$\Gamma(\gamma\chi_{b0}(2P))/\Gamma_{total}$ Γ_{12}/Γ

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
0.054 ± 0.006 OUR AVERAGE		Error includes scale factor of 1.1.			
0.060 ± 0.004 ± 0.006	4959 ± 339	[11] HEINTZ	92	CSB2	$e^+e^- \to \gamma$
$0.049^{+0.003}_{-0.004} \pm 0.006$	9903 ± 550	MORRISON	91	CLE2	$e^+e^- \to \gamma$X

[3] Using B($\Upsilon(2S) \to \Upsilon(1S)\gamma\gamma$) = (0.038 ± 0.007)%, and B($\Upsilon(2S) \to \Upsilon(1S)\pi^0\pi^0$) = (1/2)B($\Upsilon(2S) \to \Upsilon(1S)\pi^+\pi^-$).
[4] Using B($\Upsilon(1S) \to \mu^+\mu^-$) = (2.48 ± 0.06)%. With the assumption of $e\mu$ universality.
[5] Using B($\Upsilon(2S) \to \Upsilon(1S)\pi^+\pi^-$) = (18.5 ± 0.8)%.
[6] Using B($\Upsilon(2S) \to \mu^+\mu^-$) = (1.31 ± 0.21)%, B($\Upsilon(2S) \to \Upsilon(1S)\gamma\gamma$)×2B($\Upsilon(1S) \to \mu^+\mu^-$) = (0.188 ± 0.035)%, and B($\Upsilon(2S) \to \Upsilon(1S)\pi^0\pi^0$)×2B($\Upsilon(1S) \to \mu^+\mu^-$) = (0.436 ± 0.056)%. With the assumption of $e\mu$ universality.
[7] From the exclusive mode.
[8] B($\Upsilon(2S) \to \mu^+\mu^-$) = (1.31 ± 0.21)% and assuming $e\mu$ universality.
[9] B($\Upsilon(2S) \to \mu^+\mu^-$) = (1.44 ± 0.10)% and assuming $e\mu$ universality. Supersedes HEINTZ 91.
[10] Using B($\Upsilon(1S) \to \mu^+\mu^-$) = (2.57 ± 0.07)% and assuming $e\mu$ universality. Supersedes HEINTZ 91.
[11] Supersedes NARAIN 91.

$\Upsilon(3S)$ REFERENCES

BUTLER	94B	PR D49 40	+Fu, Kalbfleisch, Lambrecht+	(CLEO Collab.)
WU	93	PL B301 307	+Franzini, Kanekal+	(CUSB Collab.)
HEINTZ	92	PR D46 1928	+Lee, Franzini+	(CUSB II Collab.)
BROCK	91	PR D43 1448	+Ferguson+	(CLEO Collab.)
HEINTZ	91	PRL 66 1563	+Kaarsberg+	(CUSB Collab.)
MORRISON	91	PRL 67 1696	+Schmidt+	(CLEO II Collab.)
NARAIN	91	PRL 66 3113	+Lovelock+	(CUSB Collab.)
CHEN	89B	PR D39 3528	+McIlwain, Miller+	(CLEO Collab.)
KAARSBERG	89	PRL 62 2077	+Heintz+	(CUSB Collab.)
BUCHMUEL...	88	HE e^+e^- Physics 412 Buchmueller, Cooper Editors: A. Ali and P. Soeding, World Scientific, Singapore		(HANN, DESY, MIT)
BARU	86B	ZPHY C32 662	+Blinov, Bondar, Bukin+	(NOVO)
KURAEV	85	SJNP 41 466 Translated from YAF 41 733.	+Fadin	(ASCI)
ARTAMONOV	84	PL 137B 272	+Baru, Blinov, Bondar+	(NOVO)
GILES	84B	PR D29 1285	+Hassard, Hempstead, Kinoshita+	(CLEO Collab.)
ANDREWS	83	PRL 50 807	+Avery, Berkelman, Cassel+	(CLEO Collab.)
TUTS	83	Cornell Conf. 284		(CUSB Collab.)
GREEN	82	PRL 49 617	+Sannes, Skubic, Snyder+	(CLEO Collab.)
MAGERAS	82	PL 118B 453	+Herb, Imlay+	(COLU, CORN, LSU, MPIM, STON)

OTHER RELATED PAPERS

ALEXANDER	89	NP B320 45	+Bonvicini, Drell, Frey, Luth	(LBL, MICH, SLAC)
ARTAMONOV	84	PL 137B 272	+Baru, Blinov, Bondar+	(NOVO)
GILES	84B	PR D29 1285	+Hassard, Hempstead, Kinoshita+	(CLEO Collab.)
HAN	82	PRL 49 1612	+Horstkotte, Imlay+	(CUSB Collab.)
PETERSON	82	PL 114B 277	+Giannini, Lee-Franzini+	(CUSB Collab.)
KAPLAN	78	PRL 40 435	+Appel, Herb, Hom+	(STON, FNAL, COLU)
YOH	78	PRL 41 684	+Herb, Hom, Lederman+	(COLU, FNAL, STON)
COBB	77	PL 72B 273	+Iwata, Fabjan+	(BNL, CERN, SYRA, YALE)
HERB	77	PRL 39 252	+Hom, Lederman, Appel, Ito+	(COLU, FNAL, STON)
INNES	77	PRL 39 1240	+Appel, Brown, Herb, Hom+	(COLU, FNAL, STON)

$\Upsilon(4S)$ or $\Upsilon(10580)$

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

$\Upsilon(4S)$ MASS

VALUE (GeV)	DOCUMENT ID		TECN	COMMENT
10.5800 ± 0.0035	[1] BEBEK	87	CLEO	$e^+e^- \to$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •				
10.5774 ± 0.0010	[2] LOVELOCK	85	CUSB	$e^+e^- \to$ hadrons

[1] Reanalysis of BESSON 85.
[2] No systematic error given.

$\Upsilon(4S)$ WIDTH

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
23.8 ± 2.2 OUR AVERAGE				
20.0 ± 2 ± 4	BESSON	85	CLEO	$e^+e^- \to$ hadrons
25 ± 2.5	LOVELOCK	85	CUSB	$e^+e^- \to$ hadrons

$\Upsilon(4S)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)		Confidence level
Γ_1	e^+e^-	$(1.01 \pm 0.21) \times 10^{-5}$		
Γ_2	$J/\psi(3097)$ anything			
Γ_3	D^{*+} anything + c.c.	< 7.4	%	90%
Γ_4	ϕ anything	< 2.3	$\times 10^{-3}$	90%
Γ_5	$\Upsilon(1S)$ anything	< 4	$\times 10^{-3}$	90%

$\Upsilon(4S)$ PARTIAL WIDTHS

$\Gamma(e^+e^-)$ Γ_1

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
0.24 ± 0.05 OUR AVERAGE	Error includes scale factor of 1.7.			
0.192 ± 0.007 ± 0.038	BESSON	85	CLEO	$e^+e^- \to$ hadrons
0.283 ± 0.037	LOVELOCK	85	CUSB	$e^+e^- \to$ hadrons

$\Upsilon(4S)$ BRANCHING RATIOS

$[\Gamma(D^{*+}\text{anything}) + \Gamma(\text{c.c.})]/\Gamma_{total}$ Γ_3/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.074	90	[3] ALEXANDER	90C	CLEO	e^+e^-

[3] For $x >$ 0.473.

$\Gamma(\phi\text{anything})/\Gamma_{total}$ Γ_4/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.0023	90	[4] ALEXANDER	90C	CLEO	e^+e^-

[4] For $x >$ 0.52.

$\Gamma(\Upsilon(1S)\text{anything})/\Gamma_{total}$ Γ_5/Γ

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
< 0.004	90	ALEXANDER	90C	CLEO	e^+e^-

$\Upsilon(4S)$ REFERENCES

ALEXANDER	90C	PRL 64 2226	+Artuso+	(CLEO Collab.)
BEBEK	87	PR D36 1289	+Berkelman, Blucher, Cassel+	(CLEO Collab.)
BESSON	85	PRL 54 381	+Green, Namjoshi, Sannes+	(CLEO Collab.)
LOVELOCK	85	PRL 54 377	+Horstkotte, Klopfenstein+	(CUSB Collab.)

OTHER RELATED PAPERS

ANDREWS	80B	PRL 45 219	+Berkelman, Cabenda, Cassel+	(CLEO Collab.)
FINOCCHI...	80	PRL 45 222	Finocchiaro, Giannini, Lee-Franzini+	(CUSB Collab.)

$\Upsilon(10860)$

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

$\Upsilon(10860)$ MASS

VALUE (GeV)	DOCUMENT ID		TECN	COMMENT
10.865 ± 0.008 OUR AVERAGE	Error includes scale factor of 1.1.			
10.868 ± 0.006 ± 0.005	BESSON	85	CLEO	$e^+e^- \to$ hadrons
10.845 ± 0.020	LOVELOCK	85	CUSB	$e^+e^- \to$ hadrons

$\Upsilon(10860)$ WIDTH

VALUE (MeV)	DOCUMENT ID		TECN	COMMENT
110 ± 13 OUR AVERAGE				
112.0 ± 17 ± 23	BESSON	85	CLEO	$e^+e^- \to$ hadrons
110.0 ± 15.0	LOVELOCK	85	CUSB	$e^+e^- \to$ hadrons

$\Upsilon(10860)$ DECAY MODES

	Mode	Fraction (Γ_i/Γ)
Γ_1	e^+e^-	$(2.8 \pm 0.7) \times 10^{-6}$

$\Upsilon(10860)$ PARTIAL WIDTHS

$\Gamma(e^+e^-)$ Γ_1

VALUE (keV)	DOCUMENT ID		TECN	COMMENT
0.31 ± 0.07 OUR AVERAGE	Error includes scale factor of 1.3.			
0.22 ± 0.05 ± 0.07	BESSON	85	CLEO	$e^+e^- \to$ hadrons
0.365 ± 0.070	LOVELOCK	85	CUSB	$e^+e^- \to$ hadrons

$\Upsilon(10860)$ REFERENCES

BESSON	85	PRL 54 381	+Green, Namjoshi, Sannes+	(CLEO Collab.)
LOVELOCK	85	PRL 54 377	+Horstkotte, Klopfenstein+	(CUSB Collab.)