$\chi_{c2}(1P)$

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

See the Review on "$\psi(2S)$ and χ_c branching ratios" before the $\chi_{c0}(1P)$ Listings.

$\chi_{c2}(1P)$ MASS

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
3556.18± 0.13 OUR AVERAGE					
3559.9 ± 2.9		EISENSTEIN	01	CLE2	$e^+e^- \rightarrow e^+e^-\chi_{c2}$
3556.4 ± 0.7		BAI	99B	BES	$\psi(2S) \rightarrow \gamma X$
3556.15± 0.07±0.12	585	ARMSTRONG	92	E760	$\overline{p}p \rightarrow e^+e^-\gamma$
3556.9 ± 0.4 ±0.5	50	BAGLIN	86B	SPEC	$\overline{p}p \rightarrow e^+e^- X$
3557.8 ± 0.2 ±4		[1] GAISER	86	CBAL	$\psi(2S) \rightarrow \gamma X$
3553.4 ± 2.2	66	[2] LEMOIGNE	82	GOLI	190 π^- Be $\rightarrow \gamma 2\mu$
3555.9 ± 0.7		[3] OREGLIA	82	CBAL	$e^+e^- \rightarrow J/\psi 2\gamma$
3557 ± 1.5	69	[4] HIMEL	80	MRK2	$e^+e^- \rightarrow J/\psi 2\gamma$
3551 ±11	15	BRANDELIK	79B	DASP	$e^+e^- \rightarrow J/\psi 2\gamma$
3553 ± 4		[4] BARTEL	78B	CNTR	$e^+e^- \rightarrow J/\psi 2\gamma$
3553 ± 4 ±4		[4,5] TANENBAUM	78	MRK1	e^+e^-
3563 ± 7	360	[4] BIDDICK	77	CNTR	$e^+e^- \rightarrow \gamma X$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
3543 ±10	4	WHITAKER	76	MRK1	$e^+e^- \rightarrow J/\psi 2\gamma$

[1] Using mass of $\psi(2S)$ = 3686.0 MeV.
[2] $J/\psi(1S)$ mass constrained to 3097 MeV.
[3] Assuming $\psi(2S)$ mass = 3686 MeV and $J/\psi(1S)$ mass = 3097 MeV.
[4] Mass value shifted by us by amount appropriate for $\psi(2S)$ mass = 3686 MeV and $J/\psi(1S)$ mass = 3097 MeV.
[5] From a simultaneous fit to radiative and hadronic decay channels.

$\chi_{c2}(1P)$ WIDTH

VALUE (MeV)	*EVTS*	*DOCUMENT ID*		*TECN*	*COMMENT*
2.08±0.17 OUR FIT					
2.00±0.18 OUR AVERAGE					
1.98±0.17±0.07	585	ARMSTRONG	92	E760	$\overline{p}p \rightarrow e^+e^-\gamma$
$2.6^{+1.4}_{-1.0}$	50	BAGLIN	86B	SPEC	$\overline{p}p \rightarrow e^+e^- X$
$2.8^{+2.1}_{-2.0}$		[6] GAISER	86	CBAL	$\psi(2S) \rightarrow \gamma X$

[6] Errors correspond to 90% confidence level; authors give only width range.

$\chi_{c2}(1P)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)	Scale factor/ Confidence level
	Hadronic decays		
Γ_1	$2(\pi^+\pi^-)$	(1.41±0.20) %	
Γ_2	$\pi^+\pi^- K^+ K^-$	(10 ±4) × 10^{-3}	S=2.0
Γ_3	$3(\pi^+\pi^-)$	(9.2 ±2.2) × 10^{-3}	
Γ_4	$\rho^0\pi^+\pi^-$	(7 ±4) × 10^{-3}	
Γ_5	$K^+\overline{K}^*(892)^0\pi^-$ + c.c.	(4.8 ±2.8) × 10^{-3}	
Γ_6	$\phi\phi$	(2.0 ±0.8) × 10^{-3}	
Γ_7	$\pi^+\pi^-$	(1.52±0.25) × 10^{-3}	
Γ_8	$K^+K^-K^+K^-$	(1.5 ±0.4) × 10^{-3}	
Γ_9	$\pi^+\pi^- p\overline{p}$	(1.4 ±0.6) × 10^{-3}	S=1.5
Γ_{10}	K^+K^-	(8.1 ±1.9) × 10^{-4}	
Γ_{11}	$K^0_S K^0_S$	(6.1 ±2.3) × 10^{-4}	
Γ_{12}	$p\overline{p}$	(7.4 ±1.0) × 10^{-5}	
Γ_{13}	$\pi^0\pi^0$		
Γ_{14}	$\eta\eta$		
Γ_{15}	$J/\psi(1S)\pi^+\pi^-\pi^0$	< 1.5 %	CL=90%
Γ_{16}	$K^0_S K^+\pi^-$ + c.c.	< 1.06 × 10^{-3}	CL=90%
	Radiative decays		
Γ_{17}	$\gamma J/\psi(1S)$	(18.7 ±2.0) %	
Γ_{18}	$\gamma\gamma$	(2.19±0.32) × 10^{-4}	

$\chi_{c2}(1P)$ PARTIAL WIDTHS

$\chi_{c2}(1P)$ $\Gamma(i)\Gamma(\gamma J/\psi(1S))/\Gamma(\text{total})$

$\Gamma(p\overline{p}) \times \Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}}$ $\Gamma_{12}\Gamma_{17}/\Gamma$

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
28.9±2.4 OUR FIT				
28.9±2.5 OUR AVERAGE				
28.2±2.6	[7] ARMSTRONG	92	E760	$\overline{p}p \to e^+e^-\gamma$
36 ±8	[7] BAGLIN	86B	SPEC	$\overline{p}p \to e^+e^- X$

$\Gamma(\gamma\gamma) \times \Gamma(\gamma J/\psi(1S))/\Gamma_{\text{total}}$ $\Gamma_{18}\Gamma_{17}/\Gamma$

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
85± 19 OUR FIT				
169± 40 OUR AVERAGE				
139± 55± 21	[8] ACCIARRI	99E	L3	$e^+e^- \to e^+e^-\chi_{c2}$
242± 65± 51	[9] ACKER..,K...	98	OPAL	$e^+e^- \to e^+e^-\chi_{c2}$
150± 42± 36	[10] DOMINICK	94	CLE2	$e^+e^- \to e^+e^-\chi_{c2}$
470±240±120	[11] BAUER	93	TPC	$e^+e^- \to e^+e^-\chi_{c2}$

$\Gamma(\gamma\gamma) \times \Gamma(2(\pi^+\pi^-))/\Gamma_{total}$ — $\Gamma_{18}\Gamma_1/\Gamma$

VALUE (eV)	DOCUMENT ID	TECN	COMMENT
6.4±1.4 OUR FIT			
6.4±1.8±0.8	EISENSTEIN 01	CLE2	$e^+e^- \to e^+e^-\chi_{c2}$

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

[8] The value for $\Gamma(\chi_{c2} \to \gamma\gamma)$ reported in ACCIARRI 99E is derived using $B(\chi_{c2} \to \gamma J/\psi(1S)) \times B(J/\psi(1S) \to \ell^+\ell^-) = 0.0162 \pm 0.0014$. Calculated by us using $B(J/\psi(1S) \to \ell^+\ell^-) = 0.1181 \pm 0.0020$.

[9] The value for $\Gamma(\chi_{c2} \to \gamma\gamma)$ reported in ACKERSTAFF,K 98 is derived using $B(\chi_{c2} \to \gamma J/\psi(1S)) = 0.135 \pm 0.011$ and $B(J/\psi(1S) \to \ell^+\ell^-) = 0.1203 \pm 0.0038$. Calculated by us using $B(J/\psi(1S) \to \ell^+\ell^-) = 0.1181 \pm 0.0020$.

[10] The value for $\Gamma(\chi_{c2} \to \gamma\gamma)$ reported in DOMINICK 94 is derived using $B(\chi_{c2} \to \gamma J/\psi(1S)) = 0.135 \pm 0.011$, $B(J/\psi(1S) \to e^+e^-) = 0.0627 \pm 0.0020$, and $B(J/\psi(1S) \to \mu^+\mu^-) = 0.0597 \pm 0.0025$. Calculated by us using $B(J/\psi(1S) \to \ell^+\ell^-) = 0.1181 \pm 0.0020$.

[11] The value for $\Gamma(\chi_{c2} \to \gamma\gamma)$ reported in BAUER 93 is derived using $B(\chi_{c2} \to \gamma J/\psi(1S)) = 0.135 \pm 0.011$, $B(J/\psi(1S) \to e^+e^-) = 0.0627 \pm 0.0020$, and $B(J/\psi(1S) \to \mu^+\mu^-) = 0.0597 \pm 0.0025$. Calculated by us using $B(J/\psi(1S) \to \ell^+\ell^-) = 0.1181 \pm 0.0020$.

$\chi_{c2}(1P)$ BRANCHING RATIOS

HADRONIC DECAYS

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

VALUE	DOCUMENT ID
0.0141±0.0020 OUR FIT	

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

VALUE	DOCUMENT ID	TECN	COMMENT
0.010 ±0.004 OUR AVERAGE	Error includes scale factor of 2.0.		
0.0079±0.0006±0.0021	[12] BAI 99B	BES	$\psi(2S) \to \gamma\chi_{c2}$
0.019 ±0.005	[13] TANENBAUM 78	MRK1	$\psi(2S) \to \gamma\chi_{c2}$

$\Gamma(3(\pi^+\pi^-))/\Gamma_{total}$ — Γ_3/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
0.0092±0.0022 OUR AVERAGE			
0.009 ±0.001 ±0.002	[12] BAI 99B	BES	$\psi(2S) \to \gamma\chi_{c2}$
0.012 ±0.008	[13] TANENBAUM 78	MRK1	$\psi(2S) \to \gamma\chi_{c2}$

$\Gamma(\rho^0\pi^+\pi^-)/\Gamma_{total}$ — Γ_4/Γ

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
68±40	[13] TANENBAUM 78	MRK1	$\psi(2S) \to \gamma\chi_{c2}$

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

VALUE (units 10^{-4})	DOCUMENT ID	TECN	COMMENT
48±28	[13] TANENBAUM 78	MRK1	$\psi(2S) \to \gamma\chi_{c2}$

$\Gamma(\phi\phi)/\Gamma_{total}$ — Γ_6/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
2.00±0.55±0.61	[12] BAI	99B	BES	$\psi(2S) \to \gamma\chi_{c2}$

$\Gamma(\pi^+\pi^-)/\Gamma_{total}$ — Γ_7/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.52±0.25 OUR AVERAGE					
1.49±0.14±0.22	185±16	[12] BAI	98I	BES	$\psi(2S) \to \gamma\chi_{c2}$
1.9 ±1.0	4	[13] BRANDELIK	79C	DASP	$\psi(2S) \to \gamma\chi_{c2}$

$[\Gamma(\pi^+\pi^-)+\Gamma(K^+K^-)]/\Gamma_{total}$ — $(\Gamma_7+\Gamma_{10})/\Gamma$

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
24±10	[13] TANENBAUM	78	MRK1	$\psi(2S) \to \gamma\chi_{c2}$

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

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
1.48±0.26±0.32	[12] BAI	99B	BES	$\psi(2S) \to \gamma\chi_{c2}$

$\Gamma(\pi^+\pi^-p\overline{p})/\Gamma_{total}$ — Γ_9/Γ

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
14 ± 6 OUR AVERAGE Error includes scale factor of 1.5.				
12.3± 2.0±3.5	[12] BAI	99B	BES	$\psi(2S) \to \gamma\chi_{c2}$
33 ±13	[13] TANENBAUM	78	MRK1	$\psi(2S) \to \gamma\chi_{c2}$

$\Gamma(K^+K^-)/\Gamma_{total}$ — Γ_{10}/Γ

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.81±0.19 OUR AVERAGE					
0.79±0.14±0.13	115±13	[12] BAI	98I	BES	$\psi(2S) \to \gamma\chi_{c2}$
1.5 ±1.1	2	[13] BRANDELIK	79C	DASP	$\psi(2S) \to \gamma\chi_{c2}$

$\Gamma(K^0_S K^0_S)/\Gamma_{total}$ — Γ_{11}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.61±0.17±0.16	[12] BAI	99B	BES	$\psi(2S) \to \gamma\chi_{c2}$

$\Gamma(p\overline{p})/\Gamma_{total}$ — Γ_{12}/Γ

VALUE (units 10^{-4})	DOCUMENT ID
0.74±0.10 OUR FIT	

$\Gamma(\pi^0\pi^0)/\Gamma_{total}$ — Γ_{13}/Γ

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.1±0.2±0.2	[12] LEE	85	CBAL	$\psi' \to$ photons

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

VALUE (units 10^{-4})	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
7.9±4.1±2.4	[12] LEE	85	CBAL	$\psi' \to$ photons

$\Gamma(J/\psi(1S)\pi^+\pi^-\pi^0)/\Gamma_{total}$ — Γ_{15}/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.015	90	BARATE	81	SPEC	190 GeV π^- Be $\rightarrow 2\pi 2\mu$

$\Gamma(K^0_S K^+\pi^- + c.c.)/\Gamma_{total}$ — Γ_{16}/Γ

VALUE (units 10^{-3})	CL%	DOCUMENT ID		TECN	COMMENT
<1.06	90	[12] BAI	99B	BES	$\psi(2S) \rightarrow \gamma\chi_{c2}$

[12] Calculated using $B(\psi(2S) \rightarrow \gamma\chi_{c2}(1P)) = 0.078 \pm 0.008$.

[13] Estimated using $B(\psi(2S) \rightarrow \gamma\chi_{c2}(1P)) = 0.078$; the errors do not contain the uncertainty in the $\psi(2S)$ decay.

RADIATIVE DECAYS

$\Gamma(\gamma J/\psi(1S))/\Gamma_{total}$ — Γ_{17}/Γ

VALUE	DOCUMENT ID
0.187±0.020 OUR FIT	

$\Gamma(\gamma\gamma)/\Gamma_{total}$ — Γ_{18}/Γ

VALUE (units 10^{-4})	DOCUMENT ID
2.19±0.32 OUR FIT	

$\Gamma(\gamma\gamma)/\Gamma(\gamma J/\psi(1S))$ — Γ_{18}/Γ_{17}

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
1.17±0.26 OUR FIT				
0.99±0.18	[14] AMBROGIANI	00B	E835	$\overline{p}p \rightarrow \chi_{c2} \rightarrow \gamma\gamma, \gamma J/\psi$

$\Gamma(\gamma\gamma) \times \Gamma(p\overline{p})/\Gamma^2_{total}$ — $\Gamma_{18}\Gamma_{12}/\Gamma^2$

VALUE (units 10^{-8})	DOCUMENT ID		TECN	COMMENT
1.63±0.24 OUR FIT				
1.7 ±0.4 OUR AVERAGE				
1.60±0.42	ARMSTRONG	93	E760	$\overline{p}p \rightarrow \gamma\gamma X$
9.9 ±4.5	BAGLIN	87B	SPEC	$\overline{p}p \rightarrow \gamma\gamma X$

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

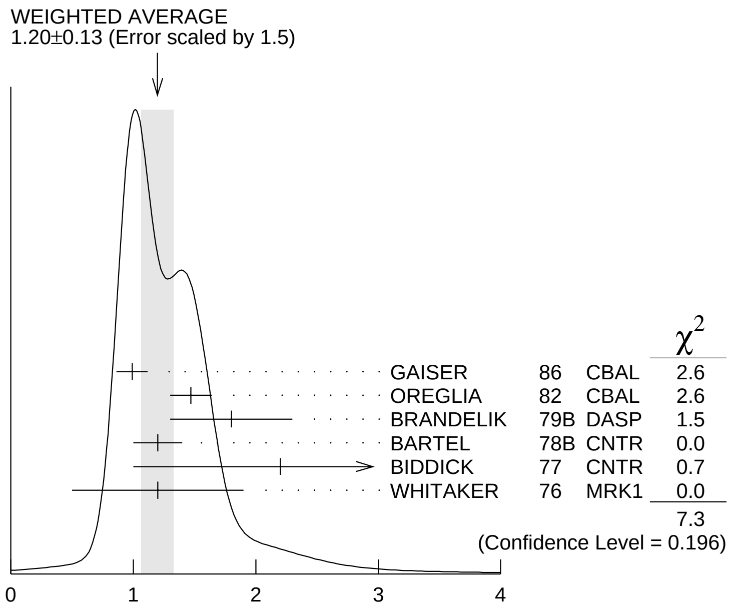
$\chi_{c2}(1P)$ CROSS-PARTICLE BRANCHING RATIOS

$$B(\chi_{c2}(1P) \rightarrow p\overline{p}) \times \frac{\Gamma(\psi(2S) \rightarrow \gamma\chi_{c2}(1P))}{\Gamma(\psi(2S) \rightarrow J/\psi(1S)\pi^+\pi^-)}$$

VALUE (units 10^{-5})	DOCUMENT ID		TECN	COMMENT
1.7±0.4 OUR FIT				
1.4±1.1	[15] BAI	98I	BES	$\psi(2S) \rightarrow \gamma\chi_{c2} \rightarrow \gamma\overline{p}p$

$B(\chi_{c2}(1P) \to \gamma J/\psi(1S)) \times B(\psi(2S) \to \gamma \chi_{c2}(1P))$

VALUE (units 10^{-2})		*DOCUMENT ID*		*TECN*	*COMMENT*
1.27±0.08 OUR FIT					
1.20±0.13 OUR AVERAGE	Error includes scale factor of 1.5. See the ideogram below.				
0.99±0.10±0.08		GAISER	86	CBAL	$\psi(2S) \to \gamma X$
1.47±0.17	[16]	OREGLIA	82	CBAL	$\psi(2S) \to \gamma \chi_{c2}$
1.8 ±0.5	[17]	BRANDELIK	79B	DASP	$\psi(2S) \to \gamma \chi_{c2}$
1.2 ±0.2	[17]	BARTEL	78B	CNTR	$\psi(2S) \to \gamma \chi_{c2}$
2.2 ±1.2	[18]	BIDDICK	77	CNTR	$e^+ e^- \to \gamma X$
1.2 ±0.7	[16]	WHITAKER	76	MRK1	$e^+ e^-$



$B(\chi_{c2}(1P) \to \gamma J/\psi(1S)) \times B(\psi(2S) \to \gamma \chi_{c2}(1P))$

$B(\chi_{c2}(1P) \to \gamma J/\psi(1S)) \times \frac{\Gamma(\psi(2S) \to \gamma \chi_{c2}(1P))}{\Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)}$

VALUE (units 10^{-2})		*DOCUMENT ID*		*TECN*	*COMMENT*
4.2±0.4 OUR FIT					
3.9±1.2	[19]	HIMEL	80	MRK2	$\psi(2S) \to \gamma \chi_{c2}$

$B(\chi_{c2}(1P) \to \gamma\gamma) \times B(\psi(2S) \to \gamma \chi_{c2}(1P))$

VALUE (units 10^{-5})	*DOCUMENT ID*		*TECN*	*COMMENT*
1.49±0.20 OUR FIT				
7.0 ±2.1 ±2.0	LEE	85	CBAL	$\psi(2S) \to \gamma \chi_{c2}$

$B(\chi_{c2}(1P) \to 2(\pi^+\pi^-)) \times \Gamma(\psi(2S) \to \gamma\chi_{c2}(1P)) / \Gamma(\psi(2S) \to J/\psi(1S)\pi^+\pi^-)$

VALUE (units 10^{-3})	DOCUMENT ID	TECN	COMMENT
3.1±0.5 OUR FIT			
3.1±1.0 OUR AVERAGE Error includes scale factor of 2.5.			
2.3±0.1±0.5	[20] BAI 99B	BES	$\psi(2S) \to \gamma\chi_{c2}$
4.3±0.6	[21] TANENBAUM 78	MRK1	$\psi(2S) \to \gamma\chi_{c2}$

[15] Calculated by us. The value for $B(\chi_{c2} \to p\overline{p})$ reported in BAI 98I is derived using $B(\psi(2S) \to \gamma\chi_{c2}) = (7.8 \pm 0.8)\%$ and $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) = (32.4 \pm 2.6)\%$ [BAI 98D].

[16] Recalculated by us using $B(J/\psi(1S) \to \ell^+\ell^-) = 0.1181 \pm 0.0020$.

[17] Recalculated by us using $B(J/\psi(1S) \to \mu^+\mu^-) = 0.0588 \pm 0.0010$.

[18] Assumes isotropic gamma distribution.

[19] The value for $B(\psi(2S) \to \gamma\chi_{c2}) \times B(\chi_{c2} \to \gamma J/\psi(1S))$ reported in HIMEL 80 is derived using $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) = (33 \pm 3)\%$ and $B(J/\psi(1S) \to \ell^+\ell^-) = 0.138 \pm 0.018$. Calculated by us using $B(J/\psi(1S) \to \ell^+\ell^-) = (0.1181 \pm 0.0020)$.

[20] Calculated by us. The value for $B(\chi_{c2} \to 2\pi^+ 2\pi^-)$ reported in BAI 99B is derived using $B(\psi(2S) \to \gamma\chi_{c2}) = (7.8 \pm 0.8)\%$ and $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) = (32.4 \pm 2.6)\%$ [BAI 98D].

[21] The value for $B(\psi(2S) \to \gamma\chi_{c2}) \times B(\chi_{c2} \to 2\pi^+\pi^-)$ reported in TANENBAUM 78 is derived using $B(\psi(2S) \to J/\psi(1S)\pi^+\pi^-) \times B(J/\psi(1S)\ell^+\ell^-) = (4.6 \pm 0.7)\%$. Calculated by us using $B(J/\psi(1S) \to \ell^+\ell^-) = 0.1181 \pm 0.0020$.

MULTIPOLE AMPLITUDES IN $\chi_{c2}(1P) \to \gamma J/\psi(1S)$ RADIATIVE DECAY

$a_2 = M2/\sqrt{E1^2 + M2^2 + E3^2}$ Magnetic quadrupole fractional transition amplitude

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
−0.140±0.006 OUR AVERAGE				
$-0.093^{+0.039}_{-0.041}\pm0.006$	5908	[22] AMBROGIANI 02	E835	$p\overline{p} \to \chi_{c2} \to J/\psi\gamma$
−0.14 ±0.006	1904	[22] ARMSTRONG 93E	E760	$p\overline{p} \to \chi_{c2} \to J/\psi\gamma$
$-0.333^{+0.116}_{-0.292}$	441	[22] OREGLIA 82	CBAL	$\psi(2S) \to \chi_{c1}\gamma \to J/\psi\gamma\gamma$

$a_3 = M2/\sqrt{E1^2 + M2^2 + E3^2}$ Electric octupole fractional transition amplitude

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
$\mathbf{0.011^{+0.041}_{-0.033}}$ **OUR AVERAGE**				
$0.020^{+0.055}_{-0.044}\pm0.009$	5908	AMBROGIANI 02	E835	$p\overline{p} \to \chi_{c2} \to J/\psi\gamma$
$0.00^{+0.06}_{-0.05}$	1904	ARMSTRONG 93E	E760	$p\overline{p} \to \chi_{c2} \to J/\psi\gamma$

[22] Assuming a_3=0.

$\chi_{c2}(1P)$ REFERENCES

AMBROGIANI	02	PR D65 052002	M. Ambrogiani *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.)
ACCIARRI	99E	PL B453 73	M. Acciarri *et al.*	(L3 Collab.)
BAI	99B	PR D60 072001	J.Z. Bai *et al.*	(BES Collab.)
ACKER..,K...	98	PL B439 197	K. Ackerstaff *et al.*	(OPAL 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.)
DOMINICK	94	PR D50 4265	J. Dominick *et al.*	(CLEO Collab.)
ARMSTRONG	93	PRL 70 2988	T.A. Armstrong *et al.*	(FNAL E760 Collab.)
ARMSTRONG	93E	PR D48 3037	T.A. Armstrong *et al.*	(FNAL-E760 Collab.)
BAUER	93	PL B302 345	D.A. Bauer *et al.*	(TPC Collab.)
ARMSTRONG	92	NP B373 35	T.A. Armstrong *et al.*	(FNAL, FERR, GENO+)
Also	92B	PRL 68 1468	T.A. Armstrong *et al.*	(FNAL, FERR, GENO+)
BAGLIN	87B	PL B187 191	C. Baglin *et al.*	(R704 Collab.)
BAGLIN	86B	PL B172 455	C. Baglin	(LAPP, CERN, GENO, LYON, OSLO+)
GAISER	86	PR D34 711	J. Gaiser *et al.*	(Crystal Ball Collab.)
LEE	85	SLAC 282	R.A. Lee	(SLAC)
LEMOIGNE	82	PL 113B 509	Y. Lemoigne *et al.*	(SACL, LOIC, SHMP+)
OREGLIA	82	PR D25 2259	M.J. Oreglia *et al.*	(SLAC, CIT, HARV+)
Also	82B	Private Comm.	M.J. Oreglia	(EFI)
BARATE	81	PR D24 2994	R. Barate *et al.*	(SACL, LOIC, SHMP, CERN+)
HIMEL	80	PRL 44 920	T. Himel *et al.*	(LBL, SLAC)
Also	82	Private Comm.	G. Trilling	(LBL, UCB)
BRANDELIK	79B	NP B160 426	R. Brandelik *et al.*	(DASP Collab.)
BRANDELIK	79C	ZPHY C1 233	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	82	Private Comm.	G. Trilling	(LBL, UCB)
BIDDICK	77	PRL 38 1324	C.J. Biddick *et al.*	(UCSD, UMD, PAVI+)
WHITAKER	76	PRL 37 1596	J.S. Whitaker *et al.*	(SLAC, LBL)

OTHER RELATED PAPERS

BARBERIS	00G	PL B485 357	D. Barberis *et al.*	(Omega expt.)
ACCIARRI	99T	PL B461 155	M. Acciarri *et al.*	(L3 Collab.)
CHEN	90B	PL B243 169	W.Y. Chen *et al.*	(CLEO Collab.)
AIHARA	88D	PRL 60 2355	H. Aihara *et al.*	(TPC Collab.)
BARATE	83	PL 121B 449	R. Barate *et al.*	(SACL, LOIC, SHMP, IND)
FELDMAN	75B	PRL 35 821	G.J. Feldman *et al.*	(LBL, SLAC)
Also Erratum.	75C	PRL 35 1189	G.J. Feldman	
TANENBAUM	75	PRL 35 1323	W.M. Tanenbaum *et al.*	(LBL, SLAC)