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CHARMED, STRANGE MESONS ($C = S = \pm 1$)

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

$D_s^\pm$ was $F^\pm$

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

Mass $m = 1968.5 \pm 0.6$ MeV (S = 1.1)
$m_{D_s^\pm} - m_{D^\pm} = 99.2 \pm 0.5$ MeV (S = 1.1)
Mean life $\tau = (0.467 \pm 0.017) \times 10^{-12}$ s
$c\tau = 140$ μm

D_s^+ form factors

$r_2 = 1.6 \pm 0.4$
$r_v = 1.5 \pm 0.5$
$\Gamma_L/\Gamma_T = 0.72 \pm 0.18$

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)	Confidence level	p (MeV/c)
Inclusive modes				
K^- anything		$(13 \ ^{+14}_{-12})$ %		–
$\overline{K}^0$ anything + K^0 anything		(39 ± 28) %		–
K^+ anything		$(20 \ ^{+18}_{-14})$ %		–
non-$K\overline{K}$ anything		(64 ± 17) %		–
e^+ anything		< 20 %	90%	–
Leptonic and semileptonic modes				
$\mu^+\nu_\mu$		$(9 \pm 4) \times 10^{-3}$		981
$\phi\ell^+\nu_\ell$	[xx]	(1.9 ± 0.5) %		–
$\eta\ell^+\nu_\ell + \eta'(958)\ell^+\nu_\ell$		(3.3 ± 1.0) %		–
$\eta\ell^+\nu_\ell$		(2.5 ± 0.7) %		–
$\eta'(958)\ell^+\nu_\ell$		$(8.7 \pm 3.4) \times 10^{-3}$		–

Hadronic modes with a $K\overline{K}$ pair (including from a ϕ)

$K^+\overline{K}^0$		$(3.6\pm 1.1)\%$		850
$K^+K^-\pi^+$	[rr,yy]	$(4.6\pm 1.2)\%$		805
$\phi\pi^+$		$(3.6\pm 0.9)\%$		712
$K^+\overline{K}^*(892)^0$		$(3.4\pm 0.9)\%$		682
$f_0(980)\pi^+$		$(1.1\pm 0.4)\%$		732
$K^+\overline{K}^*_0(1430)^0$		$(7\pm 4)\times 10^{-3}$		186
$f_J(1710)\pi^+ \rightarrow K^+K^-\pi^+$	[zz]	$(1.5\pm 2.0)\times 10^{-3}$		204
$K^+K^-\pi^+$ nonresonant		$(9\pm 4)\times 10^{-3}$		805
$K^0\overline{K}^0\pi^+$				802
$K^*(892)^+\overline{K}^0$		$(4.3\pm 1.4)\%$		683
$K^+K^-\pi^+\pi^0$				748
$\phi\pi^+\pi^0$		$(9\pm 5)\%$		687
$\phi\rho^+$		$(6.7\pm 2.3)\%$		407
$\phi\pi^+\pi^0$ 3-body		$< 2.6\%$	90%	687
$K^+K^-\pi^+\pi^0$ non-ϕ		$< 9\%$	90%	748
$K^+\overline{K}^0\pi^+\pi^-$		$< 2.8\%$	90%	744
$K^0K^-\pi^+\pi^+$		$(4.3\pm 1.5)\%$		744
$K^*(892)^+\overline{K}^*(892)^0$		$(5.8\pm 2.5)\%$		412
$K^0K^-\pi^+\pi^+$ non-$K^{*+}\overline{K}^{*0}$		$< 2.9\%$	90%	744
$K^+K^-\pi^+\pi^+\pi^-$				673
$\phi\pi^+\pi^+\pi^-$		$(1.8\pm 0.6)\%$		640
$K^+K^-\pi^+\pi^+\pi^-$ non-ϕ		$(3.0^{+3.0}_{-2.0})\times 10^{-3}$		673

Other hadronic modes (0, 1, or 3 K's)

$\pi^+\pi^+\pi^-$		$(1.4\pm 0.4)\%$		959
$\rho^0\pi^+$		$< 2.9\times 10^{-3}$	90%	827
$f_0(980)\pi^+$		$(1.2\pm 0.5)\%$		732
$\pi^+\pi^+\pi^-$ nonresonant		$(1.0\pm 0.4)\%$		959
$\pi^+\pi^+\pi^-\pi^0$		$< 12\%$	90%	935
$\eta\pi^+$		$(2.0\pm 0.6)\%$		902
$\omega\pi^+$		$< 1.8\%$	90%	822
$\pi^+\pi^+\pi^+\pi^-\pi^-$		$(3.0^{+4.0}_{-3.0})\times 10^{-3}$		899
$\pi^+\pi^+\pi^-\pi^0\pi^0$				902
$\eta\rho^+$		$(10.3\pm 3.2)\%$		727
$\eta\pi^+\pi^0$ 3-body		$< 3.0\%$	90%	886
$\pi^+\pi^+\pi^+\pi^-\pi^-\pi^0$		$(4.9\pm 3.2)\%$		856
$\eta'(958)\pi^+$		$(4.9\pm 1.8)\%$		743
$\pi^+\pi^+\pi^+\pi^-\pi^-\pi^0\pi^0$				803

$\eta'(958)\rho^+$		(12 ± 4) %			470
$\eta'(958)\pi^+\pi^0$ 3-body		< 3.1	%	90%	720
$K^0\pi^+$		< 8	$\times 10^{-3}$	90%	916
$K^+\pi^+\pi^-$		(1.0 ± 0.4) %			900
$K^+\rho^0$		< 2.9	$\times 10^{-3}$	90%	747
$K^*(892)^0\pi^+$		(6.5 ± 2.8)	$\times 10^{-3}$		773
$K^+K^+K^-$		< 6	$\times 10^{-4}$	90%	628
ϕK^+		< 5	$\times 10^{-4}$	90%	607

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

$\pi^+\mu^+\mu^-$	[aaa]	< 4.3	$\times 10^{-4}$	90%	968
$K^+\mu^+\mu^-$	$C1$	< 5.9	$\times 10^{-4}$	90%	909
$K^*(892)^+\mu^+\mu^-$	$C1$	< 1.4	$\times 10^{-3}$	90%	765
$\pi^-\mu^+\mu^+$	L	< 4.3	$\times 10^{-4}$	90%	968
$K^-\mu^+\mu^+$	L	< 5.9	$\times 10^{-4}$	90%	909
$K^*(892)^-\mu^+\mu^+$	L	< 1.4	$\times 10^{-3}$	90%	765

$D_s^{*\pm}$

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

Mass $m = 2112.4 \pm 0.7$ MeV (S = 1.1)

$m_{D_s^{*\pm}} - m_{D_s^\pm} = 143.8 \pm 0.4$ 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)
$D_s^+\gamma$	seen	139
$D_s^+\pi^0$	seen	48

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

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

Mass $m = 2535.35 \pm 0.34$ MeV
Full width $\Gamma < 2.3$ MeV, CL = 90%

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

$D_{s1}(2536)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^*(2010)^+ K^0$	seen	150
$D^*(2007)^0 K^+$	seen	169
$D^+ K^0$	not seen	382
$D^0 K^+$	not seen	392
$D_s^{*+} \gamma$	possibly seen	389

$D_{sJ}(2573)^{\pm}$

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

J^P is natural, width and decay modes consistent with 2^+.

Mass $m = 2573.5 \pm 1.7$ MeV
Full width $\Gamma = 15^{+5}_{-4}$ MeV

$D_{sJ}(2573)^-$ modes are charge conjugates of the modes below.

$D_{sJ}(2573)^+$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^0 K^+$	seen	436
$D^*(2007)^0 K^+$	seen	245