NODE=M092

$\Upsilon(10860)$

$I^G(J^{PC}) = 0^-(1^{--})$

$\Upsilon(10860)$ MASS

NODE=M092M

NODE=M092M

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT	
$10885.2^{+2.6}_{-1.6}$ OUR AVERAGE				
$10885.3 \pm 1.5^{+2.2}_{-0.9}$	[1] MIZUK 19	BELL	$e^+e^- \to \Upsilon(nS)\pi^+\pi^-$	
$10884.7^{+3.6}_{-3.4}{}^{+8.9}_{-1.0}$	[2] MIZUK 16	BELL	$e^+e^- \to h_b(1P,2P)\pi^+\pi^-$	
• • • We do not use the following data for averages, fits, limits, etc. • • •				
10882 ± 1	[3] DONG 20A		$e^+e^- \to b\bar{b}$	
$10881.8^{+1.0}_{-1.1}\pm1.2$	[4,5] SANTEL 16	BELL	$e^+e^- \to$ hadrons	
$10891.1 \pm 3.2^{+1.2}_{-2.0}$	[6,7] SANTEL 16	BELL	$e^+e^- \to \Upsilon(1S,2S,3S)\pi^+\pi^-$	OCCUR=2
10879 ± 3	[8,9] CHEN 10	BELL	$e^+e^- \to$ hadrons	
$10888.4^{+2.7}_{-2.6}\pm1.2$	[10] CHEN 10	BELL	$e^+e^- \to \Upsilon(1S,2S,3S)\pi^+\pi^-$	OCCUR=2
10876 ± 2	[8] AUBERT 09E	BABR	$e^+e^- \to$ hadrons	
10869 ± 2	[11] AUBERT 09E	BABR	$e^+e^- \to$ hadrons	OCCUR=2
$10868 \pm 6 \pm 5$	[12] BESSON 85	CLEO	$e^+e^- \to$ hadrons	
10845 ± 20	[13] LOVELOCK 85	CUSB	$e^+e^- \to$ hadrons	

[1] From a simultaneous fit to the $\Upsilon(nS)\pi^+\pi^-$, n = 1, 2, 3, cross sections at 28 energy points within $\sqrt{s}$ = 10.6–11.05 GeV, including the initial-state radiation at $\Upsilon(10860)$. NODE=M092M;LINKAGE=E

[2] From a simultaneous fit to the $h_b(nP)\pi^+\pi^-$, n = 1, 2 cross sections at 22 energy points within $\sqrt{s}$ = 10.77–11.02 GeV to a pair of interfering Breit-Wigner amplitudes modified by phase space factors, with eight resonance parameters (a mass and width for each of $\Upsilon(10860)$ and $\Upsilon(11020)$, a single relative phase, a single relative amplitude, and two overall normalization factors, one for each n). The systematic error estimate is dominated by possible interference with a small nonresonant continuum amplitude. NODE=M092M;LINKAGE=D

[3] From a fit to the dressed cross sections of AUBERT 09E by BaBar and SANTEL 16 by Belle above 10.68 GeV with a coherent sum of a continuum amplitude and three Breit-Wigner functions with constant widths. NODE=M092M;LINKAGE=H

[4] From a fit to the total hadronic cross sections measured at 60 energy points within $\sqrt{s}$ = 10.82–11.05 GeV to a pair of interfering Breit-Wigner amplitudes and two floating continuum amplitudes with $1/\sqrt{s}$ dependence, one coherent with the resonances and one incoherent, with six resonance parameters (a mass, width, and an amplitude for each of $\Upsilon(10860)$ and $\Upsilon(11020)$, one relative phase, and one decoherence coefficient). NODE=M092M;LINKAGE=A

[5] Not including uncertain and potentially large systematic errors due to assumed continuum amplitude $1/\sqrt{s}$ dependence and related interference contributions. NODE=M092M;LINKAGE=B

[6] From a simultaneous fit to the $\Upsilon(nS)\pi^+\pi^-$, n = 1, 2, 3, cross sections at 25energy points within $\sqrt{s}$ = 10.6–11.05 GeV to a pair of interfering Breit-Wigner amplitudesmodified by phase space factors, with fourteen resonance parameters (a mass, width, and threeamplitudes for each of $\Upsilon(10860)$ and $\Upsilon(11020)$, a single universal relativephase, and three decoherence coefficients, one for each n). Continuum contributions weremeasured (and therefore fixed) to be zero. NODE=M092M;LINKAGE=C

[7] Superseded by MIZUK 19. NODE=M092M;LINKAGE=F

[8] In a model where a flat non-resonant $b\bar{b}$-continuum is incoherently added to a second flat component interfering with two Breit-Wigner resonances. Systematic uncertainties not estimated. NODE=M092M;LINKAGE=AU

[9] The parameters of the $\Upsilon(11020)$ are fixed to those in AUBERT 09E. NODE=M092M;LINKAGE=CH

[10] In a model where a flat nonresonant $\Upsilon(1S,2S,3S)\pi^+\pi^-$ continuum interferes with a single Breit-Wigner resonance. NODE=M092M;LINKAGE=CE

[11] In a model where a non-resonant $b\bar{b}$-continuum represented by a threshold function at $\sqrt{s}=2m_B$ is incoherently added to a flat component interfering with two Breit-Wigner resonances. Not independent of other AUBERT 09E results. Systematic uncertainties not estimated. NODE=M092M;LINKAGE=UB

[12] Assuming four Gaussians with radiative tails and a single step in R. NODE=M092M;LINKAGE=BE

[13] In a coupled-channel model with three resonances and a smooth step in R. NODE=M092M;LINKAGE=LO

$\Upsilon(10860)$ WIDTH

NODE=M092W

NODE=M092W

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
37 ± 4 OUR AVERAGE			
$36.6^{+4.5}_{-3.9}{}^{+0.5}_{-1.1}$	[1] MIZUK 19	BELL	$e^+e^- \to \Upsilon(nS)\pi^+\pi^-$
$40.6^{+12.7}_{-8.0}{}^{+1.1}_{-19.1}$	[2] MIZUK 16	BELL	$e^+e^- \to h_b(1P,2P)\pi^+\pi^-$

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

49.5 ± 1.5	[3] DONG	20A		$e^+e^- \to b\overline{b}$	
$48.5^{+1.9+2.0}_{-1.8-2.8}$	[4,5] SANTEL	16	BELL	$e^+e^- \to$ hadrons	
$53.7^{+7.1+1.3}_{-5.6-5.4}$	[6,7] SANTEL	16	BELL	$e^+e^- \to \Upsilon(1S,2S,3S)\pi^+\pi^-$	OCCUR=2
46^{+9}_{-7}	[8,9] CHEN	10	BELL	$e^+e^- \to$ hadrons	
$30.7^{+8.3}_{-7.0} \pm 3.1$	[10] CHEN	10	BELL	$e^+e^- \to \Upsilon(1S,2S,3S)\pi^+\pi^-$	OCCUR=2
43 ± 4	[8] AUBERT	09E	BABR	$e^+e^- \to$ hadrons	
74 ± 4	[11] AUBERT	09E	BABR	$e^+e^- \to$ hadrons	OCCUR=2
$112 \pm 17 \pm 23$	[12] BESSON	85	CLEO	$e^+e^- \to$ hadrons	
110 ± 15	[13] LOVELOCK	85	CUSB	$e^+e^- \to$ hadrons	

[1] From a simultaneous fit to the Υ(nS)$\pi^+\pi^-$, n = 1, 2, 3, cross sections at 28 energy points within $\sqrt{s}$ = 10.6–11.05 GeV, including the initial-state radiation at Υ(10860). NODE=M092W;LINKAGE=F

[2] From a simultaneous fit to the h_b(nP)$\pi^+\pi^-$, n = 1, 2 cross sections at 22 energy points within $\sqrt{s}$ = 10.77–11.02 GeV to a pair of interfering Breit-Wigner amplitudes modified by phase space factors, with eight resonance parameters (a mass and width for each of Υ(10860) and Υ(11020), a single relative phase, a single relative amplitude, and two overall normalization factors, one for each n). The systematic error estimate is dominated by possible interference with a small nonresonant continuum amplitude. NODE=M092W;LINKAGE=D

[3] From a fit to the dressed cross sections of AUBERT 09E by BaBar and SANTEL 16 by Belle above 10.68 GeV with a coherent sum of a continuum amplitude and three Breit-Wigner functions with constant widths. NODE=M092W;LINKAGE=G

[4] From a fit to the total hadronic cross sections measured at 60 energy points within $\sqrt{s}$ = 10.82–11.05 GeV to a pair of interfering Breit-Wigner amplitudes and two floating continuum amplitudes with $1/\sqrt{s}$ dependence, one coherent with the resonances and one incoherent, with six resonance parameters (a mass, width, and an amplitude for each of Υ(10860) and Υ(11020), one relative phase, and one decoherence coefficient). NODE=M092W;LINKAGE=A

[5] Not including uncertain and potentially large systematic errors due to assumed continuum amplitude $1/\sqrt{s}$ dependence and related interference contributions. NODE=M092W;LINKAGE=B

[6] From a simultaneous fit to the Υ(nS)$\pi^+\pi^-$, n = 1, 2, 3, cross sections at 25energy points within $\sqrt{s}$ = 10.6–11.05 GeV to a pair of interfering Breit-Wigner amplitudesmodified by phase space factors, with fourteen resonance parameters (a mass, width, and threeamplitudes for each of Υ(10860) and Υ(11020), a single universal relativephase, and three decoherence coefficients, one for each n). Continuum contributions weremeasured (and therefore fixed) to be zero. NODE=M092W;LINKAGE=C

[7] Superseded by MIZUK 19. NODE=M092W;LINKAGE=E

[8] In a model where a flat non-resonant $b\overline{b}$-continuum is incoherently added to a second flat component interfering with two Breit-Wigner resonances. Systematic uncertainties not estimated. NODE=M092W;LINKAGE=AU

[9] The parameters of the Υ(11020) are fixed to those in AUBERT 09E. NODE=M092W;LINKAGE=CH

[10] In a model where a flat nonresonant $\Upsilon(1S,2S,3S)\pi^+\pi^-$ continuum interferes with a single Breit-Wigner resonance. NODE=M092W;LINKAGE=CE

[11] In a model where a non-resonant $b\overline{b}$-continuum represented by a threshold function at $\sqrt{s}$=2m_B is incoherently added to a flat component interfering with two Breit-Wigner resonances. Not independent of other AUBERT 09E results. Systematic uncertainties not estimated. NODE=M092W;LINKAGE=UB

[12] Assuming four Gaussians with radiative tails and a single step in R. NODE=M092W;LINKAGE=BE

[13] In a coupled-channel model with three resonances and a smooth step in R. NODE=M092W;LINKAGE=LO

Υ(10860) DECAY MODES

NODE=M092215;NODE=M092

	Mode	Fraction (Γ_i/Γ)	Confidence level	
Γ_1	$B\overline{B}X$	$(73.5^{+1.5}_{-2.8})$ %		DESIG=9
Γ_2	$B\overline{B}$	(5.5 ± 1.0) %		DESIG=2
Γ_3	$B\overline{B}^*$ + c.c.	(13.7 ± 1.6) %		DESIG=3
Γ_4	$B^*\overline{B}^*$	(38.1 ± 3.4) %		DESIG=4
Γ_5	$B\overline{B}^{(*)}\pi$	$<$ 19.7 %	90%	DESIG=10
Γ_6	$B\overline{B}\pi$	(0.0 ± 1.2) %		DESIG=23
Γ_7	$B^*\overline{B}\pi + B\overline{B}^*\pi$	(7.3 ± 2.3) %		DESIG=24
Γ_8	$B^*\overline{B}^*\pi$	(1.0 ± 1.4) %		DESIG=25
Γ_9	$B\overline{B}\pi\pi$	$<$ 8.9 %	90%	DESIG=11
Γ_{10}	$B_s^{(*)}\overline{B}_s^{(*)}$	(21.3 ± 1.5) %		DESIG=16
Γ_{11}	$B_s\overline{B}_s$	$(6 \pm 5) \times 10^{-3}$		DESIG=5
Γ_{12}	$B_s\overline{B}_s^*$ + c.c.	(1.44 ± 0.28) %		DESIG=7
Γ_{13}	$B_s^*\overline{B}_s^*$	(18.7 ± 1.3) %		DESIG=8
Γ_{14}	no open-bottom	$(4.8^{+4.0}_{-0.5})$ %		DESIG=28

Γ_{15}	e^+e^-	$(8.3 \pm 2.1) \times 10^{-6}$		DESIG=1
Γ_{16}	$K^*(892)^0\overline{K}^0$	$< 1.0 \times 10^{-5}$	90%	DESIG=29
Γ_{17}	$\Upsilon(1S)\pi^+\pi^-$	$(5.3 \pm 0.6) \times 10^{-3}$		DESIG=17
Γ_{18}	$\Upsilon(1S)\eta$	$(8.5 \pm 1.7) \times 10^{-4}$		DESIG=44
Γ_{19}	$\Upsilon(1S)\eta'$	$< 6.9 \times 10^{-5}$	90%	DESIG=45
Γ_{20}	$\Upsilon(2S)\pi^+\pi^-$	$(7.8 \pm 1.3) \times 10^{-3}$		DESIG=18
Γ_{21}	$\Upsilon(2S)\eta$	$(4.1 \pm 0.6) \times 10^{-3}$		DESIG=46
Γ_{22}	$\Upsilon(3S)\pi^+\pi^-$	$(4.8 {}^{+1.9}_{-1.7}) \times 10^{-3}$		DESIG=19
Γ_{23}	$\Upsilon(1S)K^+K^-$	$(6.1 \pm 1.8) \times 10^{-4}$		DESIG=20
Γ_{24}	$\eta\Upsilon_J(1D)$	$(4.8 \pm 1.1) \times 10^{-3}$		DESIG=40
Γ_{25}	$h_b(1P)\pi^+\pi^-$	$(3.5 {}^{+1.0}_{-1.3}) \times 10^{-3}$		DESIG=26
Γ_{26}	$h_b(2P)\pi^+\pi^-$	$(5.7 {}^{+1.7}_{-2.1}) \times 10^{-3}$		DESIG=27
Γ_{27}	$\chi_{bJ}(1P)\pi^+\pi^-\pi^0$	$(2.5 \pm 2.3) \times 10^{-3}$		DESIG=41
Γ_{28}	$\chi_{b0}(1P)\pi^+\pi^-\pi^0$	$< 6.3 \times 10^{-3}$	90%	DESIG=30
Γ_{29}	$\chi_{b0}(1P)\omega$	$< 3.9 \times 10^{-3}$	90%	DESIG=31
Γ_{30}	$\chi_{b0}(1P)(\pi^+\pi^-\pi^0)_{\text{non}-\omega}$	$< 4.8 \times 10^{-3}$	90%	DESIG=32
Γ_{31}	$\chi_{b1}(1P)\pi^+\pi^-\pi^0$	$(1.85 \pm 0.33) \times 10^{-3}$		DESIG=33
Γ_{32}	$\chi_{b1}(1P)\omega$	$(1.57 \pm 0.30) \times 10^{-3}$		DESIG=34
Γ_{33}	$\chi_{b1}(1P)(\pi^+\pi^-\pi^0)_{\text{non}-\omega}$	$(5.2 \pm 1.9) \times 10^{-4}$		DESIG=35
Γ_{34}	$\chi_{b2}(1P)\pi^+\pi^-\pi^0$	$(1.17 \pm 0.30) \times 10^{-3}$		DESIG=36
Γ_{35}	$\chi_{b2}(1P)\omega$	$(6.0 \pm 2.7) \times 10^{-4}$		DESIG=37
Γ_{36}	$\chi_{b2}(1P)(\pi^+\pi^-\pi^0)_{\text{non}-\omega}$	$(6 \pm 4) \times 10^{-4}$		DESIG=38
Γ_{37}	$\gamma X_b \to \gamma\Upsilon(1S)\omega$	$< 3.8 \times 10^{-5}$	90%	DESIG=39
Γ_{38}	$\eta_b(1S)\omega$	$< 1.3 \times 10^{-3}$	90%	DESIG=42
Γ_{39}	$\eta_b(2S)\omega$	$< 5.6 \times 10^{-3}$	90%	DESIG=43

Inclusive Decays.

NODE=M092;CLUMP=I

These decay modes are submodes of one or more of the decay modes above.

NODE=M092

Γ_{40}	ϕ anything	$(13.8 {}^{+2.4}_{-1.7})$ %	DESIG=12
Γ_{41}	D^0 anything + c.c.	(112 ± 6) %	DESIG=13
Γ_{42}	D_s anything + c.c.	(44.7 ± 2.6) %	DESIG=6
Γ_{43}	J/ψ anything	(2.06 ± 0.21) %	DESIG=14
Γ_{44}	B^0 anything + c.c.	(77 ± 8) %	DESIG=21
Γ_{45}	B^+ anything + c.c.	(72 ± 6) %	DESIG=22

Υ(10860) PARTIAL WIDTHS

NODE=M092220

$\Gamma(e^+e^-)$ Γ_{15}

NODE=M092W1
NODE=M092W1

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

$\Gamma(e^+e^-) \times \Gamma(\Upsilon(1S)\pi^+\pi^-)/\Gamma_{total}$ $\Gamma_{15}\Gamma_{17}/\Gamma$

NODE=M092R50
NODE=M092R50

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.09±0.34	[1,2] MIZUK	19	BELL	$e^+e^- \to \Upsilon(\text{nS})\pi^+\pi^-$

[1] From a simultaneous fit to the $\Upsilon(\text{nS})\pi^+\pi^-$, $n = 1, 2, 3$, cross sections at 28 energy points within $\sqrt{s} = 10.6$–11.05 GeV, including the initial-state radiation at $\Upsilon(10860)$.

NODE=M092R50;LINKAGE=A

[2] Reported as the range 0.75–1.43 eV obtained from multiple solutions of an amplitude fit within a model composed as a sum of Breit-Wigner functions.

NODE=M092R50;LINKAGE=B

$\Gamma(e^+e^-) \times \Gamma(\Upsilon(2S)\pi^+\pi^-)/\Gamma_{total}$ $\Gamma_{15}\Gamma_{20}/\Gamma$

NODE=M092R51
NODE=M092R51

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
2.58±1.22	[1,2] MIZUK	19	BELL	$e^+e^- \to \Upsilon(\text{nS})\pi^+\pi^-$

[1] From a simultaneous fit to the $\Upsilon(\text{nS})\pi^+\pi^-$, $n = 1, 2, 3$, cross sections at 28 energy points within $\sqrt{s} = 10.6$–11.05 GeV, including the initial-state radiation at $\Upsilon(10860)$.

NODE=M092R51;LINKAGE=A

[2] Reported as the range 1.35–3.80 eV obtained from multiple solutions of an amplitude fit within a model composed as a sum of Breit-Wigner functions.

NODE=M092R51;LINKAGE=B

$\Gamma(e^+e^-) \times \Gamma(\Upsilon(3S)\pi^+\pi^-)/\Gamma_{total}$ — $\Gamma_{15}\Gamma_{22}/\Gamma$

NODE=M092R52

VALUE (eV)	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.73 ± 0.30	[1,2] MIZUK	19	BELL	$e^+e^- \to \Upsilon(nS)\pi^+\pi^-$

[1] From a simultaneous fit to the $\Upsilon(nS)\pi^+\pi^-$, n = 1, 2, 3, cross sections at 28 energy points within $\sqrt{s}$ = 10.6–11.05 GeV, including the initial-state radiation at $\Upsilon(10860)$. NODE=M092R52;LINKAGE=A

[2] Reported as the range 0.43–1.03 eV obtained from multiple solutions of an amplitude fit within a model composed as a sum of Breit-Wigner functions. NODE=M092R52;LINKAGE=B

$\Upsilon(10860)$ BRANCHING RATIOS

NODE=M092230

$\Gamma(B\overline{B}X)/\Gamma_{total}$ — Γ_1/Γ

NODE=M092R13

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$0.735^{+0.015}_{-0.028}$ OUR AVERAGE					
[0.71 ± 0.06 OUR 2025 AVERAGE]					
$0.738^{+0.015}_{-0.029}$		ADACHI	250	BELL	$e^+e^- \to \Upsilon(5S)$
$0.589\pm0.100\pm0.092$		[1] HUANG	07	CLEO	$\Upsilon(5S) \to$ hadrons
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$0.737\pm0.032\pm0.051$	1063	[2] DRUTSKOY	10	BELL	$\Upsilon(5S) \to B^+X,\ B^0X$

NEW

[1] Using measurements or limits from AQUINES 06. NODE=M092R13;LINKAGE=HU

[2] Not independent of DRUTSKOY 10 values for $\Upsilon(5S) \to B^{\pm,0}$ anything. Superseded by ADACHI 250. NODE=M092R13;LINKAGE=DR

$\Gamma(B\overline{B})/\Gamma_{total}$ — Γ_2/Γ

NODE=M092R16

VALUE (units 10^{-2})	CL%	DOCUMENT ID		TECN	COMMENT
$5.5^{+1.0}_{-0.9}\pm0.4$		[1] DRUTSKOY	10	BELL	$\Upsilon(5S) \to B^+X,\ B^0X$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
<13.8	90	[2] HUANG	07	CLEO	$\Upsilon(5S) \to$ hadrons

[1] Assuming isospin conservation. NODE=M092R16;LINKAGE=DR

[2] Using measurements or limits from AQUINES 06. NODE=M092R16;LINKAGE=HU

$\Gamma(B\overline{B})/\Gamma(B\overline{B}X)$ — Γ_2/Γ_1

NODE=M092R05

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.22	90	AQUINES	06	CLE3	$\Upsilon(5S) \to$ hadrons

$\Gamma(B\overline{B}^* + c.c.)/\Gamma_{total}$ — Γ_3/Γ

NODE=M092R15

VALUE	DOCUMENT ID		TECN	COMMENT
0.137 ± 0.016 OUR AVERAGE				
$0.137\pm0.013\pm0.011$	[1] DRUTSKOY	10	BELL	$\Upsilon(5S) \to B^+X,\ B^0X$
$0.143\pm0.053\pm0.027$	[2] HUANG	07	CLEO	$\Upsilon(5S) \to$ hadrons

[1] Assuming isospin conservation. NODE=M092R15;LINKAGE=DR

[2] Using measurements or limits from AQUINES 06. NODE=M092R15;LINKAGE=HU

$\Gamma(B\overline{B}^* + c.c.)/\Gamma(B\overline{B}X)$ — Γ_3/Γ_1

NODE=M092R06

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$0.24\pm0.09\pm0.03$	10	AQUINES	06	CLE3	$\Upsilon(5S) \to$ hadrons

$\Gamma(B^*\overline{B}^*)/\Gamma_{total}$ — Γ_4/Γ

NODE=M092R14

VALUE	DOCUMENT ID		TECN	COMMENT
0.381 ± 0.034 OUR AVERAGE				
$0.375^{+0.021}_{-0.019}\pm0.030$	[1] DRUTSKOY	10	BELL	$\Upsilon(5S) \to B^+X,\ B^0X$
$0.436\pm0.083\pm0.072$	[2] HUANG	07	CLEO	$\Upsilon(5S) \to$ hadrons

[1] Assuming isospin conservation. NODE=M092R14;LINKAGE=DR

[2] Using measurements or limits from AQUINES 06. NODE=M092R14;LINKAGE=HU

$\Gamma(B^*\overline{B}^*)/\Gamma(B\overline{B}X)$ — Γ_4/Γ_1

NODE=M092R07

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$0.74\pm0.15\pm0.08$	31	AQUINES	06	CLE3	$\Upsilon(5S) \to$ hadrons

$\Gamma(B\overline{B}^{(*)}\pi)/\Gamma_{total}$ — Γ_5/Γ

NODE=M092R17

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.197	90	[1] HUANG	07	CLEO	$\Upsilon(5S) \to$ hadrons

[1] Using measurements or limits from AQUINES 06. NODE=M092R17;LINKAGE=HU

$\Gamma(B\overline{B}^{(*)}\pi)/\Gamma(B\overline{B}X)$ — Γ_5/Γ_1

NODE=M092R08
NODE=M092R08

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.32	90	AQUINES	06	CLE3	$\Upsilon(5S) \to$ hadrons

$\Gamma(B\overline{B}\pi)/\Gamma_{\text{total}}$ — Γ_6/Γ

NODE=M092R28
NODE=M092R28

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
0.0±1.2±0.3	0	[1] DRUTSKOY	10	BELL	$\Upsilon(5S) \to B^{+,0}\pi^- X$

[1] Assuming isospin conservation.

NODE=M092R28;LINKAGE=DR

$\left[\Gamma(B^*\overline{B}\pi)+\Gamma(B\overline{B}^*\pi)\right]/\Gamma_{\text{total}}$ — Γ_7/Γ

NODE=M092R29
NODE=M092R29

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{7.3^{+2.3}_{-2.1}\pm0.8}$	38	[1] DRUTSKOY	10	BELL	$\Upsilon(5S) \to B^{+,0}\pi^- X$

[1] Assuming isospin conservation.

NODE=M092R29;LINKAGE=DR

$\Gamma(B^*\overline{B}^*\pi)/\Gamma_{\text{total}}$ — Γ_8/Γ

NODE=M092R30
NODE=M092R30

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{1.0^{+1.4}_{-1.3}\pm0.4}$	5	[1] DRUTSKOY	10	BELL	$\Upsilon(5S) \to B^{+,0}\pi^- X$

[1] Assuming isospin conservation.

NODE=M092R30;LINKAGE=DR

$\Gamma(B\overline{B}\pi\pi)/\Gamma_{\text{total}}$ — Γ_9/Γ

NODE=M092R18
NODE=M092R18

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.089	90	[1] HUANG	07	CLEO	$\Upsilon(5S) \to$ hadrons

[1] Using measurements or limits from AQUINES 06.

NODE=M092R18;LINKAGE=HU

$\Gamma(B\overline{B}\pi\pi)/\Gamma(B\overline{B}X)$ — Γ_9/Γ_1

NODE=M092R09
NODE=M092R09

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.14	90	AQUINES	06	CLE3	$\Upsilon(5S) \to$ hadrons

$\Gamma(B_s^{(*)}\overline{B}_s^{(*)})/\Gamma_{\text{total}}$ — $\Gamma_{10}/\Gamma = (\Gamma_{11}+\Gamma_{12}+\Gamma_{13})/\Gamma$

NODE=M092R01
NODE=M092R01
NEW

VALUE	DOCUMENT ID		TECN	COMMENT
0.213±0.015 OUR AVERAGE				
[$0.189^{+0.027}_{-0.021}$ OUR 2025 AVERAGE]				
$0.214^{+0.015}_{-0.017}$	ADACHI	25O	BELL	$e^+e^- \to \Upsilon(5S)$
$0.21^{+0.06}_{-0.03}$	[1] HUANG	07	CLEO	$\Upsilon(5S) \to D_s X$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.172±0.030	[2] ESEN	13	BELL	$\Upsilon(5S) \to D^0 X$, $D_s X$
0.180±0.013±0.032	[3] DRUTSKOY	07	BELL	$\Upsilon(5S) \to D^0 X$, $D_s X$
0.160±0.026±0.058	[4] ARTUSO	05B	CLEO	$e^+e^- \to D_x X$

[1] Supersedes ARTUSO 05B. Combining inclusive ϕ, D_s, and B measurements. Using $B(D_s^+ \to \phi\pi^+) = 4.4 \pm 0.6\%$ from PDG 06.

NODE=M092R01;LINKAGE=HU

[2] Superseded by ADACHI 25O.

NODE=M092R01;LINKAGE=A

[3] Using $B(D_s^+ \to \phi\pi^+) = (4.4 \pm 0.6)\%$ from PDG 06. Superseded by ESEN 13

NODE=M092R01;LINKAGE=DR

[4] Uses a model-dependent estimate $B(B_s \to D_s X) = (92 \pm 11)\%$.

NODE=M092R01;LINKAGE=AR

$\Gamma(B_s^{(*)}\overline{B}_s^{(*)})/\Gamma(B\overline{B}X)$ — Γ_{10}/Γ_1

NODE=M092R34
NODE=M092R34

VALUE	DOCUMENT ID
$\mathbf{0.264^{+0.052}_{-0.045}}$ **OUR EVALUATION**	

→ UNCHECKED ←

$\Gamma(B_s^*\overline{B}_s^*)/\Gamma(B_s^{(*)}\overline{B}_s^{(*)})$ — $\Gamma_{13}/\Gamma_{10} = \Gamma_{13}/(\Gamma_{11}+\Gamma_{12}+\Gamma_{13})$

NODE=M092R19
NODE=M092R19

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
87.8±1.5 OUR AVERAGE					
87.0±1.7		[1,2] ESEN	13	BELL	$B_s^0 \to D_s^- \pi^+$
90.5±3.2±0.1	227	[2,3] LI	12	BELL	$B_s^0 \to J/\psi\eta^{(\prime)}$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$90.1^{+3.8}_{-4.0}\pm0.2$		[4] LOUVOT	09	BELL	10.86 $e^+e^- \to B_s^{(*)}\overline{B}_s^{(*)}$
$93^{+7}_{-9}\pm1$		[4] DRUTSKOY	07A	BELL	Superseded by LOUVOT 09

[1] Supersedes LOUVOT 09. NODE=M092R19;LINKAGE=ES
[2] With N($B_s^{(*)} \overline{B}_s^{(*)}$) = (7.11 ± 1.30) × 10^6. NODE=M092R19;LINKAGE=IL
[3] The ratios N($B_s^* \overline{B}_s^*$) / N($B_s^{(*)} \overline{B}_s^{(*)}$) and N($B_s^* \overline{B}_s^0$) / N($B_s^{(*)} \overline{B}_s^{(*)}$) are measured with a correlation coefficient of −0.72. NODE=M092R19;LINKAGE=LI
[4] From a measurement of $\sigma(e^+ e^- \rightarrow B_s^* \overline{B}_s^*)$ / $\sigma(e^+ e^- \rightarrow B_s^{(*)} \overline{B}_s^{(*)})$ at $\sqrt{s}$ = 10.86 GeV. NODE=M092R19;LINKAGE=DR

$\Gamma(B_s \overline{B}_s)/\Gamma(B_s^{(*)} \overline{B}_s^{(*)})$ $\Gamma_{11}/\Gamma_{10} = \Gamma_{11}/(\Gamma_{11}+\Gamma_{12}+\Gamma_{13})$

NODE=M092R24
NODE=M092R24

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
$2.6^{+2.6}_{-2.5}$	LOUVOT	09	BELL	10.86 $e^+ e^- \rightarrow B_s^{(*)} \overline{B}_s^{(*)}$

$\Gamma(B_s \overline{B}_s)/\Gamma(B_s^* \overline{B}_s^*)$ Γ_{11}/Γ_{13}

NODE=M092R03
NODE=M092R03

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.16	90	BONVICINI	06	CLE3	$e^+ e^-$

$\Gamma(B_s \overline{B}_s^* + \text{c.c.})/\Gamma(B_s^{(*)} \overline{B}_s^{(*)})$ $\Gamma_{12}/\Gamma_{10} = \Gamma_{12}/(\Gamma_{11}+\Gamma_{12}+\Gamma_{13})$

NODE=M092R25
NODE=M092R25

VALUE (units 10^{-2})	EVTS	DOCUMENT ID		TECN	COMMENT
6.7±1.2 OUR AVERAGE					
7.3±1.4		[1,2] ESEN	13	BELL	$B_s^0 \rightarrow D_s^- \pi^+$
4.9±2.5±0.0	227	[2,3] LI	12	BELL	$B_s^0 \rightarrow J/\psi \eta^{(\prime)}$
• • • We do not use the following data for averages, fits, limits, etc. • • •					
$7.3^{+3.3}_{-3.0}$±0.1		LOUVOT	09	BELL	10.86 $e^+ e^- \rightarrow B_s^{(*)} \overline{B}_s^{(*)}$

[1] Supersedes LOUVOT 09. NODE=M092R25;LINKAGE=ES
[2] With N($B_s^{(*)} \overline{B}_s^{(*)}$) = (7.11 ± 1.30) × 10^6. NODE=M092R25;LINKAGE=IL
[3] The ratios N($B_s^* \overline{B}_s^*$) / N($B_s^{(*)} \overline{B}_s^{(*)}$) and N($B_s^* \overline{B}_s^0$) / N($B_s^{(*)} \overline{B}_s^{(*)}$) are measured with a correlation coefficient of −0.72. NODE=M092R25;LINKAGE=LI

$\Gamma(B_s \overline{B}_s^* + \text{c.c.})/\Gamma(B_s^* \overline{B}_s^*)$ Γ_{12}/Γ_{13}

NODE=M092R04
NODE=M092R04

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<0.16	90	BONVICINI	06	CLE3	$e^+ e^-$

$\Gamma(\text{no open-bottom})/\Gamma_{\text{total}}$ Γ_{14}/Γ

NODE=M092R33
NODE=M092R33

VALUE	DOCUMENT ID		TECN	COMMENT
$0.048^{+0.036}_{-0.005}$	ADACHI	25O	BELL	$e^+ e^- \rightarrow \Upsilon(5S)$

$\Gamma(K^*(892)^0 \overline{K}^0)/\Gamma_{\text{total}}$ Γ_{16}/Γ

NODE=M092R35
NODE=M092R35

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<1.0 × 10^{-5}	90	SHEN	13A	BELL	$e^+ e^- \rightarrow K^*(892)^0 \overline{K}^0$

$\Gamma(\eta \Upsilon_J(1D))/\Gamma_{\text{total}}$ Γ_{24}/Γ

NODE=M092R48
NODE=M092R48

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
4.82±0.92±0.67	[1] TAMPONI	18	BELL	$e^+ e^- \rightarrow \Upsilon(5S) \rightarrow \eta X$

[1] Mainly $J = 2$, assumes no continuum contribution under $\Upsilon(5S)$. NODE=M092R48;LINKAGE=A

$\Gamma(\Upsilon(1S)\pi^+\pi^-)/\Gamma_{\text{total}}$ Γ_{17}/Γ

NODE=M092R20
NODE=M092R20

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
5.3±0.3±0.5	325	[1] CHEN	08	BELL	10.87 $e^+ e^- \rightarrow \Upsilon(1S)\pi^+\pi^-$

[1] Assuming that the observed events are solely due to the $\Upsilon(5S)$ resonance. NODE=M092R20;LINKAGE=CH

$\Gamma(\Upsilon(1S)\eta)/\Gamma_{\text{total}}$ Γ_{18}/Γ

NODE=M092R55
NODE=M092R55

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
0.85±0.15±0.08	[1,2] KOVALENKO	21	BELL	$e^+ e^- \rightarrow \Upsilon(5S)$

[1] Assuming that the observed events are solely due to the $\Upsilon(5S)$ resonance. NODE=M092R55;LINKAGE=A
[2] Using a data sample of 118.3 fb^{-1} of $e^+ e^-$ collisions at $\sqrt{s}$ = 10.866 GeV. NODE=M092R55;LINKAGE=B

$\Gamma(\Upsilon(1S)\eta')/\Gamma_{\text{total}}$ Γ_{19}/Γ

NODE=M092R56
NODE=M092R56

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
<6.9 × 10^{-5}	90	[1,2] KOVALENKO	21	BELL	$e^+ e^- \rightarrow \Upsilon(5S)$

[1] Assuming that the observed events are solely due to the $\Upsilon(5S)$ resonance. NODE=M092R56;LINKAGE=A
[2] Using a data sample of 118.3 fb^{-1} of $e^+ e^-$ collisions at $\sqrt{s}$ = 10.866 GeV. NODE=M092R56;LINKAGE=B

$\Gamma(\Upsilon(2S)\pi^+\pi^-)/\Gamma_{total}$ — Γ_{20}/Γ

NODE=M092R21

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
7.8±0.6±1.1	186	[1] CHEN	08	BELL	10.87 $e^+e^- \to \Upsilon(2S)\pi^+\pi^-$

[1] Assuming that the observed events are solely due to the $\Upsilon(5S)$ resonance.

NODE=M092R21;LINKAGE=CH

$\Gamma(\Upsilon(2S)\eta)/\Gamma_{total}$ — Γ_{21}/Γ

NODE=M092R57

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
4.13±0.41±0.37	[1,2] KOVALENKO	21	BELL	$e^+e^- \to \Upsilon(5S)$

[1] Assuming that the observed events are solely due to the $\Upsilon(5S)$ resonance.
[2] Using a data sample of 118.3 fb^{-1} of e^+e^- collisions at $\sqrt{s}$ = 10.866 GeV.

NODE=M092R57;LINKAGE=A
NODE=M092R57;LINKAGE=B

$\Gamma(\Upsilon(3S)\pi^+\pi^-)/\Gamma_{total}$ — Γ_{22}/Γ

NODE=M092R22

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{4.8^{+1.8}_{-1.5}\pm0.7}$	10	[1] CHEN	08	BELL	10.87 $e^+e^- \to \Upsilon(3S)\pi^+\pi^-$

[1] Assuming that the observed events are solely due to the $\Upsilon(5S)$ resonance.

NODE=M092R22;LINKAGE=CH

$\Gamma(\Upsilon(1S)K^+K^-)/\Gamma_{total}$ — Γ_{23}/Γ

NODE=M092R23

VALUE (units 10^{-4})	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{6.1^{+1.6}_{-1.4}\pm1.0}$	20	[1] CHEN	08	BELL	10.87 $e^+e^- \to \Upsilon(1S)K^+K^-$

[1] Assuming that the observed events are solely due to the $\Upsilon(5S)$ resonance.

NODE=M092R23;LINKAGE=CH

$\Gamma(h_b(1P)\pi^+\pi^-)/\Gamma(\Upsilon(2S)\pi^+\pi^-)$ — Γ_{25}/Γ_{20}

NODE=M092R31

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.45\pm0.08^{+0.07}_{-0.12}}$	ADACHI	12	BELL	10.86 $e^+e^- \to$ hadrons

$\Gamma(h_b(2P)\pi^+\pi^-)/\Gamma(\Upsilon(2S)\pi^+\pi^-)$ — Γ_{26}/Γ_{20}

NODE=M092R32

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.77\pm0.08^{+0.22}_{-0.17}}$	ADACHI	12	BELL	10.86 $e^+e^- \to$ hadrons

$\Gamma(h_b(1P)\pi^+\pi^-)/\Gamma(h_b(2P)\pi^+\pi^-)$ — Γ_{25}/Γ_{26}

NODE=M092R00

VALUE	DOCUMENT ID		TECN	COMMENT
0.616±0.052±0.017	MIZUK	16	BELL	$e^+e^- \to h_b(1P,2P)\pi^+\pi^-$

$\Gamma(\chi_{bJ}(1P)\pi^+\pi^-\pi^0)/\Gamma_{total}$ — Γ_{27}/Γ

NODE=M092R49

VALUE (units 10^{-3})	DOCUMENT ID		TECN	COMMENT
2.5±0.6±2.2	YIN	18	BELL	$e^+e^- \to$ hadrons

$\Gamma(\chi_{b0}(1P)\pi^+\pi^-\pi^0)/\Gamma_{total}$ — Γ_{28}/Γ

NODE=M092R36

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{<6.3\times10^{-3}}$	90	[1] HE	14	BELL	$\Upsilon(5S) \to \pi^+\pi^-\pi^0\gamma\Upsilon(1S)$

[1] Assuming that all the $b\overline{b}$ events are from $\Upsilon(5S)$ resonance decays and using $\sigma(e^+e^- \to b\overline{b})$ = 0.340 ± 0.016 nb from ESEN 13. Correlated with other results from HE 14.

NODE=M092R36;LINKAGE=A

$\Gamma(\chi_{b0}(1P)\omega)/\Gamma_{total}$ — Γ_{29}/Γ

NODE=M092R37

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{<3.9\times10^{-3}}$	90	[1] HE	14	BELL	$\Upsilon(5S) \to \pi^+\pi^-\pi^0\gamma\Upsilon(1S)$

[1] Assuming that all the $b\overline{b}$ events are from $\Upsilon(5S)$ resonance decays and using $\sigma(e^+e^- \to b\overline{b})$ = 0.340 ± 0.016 nb from ESEN 13. Correlated with other results from HE 14.

NODE=M092R37;LINKAGE=A

$\Gamma(\chi_{b0}(1P)(\pi^+\pi^-\pi^0)_{non-\omega})/\Gamma_{total}$ — Γ_{30}/Γ

NODE=M092R38

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$\mathbf{<4.8\times10^{-3}}$	90	[1] HE	14	BELL	$\Upsilon(5S) \to \pi^+\pi^-\pi^0\gamma\Upsilon(1S)$

[1] Assuming that all the $b\overline{b}$ events are from $\Upsilon(5S)$ resonance decays and using $\sigma(e^+e^- \to b\overline{b})$ = 0.340 ± 0.016 nb from ESEN 13. Correlated with other results from HE 14.

NODE=M092R38;LINKAGE=A

$\Gamma(\chi_{b1}(1P)\pi^+\pi^-\pi^0)/\Gamma_{total}$ — Γ_{31}/Γ

NODE=M092R39

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.85±0.23±0.23	80	[1] HE	14	BELL	$\Upsilon(5S) \to \pi^+\pi^-\pi^0\gamma\Upsilon(1S)$

[1] Assuming that all the $b\overline{b}$ events are from $\Upsilon(5S)$ resonance decays and using $\sigma(e^+e^- \to b\overline{b})$ = 0.340 ± 0.016 nb from ESEN 13. Correlated with other results from HE 14.

NODE=M092R39;LINKAGE=A

$\Gamma(\chi_{b1}(1P)\omega)/\Gamma_{total}$ Γ_{32}/Γ

NODE=M092R40

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.57±0.22±0.21	60	[1] HE	14	BELL	$\Upsilon(5S) \to \pi^+\pi^-\pi^0\gamma\Upsilon(1S)$

[1] Assuming that all the $b\overline{b}$ events are from $\Upsilon(5S)$ resonance decays and using $\sigma(e^+e^- \to b\overline{b}) = 0.340 \pm 0.016$ nb from ESEN 13. Correlated with other results from HE 14.

NODE=M092R40;LINKAGE=A

$\Gamma(\chi_{b1}(1P)(\pi^+\pi^-\pi^0)_{non-\omega})/\Gamma_{total}$ Γ_{33}/Γ

NODE=M092R41

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.52±0.15±0.11	24	[1] HE	14	BELL	$\Upsilon(5S) \to \pi^+\pi^-\pi^0\gamma\Upsilon(1S)$

[1] Assuming that all the $b\overline{b}$ events are from $\Upsilon(5S)$ resonance decays and using $\sigma(e^+e^- \to b\overline{b}) = 0.340 \pm 0.016$ nb from ESEN 13. Correlated with other results from HE 14.

NODE=M092R41;LINKAGE=A

$\Gamma(\chi_{b2}(1P)\pi^+\pi^-\pi^0)/\Gamma_{total}$ Γ_{34}/Γ

NODE=M092R42

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
1.17±0.27±0.14	29	[1] HE	14	BELL	$\Upsilon(5S) \to \pi^+\pi^-\pi^0\gamma\Upsilon(1S)$

[1] Assuming that all the $b\overline{b}$ events are from $\Upsilon(5S)$ resonance decays and using $\sigma(e^+e^- \to b\overline{b}) = 0.340 \pm 0.016$ nb from ESEN 13. Correlated with other results from HE 14.

NODE=M092R42;LINKAGE=A

$\Gamma(\chi_{b2}(1P)\omega)/\Gamma_{total}$ Γ_{35}/Γ

NODE=M092R43

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.60±0.23±0.15	13	[1] HE	14	BELL	$\Upsilon(5S) \to \pi^+\pi^-\pi^0\gamma\Upsilon(1S)$

[1] Assuming that all the $b\overline{b}$ events are from $\Upsilon(5S)$ resonance decays and using $\sigma(e^+e^- \to b\overline{b}) = 0.340 \pm 0.016$ nb from ESEN 13. Correlated with other results from HE 14.

NODE=M092R43;LINKAGE=A

$\Gamma(\chi_{b2}(1P)\omega)/\Gamma(\chi_{b1}(1P)\omega)$ Γ_{35}/Γ_{32}

NODE=M092R44

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
0.38±0.16±0.09	[1] HE	14	BELL	$\Upsilon(5S) \to \pi^+\pi^-\pi^0\gamma\Upsilon(1S)$

[1] Accounting for correlated systematics.

NODE=M092R44;LINKAGE=A

$\Gamma(\chi_{b2}(1P)(\pi^+\pi^-\pi^0)_{non-\omega})/\Gamma_{total}$ Γ_{36}/Γ

NODE=M092R45

VALUE (units 10^{-3})	EVTS	DOCUMENT ID		TECN	COMMENT
0.61±0.22±0.28	16	[1] HE	14	BELL	$\Upsilon(5S) \to \pi^+\pi^-\pi^0\gamma\Upsilon(1S)$

[1] Assuming that all the $b\overline{b}$ events are from $\Upsilon(5S)$ resonance decays and using $\sigma(e^+e^- \to b\overline{b}) = 0.340 \pm 0.016$ nb from ESEN 13. Correlated with other results from HE 14.

NODE=M092R45;LINKAGE=A

$\Gamma(\chi_{b2}(1P)(\pi^+\pi^-\pi^0)_{non-\omega})/\Gamma(\chi_{b1}(1P)(\pi^+\pi^-\pi^0)_{non-\omega})$ Γ_{36}/Γ_{33}

NODE=M092R46

VALUE	DOCUMENT ID		TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.20±0.55±0.65	[1] HE	14	BELL	$\Upsilon(5S) \to \pi^+\pi^-\pi^0\gamma\Upsilon(1S)$

[1] Accounting for correlated systematics.

NODE=M092R46;LINKAGE=A

$\Gamma(\eta_b(1S)\omega)/\Gamma_{total}$ Γ_{38}/Γ

NODE=M092R53

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<1.3 \times 10^{-3}$	90	[1] OSKIN	20	BELL	$e^+e^- \to \omega X$

[1] Using $\sigma_{b\overline{b}} = 0.340 \pm 0.016$ nb from TAMPONI 15.

NODE=M092R53;LINKAGE=A

$\Gamma(\eta_b(2S)\omega)/\Gamma_{total}$ Γ_{39}/Γ

NODE=M092R54

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<5.6 \times 10^{-3}$	90	[1] OSKIN	20	BELL	$e^+e^- \to \omega X$

[1] Using $\sigma_{b\overline{b}} = 0.340 \pm 0.016$ nb from TAMPONI 15.

NODE=M092R54;LINKAGE=A

$\Gamma(\gamma X_b \to \gamma\Upsilon(1S)\omega)/\Gamma_{total}$ Γ_{37}/Γ

NODE=M092R47

VALUE	CL%	DOCUMENT ID		TECN	COMMENT
$<3.8 \times 10^{-5}$	90	[1] HE	14	BELL	$\Upsilon(5S) \to \pi^+\pi^-\pi^0\gamma\Upsilon(1S)$

[1] Assuming that all the $b\overline{b}$ events are from $\Upsilon(5S)$ resonance decays and using $\sigma(e^+e^- \to b\overline{b}) = 0.340 \pm 0.016$ nb from ESEN 13. Correlated with other results from HE 14. For a state X_b with mass between 10.55 GeV/c^2 and 10.65 GeV/c^2, the obtained 90% upper limit as a function of m_{X_b} varies from 2.6×10^{-5} to 3.8×10^{-5}.

NODE=M092R47;LINKAGE=A

$\Gamma(\phi$ anything$)/\Gamma_{total}$ — Γ_{40}/Γ

NODE=M092R12

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.138 \pm 0.007^{+0.023}_{-0.015}}$	HUANG	07	CLEO	$\Upsilon(5S) \to \phi X$

$\Gamma(D^0$ anything + c.c.$)/\Gamma_{total}$ — Γ_{41}/Γ

NODE=M092R10

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{1.117 \pm 0.005 \pm 0.060}$	[1] ZHUKOVA	23	BELL	$\Upsilon(5S) \to D^0 X,\ \overline{D}^0 X$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$1.076 \pm 0.040 \pm 0.068$	DRUTSKOY	07	BELL	$\Upsilon(5S) \to D^0 X,\ \overline{D}^0 X$

[1] Supersedes DRUTSKOY 07.

NODE=M092R10;LINKAGE=A

$\Gamma(D_s$ anything + c.c.$)/\Gamma_{total}$ — Γ_{42}/Γ

NODE=M092R02

VALUE	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.447 \pm 0.026}$ **OUR AVERAGE**				
$0.447 \pm 0.003 \pm 0.027$	[1] ZHUKOVA	23	BELL	$\Upsilon(5S) \to D_s^{\pm} X$
$0.44 \pm 0.09 \pm 0.04$	[2] ARTUSO	05B	CLE3	$\Upsilon(5S) \to D_s^{\pm} X$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
$0.472 \pm 0.024 \pm 0.072$	[3] DRUTSKOY	07	BELL	$\Upsilon(5S) \to D_s^{\pm} X$

[1] Supersedes DRUTSKOY 07.

NODE=M092R02;LINKAGE=A

[2] ARTUSO 05B reports $[\Gamma(\Upsilon(10860) \to D_s$ anything + c.c.$)/\Gamma_{total}] \times [B(D_s^+ \to \phi\pi^+)] = 0.0198 \pm 0.0019 \pm 0.0038$ which we divide by our best (shown rounded) value $B(D_s^+ \to \phi\pi^+) = (4.5 \pm 0.4) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best (shown rounded) value.

NODE=M092R02;LINKAGE=AR

[3] Using $B(D_s^+ \to \phi\pi^+) = (4.4 \pm 0.6)\%$ from PDG 06.

NODE=M092R02;LINKAGE=DR

$\Gamma(J/\psi$ anything$)/\Gamma_{total}$ — Γ_{43}/Γ

NODE=M092R11

VALUE (units 10^{-2})	DOCUMENT ID		TECN	COMMENT
$\mathbf{2.060 \pm 0.160 \pm 0.134}$	DRUTSKOY	07	BELL	$\Upsilon(5S) \to J/\psi X$

$\Gamma(B^0$ anything + c.c.$)/\Gamma_{total}$ — Γ_{44}/Γ

NODE=M092R26

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.770^{+0.058}_{-0.056} \pm 0.061}$	352	DRUTSKOY	10	BELL	$\Upsilon(5S) \to B^0 X$

$\Gamma(B^+$ anything + c.c.$)/\Gamma_{total}$ — Γ_{45}/Γ

NODE=M092R27

VALUE	EVTS	DOCUMENT ID		TECN	COMMENT
$\mathbf{0.721^{+0.039}_{-0.038} \pm 0.050}$	711	DRUTSKOY	10	BELL	$\Upsilon(5S) \to B^+ X$

$\Upsilon(10860)$ REFERENCES

NODE=M092

ADACHI	25O	JHEP 2504 114	I. Adachi et al.	(BELLE and BELLEII Collab.)	REFID=63463
ZHUKOVA	23	JHEP 2308 131	V. Zhukova et al.	(BELLE Collab.)	REFID=62312
KOVALENKO	21	PR D104 112006	E. Kovalenko et al.	(BELLE Collab.)	REFID=61452
DONG	20A	CP C44 083001	X.-K. Dong et al.		REFID=60595
OSKIN	20	PR D102 092011	P. Oskin et al.	(BELLE Collab.)	REFID=60735
MIZUK	19	JHEP 1910 220	R. Mizuk et al.	(BELLE Collab.)	REFID=60090
TAMPONI	18	EPJ C78 633	U. Tamponi et al.	(BELLE Collab.)	REFID=59195
YIN	18	PR D98 091102	J.H. Yin et al.	(BELLE Collab.)	REFID=59468
MIZUK	16	PRL 117 142001	R. Mizuk et al.	(BELLE Collab.)	REFID=57465
SANTEL	16	PR D93 011101	D. Santel et al.	(BELLE Collab.)	REFID=57121
TAMPONI	15	PRL 115 142001	U. Tamponi et al.	(BELLE Collab.)	REFID=56996
HE	14	PRL 113 142001	X.H. He et al.	(BELLE Collab.)	REFID=55927
ESEN	13	PR D87 031101	S. Esen et al.	(BELLE Collab.)	REFID=54894
SHEN	13A	PR D88 052019	C.P. Shen et al.	(BELLE Collab.)	REFID=55591
ADACHI	12	PRL 108 032001	I. Adachi et al.	(BELLE Collab.)	REFID=53962
LI	12	PRL 108 181808	J. Li et al.	(BELLE Collab.)	REFID=54116
CHEN	10	PR D82 091106	K.-F. Chen et al.	(BELLE Collab.)	REFID=53531
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