# $\Upsilon(10860)$

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

## $\Upsilon(10860)$ MASS

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **10876 ±11 OUR EVALUATION** Weighted-average of Belle and BaBar results, but tripling the scaling $S$-factors applied to the uncertainties to account for model-dependence, handling of radiative corrections, and interference effects. | | | | |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| 10879 ± 3 | [1,2] CHEN | 10 | BELL | $e^+e^- \rightarrow$ hadrons |
| $10888.4^{+2.7}_{-2.6} \pm 1.2$ | [3] CHEN | 10 | BELL | $e^+e^- \rightarrow \Upsilon(1S,2S,3S)\pi^+\pi^-$ |
| 10876 ± 2 | [1] AUBERT | 09E | BABR | $e^+e^- \rightarrow$ hadrons |
| 10869 ± 2 | [4] AUBERT | 09E | BABR | $e^+e^- \rightarrow$ hadrons |
| 10868 ± 6 ±5 | [5] BESSON | 85 | CLEO | $e^+e^- \rightarrow$ hadrons |
| 10845 ±20 | [6] LOVELOCK | 85 | CUSB | $e^+e^- \rightarrow$ hadrons |

[1] 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.

[2] The parameters of the $\Upsilon(11020)$ are fixed to those in AUBERT 09E.

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

[4] 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.

[5] Assuming four Gaussians with radiative tails and a single step in $R$.

[6] In a coupled-channel model with three resonances and a smooth step in $R$.

## $\Upsilon(10860)$ WIDTH

| VALUE (MeV) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **55 ±28 OUR EVALUATION** Weighted-average of Belle and BaBar results, but tripling the scaling $S$-factors applied to the uncertainties to account for model-dependence, handling of radiative corrections, and interference effects. | | | | |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $46^{+9}_{-7}$ | [7,8] CHEN | 10 | BELL | $e^+e^- \rightarrow$ hadrons |
| $30.7^{+8.3}_{-7.0} \pm 3.1$ | [9] CHEN | 10 | BELL | $e^+e^- \rightarrow \Upsilon(1S,2S,3S)\pi^+\pi^-$ |
| 43 ± 4 | [7] AUBERT | 09E | BABR | $e^+e^- \rightarrow$ hadrons |
| 74 ± 4 | [10] AUBERT | 09E | BABR | $e^+e^- \rightarrow$ hadrons |
| 112 ±17 ±23 | [11] BESSON | 85 | CLEO | $e^+e^- \rightarrow$ hadrons |
| 110 ±15 | [12] LOVELOCK | 85 | CUSB | $e^+e^- \rightarrow$ hadrons |

[7] 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.
[8] The parameters of the $\Upsilon(11020)$ are fixed to those in AUBERT 09E.
[9] In a model where a flat nonresonant $\Upsilon(1S,2S,3S)\pi^+\pi^-$ continuum interferes with a single Breit-Wigner resonance.
[10] 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.
[11] Assuming four Gaussians with radiative tails and a single step in $R$.
[12] In a coupled-channel model with three resonances and a smooth step in $R$.

## $\Upsilon$(10860) DECAY MODES

| | Mode | Fraction ($\Gamma_i/\Gamma$) | Confidence level |
|---|---|---|---|
| $\Gamma_1$ | $B\overline{B}X$ | $(75.9\ ^{+2.7}_{-4.0})$ % | |
| $\Gamma_2$ | $B\overline{B}$ | $(5.5\ \pm1.0)$ % | |
| $\Gamma_3$ | $B\overline{B}^* +$ c.c. | $(13.7\ \pm1.6)$ % | |
| $\Gamma_4$ | $B^*\overline{B}^*$ | $(38.1\ \pm3.4)$ % | |
| $\Gamma_5$ | $B\overline{B}^{(*)}\pi$ | $<19.7$ % | 90% |
| $\Gamma_6$ | $B\overline{B}\pi$ | $(0.0\ \pm1.2)$ % | |
| $\Gamma_7$ | $B^*\overline{B}\pi + B\overline{B}^*\pi$ | $(7.3\ \pm2.3)$ % | |
| $\Gamma_8$ | $B^*\overline{B}^*\pi$ | $(1.0\ \pm1.4)$ % | |
| $\Gamma_9$ | $B\overline{B}\pi\pi$ | $<8.9$ % | 90% |
| $\Gamma_{10}$ | $B_s^{(*)}\overline{B}_s^{(*)}$ | $(19.9\ \pm3.0)$ % | |
| $\Gamma_{11}$ | $B_s\overline{B}_s$ | $(5\ \pm5) \times 10^{-3}$ | |
| $\Gamma_{12}$ | $B_s\overline{B}_s^* +$ c.c. | $(1.5\ \pm0.7)$ % | |
| $\Gamma_{13}$ | $B_s^*\overline{B}_s^*$ | $(17.9\ \pm2.8)$ % | |
| $\Gamma_{14}$ | no open-bottom | $(4.2\ ^{+5.0}_{-0.6})$ % | |
| $\Gamma_{15}$ | $e^+e^-$ | $(5.6\ \pm3.1) \times 10^{-6}$ | |
| $\Gamma_{16}$ | $\Upsilon(1S)\pi^+\pi^-$ | $(5.3\ \pm0.6) \times 10^{-3}$ | |
| $\Gamma_{17}$ | $\Upsilon(2S)\pi^+\pi^-$ | $(7.8\ \pm1.3) \times 10^{-3}$ | |
| $\Gamma_{18}$ | $\Upsilon(3S)\pi^+\pi^-$ | $(4.8\ ^{+1.9}_{-1.7}) \times 10^{-3}$ | |
| $\Gamma_{19}$ | $\Upsilon(1S)K^+K^-$ | $(6.1\ \pm1.8) \times 10^{-4}$ | |
| $\Gamma_{20}$ | $h_b(1P)\pi^+\pi^-$ | $(3.5\ ^{+1.0}_{-1.3}) \times 10^{-3}$ | |
| $\Gamma_{21}$ | $h_b(2P)\pi^+\pi^-$ | $(6.0\ ^{+2.1}_{-1.8}) \times 10^{-3}$ | |

### Inclusive Decays.

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

| | | | |
|---|---|---|---|
| $\Gamma_{22}$ | $\phi$ anything | $(13.8\ ^{+2.4}_{-1.7})$ % | |
| $\Gamma_{23}$ | $D^0$ anything $+$ c.c. | $(108\ \pm8)$ % | |

| | | |
|---|---|---|
| $\Gamma_{24}$ | $D_s$ anything + c.c. | ( 46 ±6 ) % |
| $\Gamma_{25}$ | $J/\psi$ anything | ( 2.06±0.21) % |
| $\Gamma_{26}$ | $B^0$ anything + c.c. | ( 77 ±8 ) % |
| $\Gamma_{27}$ | $B^+$ anything + c.c. | ( 72 ±6 ) % |

## $\Upsilon$(10860) PARTIAL WIDTHS

### $\Gamma(e^+e^-)$ — $\Gamma_{15}$

| 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) BRANCHING RATIOS

"OUR EVALUATION" is obtained based on averages of rescaled data listed below. The averages and rescaling were performed by the Heavy Flavor Averaging Group (HFAG) and are described at http://www.slac.stanford.edu/xorg/hfag/.

### $\Gamma(B\overline{B}X)/\Gamma_{total}$ — $\Gamma_1/\Gamma$

| VALUE | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **$0.759^{+0.027}_{-0.040}$ OUR EVALUATION** | | | | | |
| **0.71 ±0.06 OUR AVERAGE** | | | | | |
| 0.737±0.032±0.051 | 1063 | [13] DRUTSKOY | 10 | BELL | $\Upsilon(5S) \to B^+X,\ B^0X$ |
| 0.589±0.100±0.092 | | [14] HUANG | 07 | CLEO | $\Upsilon(5S) \to$ hadrons |

### $\Gamma(B\overline{B})/\Gamma_{total}$ — $\Gamma_2/\Gamma$

| VALUE (units $10^{-2}$) | CL% | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **$5.5^{+1.0}_{-0.9}\pm0.4$** | | [15] 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 | [14] HUANG | 07 | CLEO | $\Upsilon(5S) \to$ hadrons |

### $\Gamma(B\overline{B})/\Gamma(B\overline{B}X)$ — $\Gamma_2/\Gamma_1$

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

### $\Gamma(B\overline{B}^* + \text{c.c.})/\Gamma_{total}$ — $\Gamma_3/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **0.137±0.016 OUR AVERAGE** | | | | |
| 0.137±0.013±0.011 | [15] DRUTSKOY | 10 | BELL | $\Upsilon(5S) \to B^+X,\ B^0X$ |
| 0.143±0.053±0.027 | [14] HUANG | 07 | CLEO | $\Upsilon(5S) \to$ hadrons |

### $\Gamma(B\overline{B}^* + \text{c.c.})/\Gamma(B\overline{B}X)$ — $\Gamma_3/\Gamma_1$

| VALUE | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **0.24±0.09±0.03** | 10 | AQUINES | 06 | CLE3 | $\Upsilon(5S) \to$ hadrons |

## $\Gamma(B^*\overline{B}^*)/\Gamma_{total}$ — $\Gamma_4/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **0.381±0.034 OUR AVERAGE** | | | | |
| $0.375^{+0.021}_{-0.019}\pm0.030$ | [15] DRUTSKOY | 10 | BELL | $\Upsilon(5S) \to B^+X,\ B^0X$ |
| $0.436\pm0.083\pm0.072$ | [14] HUANG | 07 | CLEO | $\Upsilon(5S) \to$ hadrons |

## $\Gamma(B^*\overline{B}^*)/\Gamma(B\overline{B}X)$ — $\Gamma_4/\Gamma_1$

| VALUE | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **0.74±0.15±0.08** | 31 | AQUINES | 06 | CLE3 | $\Upsilon(5S) \to$ hadrons |

## $\Gamma(B\overline{B}^{(*)}\pi)/\Gamma_{total}$ — $\Gamma_5/\Gamma$

| VALUE | CL% | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **<0.197** | 90 | [14] HUANG | 07 | CLEO | $\Upsilon(5S) \to$ hadrons |

## $\Gamma(B\overline{B}^{(*)}\pi)/\Gamma(B\overline{B}X)$ — $\Gamma_5/\Gamma_1$

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

## $\Gamma(B\overline{B}\pi)/\Gamma_{total}$ — $\Gamma_6/\Gamma$

| VALUE (units $10^{-2}$) | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **0.0±1.2±0.3** | 0 | [15] DRUTSKOY | 10 | BELL | $\Upsilon(5S) \to B^{+,0}\pi^- X$ |

## $[\Gamma(B^*\overline{B}\pi)+\Gamma(B\overline{B}^*\pi)]/\Gamma_{total}$ — $\Gamma_7/\Gamma$

| VALUE (units $10^{-2}$) | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| $\mathbf{7.3^{+2.3}_{-2.1}\pm0.8}$ | 38 | [15] DRUTSKOY | 10 | BELL | $\Upsilon(5S) \to B^{+,0}\pi^- X$ |

## $\Gamma(B^*\overline{B}^*\pi)/\Gamma_{total}$ — $\Gamma_8/\Gamma$

| VALUE (units $10^{-2}$) | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| $\mathbf{1.0^{+1.4}_{-1.3}\pm0.4}$ | 5 | [15] DRUTSKOY | 10 | BELL | $\Upsilon(5S) \to B^{+,0}\pi^- X$ |

## $\Gamma(B\overline{B}\pi\pi)/\Gamma_{total}$ — $\Gamma_9/\Gamma$

| VALUE | CL% | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **<0.089** | 90 | [14] HUANG | 07 | CLEO | $\Upsilon(5S) \to$ hadrons |

## $\Gamma(B\overline{B}\pi\pi)/\Gamma(B\overline{B}X)$ — $\Gamma_9/\Gamma_1$

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

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

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **0.199±0.030 OUR EVALUATION** | | | | |
| $\mathbf{0.195^{+0.030}_{-0.023}}$ **OUR AVERAGE** | | | | |
| $0.180\pm0.013\pm0.032$ | [16] DRUTSKOY | 07 | BELL | $\Upsilon(5S) \to D^0X,\ D_sX$ |
| $0.21\ ^{+0.06}_{-0.03}$ | [17] HUANG | 07 | CLEO | $\Upsilon(5S) \to D_sX$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $0.160\pm0.026\pm0.058$ | [18] ARTUSO | 05B | CLEO | $e^+e^- \to D_xX$ |

### $\Gamma(B_s^{(*)}\overline{B}_s^{(*)})/\Gamma(B\overline{B}X)$ — $\Gamma_{10}/\Gamma_1$

| VALUE | DOCUMENT ID |
|---|---|
| **$0.262^{+0.051}_{-0.043}$ OUR EVALUATION** | |

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

| VALUE (units $10^{-2}$) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **$90.1^{+3.8}_{-4.0}\pm0.2$** | [19] LOUVOT | 09 | BELL | 10.86 $e^+e^- \rightarrow B_s^{(*)}\overline{B}_s^{(*)}$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | |
| $93\ ^{+7}_{-9}\ \pm1$ | [19] DRUTSKOY | 07A | BELL | Superseded by LOUVOT 09 |

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

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

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

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

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

| VALUE (units $10^{-2}$) | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **$7.3^{+3.3}_{-3.0}\pm0.1$** | LOUVOT | 09 | BELL | 10.86 $e^+e^- \rightarrow B_s^{(*)}\overline{B}_s^{(*)}$ |

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

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

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

| VALUE | DOCUMENT ID |
|---|---|
| **$0.042^{+0.046}_{-0.006}$ OUR EVALUATION** | |

### $\Gamma(\Upsilon(1S)\pi^+\pi^-)/\Gamma_{total}$ — $\Gamma_{16}/\Gamma$

| VALUE (units $10^{-3}$) | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **$5.3\pm0.3\pm0.5$** | 325 | [20] CHEN | 08 | BELL | 10.87 $e^+e^- \rightarrow \Upsilon(1S)\pi^+\pi^-$ |

### $\Gamma(\Upsilon(2S)\pi^+\pi^-)/\Gamma_{total}$ — $\Gamma_{17}/\Gamma$

| VALUE (units $10^{-3}$) | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **$7.8\pm0.6\pm1.1$** | 186 | [20] CHEN | 08 | BELL | 10.87 $e^+e^- \rightarrow \Upsilon(2S)\pi^+\pi^-$ |

### $\Gamma(\Upsilon(3S)\pi^+\pi^-)/\Gamma_{total}$ — $\Gamma_{18}/\Gamma$

| VALUE (units $10^{-3}$) | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| **$4.8^{+1.8}_{-1.5}\pm0.7$** | 10 | [20] CHEN | 08 | BELL | 10.87 $e^+e^- \rightarrow \Upsilon(3S)\pi^+\pi^-$ |

### $\Gamma(\Upsilon(1S)K^+K^-)/\Gamma_{total}$ — $\Gamma_{19}/\Gamma$

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

### $\Gamma(h_b(1P)\pi^+\pi^-)/\Gamma(\Upsilon(2S)\pi^+\pi^-)$ — $\Gamma_{20}/\Gamma_{17}$

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

### $\Gamma(h_b(2P)\pi^+\pi^-)/\Gamma(\Upsilon(2S)\pi^+\pi^-)$ — $\Gamma_{21}/\Gamma_{17}$

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

### $\Gamma(\phi$ anything$)/\Gamma_{total}$ — $\Gamma_{22}/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| $\mathbf{0.138\pm0.007^{+0.023}_{-0.015}}$ | HUANG | 07 | CLEO | $\Upsilon(5S) \rightarrow \phi X$ |

### $\Gamma(D^0$ anything + c.c.$)/\Gamma_{total}$ — $\Gamma_{23}/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **1.076±0.040±0.068** | DRUTSKOY | 07 | BELL | $\Upsilon(5S) \rightarrow D^0 X$ |

### $\Gamma(D_s$ anything + c.c.$)/\Gamma_{total}$ — $\Gamma_{24}/\Gamma$

| VALUE | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|
| **0.46 ±0.06 OUR AVERAGE** | | | | |
| 0.472±0.024±0.072 | [16] DRUTSKOY | 07 | BELL | $\Upsilon(5S) \rightarrow D_s X$ |
| 0.44 ±0.09 ±0.04 | [21] ARTUSO | 05B | CLE3 | $e^+e^- \rightarrow D_x X$ |

### $\Gamma(J/\psi$ anything$)/\Gamma_{total}$ — $\Gamma_{25}/\Gamma$

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

### $\Gamma(B^0$ anything + c.c.$)/\Gamma_{total}$ — $\Gamma_{26}/\Gamma$

| VALUE | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| $\mathbf{0.770^{+0.058}_{-0.056}\pm0.061}$ | 352 | DRUTSKOY | 10 | BELL | $\Upsilon(5S) \rightarrow B^0 X$ |

### $\Gamma(B^+$ anything + c.c.$)/\Gamma_{total}$ — $\Gamma_{27}/\Gamma$

| VALUE | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| $\mathbf{0.721^{+0.039}_{-0.038}\pm0.050}$ | 711 | DRUTSKOY | 10 | BELL | $\Upsilon(5S) \rightarrow B^+ X$ |

[13] Not independent of DRUTSKOY 10 values for $\Upsilon(5S) \rightarrow B^{\pm,0}$ anything.
[14] Using measurements or limits from AQUINES 06.
[15] Assuming isospin conservation.
[16] Using B($D_s^+ \rightarrow \phi\pi^+$) = (4.4 ± 0.6)% from PDG 06.
[17] Supersedes ARTUSO 05B. Combining inclusive $\phi$, $D_s$, and $B$ measurements. Using B($D_s^+ \rightarrow \phi\pi^+$) = 4.4 ± 0.6% from PDG 06.
[18] Uses a model-dependent estimate B($B_s \rightarrow D_s X$) = (92 ± 11)%.

[19] From a measurement of $\sigma(e^+ e^- \to B_s^* \overline{B}_s^*) / \sigma(e^+ e^- \to B_s^{(*)} \overline{B}_s^{(*)})$ at $\sqrt{s} = 10.86$ GeV.

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

[21] ARTUSO 05B reports $[\Gamma(\Upsilon(10860) \to D_s \text{ anything } + \text{ c.c.})/\Gamma_{\text{total}}] \times [B(D_s^+ \to \phi\pi^+)] = 0.0198 \pm 0.0019 \pm 0.0038$ which we divide by our best 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 value.

## $\Upsilon$(10860) REFERENCES


| | | | | |
|---|---|---|---|---|
| ADACHI | 12 | PRL 108 032001 | I. Adachi *et al.* | (BELLE Collab.) |
| CHEN | 10 | PR D82 091106R | K.-F. Chen *et al.* | (BELLE Collab.) |
| DRUTSKOY | 10 | PR D81 112003 | A. Drutskoy *et al.* | (BELLE Collab.) |
| AUBERT | 09E | PRL 102 012001 | B. Aubert *et al.* | (BABAR Collab.) |
| LOUVOT | 09 | PRL 102 021801 | R. Louvot *et al.* | (BELLE Collab.) |
| CHEN | 08 | PRL 100 112001 | K.-F. Chen *et al.* | (BELLE Collab.) |
| DRUTSKOY | 07 | PRL 98 052001 | A. Drutskoy *et al.* | (BELLE Collab.) |
| DRUTSKOY | 07A | PR D76 012002 | A. Drutskoy *et al.* | (BELLE Collab.) |
| HUANG | 07 | PR D75 012002 | G.S. Huang *et al.* | (CLEO Collab.) |
| AQUINES | 06 | PRL 96 152001 | O. Aquines *et al.* | (CLEO Collab.) |
| BONVICINI | 06 | PRL 96 022002 | G. Bonvicini *et al.* | (CLEO Collab.) |
| PDG | 06 | JPG 33 1 | W.-M. Yao *et al.* | (PDG Collab.) |
| ARTUSO | 05B | PRL 95 261801 | M. Artuso *et al.* | (CLEO Collab.) |
| BESSON | 85 | PRL 54 381 | D. Besson *et al.* | (CLEO Collab.) |
| LOVELOCK | 85 | PRL 54 377 | D.M.J. Lovelock *et al.* | (CUSB Collab.) |