



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

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} , and $D_s^{*\pm}$ mass and mass difference measurements.

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
2112.3 ± 0.5 OUR FIT	Error includes scale factor of 1.1.		
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} , and $D_s^{*\pm}$ 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 $D_s^+ \gamma$	$(94.2 \pm 0.7) \%$
Γ_2 $D_s^+ \pi^0$	$(5.8 \pm 0.7) \%$

CONSTRAINED FIT INFORMATION

An overall fit to a branching ratio uses 2 measurements and one constraint to determine 2 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 $\langle \delta x_i \delta x_j \rangle / (\delta x_i \delta x_j)$, 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.

$$x_2 \begin{vmatrix} & -100 \\ & \\ & \\ x_1 & \end{vmatrix}$$

 D_s^{*+} BRANCHING RATIOS

$\Gamma(D_s^+ \gamma) / \Gamma_{\text{total}}$						Γ_1/Γ
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		
0.942 ± 0.007						OUR FIT

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

0.942 ± 0.004 ± 0.006	16k	³ AUBERT, BE	05G	BABR	10.6 $e^+ e^- \rightarrow$ hadrons	
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			

$\Gamma(D_s^+ \pi^0) / \Gamma_{\text{total}}$						Γ_2/Γ
<u>VALUE</u>	<u>EVTS</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>		

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

0.059 ± 0.004 ± 0.006	560	³ AUBERT, BE	05G	BABR	10.6 $e^+ e^- \rightarrow$ hadrons	
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$\Gamma(D_s^+ \pi^0) / \Gamma(D_s^+ \gamma)$				Γ_2 / Γ_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 ⁻ → hadrons	
0.062 ^{+0.020} _{-0.018} ± 0.022	GRONBERG	95 CLE2	e ⁺ e ⁻	

³ Derived from the ratio $\Gamma(D_s^+ \pi^0) / \Gamma(D_s^+ \gamma)$ assuming that the branching fractions of $D_s^{*+} \rightarrow D_s^+ \pi^0$ and $D_s^{*+} \rightarrow D_s^+ \gamma$ decays sum to 100%.

$D_s^{*\pm}$ REFERENCES

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.)

OTHER RELATED PAPERS

KAMAL	92	PL B284 421	A.N. Kamal, Q.P. Xu	(ALBE)
BRANDELIK	78C	PL 76B 361	R. Brandelik <i>et al.</i>	(DASP Collab.)
BRANDELIK	77B	PL 70B 132	R. Brandelik <i>et al.</i>	(DASP Collab.)