# $D_{sJ}(2460)^{\pm}$

$I(J^P) = 0(1^+)$

Zero spin excluded by the observation of the decay to $D_s^+ \gamma$, the decay angular distribution consistent with spin 1.

## $D_{sJ}(2460)^{\pm}$ MASS

| *VALUE* (MeV) | *EVTS* | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| **2458.9±0.9 OUR FIT** | Error includes scale factor of 1.1. | | | | |
| **2458.0±1.0±1.0** | 195 | AUBERT | 04E | BABR | 10.6 $e^+e^-$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| 2458.9±1.5 | 112 | [1] AUBERT,B | 04S | BABR | $B \to D_{sJ}(2460)^+ \overline{D}^{(*)}$ |
| 2461.1±1.6 | 139 | [2] AUBERT,B | 04S | BABR | $B \to D_{sJ}(2460)^+ \overline{D}^{(*)}$ |
| 2456.5±1.3±1.3 | 126 | [3,4] MIKAMI | 04 | BELL | 10.6 $e^+e^-$ |
| 2459.5±1.3±2.0 | 152 | [5,6] MIKAMI | 04 | BELL | 10.6 $e^+e^-$ |
| 2459.9±0.9±1.6 | 60 | [5,6] MIKAMI | 04 | BELL | 10.6 $e^+e^-$ |
| 2459.2±1.6±2.0 | 57 | KROKOVNY | 03B | BELL | 10.6 $e^+e^-$ |

[1] Systematic errors not evaluated. From the decay to $D_s^{*+} \pi^0$.

[2] Systematic errors not evaluated. From the decay to $D_s^+ \gamma$.

[3] Not independent of the corresponding $m_{D_{sJ}(2460)^{\pm}} - m_{D_s^{*\pm}}$.

[4] Using $m_{D_s^{*+}} = 2112.4 \pm 0.7$ MeV.

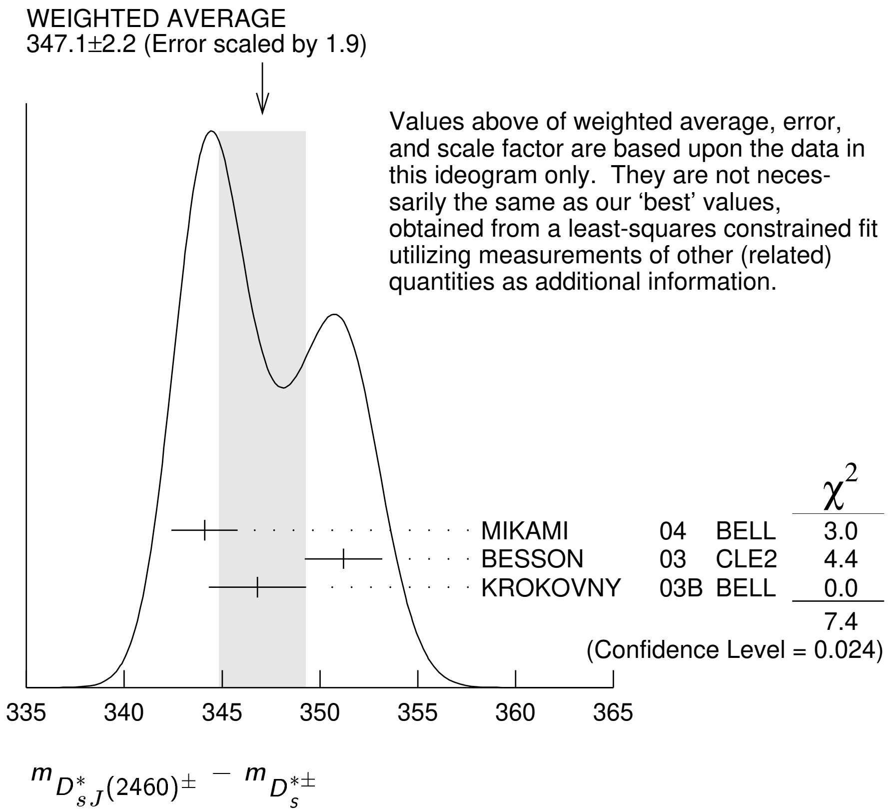
[5] Not independent of the corresponding $m_{D_{sJ}(2460)^{\pm}} - m_{D_s^{\pm}}$.

[6] Using $m_{D_s^+} = 1968.5 \pm 0.6$ MeV.

## $m_{D_{sJ}(2460)^{\pm}} - m_{D_s^{*\pm}}$

| *VALUE* (MeV) | *EVTS* | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| **346.9±1.0 OUR FIT** | Error includes scale factor of 1.2. | | | | |
| **347.1±2.2 OUR AVERAGE** | Error includes scale factor of 1.9. See the ideogram below. | | | | |
| 344.1±1.3±1.1 | 126 | MIKAMI | 04 | BELL | 10.6 $e^+e^-$ |
| 351.2±1.7±1.0 | 41 | BESSON | 03 | CLE2 | 10.6 $e^+e^-$ |
| 346.8±1.6±1.9 | 57 | [7] KROKOVNY | 03B | BELL | 10.6 $e^+e^-$ |

[7] Recalculated by us using $m_{D_s^{*+}} = 2112.4 \pm 0.7$ MeV.




## $m_{D_{sJ}(2460)^\pm} - m_{D_s^\pm}$

| *VALUE* (MeV) | *EVTS* | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|
| **490.7±0.9 OUR FIT** | Error includes scale factor of 1.2. | | | | |
| **491.3±1.4 OUR AVERAGE** | | | | | |
| 491.0±1.3±1.9 | 152 | [8] MIKAMI | 04 | BELL | 10.6 $e^+e^-$ |
| 491.4±0.9±1.5 | 60 | [9] MIKAMI | 04 | BELL | 10.6 $e^+e^-$ |

[8] From the decay to $D_s^\pm \gamma$.

[9] From the decay to $D_s^\pm \pi^+ \pi^-$.

## $D_{sJ}(2460)^\pm$ WIDTH

| *VALUE* (MeV) | *CL%* | *EVTS* | *DOCUMENT ID* | | *TECN* | *COMMENT* |
|---|---|---|---|---|---|---|
| **< 5.5** | 90 | 126 | MIKAMI | 04 | BELL | 10.6 $e^+e^-$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | | |
| <10 | | 195 | AUBERT | 04E | BABR | 10.6 $e^+e^-$ |
| < 7 | 90 | 41 | BESSON | 03 | CLE2 | 10.6 $e^+e^-$ |

## $D_{sJ}(2460)^+$ DECAY MODES

$D_{sJ}(2460)^-$ modes are charge conjugates of the modes below.

| | Mode |
|---|---|
| $\Gamma_1$ | $D_s^{*+}\pi^0$ |
| $\Gamma_2$ | $D_s^+\gamma$ |
| $\Gamma_3$ | $D_s^+\pi^+\pi^-$ |
| $\Gamma_4$ | $D_s^{*+}\gamma$ |
| $\Gamma_5$ | $D_{sJ}^*(2317)^+\gamma$ |

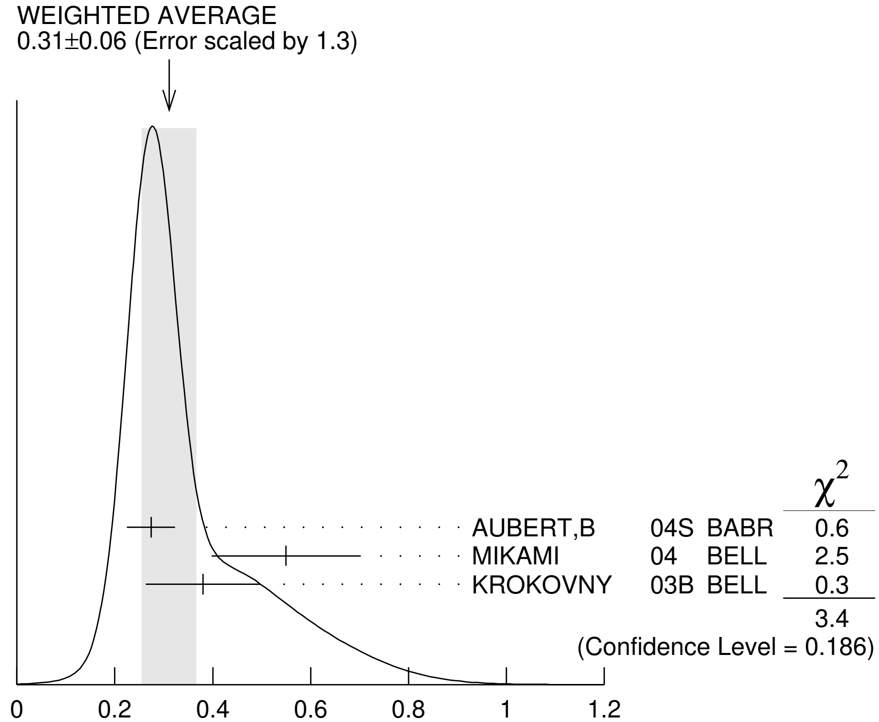
## $D_{sJ}(2460)^{\pm}$ BRANCHING RATIOS

### $\Gamma(D_s^{*+}\pi^0)/\Gamma_{\text{total}}$ — $\Gamma_1/\Gamma$

| VALUE | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| seen | 41 | BESSON | 03 | CLE2 | 10.6 $e^+e^-$ |

### $\Gamma(D_s^+\gamma)/\Gamma(D_s^{*+}\pi^0)$ — $\Gamma_2/\Gamma_1$

| VALUE | CL% | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|---|
| **0.31 ±0.06 OUR AVERAGE** Error includes scale factor of 1.3. See the ideogram below. | | | | | | |
| 0.274±0.045±0.020 | | 251 | AUBERT,B | 04S | BABR | $B \to D_{sJ}(2460)^+\overline{D}^{(*)}$ |
| 0.55 ±0.13 ±0.08 | | 152 | MIKAMI | 04 | BELL | 10.6 $e^+e^-$ |
| 0.38 ±0.11 ±0.04 | | 38 | KROKOVNY | 03B | BELL | 10.6 $e^+e^-$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | | |
| < 0.49 | 90 | | BESSON | 03 | CLE2 | 10.6 $e^+e^-$ |




$\Gamma\left(D_s^+\gamma\right)/\Gamma\left(D_s^{*+}\pi^0\right)$ $\Gamma_2/\Gamma_1$

### $\Gamma\left(D_s^+\pi^+\pi^-\right)/\Gamma\left(D_s^{*+}\pi^0\right)$ $\Gamma_3/\Gamma_1$

| VALUE | CL% | EVTS | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|---|
| **0.14±0.04±0.02** | | 60 | MIKAMI | 04 | BELL | 10.6 $e^+e^-$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | | |
| <0.08 | 90 | | BESSON | 03 | CLE2 | 10.6 $e^+e^-$ |

### $\Gamma\left(D_s^{*+}\gamma\right)/\Gamma\left(D_s^{*+}\pi^0\right)$ $\Gamma_4/\Gamma_1$

| VALUE | CL% | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| <0.16 | 90 | BESSON | 03 | CLE2 | 10.6 $e^+e^-$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| <0.31 | 90 | MIKAMI | 04 | BELL | 10.6 $e^+e^-$ |

### $\Gamma\left(D_{sJ}^*(2317)^+\gamma\right)/\Gamma\left(D_s^{*+}\pi^0\right)$ $\Gamma_5/\Gamma_1$

| VALUE | CL% | DOCUMENT ID | | TECN | COMMENT |
|---|---|---|---|---|---|
| <0.22 | 95 | AUBERT | 04E | BABR | 10.6 $e^+e^-$ |
| • • • We do not use the following data for averages, fits, limits, etc. • • • | | | | | |
| <0.58 | 90 | BESSON | 03 | CLE2 | 10.6 $e^+e^-$ |

## $D_s(2460)^{\pm}$ REFERENCES


| | | | | |
|---|---|---|---|---|
| AUBERT | 04E | PR D69 031101R | B. Aubert et al. | (BABAR Collab.) |
| AUBERT,B | 04S | PRL 93 181801 | B. Aubert et al. | (BABAR Collab.) |
| MIKAMI | 04 | PRL 92 012002 | Y. Mikami et al. | (BELLE Collab.) |
| BESSON | 03 | PR D68 032002 | D. Besson et al. | (CLEO Collab.) |
| KROKOVNY | 03B | PRL 91 262002 | P. Krokovny et al. | (BELLE Collab.) |

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