



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

$J^P = 1^-$  established by ABLIKIM 23AZ.

### $D_s^{*\pm}$ 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 ( $\Gamma_i/\Gamma$ )
$\Gamma_1 \quad D_s^+ \gamma$	$(93.6 \pm 0.4) \%$
$\Gamma_2 \quad D_s^+ \pi^0$	$(5.77 \pm 0.35) \%$
$\Gamma_3 \quad D_s^+ e^+ e^-$	$(6.7 \pm 1.6) \times 10^{-3}$
$\Gamma_4 \quad e^+ \nu_e$	$(2.1^{+1.2}_{-0.9}) \times 10^{-5}$

### CONSTRAINED FIT INFORMATION

An overall fit to 2 branching ratios uses 4 measurements and one constraint to determine 3 parameters. The overall fit has a  $\chi^2 = 0.0$  for 2 degrees of freedom.

The following *off-diagonal* array elements are the correlation coefficients  $\langle \delta x_i \delta x_j \rangle / (\delta x_i \delta x_j)$ , 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.

$x_2$	-91	
$x_3$	-38	-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>
● ● ● 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 (units <math>10^{-2}</math>)</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
<b>6.2 ± 0.4 OUR FIT</b>	
<b>6.2 ± 0.4 OUR AVERAGE</b>	
6.16 ± 0.43 ± 0.18	ABLIKIM    23P    BES3 $e^+ e^-$
6.2 ± 0.5 ± 0.6	AUBERT, BE    05G    BABR $10.6 e^+ e^- \rightarrow \text{hadrons}$
6.2 $^{+2.0}_{-1.8}$ ± 2.2	GRONBERG    95    CLE2 $e^+ e^-$

$\Gamma(D_s^+ e^+ e^-)/\Gamma(D_s^+ \gamma)$			$\Gamma_3/\Gamma_1$		
<u>VALUE (units <math>10^{-3}</math>)</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>	
<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 $e^+ e^- \rightarrow$ hadrons	

  

$\Gamma(e^+ \nu_e)/\Gamma_{\text{total}}$			$\Gamma_4/\Gamma$		
<u>VALUE (units <math>10^{-5}</math>)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
<b>2.1<sup>+1.2</sup><sub>-0.9</sub>±0.2</b>	ABLIKIM	23BF BES3	$e^+ e^- \rightarrow D_s^- D_s^{*+}$		

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

ABLIKIM	23AZ	PL B846 138245	M. Ablikim <i>et al.</i>	(BESIII Collab.) JP
ABLIKIM	23BF	PRL 131 141802	M. Ablikim <i>et al.</i>	(BESIII Collab.)
ABLIKIM	23P	PR D107 032011	M. Ablikim <i>et al.</i>	(BESIII Collab.)
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.)