



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

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

$D_s^{*\pm}$ MASS

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

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
2112.2±0.4 OUR FIT			
2106.6±2.1±2.7	¹ BLAYLOCK	87	MRK3 $e^+e^- \rightarrow D_s^\pm \gamma X$
¹ 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^{*0} , $D_1(2420)^0$, $D_2^*(2460)^0$, and $D_{s1}(2536)^\pm$ mass and mass difference measurements.

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
143.8 ± 0.4 OUR FIT				
143.9 ± 0.4 OUR AVERAGE				
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		² 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, ν - ² H
110 ±46		BRANDELIK	79	DASP $e^+e^- \rightarrow D_s^\pm \gamma X$
² Result includes data of ALBRECHT 84B.				

$D_s^{*\pm}$ WIDTH

VALUE (MeV)	CL%	DOCUMENT ID	TECN	COMMENT
< 1.9	90	GRONBERG	95	CLE2 e^+e^-
< 4.5	90	ALBRECHT	88	ARG $E_{\text{cm}}^{ee} = 10.2$ 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 (Γ_i/Γ)
Γ_1	$D_s^+ \gamma$	(93.6 $\pm$ 0.4) %
Γ_2	$D_s^+ \pi^0$	(5.77 $\pm$ 0.35) %
Γ_3	$D_s^+ e^+ e^-$	(6.7 $\pm$ 1.6) $\times 10^{-3}$
Γ_4	$e^+ \nu_e$	(2.1 $\begin{smallmatrix} +1.2 \\ -0.9 \end{smallmatrix}$) $\times 10^{-5}$

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 $\langle \delta x_i \delta x_j \rangle / (\delta x_i \cdot \delta x_j)$, 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	−91	
x_3	−38	−4
	x_1	x_2

D_s^{*+} BRANCHING RATIOS

$\Gamma(D_s^+ \gamma)/\Gamma_{\text{total}}$					Γ_1/Γ
VALUE (%)	DOCUMENT ID	TECN	COMMENT		
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
seen	ASRATYAN	91	HLBC	$\tau_\mu \text{ Ne}$	
seen	ALBRECHT	88	ARG	$e^+ e^- \rightarrow D_s^\pm \gamma X$	
seen	AIHARA	84D			
seen	ALBRECHT	84B			
seen	BRANDELIK	79			

$\Gamma(D_s^+ \pi^0)/\Gamma(D_s^+ \gamma)$					Γ_2/Γ_1
VALUE (units 10^{-2})	DOCUMENT ID	TECN	COMMENT		
6.2 $\pm$ 0.4 OUR FIT					
6.2 $\pm$ 0.4 OUR AVERAGE					
6.16 $\pm$ 0.43 $\pm$ 0.18	ABLIKIM	23P	BES3	$e^+ e^-$	
6.2 $\pm$ 0.5 $\pm$ 0.6	AUBERT,BE	05G	BABR	10.6 $e^+ e^- \rightarrow$ hadrons	
6.2 $\begin{smallmatrix} +2.0 \\ -1.8 \end{smallmatrix}$ $\pm$ 2.2	GRONBERG	95	CLE2	$e^+ e^-$	

$\Gamma(D_s^+ e^+ e^-)/\Gamma(D_s^+ \gamma)$		Γ_3/Γ_1		
<u>VALUE (units 10^{-3})</u>	<u>EVTs</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
7.2±1.7 OUR FIT				
7.2^{+1.5}_{-1.3}±1.0	38	CRONIN-HEN..12	CLEO	4.17 $e^+ e^- \rightarrow$ hadrons
$\Gamma(e^+ \nu_e)/\Gamma_{\text{total}}$		Γ_4/Γ		
<u>VALUE (units 10^{-5})</u>		<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
2.1^{+1.2}_{-0.9}±0.2		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.)