_6	$\rho^+\pi^-\pi^0+$ c.c.	$(2.8\ \pm0.4\ )$ %	
Γ_7	$4\pi^0$	$(3.2\ \pm0.4\ )\times10^{-3}$	
Γ_8	$\pi^+\pi^-K^+K^-$	(1.75 ± 0.14) %	
Γ_9	$K_0^*(1430)^0\overline{K}_0^*(1430)^0\rightarrow\pi^+\pi^-K^+K^-$	$(9.6\ ^{+3.5}_{-2.8}\ )\times10^{-4}$	
Γ_{10}	$K_0^*(1430)^0\overline{K}_2^*(1430)^0+$ c.c. $\rightarrow\pi^+\pi^-K^+K^-$	$(7.8\ ^{+1.9}_{-2.4}\ )\times10^{-4}$	
Γ_{11}	$K_1(1270)^+K^-+$ c.c. $\rightarrow\pi^+\pi^-K^+K^-$	$(6.1\ \pm1.9\ )\times10^{-3}$	
Γ_{12}	$K_1(1400)^+K^-+$ c.c. $\rightarrow\pi^+\pi^-K^+K^-$	$<2.6\ \times10^{-3}$	CL=90%
Γ_{13}	$f_0(980)f_0(980)$	$(1.6\ ^{+1.0}_{-0.9}\ )\times10^{-4}$	
Γ_{14}	$f_0(980)f_0(2200)$	$(7.8\ ^{+2.0}_{-2.5}\ )\times10^{-4}$	
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}	$f_0(1370)f_0(1710)$	$(6.6\ ^{+3.5}_{-2.3}\ )\times10^{-4}$	
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}	$K^+K^-\pi^+\pi^-\pi^0$	(1.11 ± 0.26) %	
Γ_{22}	$K^+K^-\pi^0\pi^0$	$(5.4\ \pm0.9\ )\times10^{-3}$	
Γ_{23}	$K^+\pi^-\overline{K}^0\pi^0+$ c.c.	(2.44 ± 0.33) %	
Γ_{24}	$\rho^+K^-K^0+$ c.c.	(1.18 ± 0.21) %	
Γ_{25}	$K^*(892)^-K^+\pi^0\rightarrow K^+\pi^-\overline{K}^0\pi^0+$ c.c.	$(4.5\ \pm1.1\ )\times10^{-3}$	
Γ_{26}	$K_S^0K_S^0\pi^+\pi^-$	$(5.6\ \pm1.0\ )\times10^{-3}$	
Γ_{27}	$K^+K^-\eta\pi^0$	$(3.0\ \pm0.7\ )\times10^{-3}$	
Γ_{28}	$3(\pi^+\pi^-)$	(1.20 ± 0.18) %	
Γ_{29}	$K^+\overline{K}^*(892)^0\pi^-+$ c.c.	$(7.2\ \pm1.6\ )\times10^{-3}$	
Γ_{30}	$K^*(892)^0\overline{K}^*(892)^0$	$(1.7\ \pm0.6\ )\times10^{-3}$	
Γ_{31}	$\pi\pi$	$(8.33\pm0.35)\times10^{-3}$	
Γ_{32}	$\pi^0\eta$	$<1.8\ \times10^{-4}$	
Γ_{33}	$\pi^0\eta'$	$<1.1\ \times10^{-3}$	

Γ_{34}	$\eta\eta$	$(2.95\pm0.19)\times10^{-3}$	
Γ_{35}	$\eta\eta'$	$<2.3\times10^{-4}$	CL=90%
Γ_{36}	$\eta'\eta'$	$(1.96\pm0.21)\times10^{-3}$	
Γ_{37}	$\omega\omega$	$(9.5\pm1.1)\times10^{-4}$	
Γ_{38}	$\omega\phi$	$(1.16\pm0.21)\times10^{-4}$	
Γ_{39}	K^+K^-	$(5.91\pm0.32)\times10^{-3}$	
Γ_{40}	$K^0_S K^0_S$	$(3.10\pm0.18)\times10^{-3}$	
Γ_{41}	$\pi^+\pi^-\eta$	$<1.9\times10^{-4}$	CL=90%
Γ_{42}	$\pi^+\pi^-\eta'$	$<3.5\times10^{-4}$	CL=90%
Γ_{43}	$\overline{K}^0K^+\pi^-$ + c.c.	$<9\times10^{-5}$	CL=90%
Γ_{44}	$K^+K^-\pi^0$	$<6\times10^{-5}$	CL=90%
Γ_{45}	$K^+K^-\eta$	$<2.2\times10^{-4}$	CL=90%
Γ_{46}	$K^+K^-K^0_S K^0_S$	$(1.4\pm0.5)\times10^{-3}$	
Γ_{47}	$K^+K^-K^+K^-$	$(2.75\pm0.28)\times10^{-3}$	
Γ_{48}	$K^+K^-\phi$	$(9.5\pm2.4)\times10^{-4}$	
Γ_{49}	$\phi\phi$	$(7.7\pm0.7)\times10^{-4}$	
Γ_{50}	$p\overline{p}$	$(2.25\pm0.09)\times10^{-4}$	
Γ_{51}	$p\overline{p}\pi^0$	$(6.8\pm0.7)\times10^{-4}$	S=1.3
Γ_{52}	$p\overline{p}\eta$	$(3.5\pm0.4)\times10^{-4}$	
Γ_{53}	$p\overline{p}\omega$	$(5.1\pm0.6)\times10^{-4}$	
Γ_{54}	$p\overline{p}\phi$	$(5.9\pm1.4)\times10^{-5}$	
Γ_{55}	$p\overline{p}\pi^+\pi^-$	$(2.1\pm0.7)\times10^{-3}$	S=1.4
Γ_{56}	$p\overline{p}\pi^0\pi^0$	$(1.02\pm0.27)\times10^{-3}$	
Γ_{57}	$p\overline{p}K^+K^-$ (non-resonant)	$(1.19\pm0.26)\times10^{-4}$	
Γ_{58}	$p\overline{p}K^0_S K^0_S$	$<8.8\times10^{-4}$	CL=90%
Γ_{59}	$p\overline{n}\pi^-$	$(1.24\pm0.11)\times10^{-3}$	
Γ_{60}	$\overline{p}n\pi^+$	$(1.34\pm0.12)\times10^{-3}$	
Γ_{61}	$p\overline{n}\pi^-\pi^0$	$(2.29\pm0.21)\times10^{-3}$	
Γ_{62}	$\overline{p}n\pi^+\pi^0$	$(2.16\pm0.18)\times10^{-3}$	
Γ_{63}	$\Lambda\overline{\Lambda}$	$(3.21\pm0.25)\times10^{-4}$	
Γ_{64}	$\Lambda\overline{\Lambda}\pi^+\pi^-$	$(1.15\pm0.13)\times10^{-3}$	
Γ_{65}	$\Lambda\overline{\Lambda}\pi^+\pi^-$ (non-resonant)	$<5\times10^{-4}$	CL=90%
Γ_{66}	$\Sigma(1385)^+\overline{\Lambda}\pi^-$ + c.c.	$<5\times10^{-4}$	CL=90%
Γ_{67}	$\Sigma(1385)^-\overline{\Lambda}\pi^+$ + c.c.	$<5\times10^{-4}$	CL=90%
Γ_{68}	$K^+\overline{p}\Lambda$ + c.c.	$(1.22\pm0.12)\times10^{-3}$	S=1.3
Γ_{69}	$K^+\overline{p}\Lambda(1520)$ + c.c.	$(2.9\pm0.7)\times10^{-4}$	
Γ_{70}	$\Lambda(1520)\overline{\Lambda}(1520)$	$(3.1\pm1.2)\times10^{-4}$	
Γ_{71}	$\Sigma^0\overline{\Sigma}^0$	$(4.4\pm0.4)\times10^{-4}$	
Γ_{72}	$\Sigma^+\overline{\Sigma}^-$	$(3.9\pm0.7)\times10^{-4}$	S=1.7
Γ_{73}	$\Sigma(1385)^+\overline{\Sigma}(1385)^-$	$(1.6\pm0.6)\times10^{-4}$	
Γ_{74}	$\Sigma(1385)^-\overline{\Sigma}(1385)^+$	$(2.3\pm0.6)\times10^{-4}$	
Γ_{75}	$\Xi^0\overline{\Xi}^0$	$(3.1\pm0.8)\times10^{-4}$	
Γ_{76}	$\Xi^-\overline{\Xi}^+$	$(4.7\pm0.7)\times10^{-4}$	

Radiative decays

Γ_{77}	$\gamma J/\psi(1S)$	(1.27 ± 0.06) %		
Γ_{78}	$\gamma\rho^0$	< 9	$\times 10^{-6}$	CL=90%
Γ_{79}	$\gamma\omega$	< 8	$\times 10^{-6}$	CL=90%
Γ_{80}	$\gamma\phi$	< 6	$\times 10^{-6}$	CL=90%
Γ_{81}	$\gamma\gamma$	(2.23 ± 0.13)	$\times 10^{-4}$	

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 238 measurements to determine 49 parameters. The overall fit has a $\chi^2 = 339.7$ for 189 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients $\left\langle\delta p_i \delta p_j\right\rangle/(\delta p_i{\cdot}\delta p_j)$, in percent, from the fit to parameters p_i, including the branching fractions, $x_i \equiv \Gamma_i/\Gamma_{\text{total}}$.

	x_1	x_2	x_8	x_{29}	x_{31}	x_{34}	x_{39}	x_{40}	x_{47}	x_{49}
x_2	25									
x_8	14	4								
x_{29}	7	2	29							
x_{31}	15	4	16	5						
x_{34}	8	2	9	3	21					
x_{39}	13	3	14	5	28	17				
x_{40}	12	3	13	4	27	16	22			
x_{47}	9	2	8	3	14	8	12	11		
x_{49}	10	3	10	4	14	9	12	12	7	
x_{50}	7	2	9	3	13	6	15	15	8	8
x_{63}	8	2	9	3	20	12	17	16	8	9
x_{77}	4	1	5	1	14	9	10	10	5	5
x_{81}	−16	−4	−9	−6	5	4	2	4	−2	−4
Γ	−22	−6	−17	−8	−16	−9	−15	−14	−10	−13

	x_{50}	x_{63}	x_{77}	x_{81}
x_{63}	11			
x_{77}	−21	8		
x_{81}	2	4	9	
Γ	−7	−9	−8	−48

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

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

$\Gamma(p\overline{p}) \times \Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}}$ — $\Gamma_{50}\Gamma_{77}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
30.0± 2.3 OUR FIT					
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$26.6\pm 2.6\pm1.4$	392	[1,2] BAGNASCO	02	E835	$\overline{p}p \to \chi_{c0} \to J/\psi\gamma$
$48.7^{+11.3}_{-8.9}\pm2.4$		[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 $(\Gamma(p\overline{p}) \times \Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}})$ 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.

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

$\Gamma(2(\pi^+\pi^-)) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ — $\Gamma_1\Gamma_{81}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
52 ± 4 OUR FIT					
49 ±10 OUR AVERAGE	Error includes scale factor of 1.8.				
$44.7\pm 3.6\pm4.9$	3.6k	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to 2(\pi^+\pi^-)$
$75 \pm13 \pm8$		EISENSTEIN	01	CLE2	$e^+e^- \to e^+e^-\chi_{c0}$

$\Gamma(\rho^0\rho^0) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ — $\Gamma_3\Gamma_{81}/\Gamma$

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	$\gamma\gamma \to \chi_{c0} \to 2(\pi^+\pi^-)$

$\Gamma(\pi^+\pi^-K^+K^-) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ — $\Gamma_8\Gamma_{81}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
41 ±4 OUR FIT					
38.8±3.7±4.7	1.7k	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to K^+K^-\pi^+\pi^-$

$\Gamma(K^+K^-\pi^+\pi^-\pi^0) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ — $\Gamma_{21}\Gamma_{81}/\Gamma$

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

$\Gamma(K^+\overline{K}^*(892)^0\pi^- + \text{c.c.}) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ — $\Gamma_{29}\Gamma_{81}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
17 ±4 OUR FIT					
16.7±6.1±3.0	495 ± 182	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to K^+K^-\pi^+\pi^-$

$\Gamma(K^*(892)^0\overline{K}^*(892)^0) \times \Gamma(\gamma\gamma)/\Gamma_{\text{total}}$ — $\Gamma_{30}\Gamma_{81}/\Gamma$

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	$\gamma\gamma \to \chi_{c0} \to K^+K^-\pi^+\pi^-$

$\Gamma(\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_{31}\Gamma_{81}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
19.5± 1.4 OUR FIT					
23 ± 5 OUR AVERAGE					
$29.7^{+17.4}_{-12.0}\pm4.8$	103^{+60}_{-42}	[1] UEHARA	09	BELL	$10.6\ e^+e^- \to e^+e^-\pi^0\pi^0$
$22.7\pm3.2\pm3.5$	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 $\pi\pi$.

$\Gamma(\eta\eta) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_{34}\Gamma_{81}/\Gamma$

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.

$\Gamma(\omega\omega) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_{37}\Gamma_{81}/\Gamma$

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 ± 0.7)%.

$\Gamma(\omega\phi) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_{38}\Gamma_{81}/\Gamma$

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)%.

$\Gamma(K^+K^-) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_{39}\Gamma_{81}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
13.9±1.1 OUR FIT					
14.3±1.6±2.3	153 ± 17	NAKAZAWA	05	BELL	$10.6\ e^+e^- \to e^+e^-K^+K^-$

$\Gamma(K^0_SK^0_S) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_{40}\Gamma_{81}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
7.3 ±0.6 OUR FIT					
8.7 ±1.7 ±0.9	266	[1] UEHARA	13	BELL	$\gamma\gamma \to K^0_SK^0_S$
• • • 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.

$\Gamma(K^+K^-K^+K^-) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_{47}\Gamma_{81}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID		TECN	COMMENT
6.4±0.7 OUR FIT					
7.9±1.3±1.1	215 ± 36	UEHARA	08	BELL	$\gamma\gamma \to \chi_{c0} \to 2(K^+K^-)$

$\Gamma(\phi\phi) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_{49}\Gamma_{81}/\Gamma$

VALUE (eV)	EVTS	DOCUMENT ID	TECN	COMMENT
1.82±0.19 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

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

VALUE	DOCUMENT ID
0.0224±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	$\psi(2S) \to \gamma\chi_{c0}$

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

VALUE	DOCUMENT ID
0.0087±0.0028 OUR FIT	

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

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
6.5±2.1±0.2	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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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	$e^+e^- \to \gamma h^+h^-h^0h^0$

[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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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
2.8±0.4±0.1	1358.5	[1,2] HE 08B	CLEO	$e^+e^- \to \gamma h^+h^-h^0h^0$

[1] HE 08B reports 3.04 ± 0.18 ± 0.42 ± 0.16 % from a measurement of $[\Gamma(\chi_{c0}(1P) \to \rho^+\pi^-\pi^0 + \text{ c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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.

$\Gamma(4\pi^0)/\Gamma_{\text{total}}$ — Γ_7/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID	TECN	COMMENT
3.2±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 $[\Gamma(\chi_{c0}(1P) \to 4\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

VALUE (units 10^{-3})	DOCUMENT ID
17.5±1.4 OUR FIT	

$\Gamma(K^+\overline{K}^*(892)^0\pi^- + \text{c.c.})/\Gamma(\pi^+\pi^-K^+K^-)$ — Γ_{29}/Γ_8

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

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

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
$9.6^{+3.5}_{-2.8}\pm0.3$	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 $[\Gamma(\chi_{c0}(1P) \to K_0^*(1430)^0\overline{K}_0^*(1430)^0 \to \pi^+\pi^-K^+K^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
$7.8^{+1.9}_{-2.4}\pm0.2$	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 $[\Gamma(\chi_{c0}(1P) \to K_0^*(1430)^0\overline{K}_2^*(1430)^0 + \text{ c.c.} \to \pi^+\pi^-K^+K^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{6.1^{+1.9}_{-1.8}\pm0.2}$	68	[1] ABLIKIM	05Q	BES2	$\psi(2S) \rightarrow \gamma\pi^+\pi^- K^+ K^-$

[1] ABLIKIM 05Q reports $(6.66\pm1.31^{+1.60}_{-1.51})\times10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K_1(1270)^+ K^- + \text{c.c.} \rightarrow \pi^+\pi^- K^+ K^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value. The measurement assumes $B(K_1(1270) \rightarrow K\rho(770)) = 42 \pm 6\%$.

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

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<2.6	90	[1] ABLIKIM	05Q	BES2	$\psi(2S) \rightarrow \gamma\pi^+\pi^- K^+ K^-$

[1] ABLIKIM 05Q reports $< 2.85 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow K_1(1400)^+ K^- + \text{c.c.} \rightarrow \pi^+\pi^- K^+ K^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$. The measurement assumes $B(K_1(1400) \rightarrow K^*(892)\pi) = 94 \pm 6\%$.

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

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{15.9^{+10.2}_{-\ 8.8}\pm0.4}$	28	[1] ABLIKIM	05Q	BES2	$\psi(2S) \rightarrow \gamma\pi^+\pi^- K^+ K^-$

[1] ABLIKIM 05Q reports $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(980) f_0(980))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))] = (1.59\pm0.50^{+0.89}_{-0.72})\times10^{-5}$ which we divide by our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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.

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

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{7.8^{+2.0}_{-2.5}\pm0.2}$	77	[1] ABLIKIM	05Q	BES2	$\psi(2S) \rightarrow \gamma\pi^+\pi^- K^+ K^-$

[1] ABLIKIM 05Q reports $(8.42\pm1.42^{+1.65}_{-2.29})\times10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(980) f_0(2200))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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 $f_0(980) \rightarrow \pi^+\pi^-$ and $f_0(2200) \rightarrow K^+K^-$ decays.

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

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

[1] ABLIKIM 05Q reports $<$ 2.9×10^{-4} from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1370) f_0(1370))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$. 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.

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

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

[1] ABLIKIM 05Q reports $<$ 1.8×10^{-4} from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1370) f_0(1500))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$. The f_0 mesons are identified via $f_0(1370) \rightarrow \pi^+\pi^-$ and $f_0(1500) \rightarrow K^+K^-$ decays. Both branching fractions for these f_0 decays are implicitly included in the quoted result.

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

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{6.6^{+3.5}_{-2.3} \pm 0.2}$	61	[1] ABLIKIM	05Q	BES2	$\psi(2S) \rightarrow \gamma\pi^+\pi^-K^+K^-$

[1] ABLIKIM 05Q reports $(7.12 \pm 1.85^{+3.28}_{-1.68}) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1370) f_0(1710))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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 $f_0(1370) \rightarrow \pi^+\pi^-$ and $f_0(1710) \rightarrow K^+K^-$ decays. Both branching fractions for these f_0 decays are implicitly included in the quoted result.

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

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

[1] ABLIKIM 05Q reports $<$ 1.4×10^{-4} from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1500) f_0(1370))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$. The f_0 mesons are identified via $f_0(1500) \rightarrow \pi^+\pi^-$ and $f_0(1370) \rightarrow K^+K^-$ decays. Both branching fractions for these f_0 decays are implicitly included in the quoted result.

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

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

[1] ABLIKIM 05Q reports $<$ 0.55×10^{-4} from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow f_0(1500) f_0(1500))/\Gamma_{\text{total}}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$. 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.

$\Gamma\big(f_0(1500)\,f_0(1710)\big)/\Gamma_{\text{total}}$ — 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 $[\Gamma(\chi_{c0}(1P) \to f_0(1500)\,f_0(1710))/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$. 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.

$\Gamma\big(K^+K^-\pi^0\pi^0\big)/\Gamma_{\text{total}}$ — Γ_{22}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.54±0.09±0.01	213.5	[1] HE	08B	CLEO	$e^+e^- \to \gamma h^+ h^- h^0 h^0$

[1] HE 08B reports $0.59 \pm 0.05 \pm 0.08 \pm 0.03$ % from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^+K^-\pi^0\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma\big(K^+\pi^-\overline{K}^0\pi^0 + \text{c.c.}\big)/\Gamma_{\text{total}}$ — Γ_{23}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
2.44±0.32±0.07	401.7	[1] HE	08B	CLEO	$e^+e^- \to \gamma h^+ h^- h^0 h^0$

[1] HE 08B reports $2.64 \pm 0.15 \pm 0.31 \pm 0.14$ % from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^+\pi^-\overline{K}^0\pi^0 + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
1.18±0.20±0.03	179.7	[1] HE	08B	CLEO	$e^+e^- \to \gamma h^+ h^- h^0 h^0$

[1] HE 08B reports $1.28 \pm 0.16 \pm 0.15 \pm 0.07$ % from a measurement of $[\Gamma(\chi_{c0}(1P) \to \rho^+K^-K^0 + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.22\pm0.11\pm0.46)\times10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma\big(K^*(892)^-K^+\pi^0 \to K^+\pi^-\overline{K}^0\pi^0 + \text{c.c.}\big)/\Gamma_{\text{total}}$ — Γ_{25}/Γ

VALUE (%)	EVTS	DOCUMENT ID		TECN	COMMENT
0.45±0.11±0.01	64.1	[1] HE	08B	CLEO	$e^+e^- \to \gamma h^+ h^- h^0 h^0$

[1] HE 08B reports $0.49 \pm 0.10 \pm 0.07 \pm 0.03$ % from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^*(892)^-K^+\pi^0 \to K^+\pi^-\overline{K}^0\pi^0 + \text{c.c.})/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^0_S K^0_S \pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{26}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
5.6±1.0±0.2	152 ± 14	[1] ABLIKIM	05O	BES2	$\psi(2S) \to \gamma\chi_{c0}$

[1] ABLIKIM 05O reports $[\Gamma(\chi_{c0}(1P) \to K^0_S K^0_S \pi^+\pi^-)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (0.558 \pm 0.051 \pm 0.089) \times 10^{-3}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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_{27}/Γ

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

[1] HE 08B reports $0.32 \pm 0.05 \pm 0.05 \pm 0.02$ % from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^+K^-\eta\pi^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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_{28}/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 $B(\psi(2S) \to \gamma\chi_{c0}) = (9.4 \pm 0.4)\%$ and $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) = (32.6 \pm 0.5)\%$.

$\Gamma(K^+\overline{K}^*(892)^0\pi^- + \text{c.c.})/\Gamma_{\text{total}}$ Γ_{29}/Γ

VALUE	DOCUMENT ID
0.0072±0.0016 OUR FIT	

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

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
$1.68^{+0.59}_{-0.53}$±0.05	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. • • •					
1.53±0.39±0.04	30 ± 6	[2,3] ABLIKIM	04H	BES	Repl. by ABLIKIM 05Q

[1] ABLIKIM 05Q reports $[\Gamma(\chi_{c0}(1P) \to K^*(892)^0\overline{K}^*(892)^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (0.168 \pm 0.035^{+0.047}_{-0.040}) \times 10^{-3}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

[3] ABLIKIM 04H reports $[\Gamma(\chi_{c0}(1P) \to K^*(892)^0\overline{K}^*(892)^0)/\Gamma_{\text{total}}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (1.53 \pm 0.29 \pm 0.26) \times 10^{-4}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

VALUE (units 10^{-3})	*DOCUMENT ID*
8.33±0.35 OUR FIT	

$\Gamma(\eta\eta)/\Gamma_{total}$ — Γ_{34}/Γ

VALUE (units 10^{-3})	*DOCUMENT ID*
2.95±0.19 OUR FIT	

$\Gamma(\eta\eta)/\Gamma(\pi\pi)$ — Γ_{34}/Γ_{31}

VALUE	*DOCUMENT ID*		*TECN*	*COMMENT*
0.354±0.025 OUR FIT				
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.26 \pm 0.09 ^{+0.03}_{-0.02}$	[1] ANDREOTTI	05C	E835	$\overline{p}p \to$ 2 mesons
$0.24 \pm 0.10 \pm 0.08$	[1] BAI	03C	BES	$\psi(2S) \to 5\gamma$

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

$\Gamma(\eta\eta')/\Gamma_{total}$ — Γ_{35}/Γ

VALUE (units 10^{-3})	*CL%*	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
<0.23	90	35 ± 13	[1] ASNER	09	CLEO	$\psi(2S) \to \gamma\eta'\eta$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<0.5	90		[2] ADAMS	07	CLEO	$\psi(2S) \to \gamma\chi_{c0}$

[1] ASNER 09 reports $< 0.25 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \eta\eta')/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

[2] Superseded by ASNER 09. ADAMS 07 reports $< 0.5 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \eta\eta')/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

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

VALUE (units 10^{-3})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
1.96±0.20±0.05	0.4k	[1] ASNER	09	CLEO	$\psi(2S) \to \gamma\eta'\eta'$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
1.57±0.40±0.04	23	[2] ADAMS	07	CLEO	$\psi(2S) \to \gamma\chi_{c0}$

[1] ASNER 09 reports $(2.12 \pm 0.13 \pm 0.21) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \eta'\eta')/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

[2] Superseded by ASNER 09. ADAMS 07 reports $(1.7 \pm 0.4 \pm 0.2) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \eta'\eta')/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 0.0922 \pm 0.0011 \pm 0.0046$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\omega\omega)/\Gamma_{total}$ — Γ_{37}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.95±0.11 OUR AVERAGE					
0.91±0.11±0.02	991	[1] ABLIKIM	11K	BES3	$\psi(2S) \to \gamma$ hadrons
2.1 ±0.6 ±0.1	38.1±9.6	[2] ABLIKIM	05N	BES2	$\psi(2S) \to \gamma\chi_{c0} \to \gamma 6\pi$

[1] ABLIKIM 11K reports $(0.95\pm0.03\pm0.11)\times10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \omega\omega)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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 $[\Gamma(\chi_{c0}(1P) \to \omega\omega)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (0.212 \pm 0.053 \pm 0.037) \times 10^{-3}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\omega\phi)/\Gamma_{total}$ — Γ_{38}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
1.16±0.21±0.03	76	[1] ABLIKIM	11K	BES3	$\psi(2S) \to \gamma$ hadrons

[1] ABLIKIM 11K reports $(1.2 \pm 0.1 \pm 0.2) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \omega\phi)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^+K^-)/\Gamma_{total}$ — Γ_{39}/Γ

VALUE (units 10^{-3})	DOCUMENT ID
5.91±0.32 OUR FIT	

$\Gamma(K^0_S K^0_S)/\Gamma_{total}$ — Γ_{40}/Γ

VALUE (units 10^{-3})	DOCUMENT ID
3.10±0.18 OUR FIT	

$\Gamma(K^0_S K^0_S)/\Gamma(\pi\pi)$ — Γ_{40}/Γ_{31}

VALUE	DOCUMENT ID		TECN	COMMENT
0.372±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 $\Gamma(\pi\pi) \times \Gamma(\gamma\gamma)/\Gamma_{total}$ 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_{40}/Γ_{39}

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

[2] Not independent from other measurements.

$\Gamma(\pi^+\pi^-\eta)/\Gamma_{total}$ Γ_{41}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<0.19	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 $[\Gamma(\chi_{c0}(1P) \to \pi^+\pi^-\eta)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

[2] ABLIKIM 06R reports $< 1.1 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \pi^+\pi^-\eta)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

$\Gamma(\pi^+\pi^-\eta')/\Gamma_{total}$ Γ_{42}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<0.35	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 $[\Gamma(\chi_{c0}(1P) \to \pi^+\pi^-\eta')/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

$\Gamma(\overline{K}^0 K^+\pi^- + c.c.)/\Gamma_{total}$ Γ_{43}/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. • • •					
<0.6	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 $[\Gamma(\chi_{c0}(1P) \to \overline{K}^0 K^+\pi^- + c.c.)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

[2] ABLIKIM 06R reports $< 0.70 \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \overline{K}^0 K^+\pi^- + c.c.)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

[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 $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) = (32.6 \pm 0.5)\%$.

$\Gamma(K^+K^-\pi^0)/\Gamma_{total}$ Γ_{44}/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 $[\Gamma(\chi_{c0}(1P) \to K^+K^-\pi^0)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

$\Gamma(K^+ K^- \eta)/\Gamma_{total}$ — Γ_{45}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<0.22	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 $[\Gamma(\chi_{c0}(1P) \to K^+ K^- \eta)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

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

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.38±0.46±0.04	16.8 ± 4.8	[1] ABLIKIM	05O	BES2	$\psi(2S) \to \gamma\chi_{c0}$

[1] ABLIKIM 05O reports $[\Gamma(\chi_{c0}(1P) \to K^+ K^- K^0_S K^0_S)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))] = (0.138 \pm 0.039 \pm 0.025) \times 10^{-3}$ which we divide by our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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_{47}/Γ

VALUE (units 10^{-3})	DOCUMENT ID
2.75±0.28 OUR FIT	

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

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.95±0.24±0.03	38	[1] ABLIKIM	06T	BES2	$\psi(2S) \to \gamma 2K^+ 2K^-$

[1] ABLIKIM 06T reports $(1.03 \pm 0.22 \pm 0.15) \times 10^{-3}$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\phi\phi)/\Gamma_{total}$ — Γ_{49}/Γ

VALUE (units 10^{-3})	DOCUMENT ID
0.77±0.07 OUR FIT	

$\Gamma(p\overline{p})/\Gamma_{total}$ — Γ_{50}/Γ

VALUE (units 10^{-4})	DOCUMENT ID
2.25±0.09 OUR FIT	

$\Gamma(p\overline{p}\pi^0)/\Gamma_{total}$ — Γ_{51}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.68±0.07 OUR AVERAGE	Error includes scale factor of 1.3.			
0.72±0.06±0.02	[1] ONYISI	10	CLE3	$\psi(2S) \to \gamma p\overline{p}X$
0.54±0.11±0.01	[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 $[\Gamma(\chi_{c0}(1P) \rightarrow p\overline{p}\pi^0)/\Gamma_{total}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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 $[\Gamma(\chi_{c0}(1P) \rightarrow p\overline{p}\pi^0)/\Gamma_{total}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.35±0.04 OUR AVERAGE				
$0.34 \pm 0.04 \pm 0.01$	[1] ONYISI	10	CLE3	$\psi(2S) \rightarrow \gamma p\overline{p}X$
$0.36 \pm 0.11 \pm 0.01$	[2] ATHAR	07	CLEO	$\psi(2S) \rightarrow \gamma h^+ h^- h^0$

[1] ONYISI 10 reports $(3.73 \pm 0.38 \pm 0.28 \pm 0.19) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow p\overline{p}\eta)/\Gamma_{total}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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 $[\Gamma(\chi_{c0}(1P) \rightarrow p\overline{p}\eta)/\Gamma_{total}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(p\overline{p}\omega)/\Gamma_{total}$ Γ_{53}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.51±0.05±0.01	[1] ONYISI	10	CLE3	$\psi(2S) \rightarrow \gamma p\overline{p}X$

[1] ONYISI 10 reports $(5.57 \pm 0.48 \pm 0.42 \pm 0.14) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow p\overline{p}\omega)/\Gamma_{total}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(p\overline{p}\phi)/\Gamma_{total}$ Γ_{54}/Γ

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
5.9±1.4±0.2	42 ± 8	[1] ABLIKIM	11F	BES3	$\psi(2S) \rightarrow \gamma p\overline{p}K^+K^-$

[1] ABLIKIM 11F reports $(6.12 \pm 1.18 \pm 0.86) \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow p\overline{p}\phi)/\Gamma_{total}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(p\overline{p}\pi^+\pi^-)/\Gamma_{total}$ Γ_{55}/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±1.15±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 ± 0.4)% and B($\psi(2S) \to J/\psi(1S)\pi^+\pi^-$) = (32.6 ± 0.5)%.

$\Gamma(p\overline{p}\pi^0\pi^0)/\Gamma_{total}$ Γ_{56}/Γ

VALUE (%)	EVTS	DOCUMENT ID	TECN	COMMENT
0.102±0.027±0.003	39.5	[1] HE 08B	CLEO	$e^+e^- \to \gamma h^+h^-h^0h^0$

[1] HE 08B reports 0.11 ± 0.02 ± 0.02 ± 0.01 % from a measurement of [$\Gamma(\chi_{c0}(1P) \to p\overline{p}\pi^0\pi^0)/\Gamma_{total}$] × [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($\psi(2S) \to \gamma\chi_{c0}(1P)$) = $(9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(p\overline{p}K^+K^-\text{(non-resonant)})/\Gamma_{total}$ Γ_{57}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
1.19±0.26±0.03	48 ± 8	[1] ABLIKIM 11F	BES3	$\psi(2S) \to \gamma p\overline{p}K^+K^-$

[1] ABLIKIM 11F reports $(1.24 \pm 0.20 \pm 0.18) \times 10^{-4}$ from a measurement of [$\Gamma(\chi_{c0}(1P) \to p\overline{p}K^+K^-\text{(non-resonant)})/\Gamma_{total}$] × [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($\psi(2S) \to \gamma\chi_{c0}(1P)$) = $(9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(p\overline{p}K^0_SK^0_S)/\Gamma_{total}$ Γ_{58}/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 ± 0.5)%

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

VALUE (units 10^{-4})	EVTS	DOCUMENT ID	TECN	COMMENT
12.4±1.1 OUR AVERAGE				
12.6±1.1±0.3	5150	[1] ABLIKIM 12J	BES3	$\psi(2S) \to \gamma p\overline{n}\pi^-$
11.0±3.0±0.3		[2] ABLIKIM 06I	BES2	$\psi(2S) \to \gamma p\pi^-X$

[1] ABLIKIM 12J reports [$\Gamma(\chi_{c0}(1P) \to p\overline{n}\pi^-)/\Gamma_{total}$] × [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($\psi(2S) \to \gamma\chi_{c0}(1P)$) = $(9.99 \pm 0.27) \times 10^{-2}$. 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 [$\Gamma(\chi_{c0}(1P) \to p\overline{n}\pi^-)/\Gamma_{total}$] × [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($\psi(2S) \to \gamma\chi_{c0}(1P)$) = $(9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\overline{p} n \pi^+)/\Gamma_{total}$ — Γ_{60}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
13.4±1.1±0.4	5808	[1] ABLIKIM	12J	BES3	$\psi(2S) \to \gamma \overline{p} n \pi^+$

[1] ABLIKIM 12J reports $[\Gamma(\chi_{c0}(1P) \to \overline{p} n \pi^+)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma \chi_{c0}(1P))] = (1.34 \pm 0.03 \pm 0.11) \times 10^{-4}$ which we divide by our best value $B(\psi(2S) \to \gamma \chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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_{61}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
22.9±2.0±0.6	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 $B(\psi(2S) \to \gamma \chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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_{62}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
21.6±1.7±0.6	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 $B(\psi(2S) \to \gamma \chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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_{63}/Γ

VALUE (units 10^{-4})	DOCUMENT ID
3.21±0.25 OUR FIT	

$\Gamma(\Lambda \overline{\Lambda} \pi^+ \pi^-)/\Gamma_{total}$ — Γ_{64}/Γ

VALUE (units 10^{-5})	CL%	EVTS	DOCUMENT ID		TECN	COMMENT
115±12±3		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 $B(\psi(2S) \to \gamma \chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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_{65}/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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

$\Gamma(\Sigma(1385)^+\overline{\Lambda}\pi^- + \text{c.c.})/\Gamma_{total}$ — Γ_{66}/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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

$\Gamma(\Sigma(1385)^-\overline{\Lambda}\pi^+ + \text{c.c.})/\Gamma_{total}$ — Γ_{67}/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 $[\Gamma(\chi_{c0}(1P) \to \Sigma(1385)^-\overline{\Lambda}\pi^+ + \text{c.c.})/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

$\Gamma(K^+\overline{p}\Lambda + \text{c.c.})/\Gamma_{total}$ — Γ_{68}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.22±0.12 OUR AVERAGE	Error includes scale factor of 1.3.				
1.28±0.09±0.03	9k	[1,2] ABLIKIM	13D	BES3	$\psi(2S) \to \gamma\Lambda\overline{p}K^+$
0.99±0.19±0.03		[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 $[\Gamma(\chi_{c0}(1P) \to K^+\overline{p}\Lambda + \text{c.c.})/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

[3] ATHAR 07 reports $(1.07 \pm 0.17 \pm 0.12) \times 10^{-3}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to K^+\overline{p}\Lambda + \text{c.c.})/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(K^+\overline{p}\Lambda(1520) + \text{c.c.})/\Gamma_{total}$ — Γ_{69}/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 $[\Gamma(\chi_{c0}(1P) \to K^+\overline{p}\Lambda(1520) + \text{c.c.})/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Lambda(1520)\overline{\Lambda}(1520))/\Gamma_{total}$ — Γ_{70}/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 $(3.18 \pm 1.11 \pm 0.53) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Lambda(1520)\overline{\Lambda}(1520))/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Sigma^0\overline{\Sigma}^0)/\Gamma_{total}$ — Γ_{71}/Γ

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
4.4±0.4 OUR AVERAGE					
4.6±0.5±0.1	243	[1] ABLIKIM	13H	BES3	$\psi(2S) \to \gamma\Sigma^0\overline{\Sigma}^0$
4.1±0.6±0.1	78 ± 10	[2] NAIK	08	CLEO	$\psi(2S) \to \gamma\Sigma^0\overline{\Sigma}^0$

[1] ABLIKIM 13H reports $(4.78 \pm 0.34 \pm 0.39) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Sigma^0\overline{\Sigma}^0)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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 $(4.41 \pm 0.56 \pm 0.47) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Sigma^0\overline{\Sigma}^0)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
3.9±0.7 OUR AVERAGE	Error includes scale factor of 1.7.				
4.4±0.5±0.1	148	[1] ABLIKIM	13H	BES3	$\psi(2S) \to \gamma\Sigma^+\overline{\Sigma}^-$
3.0±0.6±0.1	39 ± 7	[2] NAIK	08	CLEO	$\psi(2S) \to \gamma\Sigma^+\overline{\Sigma}^-$

[1] ABLIKIM 13H reports $(4.54 \pm 0.42 \pm 0.30) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \Sigma^+\overline{\Sigma}^-)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. 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 $[\Gamma(\chi_{c0}(1P) \to \Sigma^+\overline{\Sigma}^-)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ 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 $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Sigma(1385)^+\overline{\Sigma}(1385)^-)/\Gamma_{total}$ — Γ_{73}/Γ

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
15.9±5.7±0.4	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 $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma(1385)^{+}\overline{\Sigma}(1385)^{-})/\Gamma_{total}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Sigma(1385)^{-}\overline{\Sigma}(1385)^{+})/\Gamma_{total}$ — Γ_{74}/Γ

VALUE (units 10^{-5})	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
23±6±1	33	[1] ABLIKIM	12I	BES3	$\psi(2S) \rightarrow \gamma\Lambda\overline{\Lambda}\pi^{+}\pi^{-}$

[1] ABLIKIM 12I reports $(23.5 \pm 6.2 \pm 2.3) \times 10^{-5}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Sigma(1385)^{-}\overline{\Sigma}(1385)^{+})/\Gamma_{total}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.68 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Xi^{0}\overline{\Xi}^{0})/\Gamma_{total}$ — Γ_{75}/Γ

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

[1] NAIK 08 reports $(3.34 \pm 0.70 \pm 0.48) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Xi^{0}\overline{\Xi}^{0})/\Gamma_{total}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Gamma(\Xi^{-}\overline{\Xi}^{+})/\Gamma_{total}$ — Γ_{76}/Γ

VALUE (units 10^{-4})	*CL%*	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
4.7±0.7±0.1		95 ± 11	[1] NAIK	08	CLEO	$\psi(2S) \rightarrow \gamma\Xi^{+}\overline{\Xi}^{-}$
• • • We do not use the following data for averages, fits, limits, etc. • • •						
<10.3	90		[2] ABLIKIM	06D	BES2	$\psi(2S) \rightarrow \chi_{c0}\gamma$

[1] NAIK 08 reports $(5.14 \pm 0.60 \pm 0.47) \times 10^{-4}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \rightarrow \Xi^{-}\overline{\Xi}^{+})/\Gamma_{total}] \times [B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.22 \pm 0.11 \pm 0.46) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \rightarrow \gamma\chi_{c0}(1P)) = (9.99 \pm 0.27) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

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

$\Gamma(p\overline{p})/\Gamma_{total} \times \Gamma(\pi\pi)/\Gamma_{total}$ — $\Gamma_{50}/\Gamma \times \Gamma_{31}/\Gamma$

VALUE (units 10^{-7})	*DOCUMENT ID*		*TECN*	*COMMENT*
18.8±1.2 OUR FIT				
15.3±2.4±0.8	[1] ANDREOTTI	03	E835	$\overline{p}p \rightarrow \chi_{c0} \rightarrow \pi^{0}\pi^{0}$

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

$\Gamma(p\overline{p})/\Gamma_{total} \times \Gamma(\pi^{0}\eta)/\Gamma_{total}$ — $\Gamma_{50}/\Gamma \times \Gamma_{32}/\Gamma$

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

$\Gamma(p\overline{p})/\Gamma_{total} \times \Gamma(\pi^0\eta')/\Gamma_{total}$ — $\Gamma_{50}/\Gamma \times \Gamma_{33}/\Gamma$

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

$\Gamma(p\overline{p})/\Gamma_{total} \times \Gamma(\eta\eta)/\Gamma_{total}$ — $\Gamma_{50}/\Gamma \times \Gamma_{34}/\Gamma$

VALUE (units 10^{-7})	DOCUMENT ID		TECN	COMMENT
6.6±0.5 OUR FIT				
$4.0\pm1.2^{+0.5}_{-0.3}$	ANDREOTTI	05C	E835	$\overline{p}p \rightarrow \eta\eta$

$\Gamma(p\overline{p})/\Gamma_{total} \times \Gamma(\eta\eta')/\Gamma_{total}$ — $\Gamma_{50}/\Gamma \times \Gamma_{35}/\Gamma$

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_{77}/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
127± 6 OUR FIT				
• • • We do not use the following data for averages, fits, limits, etc. • • •				
200±20±20	[1] ADAM	05A	CLEO	$e^+e^- \rightarrow \psi(2S) \rightarrow \gamma\chi_{c0}$

[1] 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_{78}/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 $< 9.6\times10^{-6}$ from a measurement of [$\Gamma(\chi_{c0}(1P) \rightarrow \gamma\rho^0)/\Gamma_{total}$] × [B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$)] assuming B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$) = $(9.2\pm0.4)\times10^{-2}$, which we rescale to our best value B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$) = 9.99×10^{-2}.

[2] ABLIKIM 11E reports $< 10.5\times10^{-6}$ from a measurement of [$\Gamma(\chi_{c0}(1P) \rightarrow \gamma\rho^0)/\Gamma_{total}$] × [B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$)] assuming B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$) = $(9.62\pm0.31)\times10^{-2}$, which we rescale to our best value B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$) = 9.99×10^{-2}.

$\Gamma(\gamma\omega)/\Gamma_{total}$ — Γ_{79}/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. • • •						
<12	90	5 ± 11	[2] ABLIKIM	11E	BES3	$\psi(2S) \rightarrow \gamma\gamma\omega$

[1] BENNETT 08A reports $< 8.8\times10^{-6}$ from a measurement of [$\Gamma(\chi_{c0}(1P) \rightarrow \gamma\omega)/\Gamma_{total}$] × [B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$)] assuming B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$) = $(9.2\pm0.4)\times10^{-2}$, which we rescale to our best value B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$) = 9.99×10^{-2}.

[2] ABLIKIM 11E reports $< 12.9\times10^{-6}$ from a measurement of [$\Gamma(\chi_{c0}(1P) \rightarrow \gamma\omega)/\Gamma_{total}$] × [B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$)] assuming B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$) = $(9.62\pm0.31)\times10^{-2}$, which we rescale to our best value B($\psi(2S) \rightarrow \gamma\chi_{c0}(1P)$) = 9.99×10^{-2}.

$\Gamma(\gamma\phi)/\Gamma_{total}$ — Γ_{80}/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 $[\Gamma(\chi_{c0}(1P) \to \gamma\phi)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.2 \pm 0.4) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

[2] ABLIKIM 11E reports $< 16.2 \times 10^{-6}$ from a measurement of $[\Gamma(\chi_{c0}(1P) \to \gamma\phi)/\Gamma_{total}] \times [B(\psi(2S) \to \gamma\chi_{c0}(1P))]$ assuming $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = (9.62 \pm 0.31) \times 10^{-2}$, which we rescale to our best value $B(\psi(2S) \to \gamma\chi_{c0}(1P)) = 9.99 \times 10^{-2}$.

$\Gamma(\gamma\gamma)/\Gamma_{total}$ — Γ_{81}/Γ

VALUE (units 10^{-4})	CL%	DOCUMENT ID		TECN	COMMENT
2.23±0.13 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 $[\Gamma(\chi_{c0}(1P) \to \gamma\gamma)/\Gamma_{total}] \times [B(B^+ \to \chi_{c0}(1P)K^+)] < 0.11 \times 10^{-6}$ which we divide by our best value $B(B^+ \to \chi_{c0}(1P)K^+) = 1.50 \times 10^{-4}$.

$\Gamma(\gamma\gamma)/\Gamma(\gamma J/\psi(1S))$ — Γ_{81}/Γ_{77}

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
1.76±0.13 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 $B(J/\psi(1S) \to e^+e^-) = 0.0593 \pm 0.0010$.

$\Gamma(p\overline{p})/\Gamma_{total} \times \Gamma(\gamma J/\psi(1S))/\Gamma_{total}$ — $\Gamma_{50}/\Gamma \times \Gamma_{77}/\Gamma$

VALUE (units 10^{-7})	EVTS	DOCUMENT ID		TECN	COMMENT
28.5±1.6 OUR FIT					
28.2±2.1 OUR AVERAGE					
$28.0 \pm 1.9 \pm 1.3$	392	[1,2,3] BAGNASCO	02	E835	$\overline{p}p \to \chi_{c0} \to J/\psi\gamma$
$29.3^{+5.7}_{-4.7} \pm 1.5$	89	[1,2] AMBROGIANI	99B		$\overline{p}p \to \chi_{c0} \to J/\psi\gamma$

[1] Values in $(\Gamma(p\overline{p}) \times \Gamma(\gamma J/\psi(1S))/\Gamma_{total})$ 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.

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

[3] Recalculated by ANDREOTTI 05A.

$\Gamma(p\overline{p})/\Gamma_{total} \times \Gamma(\gamma\gamma)/\Gamma_{total}$ — $\Gamma_{50}/\Gamma \times \Gamma_{81}/\Gamma$

VALUE (units 10^{-8})	DOCUMENT ID	TECN	COMMENT
5.0 ±0.4 OUR FIT			
• • • We do not use the following data for averages, fits, limits, etc. • • •			
$6.52 \pm 1.18^{+0.48}_{-0.72}$	[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

$\Gamma(\chi_{c0}(1P) \to p\overline{p})/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{total}$ — $\Gamma_{50}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-6})	EVTS	DOCUMENT ID	TECN	COMMENT
22.5±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	$\psi(2S) \to \gamma p\overline{p}$
$23.6^{+3.7}_{-3.4} \pm 3.4$	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 $B(\psi(2S) \to \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$.

$\Gamma(\chi_{c0}(1P) \to p\overline{p})/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ — $\Gamma_{50}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}_{11}$

VALUE (units 10^{-5})	DOCUMENT ID	TECN	COMMENT
6.54±0.27 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].

$\Gamma(\chi_{c0}(1P) \to \Lambda\overline{\Lambda})/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{total}$ — $\Gamma_{63}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-6})	EVTS	DOCUMENT ID	TECN	COMMENT
32.0±2.3 OUR FIT				
31.7±2.3 OUR AVERAGE				
32.0±1.9±2.2	369	[1] ABLIKIM 13H	BES3	$\psi(2S) \to \gamma\Lambda\overline{\Lambda}$
31.2±3.3±2.0	131 ± 12	[2] NAIK 08	CLEO	$\psi(2S) \to \gamma\Lambda\overline{\Lambda}$

[1] 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 $B(\psi(2S) \to \gamma\chi_{c0}) = (9.62 \pm 0.31)\%$.

[2] 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 $B(\psi(2S) \to \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$.

$\Gamma(\chi_{c0}(1P) \to \Lambda\overline{\Lambda})/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ — $\Gamma_{63}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}_{11}$

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
9.3±0.7 OUR FIT					
$13.0^{+3.6}_{-3.5}\pm2.5$	$15.2^{+4.2}_{-4.0}$	[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 ± 0.5)% and B($J/\psi \to p\overline{p}$) = $(2.17 \pm 0.07) \times 10^{-3}$.

$\Gamma(\chi_{c0}(1P) \to \gamma J/\psi(1S))/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{total}$ — $\Gamma_{77}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.126±0.006 OUR FIT					
0.131±0.035 OUR AVERAGE		Error includes scale factor of 3.9.			
0.151±0.003±0.010	4.3k	ABLIKIM	12O	BES3	$\psi(2S) \to \gamma\chi_{c0}$
0.069±0.018		[1] OREGLIA	82	CBAL	$\psi(2S) \to \gamma\chi_{c0}$
0.4 ±0.3		[2] BRANDELIK	79B	DASP	$\psi(2S) \to \gamma\chi_{c0}$
0.16 ±0.11		[2] BARTEL	78B	CNTR	$\psi(2S) \to \gamma\chi_{c0}$
3.3 ±1.7		[3] BIDDICK	77	CNTR	$e^+e^- \to \gamma X$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
0.125±0.007±0.013	560	[4] MENDEZ	08	CLEO	$\psi(2S) \to \gamma\chi_{c0}$
0.18 ±0.01 ±0.02	172	[5] ADAM	05A	CLEO	Repl. by MENDEZ 08

[1] Recalculated by us using B($J/\psi(1S) \to \ell^+\ell^-$) = 0.1181 ± 0.0020.
[2] Recalculated by us using B($J/\psi(1S) \to \mu^+\mu^-$) = 0.0588 ± 0.0010.
[3] Assumes isotropic gamma distribution.
[4] Not independent from other measurements of MENDEZ 08.
[5] Not independent from other values reported by ADAM 05A.

$\Gamma(\chi_{c0}(1P) \to \gamma J/\psi(1S))/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\text{anything})$ — $\Gamma_{77}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}_{9}$

$$\Gamma_{77}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}_{9} = \Gamma_{77}/\Gamma \times \Gamma^{\psi(2S)}_{128}/(\Gamma^{\psi(2S)}_{11}+\Gamma^{\psi(2S)}_{12}+\Gamma^{\psi(2S)}_{13}+0.339\Gamma^{\psi(2S)}_{129}+0.192\Gamma^{\psi(2S)}_{130})$$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.208±0.011 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.

$\Gamma(\chi_{c0}(1P) \to \gamma J/\psi(1S))/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\qquad \Gamma_{77}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}_{11}$

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.367±0.019 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.

$\Gamma(\chi_{c0}(1P) \to \gamma\gamma)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{total}$ $\qquad \Gamma_{81}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-5})	EVTS	DOCUMENT ID		TECN	COMMENT
2.23±0.14 OUR FIT					
2.18±0.18 OUR AVERAGE					
2.17±0.17±0.12	0.8k	ABLIKIM	12A	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	$\psi(2S) \to \gamma\chi_{c0}$

$\Gamma(\chi_{c0}(1P) \to \pi\pi)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{total}$ $\qquad \Gamma_{31}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
8.32±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 ± 0.03 ± 0.23 ± 0.14) $\times 10^{-3}$ using B($\psi(2S) \to \gamma\chi_{c0}$) = (9.4 ± 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 ± 0.08 ± 0.31 ± 0.32) $\times 10^{-3}$ using B($\psi(2S) \to \gamma\chi_{c0}$) = (9.22 ± 0.11 ± 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 ± 0.07 ± 0.32 ± 0.15) $\times 10^{-3}$ using B($\psi(2S) \to \gamma\chi_{c0}$) = (9.22 ± 0.11 ± 0.46)%. We have multiplied the $\pi^0\pi^0$ measurement by 3 to obtain $\pi\pi$.

$\Gamma(\chi_{c0}(1P) \to \pi\pi)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\qquad \Gamma_{31}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}_{11}$

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
24.2±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 ± 0.8)% and B($\psi' \to J/\psi\pi^+\pi^-$) = (32.4 ± 2.6)% [BAI 98D]. We have multiplied $\pi^+\pi^-$ measurement by 3/2 to obtain $\pi\pi$.

$\Gamma(\chi_{c0}(1P) \to \eta\eta)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{total}$ $\Gamma_{34}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}$

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).

$\Gamma(\chi_{c0}(1P) \to \eta\eta)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_{34}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}_{11}$

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.86 ±0.05 OUR FIT				
0.578±0.241±0.158	BAI	03C	BES	$\psi(2S) \to \gamma\eta\eta$

$\Gamma(\chi_{c0}(1P) \to K^+K^-)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{total}$ $\Gamma_{39}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
5.90±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 $B(\psi(2S) \to \gamma\chi_{c0}) = (9.22 \pm 0.11 \pm 0.46)\%$.

$\Gamma(\chi_{c0}(1P) \to K^+K^-)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_{39}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}_{11}$

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].

$\Gamma(\chi_{c0}(1P) \to K^0_S K^0_S)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{total}$ $\Gamma_{40}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
3.09±0.16 OUR FIT					
3.18±0.17 OUR AVERAGE					
3.22±0.07±0.17	2.1k	[1] ASNER	09	CLEO	$\psi(2S) \to \gamma K^0_S K^0_S$
3.02±0.19±0.33	322	ABLIKIM	05O	BES2	$\psi(2S) \to \gamma K^0_S K^0_S$

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

$\Gamma(\chi_{c0}(1P) \to K^0_S K^0_S)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ — $\Gamma_{40}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}_{11}$

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
9.0±0.5 OUR FIT				
5.6±0.8±1.3	[1] BAI	99B	BES	$\psi(2S) \to \gamma K^0_S K^0_S$

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

$\Gamma(\chi_{c0}(1P) \to 2(\pi^+\pi^-))/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ — $\Gamma_{1}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}_{11}$

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
6.5±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 ± 0.8)% and B($\psi(2S) \to J/\psi(1S) \pi^+\pi^-$) = (32.4 ± 2.6)% [BAI 98D].

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

$\Gamma(\chi_{c0}(1P) \to \pi^+\pi^- K^+ K^-)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{total}$ — $\Gamma_{8}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
1.75±0.14 OUR FIT				
1.64±0.05±0.2	ABLIKIM	05Q	BES2	$\psi(2S) \to \gamma \chi_{c0}$

$\Gamma(\chi_{c0}(1P) \to \pi^+\pi^- K^+ K^-)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ — $\Gamma_{8}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}_{11}$

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($\psi(2S) \to \pi^+\pi^- J/\psi$) × B($J/\psi \to \ell^+\ell^-$) = (4.6 ± 0.7)%. Calculated by us using B($J/\psi \to \ell^+\ell^-$) = 0.1181 ± 0.0020.

$\Gamma(\chi_{c0}(1P) \to K^+K^-K^+K^-)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{total}$ $\Gamma_{47}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
2.74±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 ± 0.4)%.

$\Gamma(\chi_{c0}(1P) \to K^+K^-K^+K^-)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_{47}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}_{11}$

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 ± 0.8)% and B($\psi(2S) \to J/\psi\pi^+\pi^-$) = (32.4 ± 2.6)% [BAI 98D].

$\Gamma(\chi_{c0}(1P) \to \phi\phi)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma_{total}$ $\Gamma_{49}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}$

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
0.77±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 ± 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 ± 0.4)%.

$\Gamma(\chi_{c0}(1P) \to \phi\phi)/\Gamma_{total} \times \Gamma(\psi(2S) \to \gamma\chi_{c0}(1P))/\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$ $\Gamma_{49}/\Gamma \times \Gamma^{\psi(2S)}_{128}/\Gamma^{\psi(2S)}_{11}$

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
2.24±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 ± 0.8)% and B($\psi(2S) \to J/\psi\pi^+\pi^-$) = (32.4 ± 2.6)% [BAI 98D].

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ABLIKIM	13H	PR D87 032007	M. Ablikim et al.	(BES III Collab.)
ABLIKIM	13V	PR D88 112001	M. Ablikim et al.	(BES III Collab.)
UEHARA	13	PTEP 2013 123C01	S. Uehara et al.	(BELLE Collab.)
ABLIKIM	12A	PR D85 112008	M. Ablikim et al.	(BES III Collab.)
ABLIKIM	12I	PR D86 052004	M. Ablikim et al.	(BES III Collab.)
ABLIKIM	12J	PR D86 052011	M. Ablikim et al.	(BES III Collab.)
ABLIKIM	12O	PRL 109 172002	M. Ablikim et al.	(BES III Collab.)
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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.)
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ABE	04G	PR D70 071102	K. Abe *et al.*	(BELLE Collab.)
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