



$$I(J^P) = 0(?^?)$$

$J^P$  is natural, width and decay modes consistent with  $1^-$ .

### $D_s^{*\pm}$ MASS

The fit includes  $D^\pm$ ,  $D^0$ ,  $D_s^\pm$ ,  $D^{*\pm}$ ,  $D^{*0}$ ,  $D_s^{*\pm}$ ,  $D_1(2420)^0$ ,  $D_2^*(2460)^0$ , and  $D_{s1}(2536)^\pm$  mass and mass difference measurements.

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
<b>2112.2 ± 0.4 OUR FIT</b>			
<b>2106.6 ± 2.1 ± 2.7</b>	<sup>1</sup> BLAYLOCK	87	MRK3 $e^+e^- \rightarrow D_s^\pm \gamma X$

<sup>1</sup> Assuming  $D_s^\pm$  mass = 1968.7 ± 0.9 MeV.

### $m_{D_s^{*\pm}} - m_{D_s^\pm}$

The fit includes  $D^\pm$ ,  $D^0$ ,  $D_s^\pm$ ,  $D^{*\pm}$ ,  $D^{*0}$ ,  $D_s^{*\pm}$ ,  $D_1(2420)^0$ ,  $D_2^*(2460)^0$ , and  $D_{s1}(2536)^\pm$  mass and mass difference measurements.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>143.8 ± 0.4 OUR FIT</b>				
<b>143.9 ± 0.4 OUR AVERAGE</b>				
143.76 ± 0.39 ± 0.40		GRONBERG	95	CLE2 $e^+e^-$
144.22 ± 0.47 ± 0.37		BROWN	94	CLE2 $e^+e^-$
142.5 ± 0.8 ± 1.5		<sup>2</sup> ALBRECHT	88	ARG $e^+e^- \rightarrow D_s^\pm \gamma X$
139.5 ± 8.3 ± 9.7	60	AIHARA	84D	TPC $e^+e^- \rightarrow$ hadrons
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
143.0 ± 18.0	8	ASRATYAN	85	HLBC FNAL 15-ft, $\nu$ - <sup>2</sup> H
110 ± 46		BRANDELIK	79	DASP $e^+e^- \rightarrow D_s^\pm \gamma X$

<sup>2</sup> Result includes data of ALBRECHT 84B.

### $D_s^{*\pm}$ WIDTH

VALUE (MeV)	CL%	DOCUMENT ID	TECN	COMMENT
<b>&lt; 1.9</b>	90	GRONBERG	95	CLE2 $e^+e^-$
< 4.5	90	ALBRECHT	88	ARG $E_{cm}^{ee} = 10.2$ GeV
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●				
< 4.9	90	BROWN	94	CLE2 $e^+e^-$
< 22	90	BLAYLOCK	87	MRK3 $e^+e^- \rightarrow D_s^\pm \gamma X$

**$D_s^{*+}$  DECAY MODES**

$D_s^{*-}$  modes are charge conjugates of the modes below.

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $D_s^+ \gamma$	(93.5 ± 0.7) %
$\Gamma_2$ $D_s^+ \pi^0$	( 5.8 ± 0.7) %
$\Gamma_3$ $D_s^+ e^+ e^-$	( 6.7 ± 1.6) × 10 <sup>-3</sup>

**CONSTRAINED FIT INFORMATION**

An overall fit to 2 branching ratios uses 3 measurements and one constraint to determine 3 parameters. The overall fit has a  $\chi^2 = 0.0$  for 1 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients  $\langle \delta x_i \delta x_j \rangle / (\delta x_i \cdot \delta x_j)$ , in percent, from the fit to the branching fractions,  $x_i \equiv \Gamma_i/\Gamma_{\text{total}}$ . The fit constrains the  $x_i$  whose labels appear in this array to sum to one.

$x_2$		-97	
$x_3$		-19	-4
		$x_1$	$x_2$

 **$D_s^{*+}$  BRANCHING RATIOS**

$\Gamma(D_s^+ \gamma)/\Gamma_{\text{total}}$				$\Gamma_1/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	

**0.935 ± 0.007 OUR FIT**

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

seen	ASRATYAN	91	HLBC	$\bar{\nu}_\mu \text{Ne}$
seen	ALBRECHT	88	ARG	$e^+ e^- \rightarrow D_s^\pm \gamma X$
seen	AIHARA	84D		
seen	ALBRECHT	84B		
seen	BRANDELIK	79		

$\Gamma(D_s^+ \pi^0)/\Gamma(D_s^+ \gamma)$				$\Gamma_2/\Gamma_1$
<u>VALUE</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	

**0.062 ± 0.008 OUR FIT**

**0.062 ± 0.008 OUR AVERAGE**

0.062 ± 0.005 ± 0.006	AUBERT, BE	05G	BABR	10.6 $e^+ e^- \rightarrow$ hadrons
0.062 <sup>+0.020</sup> <sub>-0.018</sub> ± 0.022	GRONBERG	95	CLE2	$e^+ e^-$

$\Gamma(D_s^+ e^+ e^-)/\Gamma(D_s^+ \gamma)$				$\Gamma_3/\Gamma_1$
VALUE (units $10^{-3}$ )	EVTS	DOCUMENT ID	TECN	COMMENT
<b>7.2±1.7 OUR FIT</b>				
<b>7.2<sup>+1.5</sup><sub>-1.3</sub>±1.0</b>	38	CRONIN-HEN..12	CLEO	4.17 e <sup>+</sup> e <sup>-</sup> → hadrons

### $D_s^{*\pm}$ REFERENCES

CRONIN-HEN... 12	PR D86 072005	D. Cronin-Hennessey <i>et al.</i>	(CLEO Collab.)
AUBERT,BE 05G	PR D72 091101	B. Aubert <i>et al.</i>	(BABAR Collab.)
GRONBERG 95	PRL 75 3232	J. Gronberg <i>et al.</i>	(CLEO Collab.)
BROWN 94	PR D50 1884	D. Brown <i>et al.</i>	(CLEO Collab.)
ASRATYAN 91	PL B257 525	A.E. Asratyan <i>et al.</i>	(ITEP, BELG, SACL+)
ALBRECHT 88	PL B207 349	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
BLAYLOCK 87	PRL 58 2171	G.T. Blaylock <i>et al.</i>	(Mark III Collab.)
ASRATYAN 85	PL 156B 441	A.E. Asratyan <i>et al.</i>	(ITEP, SERP)
AIHARA 84D	PRL 53 2465	H. Aihara <i>et al.</i>	(TPC Collab.)
ALBRECHT 84B	PL 146B 111	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
BRANDELIK 79	PL 80B 412	R. Brandelik <i>et al.</i>	(DASP Collab.)