

CHARMED MESONS ($C = \pm 1$)

$$D^+ = c\bar{d}, D^0 = c\bar{u}, \bar{D}^0 = \bar{c}u, D^- = \bar{c}d, \text{ similarly for } D^{*'}\text{'s}$$

D^\pm

$$I(J^P) = \frac{1}{2}(0^-)$$

$$\text{Mass } m = 1869.4 \pm 0.5 \text{ MeV} \quad (S = 1.1)$$

$$\text{Mean life } \tau = (1040 \pm 7) \times 10^{-15} \text{ s}$$

$$c\tau = 311.8 \mu\text{m}$$

c-quark decays

$$\Gamma(c \rightarrow \ell^+ \text{ anything}) / \Gamma(c \rightarrow \text{ anything}) = 0.096 \pm 0.004 \text{ [a]}$$

$$\Gamma(c \rightarrow D^*(2010)^+ \text{ anything}) / \Gamma(c \rightarrow \text{ anything}) = 0.255 \pm 0.017$$

CP-violation decay-rate asymmetries

$$A_{CP}(K_S^0 \pi^\pm) = -0.016 \pm 0.017$$

$$A_{CP}(K_S^0 K^\pm) = 0.07 \pm 0.06$$

$$A_{CP}(K^+ K^- \pi^\pm) = 0.002 \pm 0.011$$

$$A_{CP}(K^\pm K^{*0}) = -0.02 \pm 0.05$$

$$A_{CP}(\phi \pi^\pm) = -0.014 \pm 0.033$$

$$A_{CP}(\pi^+ \pi^- \pi^\pm) = -0.02 \pm 0.04$$

$D^+ \rightarrow \bar{K}^*(892)^0 \ell^+ \nu_\ell$ form factors

$$r_V = 1.62 \pm 0.08 \quad (S = 1.5)$$

$$r_2 = 0.83 \pm 0.05$$

$$r_3 = 0.0 \pm 0.4$$

$$\Gamma_L / \Gamma_T = 1.13 \pm 0.08$$

$$\Gamma_+ / \Gamma_- = 0.22 \pm 0.06 \quad (S = 1.6)$$

D^- modes are charge conjugates of the modes below.

D^+ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
Inclusive modes			
e^+ anything	(17.2 \pm 1.9) %		—
K^- anything	(27.5 \pm 2.4) %		—
\bar{K}^0 anything + K^0 anything	(61 \pm 8) %		—
K^+ anything	(5.5 \pm 1.6) %		—
η anything	[b] < 13	%	CL=90%
ϕ anything	< 1.8	%	CL=90%
ϕe^+ anything	< 1.6	%	CL=90%

Leptonic and semileptonic modes

$\mu^+ \nu_\mu$	$(8 \begin{smallmatrix} +17 \\ -5 \end{smallmatrix}) \times 10^{-4}$		932
$\bar{K}^0 \ell^+ \nu_\ell$	[c] $(6.8 \pm 0.8) \%$		868
$\bar{K}^0 e^+ \nu_e$	$(6.7 \pm 0.9) \%$		868
$\bar{K}^0 \mu^+ \nu_\mu$	$(7.0 \begin{smallmatrix} +3.0 \\ -2.0 \end{smallmatrix}) \%$		865
$K^- \pi^+ e^+ \nu_e$	$(4.5 \begin{smallmatrix} +1.0 \\ -0.8 \end{smallmatrix}) \%$	S=1.1	863
$\bar{K}^*(892)^0 e^+ \nu_e$	$(3.7 \pm 0.5) \%$		722
$\times B(\bar{K}^*(892)^0 \rightarrow K^- \pi^+)$			
$K^- \pi^+ e^+ \nu_e$ nonresonant	$< 7 \times 10^{-3}$	CL=90%	863
$K^- \pi^+ \mu^+ \nu_\mu$	$(4.00 \pm 0.32) \%$		851
$\bar{K}^*(892)^0 \mu^+ \nu_\mu$	$(3.7 \pm 0.3) \%$		717
$\times B(\bar{K}^*(892)^0 \rightarrow K^- \pi^+)$			
$K^- \pi^+ \mu^+ \nu_\mu$ nonresonant	$(3.3 \pm 1.3) \times 10^{-3}$		851
$(\bar{K}^*(892)\pi)^0 e^+ \nu_e$	$< 1.2 \%$	CL=90%	712
$(\bar{K}\pi\pi)^0 e^+ \nu_e$ non- $\bar{K}^*(892)$	$< 9 \times 10^{-3}$	CL=90%	846
$K^- \pi^+ \pi^0 \mu^+ \nu_\mu$	$< 1.7 \times 10^{-3}$	CL=90%	825
$\pi^0 \ell^+ \nu_\ell$	[d] $(3.1 \pm 1.5) \times 10^{-3}$		930

Fractions of some of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

$\bar{K}^*(892)^0 \ell^+ \nu_\ell$	[c] $(5.73 \pm 0.35) \%$		722
$\bar{K}^*(892)^0 e^+ \nu_e$	$(5.5 \pm 0.7) \%$	S=1.4	722
$\bar{K}^*(892)^0 \mu^+ \nu_\mu$	$(5.5 \pm 0.4) \%$		717
$\bar{K}_1(1270)^0 \mu^+ \nu_\mu$	$< 4 \%$	CL=95%	493
$\bar{K}_2^*(1430)^0 \mu^+ \nu_\mu$	$< 1.0 \%$	CL=95%	380
$\rho^0 e^+ \nu_e$	$(2.5 \pm 1.0) \times 10^{-3}$		774
$\rho^0 \mu^+ \nu_\mu$	$(3.4 \pm 0.8) \times 10^{-3}$		769
$\phi e^+ \nu_e$	$< 2.09 \%$	CL=90%	657
$\phi \mu^+ \nu_\mu$	$< 3.72 \%$	CL=90%	651
$\eta \ell^+ \nu_\ell$	$< 5 \times 10^{-3}$	CL=90%	854
$\eta'(958) \mu^+ \nu_\mu$	$< 1.1 \%$	CL=90%	684

Hadronic modes with a \bar{K} or $\bar{K}K\bar{K}$

$\bar{K}^0 \pi^+$	$(2.82 \pm 0.19) \%$		862
$K^- \pi^+ \pi^+$	[e] $(9.2 \pm 0.6) \%$		845
$\bar{K}^*(892)^0 \pi^+$	$(1.30 \pm 0.13) \%$		714
$\times B(\bar{K}^*(892)^0 \rightarrow K^- \pi^+)$			
$\bar{K}_0^*(1430)^0 \pi^+$	$(2.3 \pm 0.3) \%$		382
$\times B(\bar{K}_0^*(1430)^0 \rightarrow K^- \pi^+)$			
$\bar{K}^*(1680)^0 \pi^+$	$(3.8 \pm 0.8) \times 10^{-3}$		58
$\times B(\bar{K}^*(1680)^0 \rightarrow K^- \pi^+)$			
$K^- \pi^+ \pi^+$ nonresonant	$(8.8 \pm 0.9) \%$		845

$\bar{K}^0 \pi^+ \pi^0$	[e]	(9.7 ± 3.0) %	S=1.1	845
$\bar{K}^0 \rho^+$		(6.6 ± 2.5) %		677
$\bar{K}^*(892)^0 \pi^+$		(6.5 ± 0.6) × 10 ⁻³		714
× B($\bar{K}^*(892)^0 \rightarrow \bar{K}^0 \pi^0$)				
$\bar{K}^0 \pi^+ \pi^0$ nonresonant		(1.3 ± 1.1) %		845
$K^- \pi^+ \pi^+ \pi^0$	[e]	(6.5 ± 1.1) %		816
$\bar{K}^*(892)^0 \rho^+$ total		(1.4 ± 0.9) %		422
× B($\bar{K}^*(892)^0 \rightarrow K^- \pi^+$)				
$\bar{K}_1(1400)^0 \pi^+$		(2.2 ± 0.6) %		390
× B($\bar{K}_1(1400)^0 \rightarrow K^- \pi^+ \pi^0$)				
$K^- \rho^+ \pi^+$ total		(3.1 ± 1.1) %		612
$K^- \rho^+ \pi^+$ 3-body		(1.1 ± 0.4) %		612
$\bar{K}^*(892)^0 \pi^+ \pi^0$ total		(4.5 ± 0.9) %		690
× B($\bar{K}^*(892)^0 \rightarrow K^- \pi^+$)				
$\bar{K}^*(892)^0 \pi^+ \pi^0$ 3-body		(2.9 ± 0.9) %		690
× B($\bar{K}^*(892)^0 \rightarrow K^- \pi^+$)				
$K^*(892)^- \pi^+ \pi^+$ 3-body		(7 ± 3) × 10 ⁻³		688
× B($K^*(892)^- \rightarrow K^- \pi^0$)				
$K^- \pi^+ \pi^+ \pi^0$ nonresonant	[f]	(1.2 ± 0.6) %		816
$\bar{K}^0 \pi^+ \pi^+ \pi^-$	[e]	(7.1 ± 1.0) %		814
$\bar{K}^0 a_1(1260)^+$		(4.0 ± 0.9) %		328
× B($a_1(1260)^+ \rightarrow \pi^+ \pi^+ \pi^-$)				
$\bar{K}_1(1400)^0 \pi^+$		(2.2 ± 0.6) %		390
× B($\bar{K}_1(1400)^0 \rightarrow \bar{K}^0 \pi^+ \pi^-$)				
$K^*(892)^- \pi^+ \pi^+$ 3-body		(1.4 ± 0.6) %		688
× B($K^*(892)^- \rightarrow \bar{K}^0 \pi^-$)				
$\bar{K}^0 \rho^0 \pi^+$ total		(4.3 ± 0.9) %		610
$\bar{K}^0 \rho^0 \pi^+$ 3-body		(5 ± 5) × 10 ⁻³		610
$\bar{K}^0 \pi^+ \pi^+ \pi^-$ nonresonant		(9 ± 4) × 10 ⁻³		814
$K^- 3\pi^+ \pi^-$	[e]	(6.2 ± 0.8) × 10 ⁻³	S=1.3	772
$\bar{K}^*(892)^0 \pi^+ \pi^+ \pi^-$		(2.1 ± 0.8) × 10 ⁻³		645
× B($\bar{K}^*(892)^0 \rightarrow K^- \pi^+$)				
$\bar{K}^*(892)^0 \rho^0 \pi^+$		(2.0 ± 0.5) × 10 ⁻³		239
× B($\bar{K}^*(892)^0 \rightarrow K^- \pi^+$)				
$\bar{K}^*(892)^0 \pi^+ \pi^+ \pi^-$ no- ρ		(2.9 ± 1.1) × 10 ⁻³		645
× B($\bar{K}^*(892)^0 \rightarrow K^- \pi^+$)				
$K^- \rho^0 \pi^+ \pi^+$		(1.94 ± 0.35) × 10 ⁻³	S=1.1	524
$K^- 3\pi^+ \pi^-$ nonresonant		(4.3 ± 3.2) × 10 ⁻⁴		772
$\bar{K}^0 \bar{K}^0 K^+$		(1.8 ± 0.8) %		545
$K^+ K^- \bar{K}^0 \pi^+$		(5.5 ± 1.4) × 10 ⁻⁴		435

Fractions of some of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

$\overline{K}^0 \rho^+$	(6.6 ± 2.5) %		677
$\overline{K}^0 a_1(1260)^+$	(8.2 ± 1.7) %		328
$\overline{K}^0 a_2(1320)^+$	< 3	× 10 ⁻³ CL=90%	199
$\overline{K}^*(892)^0 \pi^+$	(1.95 ± 0.19) %		714
$\overline{K}^*(892)^0 \rho^+$ total	[f] (2.1 ± 1.4) %		422
$\overline{K}^*(892)^0 \rho^+$ S-wave	[f] (1.7 ± 1.6) %		422
$\overline{K}^*(892)^0 \rho^+$ P-wave	< 1	× 10 ⁻³ CL=90%	422
$\overline{K}^*(892)^0 \rho^+$ D-wave	(10 ± 7) × 10 ⁻³		422
$\overline{K}^*(892)^0 \rho^+$ D-wave longitu- dinal	< 7	× 10 ⁻³ CL=90%	422
$\overline{K}_1(1270)^0 \pi^+$	< 7	× 10 ⁻³ CL=90%	487
$\overline{K}_1(1400)^0 \pi^+$	(5.0 ± 1.3) %		390
$\overline{K}_0^*(1430)^0 \pi^+$	(3.8 ± 0.4) %		382
$\overline{K}^*(1680)^0 \pi^+$	(1.47 ± 0.31) %		58
$\overline{K}^*(892)^0 \pi^+ \pi^0$ total	(6.8 ± 1.4) %		690
$\overline{K}^*(892)^0 \pi^+ \pi^0$ 3-body	[f] (4.3 ± 1.4) %		690
$K^*(892)^- \pi^+ \pi^+$ total	—		688
$K^*(892)^- \pi^+ \pi^+$ 3-body	(2.1 ± 0.9) %		688
$K^- \rho^+ \pi^+$ total	(3.1 ± 1.1) %		612
$K^- \rho^+ \pi^+$ 3-body	(1.1 ± 0.4) %		612
$\overline{K}^0 \rho^0 \pi^+$ total	(4.3 ± 0.9) %	CL=90%	610
$\overline{K}^0 \rho^0 \pi^+$ 3-body	(5 ± 5) × 10 ⁻³		610
$\overline{K}^*(892)^0 \pi^+ \pi^+ \pi^-$	(3.2 ± 1.2) × 10 ⁻³	S=2.0	645
$\overline{K}^*(892)^0 \rho^0 \pi^+$	(3.0 ± 0.7) × 10 ⁻³	S=1.3	239
$\overline{K}^*(892)^0 \pi^+ \pi^+ \pi^-$ no- ρ	(4.4 ± 1.7) × 10 ⁻³		645
$K^- \rho^0 \pi^+ \pi^+$	(1.94 ± 0.35) × 10 ⁻³		524
$\overline{K}^*(892)^0 a_1(1260)^+$	(9.1 ± 1.9) × 10 ⁻³		†

Pionic modes

$\pi^+ \pi^0$	(2.6 ± 0.7) × 10 ⁻³		925
$\pi^+ \pi^+ \pi^-$	(3.1 ± 0.4) × 10 ⁻³		908
$\sigma \pi^+$	(2.2 ± 0.5) × 10 ⁻³		—
$\rho^0 \pi^+$	(1.05 ± 0.18) × 10 ⁻³		766
$f_0(980) \pi^+$	[g] (1.9 ± 0.5) × 10 ⁻⁴		669
× B($f_0 \rightarrow \pi^+ \pi^-$)			
$f_2(1270) \pi^+$	(6.1 ± 1.1) × 10 ⁻⁴		485
× B($f_2 \rightarrow \pi^+ \pi^-$)			
$\pi^+ \pi^+ \pi^-$ nonresonant	(2.4 ± 2.1) × 10 ⁻⁴		908
$\pi^+ \pi^+ \pi^- \pi^0$	—		883
$\eta \pi^+ \times B(\eta \rightarrow \pi^+ \pi^- \pi^0)$	(6.8 ± 1.4) × 10 ⁻⁴		848
$\omega \pi^+ \times B(\omega \rightarrow \pi^+ \pi^- \pi^0)$	< 6	× 10 ⁻³ CL=90%	763
$3\pi^+ 2\pi^-$	(1.82 ± 0.25) × 10 ⁻³	S=1.2	845

Fractions of some of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

$\eta\pi^+$	$(3.0 \pm 0.6) \times 10^{-3}$		848
$\rho^0\pi^+$	$(1.05 \pm 0.18) \times 10^{-3}$		766
$\omega\pi^+$	$< 7 \times 10^{-3}$	CL=90%	763
$\eta\rho^+$	$< 7 \times 10^{-3}$	CL=90%	655
$\eta'(958)\pi^+$	$(5.1 \pm 1.0) \times 10^{-3}$		680
$\eta'(958)\rho^+$	$< 5 \times 10^{-3}$	CL=90%	348
$f_2(1270)\pi^+$	$(1.08 \pm 0.20) \times 10^{-3}$		485

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

$K^+\bar{K}^0$	$(5.9 \pm 0.6) \times 10^{-3}$	S=1.2	792
$K^+K^-\pi^+$	[e] $(8.9 \pm 0.8) \times 10^{-3}$		744
$\phi\pi^+ \times B(\phi \rightarrow K^+K^-)$	$(3.1 \pm 0.3) \times 10^{-3}$		647
$K^+\bar{K}^*(892)^0$ $\times B(\bar{K}^{*0} \rightarrow K^-\pi^+)$	$(2.9 \pm 0.4) \times 10^{-3}$		613
$K^+K^-\pi^+$ nonresonant	$(4.6 \pm 0.9) \times 10^{-3}$		744
$K^0\bar{K}^0\pi^+$	—		741
$K^*(892)^+\bar{K}^0$ $\times B(K^{*+} \rightarrow K^0\pi^+)$	$(2.1 \pm 0.9) \%$		611
$K^+K^-\pi^+\pi^0$	—		682
$\phi\pi^+\pi^0 \times B(\phi \rightarrow K^+K^-)$	$(1.1 \pm 0.5) \%$		619
$\phi\rho^+ \times B(\phi \rightarrow K^+K^-)$	$< 7 \times 10^{-3}$	CL=90%	258
$K^+K^-\pi^+\pi^0$ non- ϕ	$(1.5 \pm 0.7) \%$		682
$K^+\bar{K}^0\pi^+\pi^-$	$(4.0 \pm 0.7) \times 10^{-3}$		678
$K^0K^-\pi^+\pi^+$	$(5.5 \pm 0.8) \times 10^{-3}$		678
$K^*(892)^+\bar{K}^*(892)^0$ $\times B^2(K^*(892)^+ \rightarrow K^0\pi^+)$	$(1.2 \pm 0.5) \%$		280
$K^0K^-\pi^+\pi^+$ (non- $K^*\bar{K}^{*0}$)	$< 7.9 \times 10^{-3}$	CL=90%	678
$K^+K^-\pi^+\pi^+\pi^-$	$(2.5 \pm 1.3) \times 10^{-4}$		600

Fractions of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

$\phi\pi^+$	$(6.2 \pm 0.6) \times 10^{-3}$		647
$\phi\pi^+\pi^0$	$(2.3 \pm 1.0) \%$		619
$\phi\rho^+$	$< 1.5 \%$	CL=90%	258
$K^+\bar{K}^*(892)^0$	$(4.3 \pm 0.6) \times 10^{-3}$		613
$K^*(892)^+\bar{K}^0$	$(3.1 \pm 1.4) \%$		611
$K^*(892)^+\bar{K}^*(892)^0$	$(2.6 \pm 1.1) \%$		280

**Doubly Cabibbo suppressed (DC) modes,
 $\Delta C = 1$ weak neutral current (C1) modes, or
 Lepton Family number (LF) or Lepton number (L) violating modes**

$K^+ \pi^+ \pi^-$	DC	$(7.0 \pm 1.5) \times 10^{-4}$		845
$K^+ \rho^0$	DC	$(2.6 \pm 1.2) \times 10^{-4}$		678
$K^*(892)^0 \pi^+$	DC [h]	$(3.7 \pm 1.7) \times 10^{-4}$		714
$K^+ \pi^+ \pi^-$ nonresonant	DC	$(2.5 \pm 1.2) \times 10^{-4}$		845
$K^+ K^+ K^-$	DC	$(8.7 \pm 2.1) \times 10^{-5}$		550
ϕK^+	DC [h]	< 1.3	$\times 10^{-4}$ CL=90%	527
$\pi^+ e^+ e^-$	C1	< 5.2	$\times 10^{-5}$ CL=90%	929
$\pi^+ \mu^+ \mu^-$	C1	< 8.8	$\times 10^{-6}$ CL=90%	917
$\rho^+ \mu^+ \mu^-$	C1	< 5.6	$\times 10^{-4}$ CL=90%	757
$K^+ e^+ e^-$		[i] < 2.0	$\times 10^{-4}$ CL=90%	870
$K^+ \mu^+ \mu^-$		[i] < 9.2	$\times 10^{-6}$ CL=90%	856
$\pi^+ e^\pm \mu^\mp$	LF	[j] < 3.4	$\times 10^{-5}$ CL=90%	926
$K^+ e^\pm \mu^\mp$	LF	[j] < 6.8	$\times 10^{-5}$ CL=90%	866
$\pi^- e^+ e^+$	L	< 9.6	$\times 10^{-5}$ CL=90%	929
$\pi^- \mu^+ \mu^+$	L	< 4.8	$\times 10^{-6}$ CL=90%	917
$\pi^- e^+ \mu^+$	L	< 5.0	$\times 10^{-5}$ CL=90%	926
$\rho^- \mu^+ \mu^+$	L	< 5.6	$\times 10^{-4}$ CL=90%	757
$K^- e^+ e^+$	L	< 1.2	$\times 10^{-4}$ CL=90%	870
$K^- \mu^+ \mu^+$	L	< 1.3	$\times 10^{-5}$ CL=90%	856
$K^- e^+ \mu^+$	L	< 1.3	$\times 10^{-4}$ CL=90%	866
$K^*(892)^- \mu^+ \mu^+$	L	< 8.5	$\times 10^{-4}$ CL=90%	703

D^0

$$I(J^P) = \frac{1}{2}(0^-)$$

Mass $m = 1864.6 \pm 0.5$ MeV (S = 1.1)

$m_{D^\pm} - m_{D^0} = 4.78 \pm 0.10$ MeV (S = 1.1)

Mean life $\tau = (410.3 \pm 1.5) \times 10^{-15}$ s

$$c\tau = 123.0 \mu\text{m}$$

$$|m_{D_1^0} - m_{D_2^0}| < 7 \times 10^{10} \hbar \text{ s}^{-1}, \text{ CL} = 95\% [k]$$

$$(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma = 2y = 0.016 \pm 0.010$$

$$\Gamma(K^+ \ell^- \bar{\nu}_\ell \text{ (via } \bar{D}^0)) / \Gamma(K^- \ell^+ \nu_\ell) < 0.005, \text{ CL} = 90\%$$

$$\Gamma(K^+ \pi^- \text{ (via } \bar{D}^0)) / \Gamma(K^- \pi^+) < 4.1 \times 10^{-4}, \text{ CL} = 95\%$$

CP-violation decay-rate asymmetries

$$\begin{aligned}
 A_{CP}(K^+ K^-) &= 0.005 \pm 0.016 \\
 A_{CP}(K_S^0 K_S^0) &= -0.23 \pm 0.19 \\
 A_{CP}(\pi^+ \pi^-) &= 0.021 \pm 0.026 \\
 A_{CP}(\pi^0 \pi^0) &= 0.00 \pm 0.05 \\
 A_{CP}(K_S^0 \phi) &= -0.03 \pm 0.09 \\
 A_{CP}(K_S^0 \pi^0) &= 0.001 \pm 0.013 \\
 A_{CP}(K^\pm \pi^\mp) &= 0.08 \pm 0.09 \\
 A_{CP}(K^\mp \pi^\pm \pi^0) &= -0.03 \pm 0.09 \\
 A_{CP}(K^\pm \pi^\mp \pi^0) &= 0.09^{+0.25}_{-0.22}
 \end{aligned}$$

CPT-violation decay-rate asymmetry

$$A_{CPT}(K^\mp \pi^\pm) = 0.008 \pm 0.008$$

\overline{D}^0 modes are charge conjugates of the modes below.

D⁰ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
Inclusive modes			
e^+ anything	[l] (6.87 ± 0.28) %		—
μ^+ anything	(6.5 ± 0.8) %		—
K^- anything	(53 ± 4) %	S=1.3	—
\overline{K}^0 anything + K^0 anything	(42 ± 5) %		—
K^+ anything	(3.4 \pm 0.6 \pm 0.4) %		—
η anything	[b] < 13 %	CL=90%	—
ϕ anything	(1.7 ± 0.8) %		—
Semileptonic modes			
$K^- \ell^+ \nu_\ell$	[c] (3.43 ± 0.14) %	S=1.2	867
$K^- e^+ \nu_e$	(3.58 ± 0.18) %	S=1.1	867
$K^- \mu^+ \nu_\mu$	(3.19 ± 0.17) %		864
$K^- \pi^0 e^+ \nu_e$	(1.1 \pm 0.8 \pm 0.6) %	S=1.6	861
$\overline{K}^0 \pi^- e^+ \nu_e$	(1.8 ± 0.8) %	S=1.6	860
$\overline{K}^*(892)^- e^+ \nu_e$	(1.43 ± 0.23) %		719
$\times B(K^*(892)^- \rightarrow \overline{K}^0 \pi^-)$			
$K^- \pi^+ \pi^- \mu^+ \nu_\mu$	< 1.2 $\times 10^{-3}$	CL=90%	821
$(\overline{K}^*(892)\pi)^- \mu^+ \nu_\mu$	< 1.4 $\times 10^{-3}$	CL=90%	692
$\pi^- e^+ \nu_e$	(3.6 ± 0.6) $\times 10^{-3}$		927
A fraction of the following resonance mode has already appeared above as a submode of a charged-particle mode.			
$K^*(892)^- e^+ \nu_e$	(2.15 ± 0.35) %		719

Hadronic modes with a \bar{K} or $\bar{K}K\bar{K}$

$K^- \pi^+$	(3.80 ± 0.09) %		861
$\bar{K}^0 \pi^0$	(2.30 ± 0.22) %		860
$\bar{K}^0 \pi^+ \pi^-$	[e] (5.97 ± 0.35) %	S=1.1	842
$\bar{K}^0 \rho^0$	(1.55 ⁺ ₋ 0.12 / 0.16) %		673
$\bar{K}^0 \omega$	(3.9 ± 0.9) × 10 ⁻⁴		670
× B($\omega \rightarrow \pi^+ \pi^-$)			
$\bar{K}^0 f_0(980)$	(2.8 ⁺ ₋ 0.6 / 0.4) × 10 ⁻³		549
× B($f_0(980) \rightarrow \pi^+ \pi^-$)			
$\bar{K}^0 f_2(1270)$	(2.6 ⁺ ₋ 2.3 / 1.4) × 10 ⁻⁴		262
× B($f_2(1270) \rightarrow \pi^+ \pi^-$)			
$\bar{K}^0 f_0(1370)$	(5.1 ⁺ ₋ 1.2 / 1.3) × 10 ⁻³		—
× B($f_0(1370) \rightarrow \pi^+ \pi^-$)			
$K^*(892)^- \pi^+$	(3.9 ± 0.3) %		711
× B($K^*(892)^- \rightarrow \bar{K}^0 \pi^-$)			
$K_0^*(1430)^- \pi^+$	(6.1 ⁺ ₋ 1.2 / 0.8) × 10 ⁻³		378
× B($K_0^*(1430)^- \rightarrow \bar{K}^0 \pi^-$)			
$K_2^*(1430)^- \pi^+$	(1.0 ⁺ ₋ 0.7 / 0.4) × 10 ⁻³		367
× B($K_2^*(1430)^- \rightarrow \bar{K}^0 \pi^-$)			
$K^*(1680)^- \pi^+$	(2.1 ⁺ ₋ 1.0 / 0.9) × 10 ⁻³		46
× B($K^*(1680)^- \rightarrow \bar{K}^0 \pi^-$)			
$K^*(892)^+ \pi^-$	(2.0 ⁺ ₋ 2.6 / 0.9) × 10 ⁻⁴		711
× B($K^*(892)^+ \rightarrow K^0 \pi^+$)			
$\bar{K}^0 \pi^+ \pi^-$ nonresonant	(5.4 ⁺ ₋ 12.0 / 3.4) × 10 ⁻⁴		842
$K^- \pi^+ \pi^0$	[e] (13.0 ± 0.8) %	S=1.3	844
$K^- \rho^+$	(10.1 ± 0.8) %		675
$K^- \rho(1700)^+$	(7.4 ± 1.6) × 10 ⁻³		†
× B($\rho(1700)^+ \rightarrow \pi^+ \pi^0$)			
$K^*(892)^- \pi^+$	(1.97 ± 0.13) %		711
× B($K^*(892)^- \rightarrow K^- \pi^0$)			
$\bar{K}^*(892)^0 \pi^0$	(1.87 ± 0.27) %		711
× B($\bar{K}^*(892)^0 \rightarrow K^- \pi^+$)			
$K_0^*(1430)^- \pi^+$	(3.0 ⁺ ₋ 0.6 / 0.4) × 10 ⁻³		378
× B($K_0^*(1430)^- \rightarrow K^- \pi^0$)			
$\bar{K}_0^*(1430)^0 \pi^0$	(5.3 ⁺ ₋ 4.2 / 1.4) × 10 ⁻³		379
× B($\bar{K}_0^*(1430)^0 \rightarrow K^- \pi^+$)			
$K^*(1680)^- \pi^+$	(1.1 ± 0.5) × 10 ⁻³		46
× B($K^*(1680)^- \rightarrow K^- \pi^0$)			
$K^- \pi^+ \pi^0$ nonresonant	(1.04 ⁺ ₋ 0.50 / 0.19) %		844

$\overline{K}^0 \pi^0 \pi^0$	—	843
$\overline{K}^*(892)^0 \pi^0$	$(9.3 \pm 1.3) \times 10^{-3}$	711
$\times B(\overline{K}^*(892)^0 \rightarrow \overline{K}^0 \pi^0)$		
$\overline{K}^0 \pi^0 \pi^0$ nonresonant	$(8.5 \pm 2.2) \times 10^{-3}$	843
$K^- \pi^+ \pi^+ \pi^-$	[e] $(7.46 \pm 0.31) \%$	812
$K^- \pi^+ \rho^0$ total	$(6.2 \pm 0.4) \%$	609
$K^- \pi^+ \rho^0$ 3-body	$(4.7 \pm 2.1) \times 10^{-3}$	609
$\overline{K}^*(892)^0 \rho^0$	$(9.7 \pm 2.1) \times 10^{-3}$	416
$\times B(\overline{K}^*(892)^0 \rightarrow K^- \pi^+)$		
$K^- a_1(1260)^+$	$(3.6 \pm 0.6) \%$	327
$\times B(a_1(1260)^+ \rightarrow \pi^+ \pi^+ \pi^-)$		
$\overline{K}^*(892)^0 \pi^+ \pi^-$ total	$(1.5 \pm 0.4) \%$	685
$\times B(\overline{K}^*(892)^0 \rightarrow K^- \pi^+)$		
$\overline{K}^*(892)^0 \pi^+ \pi^-$ 3-body	$(9.5 \pm 2.1) \times 10^{-3}$	685
$\times B(\overline{K}^*(892)^0 \rightarrow K^- \pi^+)$		
$K_1(1270)^- \pi^+$	[f] $(2.9 \pm 0.3) \times 10^{-3}$	484
$\times B(K_1(1270)^- \rightarrow K^- \pi^+ \pi^-)$		
$K^- \pi^+ \pi^+ \pi^-$ nonresonant	$(1.74 \pm 0.25) \%$	812
$\overline{K}^0 \pi^+ \pi^- \pi^0$	[e] $(10.9 \pm 1.3) \%$	812
$\overline{K}^0 \eta \times B(\eta \rightarrow \pi^+ \pi^- \pi^0)$	$(1.74 \pm 0.25) \times 10^{-3}$	772
$\overline{K}^0 \omega \times B(\omega \rightarrow \pi^+ \pi^- \pi^0)$	$(2.1 \pm 0.4) \%$	670
$K^*(892)^- \rho^+$	$(4.4 \pm 1.7) \%$	416
$\times B(K^*(892)^- \rightarrow \overline{K}^0 \pi^-)$		
$\overline{K}^*(892)^0 \rho^0$	$(4.8 \pm 1.1) \times 10^{-3}$	416
$\times B(\overline{K}^*(892)^0 \rightarrow \overline{K}^0 \pi^0)$		
$K_1(1270)^- \pi^+$	[f] $(4.5 \pm 1.2) \times 10^{-3}$	484
$\times B(K_1(1270)^- \rightarrow \overline{K}^0 \pi^- \pi^0)$		
$\overline{K}^*(892)^0 \pi^+ \pi^-$ 3-body	$(4.7 \pm 1.0) \times 10^{-3}$	685
$\times B(\overline{K}^*(892)^0 \rightarrow \overline{K}^0 \pi^0)$		
$\overline{K}^0 \pi^+ \pi^- \pi^0$ nonresonant	$(2.3 \pm 2.3) \%$	812
$K^- \pi^+ \pi^+ \pi^- \pi^0$	$(4.0 \pm 0.4) \%$	771
$\overline{K}^*(892)^0 \pi^+ \pi^- \pi^0$	$(1.2 \pm 0.6) \%$	643
$\times B(\overline{K}^*(892)^0 \rightarrow K^- \pi^+)$		
$\overline{K}^*(892)^0 \eta$	$(2.7 \pm 0.6) \times 10^{-3}$	582
$\times B(\overline{K}^*(892)^0 \rightarrow K^- \pi^+)$		
$\times B(\eta \rightarrow \pi^+ \pi^- \pi^0)$		
$K^- \pi^+ \omega \times B(\omega \rightarrow \pi^+ \pi^- \pi^0)$	$(2.7 \pm 0.5) \%$	605
$\overline{K}^*(892)^0 \omega$	$(6.5 \pm 2.4) \times 10^{-3}$	410
$\times B(\overline{K}^*(892)^0 \rightarrow K^- \pi^+)$		
$\times B(\omega \rightarrow \pi^+ \pi^- \pi^0)$		
$\overline{K}^0 \pi^+ \pi^+ \pi^- \pi^-$	$(6.4 \pm 1.8) \times 10^{-3}$	768
$\overline{K}^0 K^+ K^-$	$(1.03 \pm 0.10) \%$	544
$\overline{K}^0 \phi \times B(\phi \rightarrow K^+ K^-)$	$(4.7 \pm 0.6) \times 10^{-3}$	520
$\overline{K}^0 K^+ K^-$ non- ϕ	$(5.6 \pm 0.9) \times 10^{-3}$	544

$K_S^0 K_S^0 K_S^0$	$(9.2 \pm 1.6) \times 10^{-4}$	538
$K^+ K^- K^- \pi^+$	$(2.04 \pm 0.30) \times 10^{-4}$	434
$K^+ K^- \bar{K}^*(892)^0$	$(4.1 \pm 1.7) \times 10^{-5}$	†
$\times B(\bar{K}^*(892)^0 \rightarrow K^- \pi^+)$		
$K^- \pi^+ \phi \times B(\phi \rightarrow K^+ K^-)$	$(3.8 \pm 1.6) \times 10^{-5}$	422
$\phi \bar{K}^*(892)^0$	$(1.0 \pm 0.2) \times 10^{-4}$	†
$\times B(\phi \rightarrow K^+ K^-)$		
$\times B(\bar{K}^*(892)^0 \rightarrow K^- \pi^+)$		
$K^+ K^- K^- \pi^+$ nonresonant	$(3.1 \pm 1.4) \times 10^{-5}$	434

Fractions of many of the following modes with resonances have already appeared above as submodes of particular charged-particle modes. (Modes for which there are only upper limits and $\bar{K}^*(892)\rho$ submodes only appear below.)

$\bar{K}^0 \eta$	$(7.7 \pm 1.1) \times 10^{-3}$		772
$\bar{K}^0 \rho^0$	$(1.55^+_{-0.16}) \%$		673
$K^- \rho^+$	$(10.1 \pm 0.8) \%$	S=1.2	675
$\bar{K}^0 \omega$	$(2.3 \pm 0.4) \%$		670
$\bar{K}^0 \eta'(958)$	$(1.88 \pm 0.28) \%$		565
$\bar{K}^0 \phi$	$(9.4 \pm 1.1) \times 10^{-3}$		520
$K^- a_1(1260)^+$	$(7.2 \pm 1.1) \%$		327
$\bar{K}^0 a_1(1260)^0$	$< 1.9 \%$	CL=90%	323
$\bar{K}^0 f_2(1270)$	$(4.7^+_{-2.4}) \times 10^{-4}$		262
$K^- a_2(1320)^+$	$< 2 \times 10^{-3}$	CL=90%	197
$K^*(892)^- \pi^+$	$(5.9 \pm 0.4) \%$	S=1.1	711
$\bar{K}^*(892)^0 \pi^0$	$(2.8 \pm 0.4) \%$	S=1.1	711
$\bar{K}^*(892)^0 \pi^+ \pi^-$ total	$(2.2 \pm 0.5) \%$		685
$\bar{K}^*(892)^0 \pi^+ \pi^-$ 3-body	$(1.42 \pm 0.31) \%$		685
$K^- \pi^+ \rho^0$ total	$(6.2 \pm 0.4) \%$		609
$K^- \pi^+ \rho^0$ 3-body	$(4.7 \pm 2.1) \times 10^{-3}$		609
$\bar{K}^*(892)^0 \rho^0$	$(1.45 \pm 0.32) \%$		416
$\bar{K}^*(892)^0 \rho^0$ transverse	$(1.5 \pm 0.5) \%$		416
$\bar{K}^*(892)^0 \rho^0$ S-wave	$(2.8 \pm 0.6) \%$		416
$\bar{K}^*(892)^0 \rho^0$ S-wave long.	$< 3 \times 10^{-3}$	CL=90%	416
$\bar{K}^*(892)^0 \rho^0$ P-wave	$< 3 \times 10^{-3}$	CL=90%	416
$\bar{K}^*(892)^0 \rho^0$ D-wave	$(1.9 \pm 0.6) \%$		416
$K^*(892)^- \rho^+$	$(6.6 \pm 2.6) \%$		416
$K^*(892)^- \rho^+$ longitudinal	$(3.2 \pm 1.3) \%$		416
$K^*(892)^- \rho^+$ transverse	$(3.4 \pm 2.0) \%$		416
$K^*(892)^- \rho^+$ P-wave	$< 1.5 \%$	CL=90%	416
$K_1(1270)^- \pi^+$	[f] $(1.14 \pm 0.31) \%$		484
$K_1(1400)^- \pi^+$	$< 1.2 \%$	CL=90%	386
$\bar{K}_1(1400)^0 \pi^0$	$< 3.7 \%$	CL=90%	387

$K_0^*(1430)^- \pi^+$	$(9.8 \begin{smallmatrix} + \\ - \end{smallmatrix} \begin{smallmatrix} 2.0 \\ 1.3 \end{smallmatrix}) \times 10^{-3}$	378
$\bar{K}_0^*(1430)^0 \pi^0$	$(8.6 \begin{smallmatrix} + \\ - \end{smallmatrix} \begin{smallmatrix} 6.8 \\ 2.3 \end{smallmatrix}) \times 10^{-3}$	379
$K_2^*(1430)^- \pi^+$	$(2.0 \begin{smallmatrix} + \\ - \end{smallmatrix} \begin{smallmatrix} 1.3 \\ 0.7 \end{smallmatrix}) \times 10^{-3}$	367
$\bar{K}_2^*(1430)^0 \pi^0$	$< 3.3 \times 10^{-3}$ CL=90%	368
$K^*(1680)^- \pi^+$	$(8.2 \begin{smallmatrix} + \\ - \end{smallmatrix} \begin{smallmatrix} 3.9 \\ 3.5 \end{smallmatrix}) \times 10^{-3}$ S=1.2	46
$\bar{K}^*(892)^0 \pi^+ \pi^- \pi^0$	$(1.8 \pm 0.9) \%$	643
$\bar{K}^*(892)^0 \eta$	$(1.8 \pm 0.4) \%$	582
$K^- \pi^+ \omega$	$(3.0 \pm 0.6) \%$	605
$\bar{K}^*(892)^0 \omega$	$(1.1 \pm 0.4) \%$	410
$K^- \pi^+ \eta'(958)$	$(6.9 \pm 1.8) \times 10^{-3}$	479
$\bar{K}^*(892)^0 \eta'(958)$	$< 1.0 \times 10^{-3}$ CL=90%	119
$K^- \pi^+ \phi$	$(7.6 \pm 3.1) \times 10^{-5}$	422
$K^+ K^- \bar{K}^*(892)^0$	$(6.1 \pm 2.5) \times 10^{-5}$	†
$\phi \bar{K}^*(892)^0$	$(3.0 \pm 0.6) \times 10^{-4}$	†

Pionic modes

$\pi^+ \pi^-$	$(1.38 \pm 0.05) \times 10^{-3}$	922
$\pi^0 \pi^0$	$(8.4 \pm 2.2) \times 10^{-4}$	922
$\pi^+ \pi^- \pi^0$	$(1.1 \pm 0.4) \%$	907
$\pi^+ \pi^+ \pi^- \pi^-$	$(7.3 \pm 0.5) \times 10^{-3}$	880

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

$K^+ K^-$	$(3.89 \begin{smallmatrix} + \\ - \end{smallmatrix} \begin{smallmatrix} 0.12 \\ 0.15 \end{smallmatrix}) \times 10^{-3}$ S=1.2	791
$K^0 \bar{K}^0$	$(7.1 \pm 1.9) \times 10^{-4}$ S=1.2	788
$K^0 K^- \pi^+$	$(6.9 \pm 1.0) \times 10^{-3}$	739
$\bar{K}^*(892)^0 K^0$ $\times B(\bar{K}^{*0} \rightarrow K^- \pi^+)$	$< 1.1 \times 10^{-3}$ CL=90%	608
$K^*(892)^+ K^-$ $\times B(K^{*+} \rightarrow K^0 \pi^+)$	$(2.5 \pm 0.5) \times 10^{-3}$	610
$K^0 K^- \pi^+$ nonresonant	$(2.3 \pm 2.3) \times 10^{-3}$	739
$\bar{K}^0 K^+ \pi^-$	$(5.3 \pm 1.0) \times 10^{-3}$	739
$K^*(892)^0 \bar{K}^0$ $\times B(K^{*0} \rightarrow K^+ \pi^-)$	$< 6 \times 10^{-4}$ CL=90%	608
$K^*(892)^- K^+$ $\times B(K^{*-} \rightarrow \bar{K}^0 \pi^-)$	$(1.3 \pm 0.7) \times 10^{-3}$	610
$\bar{K}^0 K^+ \pi^-$ nonresonant	$(3.8 \begin{smallmatrix} + \\ - \end{smallmatrix} \begin{smallmatrix} 2.3 \\ 1.9 \end{smallmatrix}) \times 10^{-3}$	739
$K^+ K^- \pi^0$	$(1.24 \pm 0.35) \times 10^{-3}$	743
$K_S^0 K_S^0 \pi^0$	$< 5.9 \times 10^{-4}$	740
$K^+ K^- \pi^+ \pi^-$	[<i>m</i>] $(2.49 \pm 0.23) \times 10^{-3}$	677
$\phi \pi^+ \pi^- \times B(\phi \rightarrow K^+ K^-)$	$(5.3 \pm 1.4) \times 10^{-4}$	614

$\phi\rho^0 \times B(\phi \rightarrow K^+ K^-)$	$(2.9 \pm 1.5) \times 10^{-4}$	250
$K^+ K^- \rho^0$ 3-body	$(9.0 \pm 2.3) \times 10^{-4}$	301
$K^*(892)^0 K^- \pi^+ + \text{c.c.}$	$[n] < 5 \times 10^{-4}$	531
$\times B(K^{*0} \rightarrow K^+ \pi^-)$		
$K^*(892)^0 \bar{K}^*(892)^0$	$(6 \pm 2) \times 10^{-4}$	272
$\times B^2(K^{*0} \rightarrow K^+ \pi^-)$		
$K^+ K^- \pi^+ \pi^-$ nonresonant	$< 8 \times 10^{-4}$ CL=90%	677
$K^0 \bar{K}^0 \pi^+ \pi^-$	$(7.5 \pm 2.9) \times 10^{-3}$	673
$K^+ K^- \pi^+ \pi^- \pi^0$	$(3.1 \pm 2.0) \times 10^{-3}$	600

Fractions of most of the following modes with resonances have already appeared above as submodes of particular charged-particle modes.

$\bar{K}^*(892)^0 K^0$	$< 1.7 \times 10^{-3}$ CL=90%	608
$K^*(892)^+ K^-$	$(3.8 \pm 0.8) \times 10^{-3}$	610
$K^*(892)^0 \bar{K}^0$	$< 9 \times 10^{-4}$ CL=90%	608
$K^*(892)^- K^+$	$(2.0 \pm 1.1) \times 10^{-3}$	610
$\phi\pi^0$	$(7.5 \pm 0.5) \times 10^{-4}$	645
$\phi\eta$	$(1.4 \pm 0.5) \times 10^{-4}$	489
$\phi\omega$	$< 2.1 \times 10^{-3}$ CL=90%	238
$\phi\pi^+ \pi^-$	$(1.06 \pm 0.28) \times 10^{-3}$	614
$\phi\rho^0$	$(5.7 \pm 3.0) \times 10^{-4}$	250
$\phi\pi^+ \pi^-$ 3-body	$(7 \pm 5) \times 10^{-4}$	614
$K^*(892)^0 K^- \pi^+ + \text{c.c.}$	$[n] < 7 \times 10^{-4}$ CL=90%	531
$K^*(892)^0 \bar{K}^*(892)^0$	$(1.4 \pm 0.5) \times 10^{-3}$	272

Radiative modes

$\rho^0 \gamma$	$< 2.4 \times 10^{-4}$ CL=90%	771
$\omega \gamma$	$< 2.4 \times 10^{-4}$ CL=90%	768
$\phi \gamma$	$(2.5 \pm_{-0.6}^{+0.7}) \times 10^{-5}$	654
$\bar{K}^*(892)^0 \gamma$	$< 7.6 \times 10^{-4}$ CL=90%	719

Doubly Cabibbo suppressed (DC) modes, $\Delta C = 2$ forbidden via mixing (C2M) modes, $\Delta C = 1$ weak neutral current (C1) modes, Lepton Family number (LF) violating modes, or Lepton number (L) violating modes

$K^+ \ell^- \bar{\nu}_\ell$ (via \bar{D}^0)	C2M	$< 1.7 \times 10^{-4}$ CL=90%	—
$K^+ \pi^-$	DC	$(1.38 \pm 0.11) \times 10^{-4}$	861
$K^+ \pi^-$ (via \bar{D}^0)	C2M	$< 1.6 \times 10^{-5}$ CL=95%	861
$K^*(892)^+ \pi^-$		$(3.0 \pm_{-1.3}^{+3.8}) \times 10^{-4}$	711
$K^+ \pi^- \pi^0$		$(5.6 \pm 1.7) \times 10^{-4}$	844
$K^+ \pi^- \pi^+ \pi^-$	DC	$(3.1 \pm 1.0) \times 10^{-4}$	812
$K^+ \pi^- \pi^+ \pi^-$ (via \bar{D}^0)	C2M	$< 4 \times 10^{-4}$ CL=90%	812

$K^+ \pi^-$ or $K^+ \pi^- \pi^+ \pi^-$ (via \bar{D}^0)		< 1.0	$\times 10^{-3}$	CL=90%	—
μ^- anything (via \bar{D}^0)	C2M	< 4	$\times 10^{-4}$	CL=90%	—
$\gamma\gamma$	C1	< 2.8	$\times 10^{-5}$	CL=90%	932
$e^+ e^-$	C1	< 6.2	$\times 10^{-6}$	CL=90%	932
$\mu^+ \mu^-$	C1	< 4.1	$\times 10^{-6}$	CL=90%	926
$\pi^0 e^+ e^-$	C1	< 4.5	$\times 10^{-5}$	CL=90%	927
$\pi^0 \mu^+ \mu^-$	C1	< 1.8	$\times 10^{-4}$	CL=90%	915
$\eta e^+ e^-$	C1	< 1.1	$\times 10^{-4}$	CL=90%	852
$\eta \mu^+ \mu^-$	C1	< 5.3	$\times 10^{-4}$	CL=90%	838
$\pi^+ \pi^- e^+ e^-$	C1	< 3.73	$\times 10^{-4}$	CL=90%	922
$\rho^0 e^+ e^-$	C1	< 1.0	$\times 10^{-4}$	CL=90%	771
$\pi^+ \pi^- \mu^+ \mu^-$	C1	< 3.0	$\times 10^{-5}$	CL=90%	894
$\rho^0 \mu^+ \mu^-$	C1	< 2.2	$\times 10^{-5}$	CL=90%	754
$\omega e^+ e^-$	C1	< 1.8	$\times 10^{-4}$	CL=90%	768
$\omega \mu^+ \mu^-$	C1	< 8.3	$\times 10^{-4}$	CL=90%	751
$K^- K^+ e^+ e^-$	C1	< 3.15	$\times 10^{-4}$	CL=90%	791
$\phi e^+ e^-$	C1	< 5.2	$\times 10^{-5}$	CL=90%	654
$K^- K^+ \mu^+ \mu^-$	C1	< 3.3	$\times 10^{-5}$	CL=90%	710
$\phi \mu^+ \mu^-$	C1	< 3.1	$\times 10^{-5}$	CL=90%	631
$\bar{K}^0 e^+ e^-$	[i]	< 1.1	$\times 10^{-4}$	CL=90%	866
$\bar{K}^0 \mu^+ \mu^-$	[i]	< 2.6	$\times 10^{-4}$	CL=90%	852
$K^- \pi^+ e^+ e^-$	C1	< 3.85	$\times 10^{-4}$	CL=90%	861
$\bar{K}^*(892)^0 e^+ e^-$	[i]	< 4.7	$\times 10^{-5}$	CL=90%	719
$K^- \pi^+ \mu^+ \mu^-$	C1	< 3.59	$\times 10^{-4}$	CL=90%	829
$\bar{K}^*(892)^0 \mu^+ \mu^-$	[i]	< 2.4	$\times 10^{-5}$	CL=90%	700
$\pi^+ \pi^- \pi^0 \mu^+ \mu^-$	C1	< 8.1	$\times 10^{-4}$	CL=90%	863
$\mu^\pm e^\mp$	LF	[j] < 8.1	$\times 10^{-6}$	CL=90%	929
$\pi^0 e^\pm \mu^\mp$	LF	[j] < 8.6	$\times 10^{-5}$	CL=90%	924
$\eta e^\pm \mu^\mp$	LF	[j] < 1.0	$\times 10^{-4}$	CL=90%	848
$\pi^+ \pi^- e^\pm \mu^\mp$	LF	[j] < 1.5	$\times 10^{-5}$	CL=90%	911
$\rho^0 e^\pm \mu^\mp$	LF	[j] < 4.9	$\times 10^{-5}$	CL=90%	767
$\omega e^\pm \mu^\mp$	LF	[j] < 1.2	$\times 10^{-4}$	CL=90%	764
$K^- K^+ e^\pm \mu^\mp$	LF	[j] < 1.8	$\times 10^{-4}$	CL=90%	754
$\phi e^\pm \mu^\mp$	LF	[j] < 3.4	$\times 10^{-5}$	CL=90%	648
$\bar{K}^0 e^\pm \mu^\mp$	LF	[j] < 1.0	$\times 10^{-4}$	CL=90%	862
$K^- \pi^+ e^\pm \mu^\mp$	LF	[j] < 5.53	$\times 10^{-4}$	CL=90%	848
$\bar{K}^*(892)^0 e^\pm \mu^\mp$	LF	[j] < 8.3	$\times 10^{-5}$	CL=90%	714
$\pi^- \pi^- e^+ e^+ + \text{c.c.}$	L	< 1.12	$\times 10^{-4}$	CL=90%	922
$\pi^- \pi^- \mu^+ \mu^+ + \text{c.c.}$	L	< 2.9	$\times 10^{-5}$	CL=90%	894
$K^- \pi^- e^+ e^+ + \text{c.c.}$	L	< 2.06	$\times 10^{-4}$	CL=90%	861
$K^- \pi^- \mu^+ \mu^+ + \text{c.c.}$	L	< 3.9	$\times 10^{-4}$	CL=90%	829
$K^- K^- e^+ e^+ + \text{c.c.}$	L	< 1.52	$\times 10^{-4}$	CL=90%	791
$K^- K^- \mu^+ \mu^+ + \text{c.c.}$	L	< 9.4	$\times 10^{-5}$	CL=90%	710

$\pi^- \pi^- e^+ \mu^+ + \text{c.c.}$	L	< 7.9	$\times 10^{-5}$	CL=90%	911
$K^- \pi^- e^+ \mu^+ + \text{c.c.}$	L	< 2.18	$\times 10^{-4}$	CL=90%	848
$K^- K^- e^+ \mu^+ + \text{c.c.}$	L	< 5.7	$\times 10^{-5}$	CL=90%	754

$D^*(2007)^0$

$$I(J^P) = \frac{1}{2}(1^-)$$

I, J, P need confirmation.

Mass $m = 2006.7 \pm 0.5$ MeV ($S = 1.1$)

$m_{D^{*0}} - m_{D^0} = 142.12 \pm 0.07$ MeV

Full width $\Gamma < 2.1$ MeV, CL = 90%

$\bar{D}^*(2007)^0$ modes are charge conjugates of modes below.

$D^*(2007)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^0 \pi^0$	(61.9±2.9) %	43
$D^0 \gamma$	(38.1±2.9) %	137

$D^*(2010)^\pm$

$$I(J^P) = \frac{1}{2}(1^-)$$

I, J, P need confirmation.

Mass $m = 2010.0 \pm 0.5$ MeV ($S = 1.1$)

$m_{D^{*(2010)^+}} - m_{D^+} = 140.64 \pm 0.10$ MeV ($S = 1.1$)

$m_{D^{*(2010)^+}} - m_{D^0} = 145.421 \pm 0.010$ MeV ($S = 1.1$)

Full width $\Gamma = 96 \pm 22$ keV

$D^*(2010)^-$ modes are charge conjugates of the modes below.

$D^*(2010)^\pm$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^0 \pi^+$	(67.7±0.5) %	39
$D^+ \pi^0$	(30.7±0.5) %	38
$D^+ \gamma$	(1.6±0.4) %	136

$D_1(2420)^0$

$$I(J^P) = \frac{1}{2}(1^+)$$

I, J, P need confirmation.

Mass $m = 2422.2 \pm 1.8$ MeV ($S = 1.2$)

Full width $\Gamma = 18.9^{+4.6}_{-3.5}$ MeV

$\bar{D}_1(2420)^0$ modes are charge conjugates of modes below.

$D_1(2420)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^*(2010)^+ \pi^-$	seen	355
$D^+ \pi^-$	not seen	474

$D_2^*(2460)^0$

$$I(J^P) = \frac{1}{2}(2^+)$$

$J^P = 2^+$ assignment strongly favored.

$$\text{Mass } m = 2458.9 \pm 2.0 \text{ MeV} \quad (S = 1.2)$$

$$\text{Full width } \Gamma = 23 \pm 5 \text{ MeV}$$

$\bar{D}_2^*(2460)^0$ modes are charge conjugates of modes below.

$D_2^*(2460)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^+ \pi^-$	seen	504
$D^*(2010)^+ \pi^-$	seen	387

$D_2^*(2460)^\pm$

$$I(J^P) = \frac{1}{2}(2^+)$$

$J^P = 2^+$ assignment strongly favored.

$$\text{Mass } m = 2459 \pm 4 \text{ MeV} \quad (S = 1.7)$$

$$m_{D_2^*(2460)^\pm} - m_{D_2^*(2460)^0} = 0.9 \pm 3.3 \text{ MeV} \quad (S = 1.1)$$

$$\text{Full width } \Gamma = 25^{+8}_{-7} \text{ MeV}$$

$D_2^*(2460)^\pm$ modes are charge conjugates of modes below.

$D_2^*(2460)^\pm$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^0 \pi^+$	seen	507
$D^{*0} \pi^+$	seen	390

NOTES

- [a] This result applies to $Z^0 \rightarrow c\bar{c}$ decays only. Here ℓ^+ is an average (not a sum) of e^+ and μ^+ decays.
- [b] This is a weighted average of D^\pm (44%) and D^0 (56%) branching fractions. See " D^+ and $D^0 \rightarrow (\eta \text{ anything}) / (\text{total } D^+ \text{ and } D^0)$ " under " D^+ Branching Ratios" in the Particle Listings.
- [c] This value averages the e^+ and μ^+ branching fractions, after making a small phase-space adjustment to the μ^+ fraction to be able to use it as an e^+ fraction; hence our ℓ^+ here is really an e^+ .
- [d] An ℓ indicates an e or a μ mode, not a sum over these modes.
- [e] 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.
- [f] The two experiments measuring this fraction are in serious disagreement. See the Particle Listings.
- [g] This value includes only $\pi^+\pi^-$ decays of the intermediate resonance, because branching fractions of this resonance are not known.
- [h] Unseen decay modes of the resonance are included.
- [i] This mode is not a useful test for a $\Delta C=1$ weak neutral current because both quarks must change flavor in this decay.
- [j] The value is for the sum of the charge states or particle/antiparticle states indicated.
- [k] This $D_1^0 - D_2^0$ limit is inferred from the $D^0 - \bar{D}^0$ mixing ratio $\Gamma(K^+\pi^- \text{ (via } \bar{D}^0)) / \Gamma(K^-\pi^+)$ near the end of the D^0 Listings.
- [l] The exclusive e^+ modes $K^- e^+ \nu_e$, $K^-\pi^0 e^+ \nu_e$, $\bar{K}^0 \pi^- e^+ \nu_e$ and $\pi^- e^+ \nu_e$ are constrained to equal this (well-measured) inclusive fraction.
- [m] The experiments on the division of this charge mode amongst its submodes disagree, and the submode branching fractions here add up to considerably more than the charged-mode fraction.
- [n] However, these upper limits are in serious disagreement with values obtained in another experiment.