

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

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

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	$B \rightarrow D_{sJ}(2460)^+ \bar{D}^{(*)}$
2461.1±1.6	139	² AUBERT,B	04S BABR	$B \rightarrow D_{sJ}(2460)^+ \bar{D}^{(*)}$
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 $m_{D_{sJ}(2460)^\pm} - m_{D_s^\pm}$.

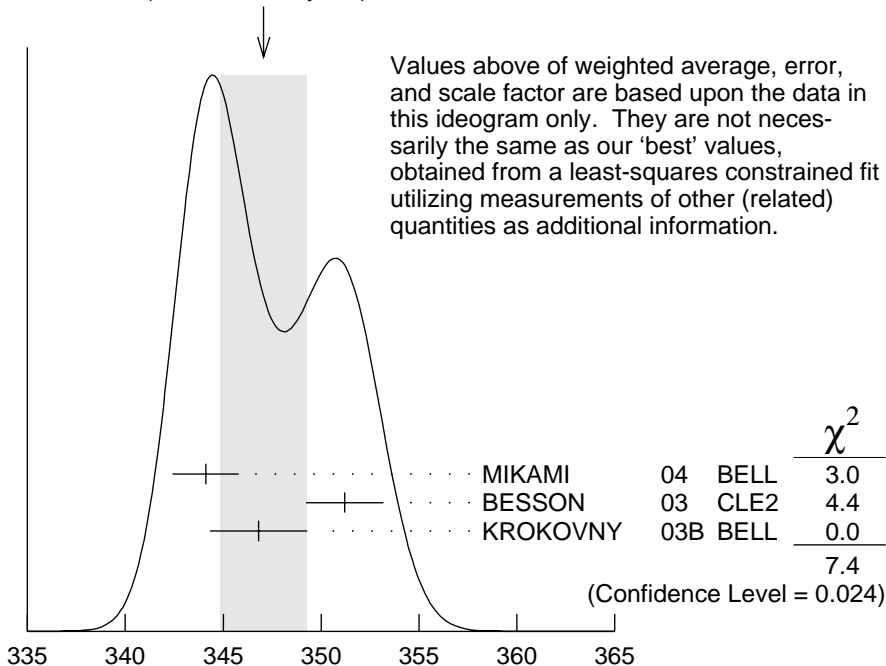
⁶ Using $m_{D_s^+} = 1968.5 \pm 0.6$ MeV.

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

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.

WEIGHTED AVERAGE
 347.1 ± 2.2 (Error scaled by 1.9)



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

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

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				
$491.0 \pm 1.3 \pm 1.9$	152	⁸ MIKAMI	04 BELL	10.6 $e^+ e^-$
$491.4 \pm 0.9 \pm 1.5$	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
$\Gamma_1 \quad D_s^{*+} \pi^0$
$\Gamma_2 \quad D_s^+ \gamma$
$\Gamma_3 \quad D_s^+ \pi^+ \pi^-$
$\Gamma_4 \quad D_s^{*+} \gamma$
$\Gamma_5 \quad D_{sJ}^*(2317)^+ \gamma$

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

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

<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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• • • We do not use the following data for averages, fits, limits, etc. • • •

seen	41	BESSON	03	CLE2 10.6 $e^+ e^-$
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$\Gamma(D_s^+ \gamma)/\Gamma(D_s^{*+} \pi^0) \qquad \qquad \qquad \Gamma_2/\Gamma_1$

<u>VALUE</u>	<u>CL%</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
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0.31 ± 0.06 OUR AVERAGE Error includes scale factor of 1.3. See the ideogram below.

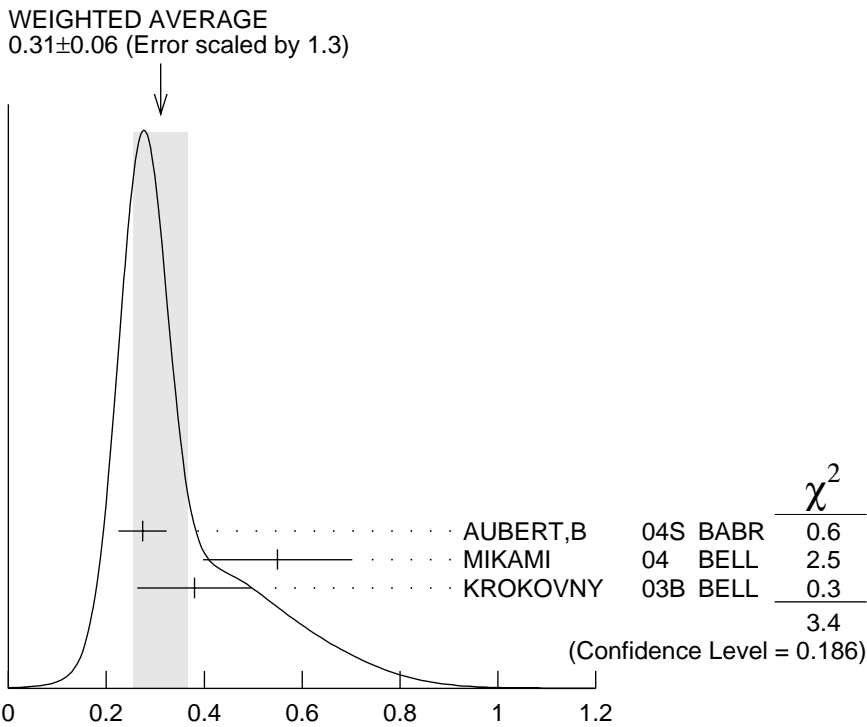
0.274 ± 0.045 ± 0.020	251	AUBERT,B	04S	BABR $B \rightarrow D_{sJ}(2460)^+ \bar{D}^*$
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0.55 ± 0.13 ± 0.08	152	MIKAMI	04	BELL 10.6 $e^+ e^-$
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0.38 ± 0.11 ± 0.04	38	KROKOVNY	03B	BELL 10.6 $e^+ e^-$
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• • • We do not use the following data for averages, fits, limits, etc. • • •

< 0.49	90	BESSON	03	CLE2 10.6 $e^+ e^-$
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$\Gamma(D_s^+ \gamma) / \Gamma(D_s^{*+} \pi^0)$ Γ_2 / Γ_1

$\Gamma(D_s^+ \pi^+ \pi^-) / \Gamma(D_s^{*+} \pi^0)$ Γ_3 / Γ_1

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

$\Gamma(D_s^{*+} \gamma) / \Gamma(D_s^{*+} \pi^0)$ Γ_4 / Γ_1

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

$\Gamma(D_{sJ}^{*+}(2317) \gamma) / \Gamma(D_s^{*+} \pi^0)$ Γ_5 / Γ_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	BESSION 03 CLE2		$10.6 e^+ e^-$

$D_s(2460)^\pm$ REFERENCES

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

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CHEN	04C	PRL 93 232001	Y.-Q. Chen, X.-Q. Li
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BARDEEN	03	PR D68 054024	W.A. Bardeen <i>et al.</i>
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CAHN	03	PR D68 037502	R.N. Cahn, J.D. Jackson
COLANGELO	03B	PL B570 180	P. Colangelo, F. De Fazio
DATTA	03C	PL B572 164	A. Datta, P.J. O'Donnell
