CHARMED, STRANGE MESONS ($C = \pm 1$, $S = \pm 1$) (including possibly non-$q\overline{q}$ states)

$D_s^+ = c\overline{s}$, $D_s^- = \overline{c}s$, similarly for D_s^*'s

$D_s^\pm$

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

Mass $m = 1968.35 \pm 0.07$ MeV
$m_{D_s^\pm} - m_{D^\pm} = 98.69 \pm 0.05$ MeV
Mean life $\tau = (504 \pm 4) \times 10^{-15}$ s (S = 1.2)
$c\tau = 151.2$ μm

CP-violating decay-rate asymmetries

$A_{CP}(\mu^\pm\nu) = (-0.2 \pm 2.5)\%$
$A_{CP}(\tau^\pm\nu)$ in $D_s^+ \to \tau^+\nu_\tau$, $D_s^- \to \tau^-\overline{\nu}_\tau = (3 \pm 5)\%$
$A_{CP}(K^\pm K_S^0) = (0.09 \pm 0.26)\%$
$A_{CP}(K^\pm K_L^0)$ in $D_s^\pm \to K^\pm K_L^0 = (-1.1 \pm 2.7) \times 10^{-2}$
$A_{CP}(K^+K^-\pi^\pm) = (-0.5 \pm 0.9)\%$
$A_{CP}(\phi\pi^\pm) = (-0.38 \pm 0.27)\%$
$A_{CP}(K^\pm K_S^0\pi^0) = (-2 \pm 6)\%$
$A_{CP}(2K_S^0\pi^\pm) = (3 \pm 5)\%$
$A_{CP}(K^+K^-\pi^\pm\pi^0) = (0.0 \pm 3.0)\%$
$A_{CP}(K^\pm K_S^0\pi^+\pi^-) = (-6 \pm 5)\%$
$A_{CP}(K_S^0 K^\mp 2\pi^\pm) = (4.1 \pm 2.8)\%$
$A_{CP}(\pi^+\pi^-\pi^\pm) = (-0.7 \pm 3.1)\%$
$A_{CP}(\pi^\pm\eta) = (0.3 \pm 0.4)\%$
$A_{CP}(\pi^\pm\eta') = (-0.9 \pm 0.5)\%$
$A_{CP}(\eta\pi^\pm\pi^0) = (-1 \pm 4)\%$
$A_{CP}(\eta'\pi^\pm\pi^0) = (0 \pm 8)\%$
$A_{CP}(K^\pm\pi^0) = (2 \pm 4)\%$ (S = 1.2)
$A_{CP}(\overline{K}^0/K^0\pi^\pm) = (0.4 \pm 0.5)\%$
$A_{CP}(K_S^0\pi^\pm) = (0.20 \pm 0.18)\%$
$A_{CP}(K^\pm\pi^+\pi^-) = (4 \pm 5)\%$
$A_{CP}(K_S^0\pi^+\pi^0)$ in $D_s^\pm \to K_S^0\pi^+\pi^0 = (3 \pm 6)\%$
$A_{CP}(K^\pm\eta) = (1.8 \pm 1.9)\%$
$A_{CP}(K^\pm\eta'(958)) = (6 \pm 19)\%$

CP violating asymmetries of *P*-odd (*T*-odd) moments

$A_T(K_S^0 K^\pm\pi^+\pi^-) = (-14 \pm 8) \times 10^{-3}$ [a]

$D_s^+ \to \phi \ell^+ \nu_\ell$ form factors

$r_2 = 0.84 \pm 0.11$ (S = 2.4)
$r_v = 1.80 \pm 0.08$
$\Gamma_L/\Gamma_T = 0.72 \pm 0.18$
$f_+(0)\,|V_{cs}|$ in $D_s^+ \to \eta e^+ \nu_e = 0.446 \pm 0.007$
$f_+(0)\,|V_{cs}|$ in $D_s^+ \to \eta' e^+ \nu_e = 0.48 \pm 0.05$
$f_+(0)|V_{cd}|$ in $D_s^+ \to K^0 e^+ \nu_e = 0.162 \pm 0.019$
$r_v \equiv V(0)/A_1(0)$ in $D_s^+ \to K^*(892)^0 e^+ \nu_e = 1.7 \pm 0.4$
$r_2 \equiv A_2(0)/A_1(0)$ in $D_s^+ \to K^*(892)^0 e^+ \nu_e = 0.77 \pm 0.29$
$f_{D_s^+}\,|V_{cs}|$ in $D_s^+ \to \mu^+ \nu_\mu = 243 \pm 5$ MeV
$f_{D_s^+}\,|V_{cs}|$ in $D_s^+ \to \tau^+ \nu_\tau = 245.3 \pm 3.0$ MeV

Unless otherwise noted, the branching fractions for modes with a resonance in the final state include all the decay modes of the resonance. D_s^- modes are charge conjugates of the modes below.

D_s^+ DECAY MODES		Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
Inclusive modes				
e^+ semileptonic	[b]	(6.33 ±0.15) %		–
π^+ anything		(119.3 ±1.4) %		–
π^- anything		(43.2 ±0.9) %		–
π^0 anything		(123 ±7) %		–
K^- anything		(18.7 ±0.5) %		–
K^+ anything		(28.9 ±0.7) %		–
K_S^0 anything		(19.0 ±1.1) %		–
η anything	[c]	(29.9 ±2.8) %		–
ω anything		(6.1 ±1.4) %		–
η' anything	[d]	(10.3 ±1.4) %	S=1.1	–
$f_0(980)$ anything, $f_0 \to \pi^+\pi^-$		< 1.3 %	CL=90%	–
ϕ anything		(15.7 ±1.0) %		–
K^+K^- anything		(15.8 ±0.7) %		–
$K_S^0 K^+$ anything		(5.8 ±0.5) %		–
$K_S^0 K^-$ anything		(1.9 ±0.4) %		–
$2K_S^0$ anything		(1.70 ±0.32) %		–
$2K^+$ anything		< 2.6	$\times 10^{-3}$ CL=90%	–
$2K^-$ anything		< 6	$\times 10^{-4}$ CL=90%	–
Leptonic and semileptonic modes				
$e^+ \nu_e$		< 8.3	$\times 10^{-5}$ CL=90%	984
$\mu^+ \nu_\mu$		(5.43 ±0.15)	$\times 10^{-3}$	981
$\tau^+ \nu_\tau$		(5.32 ±0.11) %		182

$\gamma e^+ \nu_e$		<	1.3	$\times 10^{-4}$	CL=90%		984
$K^+ K^- e^+ \nu_e$			—				851
$\phi e^+ \nu_e$	[e]	(	2.39 ±0.16)	%		S=1.3	720
$\phi \mu^+ \nu_\mu$		(	1.9 ±0.5)	%			715
$\eta e^+ \nu_e$ + $\eta'(958) e^+ \nu_e$	[e]	(	3.03 ±0.24)	%			–
$\eta e^+ \nu_e$	[e]	(	2.32 ±0.08)	%			908
$\eta'(958) e^+ \nu_e$	[e]	(	8.0 ±0.7)	$\times 10^{-3}$			751
$\eta \mu^+ \nu_\mu$		(	2.4 ±0.5)	%			905
$\eta'(958) \mu^+ \nu_\mu$		(	1.1 ±0.5)	%			747
$\omega e^+ \nu_e$	[f]	<	2.0	$\times 10^{-3}$	CL=90%		829
$K^0 e^+ \nu_e$		(	3.4 ±0.4)	$\times 10^{-3}$			921
$K^*(892)^0 e^+ \nu_e$	[e]	(	2.15 ±0.28)	$\times 10^{-3}$		S=1.1	782
$a_0(980)^0 e^+ \nu_e$, $a_0(980)^0 \to \pi^0 \eta$		<	1.2	$\times 10^{-4}$	CL=90%		–

Hadronic modes with a $K\overline{K}$ pair

$K^+ K^0_S$		(	1.453±0.035)	%			850
$K^+ K^0_L$		(	1.49 ±0.06)	%			850
$K^+ \overline{K}^0$		(	2.95 ±0.14)	%			850
$K^+ K^- \pi^+$	[g]	(	5.38 ±0.10)	%		S=1.1	805
$\phi \pi^+$	[e,h]	(	4.5 ±0.4)	%			712
$\phi \pi^+$, $\phi \to K^+ K^-$	[h]	(	2.22 ±0.06)	%			712
$K^+ \overline{K}^*(892)^0$, $\overline{K}^{*0} \to K^- \pi^+$		(	2.58 ±0.06)	%			416
$f_0(980) \pi^+$, $f_0 \to K^+ K^-$		(	1.11 ±0.19)	%			732
$f_0(1370) \pi^+$, $f_0 \to K^+ K^-$		(	7.1 ±2.9)	$\times 10^{-4}$			–
$f_0(1710) \pi^+$, $f_0 \to K^+ K^-$		(	6.7 ±2.8)	$\times 10^{-4}$			198
$K^+ \overline{K}^*_0(1430)^0$, $\overline{K}^*_0 \to K^- \pi^+$		(	1.76 ±0.25)	$\times 10^{-3}$			218
$K^+ K^0_S \pi^0$		(	1.52 ±0.22)	%			805
$2K^0_S \pi^+$		(	7.7 ±0.6)	$\times 10^{-3}$			802
$K^0 \overline{K}^0 \pi^+$			—				802
$K^*(892)^+ \overline{K}^0$	[e]	(	5.4 ±1.2)	%			683
$K^+ K^- \pi^+ \pi^0$		(	5.50 ±0.24)	%		S=1.3	748
$\phi \rho^+$	[e]	(	5.59 ±0.34)	%			401
$\overline{K}_1(1270)^0 K^+$, $\overline{K}_1(1270)^0 \to K^- \rho^+$		(	5.7 ±0.6)	$\times 10^{-3}$			–
$\overline{K}_1(1270)^0 K^+$, $\overline{K}_1(1270)^0 \to K^*(892) \pi$		(	1.31 ±0.25)	%			–
$\overline{K}_1(1400)^0 K^+$, $\overline{K}_1(1400)^0 \to K^*(892) \pi$		(	2.0 ±0.4)	%			–
$a_0(980)^0 \rho^+$, $a_0(980)^0 \to K^+ K^-$		(	1.9 ±0.4)	$\times 10^{-3}$			–
$f_1(1420)^0 \pi^+$, $f_1(1420)^0 \to K^*(892)^\mp K^\pm$		(	3.9 ±0.7)	$\times 10^{-3}$			–

$f_1(1420)^0\pi^+$, $f_1(1420)^0 \to$ $a_0(980)^0\pi^0$, $a_0(980)^0 \to$ K^+K^-		(4.0	±1.4)	$\times10^{-4}$		–
$\eta(1475)\pi^+$, $\eta(1475) \to$ $a_0(980)^0\pi^0$, $a_0(980)^0 \to$ K^+K^-		(7.0	±2.8)	$\times10^{-4}$		–
$K^0_S K^- 2\pi^+$		(1.53	±0.08)	%	S=1.5	744
$K^*(892)^+\overline{K}^*(892)^0$	[e]	(5.64	±0.35)	%		417
$\eta(1475)K^0_S$, $\eta \to$ $K^*(892)^0\pi^+$, $K^{*0} \to$ $K^-\pi^+$		(3.4	±1.0)	$\times10^{-4}$		–
$\eta(1475)\pi^+$, $\eta \to$ $\overline{K}^*(892)^+K^-$, $\overline{K}^{*+} \to$ $K^0_S\pi^+$		(3.4	±1.0)	$\times10^{-4}$		–
$\eta(1475)\pi^+$, $\eta \to$ $a_0(980)^-\pi^+$, $a_0^- \to$ $K^0_S K^-$		(1.7	±0.9)	$\times10^{-3}$		–
$f_1(1285)\pi^+$, $f_1 \to$ $a_0(980)^-\pi^+$, $a_0^- \to$ $K^0_S K^-$		(3.4	±0.8)	$\times10^{-4}$		–
$K^+K^0_S\pi^+\pi^-$		(9.5	±0.8)	$\times10^{-3}$	S=1.1	744
$K^+K^-2\pi^+\pi^-$		(8.6	±1.5)	$\times10^{-3}$		673
$\phi2\pi^+\pi^-$	[e]	(1.21	±0.16)	%		640
$\phi\rho^0\pi^+$, $\phi \to K^+K^-$		(6.4	±1.3)	$\times10^{-3}$		181
$\phi a_1(1260)^+$, $\phi \to$ K^+K^-, $a_1^+ \to$ $\rho^0\pi^+$		(7.4	±1.2)	$\times10^{-3}$		†
$\phi2\pi^+\pi^-$ non-ρ, $\phi \to$ K^+K^-		(1.8	±0.7)	$\times10^{-3}$		–
$K^+K^-\rho^0\pi^+$ non-ϕ		< 2.6		$\times10^{-4}$	CL=90%	249
$K^+K^-2\pi^+\pi^-$ nonresonant		(9	±7)	$\times10^{-4}$		673
$2K^0_S2\pi^+\pi^-$		(7.8	±3.3)	$\times10^{-4}$		669

Hadronic modes without K's

$\pi^+\pi^0$		< 1.2		$\times10^{-4}$	CL=90%	975
$2\pi^+\pi^-$		(1.08	±0.04)	%		959
$\rho^0\pi^+$		(1.9	±1.2)	$\times10^{-4}$		825
$\pi^+(\pi^+\pi^-)_{S-\text{wave}}$	[i]	(9.0	±0.4)	$\times10^{-3}$		959
$f_2(1270)\pi^+$, $f_2 \to \pi^+\pi^-$		(1.09	±0.19)	$\times10^{-3}$		559
$\rho(1450)^0\pi^+$, $\rho^0 \to \pi^+\pi^-$		(2.9	±1.9)	$\times10^{-4}$		421
$\pi^+2\pi^0$		(6.5	±1.3)	$\times10^{-3}$		961
$2\pi^+\pi^-\pi^0$			—			935
$\eta\pi^+$	[e]	(1.68	±0.09)	%	S=1.1	902
$\omega\pi^+$	[e]	(1.92	±0.30)	$\times10^{-3}$		822

$3\pi^+2\pi^-$		(	7.9	±0.8) $\times10^{-3}$		899
$2\pi^+\pi^-2\pi^0$			—			902
$\eta\rho^+$	[e]	(	8.9	±0.8) %		724
$\eta\pi^+\pi^0$		(	9.5	±0.5) %		885
$\eta(\pi^+\pi^0)$ $_{P-wave}$		(	5.1	±3.1) $\times10^{-3}$		885
$2\pi^+\pi^-\eta$		(	3.12	±0.16) %		855
$a_1(1260)^+\eta$, $a_1^+\to$ $\rho(770)^0\pi^+$, $\rho^0\to$ $\pi^+\pi^-$		(	1.73	±0.16) %		–
$a_1(1260)^+\eta$, $a_1^+\to$ $f_0(500)\pi^+$, $f_0\to\pi^+\pi^-$		(	2.5	±0.9) $\times10^{-3}$		–
$a_0(980)^{+0}\pi^{0+}$, $a_0(980)^{+0}\to\eta\pi^{+0}$		(	2.2	±0.4) %		–
$a_0(980)^+\rho(770)^0$, $a_0^+\to$ $\eta\pi^+$		(	2.1	±0.9) $\times10^{-3}$		–
$\eta(1405)\pi^+$, $\eta(1405)\to$ $a_0(980)^-\pi^+$, $a_0^-\to$ $\eta\pi^-$		(	2.2	±0.7) $\times10^{-4}$		–
$\eta(1405)\pi^+$, $\eta(1405)\to$ $a_0(980)^+\pi^-$, $a_0^+\to$ $\eta\pi^+$		(	2.2	±0.7) $\times10^{-4}$		–
$f_1(1420)\pi^+$, $f_1\to$ $a_0(980)^-\pi^+$, $a_0^-\to$ $\eta\pi^-$		(	5.9	±1.8) $\times10^{-4}$		–
$f_1(1420)\pi^+$, $f_1\to$ $a_0(980)^+\pi^-$, $a_0^+\to$ $\eta\pi^+$		(	5.3	±1.8) $\times10^{-4}$		–
$\omega\pi^+\pi^0$	[e]	(	2.8	±0.7) %		802
$3\pi^+2\pi^-\pi^0$		(	4.9	±3.2) %		856
$\omega2\pi^+\pi^-$	[e]	(	1.6	±0.5) %		766
$\eta'(958)\pi^+$	[d,e]	(	3.94	±0.25) %		743
$3\pi^+2\pi^-2\pi^0$			—			803
$\omega\eta\pi^+$	[e]	<	2.13	%	CL=90%	654
$\eta'(958)\rho^+$	[d,e]	(	5.8	±1.5) %		465
$\eta'(958)\pi^+\pi^0$		(	5.6	±0.8) %		720
$\eta'(958)\pi^+\pi^0$ nonresonant		<	5.1	%	CL=90%	720

Modes with one or three K's

$K^+\pi^0$		(	7.4	±0.5) $\times10^{-4}$		917
$K_S^0\pi^+$		(	1.10	±0.05) $\times10^{-3}$		916
$K^+\eta$	[e]	(	1.73	±0.08) $\times10^{-3}$		835
$K^+\omega$	[e]	(	8.7	±2.5) $\times10^{-4}$		741
$K^+\eta'(958)$	[e]	(	2.64	±0.24) $\times10^{-3}$		646
$K^+\pi^+\pi^-$		(	6.5	±0.4) $\times10^{-3}$		900

$K^+\rho^0$		(	2.5	± 0.4) $\times 10^{-3}$		745
$K^+\rho(1450)^0$, $\rho^0 \to \pi^+\pi^-$		(	6.9	± 2.4) $\times 10^{-4}$		–
$K^*(892)^0\pi^+$, $K^{*0} \to K^+\pi^-$		(	1.40	± 0.24) $\times 10^{-3}$		775
$K^*(1410)^0\pi^+$, $K^{*0} \to K^+\pi^-$		(	1.22	± 0.28) $\times 10^{-3}$		–
$K^*(1430)^0\pi^+$, $K^{*0} \to K^+\pi^-$		(	5.0	± 3.4) $\times 10^{-4}$		–
$K^+\pi^+\pi^-$ nonresonant		(	1.03	± 0.34) $\times 10^{-3}$		900
$K^0\pi^+\pi^0$		(	1.08	± 0.06) %		899
$K^0_S 2\pi^+\pi^-$		(	2.8	± 1.0) $\times 10^{-3}$		870
$K^+\omega\pi^0$	[e]	<	8.2	$\times 10^{-3}$	CL=90%	684
$K^+\omega\pi^+\pi^-$	[e]	<	5.4	$\times 10^{-3}$	CL=90%	603
$K^+\omega\eta$	[e]	<	7.9	$\times 10^{-3}$	CL=90%	366
$2K^+K^-$		(	2.15	± 0.20) $\times 10^{-4}$		628
ϕK^+, $\phi \to K^+K^-$		(	8.8	± 2.0) $\times 10^{-5}$		–

Doubly Cabibbo-suppressed modes

$2K^+\pi^-$		(	1.276	± 0.031) $\times 10^{-4}$		805
$K^+K^*(892)^0$, $K^{*0} \to K^+\pi^-$		(	6.0	± 3.4) $\times 10^{-5}$		–

Baryon-antibaryon mode

$p\overline{n}$		(	1.22	± 0.11) $\times 10^{-3}$		295
$p\overline{p}e^+\nu_e$		<	2.0	$\times 10^{-4}$	CL=90%	296

$\Delta C = 1$ weak neutral current (*C1*) modes, Lepton family number (*LF*), or Lepton number (*L*) violating modes

$\pi^+e^+e^-$		[j]	<	5.5	$\times 10^{-6}$	CL=90%	979
$\pi^+\phi$, $\phi \to e^+e^-$		[k]	(	6 $^{+8}_{-4}$) $\times 10^{-6}$			–
$\pi^+\mu^+\mu^-$		[j]	<	1.8	$\times 10^{-7}$	CL=90%	968
$K^+e^+e^-$	*C1*		<	3.7	$\times 10^{-6}$	CL=90%	922
$K^+\mu^+\mu^-$	*C1*		<	1.4	$\times 10^{-7}$	CL=90%	909
$K^*(892)^+\mu^+\mu^-$	*C1*		<	1.4	$\times 10^{-3}$	CL=90%	765
$\pi^+e^+\mu^-$	*LF*		<	1.1	$\times 10^{-6}$	CL=90%	976
$\pi^+e^-\mu^+$	*LF*		<	9.4	$\times 10^{-7}$	CL=90%	976
$K^+e^+\mu^-$	*LF*		<	7.9	$\times 10^{-7}$	CL=90%	919
$K^+e^-\mu^+$	*LF*		<	5.6	$\times 10^{-7}$	CL=90%	919
π^-2e^+	*L*		<	1.4	$\times 10^{-6}$	CL=90%	979
$\pi^-2\mu^+$	*L*		<	8.6	$\times 10^{-8}$	CL=90%	968
$\pi^-e^+\mu^+$	*L*		<	6.3	$\times 10^{-7}$	CL=90%	976
K^-2e^+	*L*		<	7.7	$\times 10^{-7}$	CL=90%	922

$K^- 2\mu^+$	L	$<$	2.6	$\times 10^{-8}$ CL=90%	909
$K^- e^+ \mu^+$	L	$<$	2.6	$\times 10^{-7}$ CL=90%	919
$K^*(892)^- 2\mu^+$	L	$<$	1.4	$\times 10^{-3}$ CL=90%	765

$D_s^{*\pm}$

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

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

Mass $m = 2112.2 \pm 0.4$ MeV
$m_{D_s^{*\pm}} - m_{D_s^{\pm}} = 143.8 \pm 0.4$ MeV
Full width $\Gamma < 1.9$ MeV, CL = 90%

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

D_s^{*+} DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D_s^+ \gamma$	(93.5±0.7) %	139
$D_s^+ \pi^0$	(5.8±0.7) %	48
$D_s^+ e^+ e^-$	(6.7±1.6) $\times 10^{-3}$	139

$D_{s0}^*(2317)^{\pm}$

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

J^P is natural, low mass consistent with 0^+.

See the review on "Heavy Non-$q\overline{q}$ Mesons."

Mass $m = 2317.8 \pm 0.5$ MeV
$m_{D_{s0}^*(2317)^{\pm}} - m_{D_s^{\pm}} = 349.4 \pm 0.5$ MeV
Full width $\Gamma < 3.8$ MeV, CL = 95%

$D_{s0}^*(2317)^-$ modes are charge conjugates of modes below.

$D_{s0}^*(2317)^{\pm}$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
$D_s^+ \pi^0$	(100^{+0}_{-20}) %		298
$D_s^+ \gamma$	$<$ 5 %	90%	323
$D_s^*(2112)^+ \gamma$	$<$ 6 %	90%	–
$D_s^+ \gamma\gamma$	$<$ 18 %	95%	323
$D_s^*(2112)^+ \pi^0$	$<$ 11 %	90%	–
$D_s^+ \pi^+ \pi^-$	$<$ 4 $\times 10^{-3}$	90%	194
$D_s^+ \pi^0 \pi^0$	not seen		205

$D_{s1}(2460)^{\pm}$

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

See the review on "Heavy Non-$q\overline{q}$ Mesons."

Mass $m = 2459.5 \pm 0.6$ MeV (S = 1.1)
$m_{D_{s1}(2460)^{\pm}} - m_{D_s^{*\pm}} = 347.3 \pm 0.7$ MeV (S = 1.2)
$m_{D_{s1}(2460)^{\pm}} - m_{D_s^{\pm}} = 491.1 \pm 0.6$ MeV (S = 1.1)
Full width $\Gamma < 3.5$ MeV, CL = 95%

$D_{s1}(2460)^-$ modes are charge conjugates of the modes below.

$D_{s1}(2460)^+$ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
$D_s^{*+}\pi^0$	(48 ±11) %		297
$D_s^+\gamma$	(18 ± 4) %		442
$D_s^+\pi^+\pi^-$	(4.3± 1.3) %	S=1.1	363
$D_s^{*+}\gamma$	< 8 %	CL=90%	323
$D_{s0}^*(2317)^+\gamma$	($3.7^{+\ 5.0}_{-\ 2.4}$) %		138

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

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

Mass $m = 2535.11 \pm 0.06$ MeV
$m_{D_{s1}(2536)^{\pm}} - m_{D_s^*(2111)} = 422.9 \pm 0.4$ MeV
$m_{D_{s1}(2536)^{\pm}} - m_{D^*(2010)^{\pm}} = 524.85 \pm 0.04$ MeV
$m_{D_{s1}(2536)^{\pm}} - m_{D^*(2007)^0} = 528.26 \pm 0.05$ MeV (S = 1.2)
Full width $\Gamma = 0.92 \pm 0.05$ MeV

Branching fractions are given relative to the one **DEFINED AS 1**.
$D_{s1}(2536)^-$ modes are charge conjugates of the modes below.

$D_{s1}(2536)^+$ DECAY MODES	Fraction (Γ_i/Γ)	Confidence level	p (MeV/c)
$D^*(2010)^+K^0$	0.85 ±0.12		149
$(D^*(2010)^+K^0)_{S-wave}$	0.61 ±0.09		149
$D^+\pi^-K^+$	0.028±0.005		176
$D^*(2007)^0K^+$	**DEFINED AS 1**		167
D^+K^0	<0.34	90%	381
D^0K^+	<0.12	90%	391
$D_s^{*+}\gamma$	possibly seen		388
$D_s^+\pi^+\pi^-$	seen		437

$D^*_{s2}(2573)$ $I(J^P) = 0(2^+)$

Mass $m = 2569.1 \pm 0.8$ MeV (S = 2.4)
$m_{D^*_{s2}(2573)} - m_{D^0} = 704 \pm 3.2$ MeV
Full width $\Gamma = 16.9 \pm 0.7$ MeV

$D^*_{s2}(2573)^-$ modes are charge conjugates of the modes below.

$D^*_{s2}(2573)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^0 K^+$	seen	431
$D^*(2007)^0 K^+$	not seen	238
$D^+ K^0_S$	seen	422
$D^{*+} K^0_S$	seen	225

$D^*_{s1}(2700)^\pm$ $I(J^P) = 0(1^-)$

Mass $m = 2714 \pm 5$ MeV (S = 1.5)
Full width $\Gamma = 122 \pm 10$ MeV

$D^*_{s1}(2700)^\pm$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^0 K^+$	seen	579
$D^+ K^0_S$	seen	573
$D^{*0} K^+$	seen	438
$D^{*+} K^0_S$	seen	431

$D^*_{s3}(2860)^\pm$ $I(J^P) = 0(3^-)$

Mass $m = 2860 \pm 7$ MeV
Full width $\Gamma = 53 \pm 10$ MeV

$D^*_{s3}(2860)^\pm$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^0 K^+$	seen	710
$D^+ K^0_S$	seen	704
$D^{*0} K^+$	seen	589
$D^{*+} K^0_S$	seen	584

NOTES

[*a*] See the Particle Listings for the (complicated) definition of this quantity.

[*b*] This is the purely e^+ semileptonic branching fraction: the e^+ fraction from τ^+ decays has been subtracted off. The sum of our (non-τ) e^+ exclusive fractions — an $e^+\nu_e$ with an η, η', ϕ, K^0, or K^{*0} — is 5.99 ± 0.31 %.

[*c*] This fraction includes η from η' decays.

[*d*] The sum of our exclusive η' fractions — $\eta' e^+\nu_e$, $\eta'\mu^+\nu_\mu$, $\eta'\pi^+$, $\eta'\rho^+$, and $\eta' K^+$ — is 11.8 ± 1.6%.

[*e*] This branching fraction includes all the decay modes of the final-state resonance.

[*f*] A test for $u\overline{u}$ or $d\overline{d}$ content in the D_s^+. Neither Cabibbo-favored nor Cabibbo-suppressed decays can contribute, and $\omega-\phi$ mixing is an unlikely explanation for any fraction above about 2×10^{-4}.

[*g*] The branching fraction for this mode may differ from the sum of the submodes that contribute to it, due to interference effects. See the relevant papers in the Particle Listings.

[*h*] We decouple the $D_s^+ \to \phi\pi^+$ branching fraction obtained from mass projections (and used to get some of the other branching fractions) from the $D_s^+ \to \phi\pi^+$, $\phi \to K^+K^-$ branching fraction obtained from the Dalitz-plot analysis of $D_s^+ \to K^+K^-\pi^+$. That is, the ratio of these two branching fractions is not exactly the $\phi \to K^+K^-$ branching fraction 0.491.

[*i*] This is the average of a model-independent and a *K*-matrix parametrization of the $\pi^+\pi^-$ *S*-wave and is a sum over several f_0 mesons.

[*j*] This mode is not a useful test for a ΔC=1 weak neutral current because both quarks must change flavor in this decay.

[*k*] This is *not* a test for the ΔC=1 weak neutral current, but leads to the $\pi^+\ell^+\ell^-$ final state.