

$\Upsilon(10860)$

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

 $\Upsilon(10860)$ MASS

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

 $\Upsilon(10860)$ WIDTH

<u>VALUE (MeV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
110 ± 13 OUR AVERAGE			
112 ± 17 ± 23	BESSION	85	CLEO $e^+e^- \rightarrow$ hadrons
110 ± 15	LOVELOCK	85	CUSB $e^+e^- \rightarrow$ hadrons

 $\Upsilon(10860)$ DECAY MODES

Mode	Fraction (Γ_i/Γ)
Γ_1 e^+e^-	$(2.8 \pm 0.7) \times 10^{-6}$
Γ_2 $B^{(*)}\bar{B}^{(*)}(X)$	
Γ_3 $B\bar{B}$	$(45 \pm 11) \%$
Γ_4 $B\bar{B}^* + \text{c.c.}$	
Γ_5 $B^*\bar{B}^*$	
Γ_6 $B^{(*)}\bar{B}^{(*)}\pi$	
Γ_7 $B\bar{B}\pi\pi$	
Γ_8 $B_s\bar{B}_s$	
Γ_9 D_s anything + c.c.	
Γ_{10} $B_s\bar{B}_s^* + \text{c.c.}$	
Γ_{11} $B_s^*\bar{B}_s^*$	

 $\Upsilon(10860)$ PARTIAL WIDTHS

$\Gamma(e^+e^-)$	Γ_1		
<u>VALUE (keV)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
0.31 ± 0.07 OUR AVERAGE	Error includes scale factor of 1.3.		
0.22 ± 0.05 ± 0.07	BESSION	85	CLEO $e^+e^- \rightarrow$ hadrons
0.365 ± 0.070	LOVELOCK	85	CUSB $e^+e^- \rightarrow$ hadrons

 $\Upsilon(10860)$ BRANCHING RATIOS

$\Gamma(B\bar{B})/\Gamma(B^{(*)}\bar{B}^{(*)}(X))$	Γ_3/Γ_2			
<u>VALUE</u>	<u>CL%</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
<0.22	90	AQUINES	06	CLE3 $\Upsilon(5S) \rightarrow$ hadrons

$\Gamma(B\bar{B}^* + \text{c.c.})/\Gamma(B^{(*)}\bar{B}^{(*)})(X)$ Γ_4/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.24±0.09±0.03	10	AQUINES 06	CLE3	$\Upsilon(5S) \rightarrow \text{hadrons}$

$\Gamma(B^*\bar{B}^*)/\Gamma(B^{(*)}\bar{B}^{(*)})(X)$ Γ_5/Γ_2

VALUE	EVTS	DOCUMENT ID	TECN	COMMENT
0.74±0.15±0.08	31	AQUINES 06	CLE3	$\Upsilon(5S) \rightarrow \text{hadrons}$

$\Gamma(B^{(*)}\bar{B}^{(*)}\pi)/\Gamma(B^{(*)}\bar{B}^{(*)})(X)$ Γ_6/Γ_2

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

$\Gamma(B\bar{B}\pi\pi)/\Gamma(B^{(*)}\bar{B}^{(*)})(X)$ Γ_7/Γ_2

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

$[\Gamma(B_s\bar{B}_s) + \Gamma(B_s\bar{B}_s^* + \text{c.c.}) + \Gamma(B_s^*\bar{B}_s^*)]/\Gamma_{\text{total}}$ $(\Gamma_8+\Gamma_{10}+\Gamma_{11})/\Gamma$

VALUE	DOCUMENT ID	TECN	COMMENT
0.160±0.026±0.058	¹ ARTUSO 05B	CLE3	$e^+e^- \rightarrow D_s X$

$\Gamma(D_s \text{ anything} + \text{c.c.})/\Gamma_{\text{total}}$ Γ_9/Γ

VALUE	DOCUMENT ID	TECN	COMMENT
0.45±0.10±0.06	² ARTUSO 05B	CLE3	$e^+e^- \rightarrow D_s X$

$\Gamma(B_s\bar{B}_s)/\Gamma(B_s^*\bar{B}_s^*)$ Γ_8/Γ_{11}

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

$\Gamma(B_s\bar{B}_s^* + \text{c.c.})/\Gamma(B_s^*\bar{B}_s^*)$ Γ_{10}/Γ_{11}

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

¹ Uses a model-dependent estimate $B(B_s \rightarrow D_s X) = (92 \pm 11)\%$.

² ARTUSO 05B reports $[B(\Upsilon(10860) \rightarrow D_s \text{ anything} + \text{c.c.}) \times B(D_s^+ \rightarrow \phi\pi^+)] = 0.0198 \pm 0.0019 \pm 0.0038$. We divide by our best value $B(D_s^+ \rightarrow \phi\pi^+) = (4.4 \pm 0.6) \times 10^{-2}$. Our first error is their experiment's error and our second error is the systematic error from using our best value.

$\Upsilon(10860)$ REFERENCES

AQUINES 06	PRL 96 152001	O. Aquines <i>et al.</i>	(CLEO Collab.)
BONVICINI 06	PRL 96 022002	G. Bonvicini <i>et al.</i>	(CLEO Collab.)
ARTUSO 05B	PRL 95 261801	M. Artuso <i>et al.</i>	(CLEO Collab.)
BESSION 85	PRL 54 381	D. Besson <i>et al.</i>	(CLEO Collab.)
LOVELOCK 85	PRL 54 377	D.M.J. Lovelock <i>et al.</i>	(CUSB Collab.)