

**$D_{s1}(2536)^\pm$**

$I(J^P) = 0(1^+)$   
 $J, P$  need confirmation.

Seen in  $D^*(2010)^+ K^0$ ,  $D^*(2007)^0 K^+$ , and  $D_s^+ \pi^+ \pi^-$ . Not seen in  $D^+ K^0$  or  $D^0 K^+$ .  $J^P = 1^+$  assignment strongly favored.

**$D_{s1}(2536)^\pm$  MASS**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>2535.35 ± 0.34 ± 0.5</b>				<b>OUR EVALUATION</b>
<b>2535.12 ± 0.25</b>				<b>OUR AVERAGE</b>
2534.78 ± 0.31 ± 0.40	182	AUBERT	08B BABR	$B \rightarrow \bar{D}^{(*)} D^* K$
2534.6 ± 0.3 ± 0.7	193	AUBERT	06P BABR	$10.6 e^+ e^- \rightarrow D_s^+ \pi^+ \pi^- X$
2535.3 ± 0.7	92	<sup>1</sup> HEISTER	02B ALEP	$e^+ e^- \rightarrow D^{*+} K^0 X, D^{*0} K^+ X$
2534.2 ± 1.2	9	ASRATYAN	94 BEBC	$\nu N \rightarrow D^* K^0 X, D^{*0} K^\pm X$
2535 ± 0.6 ± 1	75	FRABETTI	94B E687	$\gamma Be \rightarrow D^{*+} K^0 X, D^{*0} K^+ X$
2535.3 ± 0.2 ± 0.5	134	ALEXANDER	93 CLE2	$e^+ e^- \rightarrow D^{*0} K^+ X$
2534.8 ± 0.6 ± 0.6	44	ALEXANDER	93 CLE2	$e^+ e^- \rightarrow D^{*+} K^0 X$
2535.2 ± 0.5 ± 1.5	28	ALBRECHT	92R ARG	$10.4 e^+ e^- \rightarrow D^{*0} K^+ X$
2536.6 ± 0.7 ± 0.4		AVERY	90 CLEO	$e^+ e^- \rightarrow D^{*+} K^0 X$
2535.9 ± 0.6 ± 2.0		ALBRECHT	89E ARG	$D_{s1}^* \rightarrow D^*(2010) K^0$
• • •				We do not use the following data for averages, fits, limits, etc. • • •
2535 ± 28		<sup>2</sup> ASRATYAN	88 HLBC	$\nu N \rightarrow D_s \gamma \gamma X$

<sup>1</sup> Calculated using  $m_{D^*(2010)^\pm} = 2010.0 \pm 0.5$  MeV,  $m_{D^*(2007)^0} = 2006.7 \pm 0.5$  MeV, and the mass difference below.  
<sup>2</sup> Not seen in  $D^* K$ .

**$m_{D_{s1}(2536)^\pm} - m_{D_s^*(2111)}$**

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
<b>424 ± 28</b>	ASRATYAN 88	HLBC	$D_s^{*\pm} \gamma$

**$m_{D_{s1}(2536)^\pm} - m_{D^*(2010)^\pm}$**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>525.3 ± 0.6 ± 0.1</b>	41	HEISTER	02B ALEP	$e^+ e^- \rightarrow D^{*+} K^0 X$

**$m_{D_{s1}(2536)^\pm} - m_{D^*(2007)^0}$**

VALUE (MeV)	EVTS	DOCUMENT ID	TECN	COMMENT
<b>528.1 ± 1.5</b>				<b>OUR AVERAGE</b>
528.7 ± 1.9 ± 0.5	51	HEISTER	02B ALEP	$e^+ e^- \rightarrow D^{*0} K^+ X$
527.3 ± 2.2	29	ACKERSTAFF	97W OPAL	$e^+ e^- \rightarrow D^{*0} K^+ X$

## $D_{s1}(2536)^\pm$ WIDTH

VALUE (MeV)	CL%	EVTS	DOCUMENT ID	TECN	COMMENT
<b>&lt;2.3</b>	90		ALEXANDER 93	CLEO	$e^+e^- \rightarrow D^{*0}K^+X$
● ● ● We do not use the following data for averages, fits, limits, etc. ● ● ●					
<2.5	95	193	AUBERT	06P BABR	$10.6 e^+e^- \rightarrow D_s^+ \pi^+ \pi^- X$
<3.2	90	75	FRABETTI	94B E687	$\gamma Be \rightarrow D^{*+}K^0X, D^{*0}K^+X$
<3.9	90		ALBRECHT	92R ARG	$10.4 e^+e^- \rightarrow D^{*0}K^+X$
<5.44	90		AVERY	90 CLEO	$e^+e^- \rightarrow D^{*+}K^0X$
<4.6	90		ALBRECHT	89E ARG	$D_{s1}^* \rightarrow D^*(2010)K^0$

## $D_{s1}(2536)^+$ DECAY MODES

$D_{s1}(2536)^-$  modes are charge conjugates of the modes below.

Mode	Fraction ( $\Gamma_i/\Gamma$ )
$\Gamma_1$ $D^*(2010)^+K^0$	seen
$\Gamma_2$ $(D^*(2010)^+K^0)_{S-wave}$	
$\Gamma_3$ $(D^*(2010)^+K^0)_{D-wave}$	
$\Gamma_4$ $D^+\pi^-K^+$	
$\Gamma_5$ $D^*(2007)^0K^+$	seen
$\Gamma_6$ $D^+K^0$	not seen
$\Gamma_7$ $D^0K^+$	not seen
$\Gamma_8$ $D_s^{*+}\gamma$	possibly seen
$\Gamma_9$ $D_s^+\pi^+\pi^-$	seen

## $D_{s1}(2536)^+$ BRANCHING RATIOS

$\Gamma(D^*(2007)^0K^+)/\Gamma(D^*(2010)^+K^0)$					$\Gamma_5/\Gamma_1$
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>1.27±0.21 OUR AVERAGE</b>					
$1.32 \pm 0.47 \pm 0.23$	92	<sup>3</sup> HEISTER	02B ALEP	$e^+e^- \rightarrow D^{*+}K^0X, D^{*0}K^+X$	
$1.9^{+1.1}_{-0.9} \pm 0.4$	35	<sup>3</sup> ACKERSTAFF	97W OPAL	$e^+e^- \rightarrow D^{*0}K^+X, D^{*+}K^0X$	
$1.1 \pm 0.3$		ALEXANDER 93	CLEO	$e^+e^- \rightarrow D^{*0}K^+X, D^{*+}K^0X$	
$1.4 \pm 0.3 \pm 0.2$		<sup>4</sup> ALBRECHT	92R ARG	$10.4 e^+e^- \rightarrow D^{*0}K^+X, D^{*+}K^0X$	

<sup>3</sup> Ratio of the production rates measured in  $Z^0$  decays.

<sup>4</sup> Evaluated by us from published inclusive cross-sections.

$\Gamma((D^*(2010)^+K^0)_{S-wave})/\Gamma(D^*(2010)^+K^0)$					$\Gamma_2/\Gamma_1$
VALUE	EVTS	DOCUMENT ID	TECN	COMMENT	
<b>0.72±0.05±0.01</b>	5485	BALAGURA 08	BELL	$10.6 e^+e^- \rightarrow D^{*+}K^0X$	

$\Gamma(D^+ \pi^- K^+)/\Gamma(D^*(2010)^+ K^0)$   $\Gamma_4/\Gamma_1$

VALUE (units $10^{-2}$ )	EVTS	DOCUMENT ID	TECN	COMMENT
<b>3.27±0.18±0.37</b>	1264	BALAGURA 08	BELL	10.6 $e^+ e^- \rightarrow D^+ \pi^- K^+ X$

$\Gamma(D^+ K^0)/\Gamma(D^*(2010)^+ K^0)$   $\Gamma_6/\Gamma_1$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<b>&lt;0.40</b>	90	ALEXANDER 93	CLEO	$e^+ e^- \rightarrow D^{*+} K^0 X$
<0.43	90	ALBRECHT 89E	ARG	$D_{s1}^* \rightarrow D^*(2010) K^0$

$\Gamma(D^0 K^+)/\Gamma(D^*(2007)^0 K^+)$   $\Gamma_7/\Gamma_5$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<b>&lt;0.12</b>	90	ALEXANDER 93	CLEO	$e^+ e^- \rightarrow D^{*0} K^+ X$

$\Gamma(D_s^{*+} \gamma)/\Gamma_{\text{total}}$   $\Gamma_8/\Gamma$

VALUE	DOCUMENT ID	TECN	COMMENT
<b>possibly seen</b>	ASRATYAN 88	HLBC	$\nu N \rightarrow D_s \gamma \gamma X$

$\Gamma(D_s^{*+} \gamma)/\Gamma(D^*(2007)^0 K^+)$   $\Gamma_8/\Gamma_5$

VALUE	CL%	DOCUMENT ID	TECN	COMMENT
<b>&lt;0.42</b>	90	ALEXANDER 93	CLEO	$e^+ e^- \rightarrow D^{*0} K^+ X$

$\Gamma(D_s^+ \pi^+ \pi^-)/\Gamma_{\text{total}}$   $\Gamma_9/\Gamma$

VALUE	DOCUMENT ID	TECN	COMMENT
<b>seen</b>	AUBERT 06P	BABR	10.6 $e^+ e^- \rightarrow D_s^+ \pi^+ \pi^- X$

**$D_{s1}(2536)^\pm$  REFERENCES**

AUBERT 08B	PR D77 011102R	B. Aubert <i>et al.</i>	(BABAR Collab.)
BALAGURA 08	PR D77 032001	V. Balagura <i>et al.</i>	(BELLE Collab.)
AUBERT 06P	PR D74 032007	B. Aubert <i>et al.</i>	(BABAR Collab.)
HEISTER 02B	PL B526 34	A. Heister <i>et al.</i>	(ALEPH Collab.)
ACKERSTAFF 97W	ZPHY C76 425	K. Ackerstaff <i>et al.</i>	(OPAL Collab.)
ASRATYAN 94	ZPHY C61 563	A.E. Asratyan <i>et al.</i>	(BIRM, BELG, CERN+)
FRABETTI 94B	PRL 72 324	P.L. Frabetti <i>et al.</i>	(FNAL E687 Collab.)
ALEXANDER 93	PL B303 377	J. Alexander <i>et al.</i>	(CLEO Collab.)
ALBRECHT 92R	PL B297 425	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
AVERY 90	PR D41 774	P. Avery, D. Besson	(CLEO Collab.)
ALBRECHT 89E	PL B230 162	H. Albrecht <i>et al.</i>	(ARGUS Collab.)
ASRATYAN 88	ZPHY C40 483	A.E. Asratyan <i>et al.</i>	(ITEP, SERP)

**OTHER RELATED PAPERS**

COLANGELO 06	PL B642 48	P. Colangelo <i>et al.</i>	
VIJANDE 06	PR D73 034002	J. Vijande, F. Fernandez, A. Valcarce	
CLOSE 05C	PR D72 094004	F.E. Close, E.S. Swanson	(OXFTP)
YAMADA 05	PR C72 065202	Y. Yamada <i>et al.</i>	
SEMENOV 99	SPU 42 847	S.V. Semenov	
Translated from UFN 42 937.			