CHARMED MESONS
($C = \pm 1$)

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

$D^\pm$

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

Mass $m = 1869.62 \pm 0.20$ MeV (S = 1.1)
Mean life $\tau = (1040 \pm 7) \times 10^{-15}$ s
$c\tau = 311.8$ μm

c-quark decays

$\Gamma(c \to \ \ell^+ \text{anything})/\Gamma(c \to \ \text{anything}) = 0.096 \pm 0.004$ [a]
$\Gamma(c \to \ D^*(2010)^+ \text{anything})/\Gamma(c \to \ \text{anything}) = 0.255 \pm 0.017$

CP-violation decay-rate asymmetries

$A_{CP}(\mu^\pm \nu) = 0.08 \pm 0.08$
$A_{CP}(K^0_S \pi^\pm) = -0.009 \pm 0.009$
$A_{CP}(K^\mp 2\pi^\pm) = -0.005 \pm 0.010$
$A_{CP}(K^\mp \pi^\pm \pi^\pm \pi^0) = 0.010 \pm 0.013$
$A_{CP}(K^0_S \pi^\pm \pi^0) = 0.003 \pm 0.009$
$A_{CP}(K^0_S \pi^\pm \pi^+ \pi^-) = 0.001 \pm 0.013$
$A_{CP}(K^0_S K^\pm) = 0.07 \pm 0.06$
$A_{CP}(K^+ K^- \pi^\pm) = (0.3 \pm 0.6)\%$
$A_{CP}(K^\pm K^{*0}) = (0.1 \pm 1.3)\%$
$A_{CP}(\phi\pi^\pm) = (-0.9 \pm 1.1)\%$
$A_{CP}(K^\pm K^*_0(1430)^0) = (8^{+7}_{-6})\%$
$A_{CP}(K^\pm K^*_2(1430)^0) = (43^{+20}_{-26})\%$
$A_{CP}(K^\pm K^*_0(800)) = (-12^{+18}_{-13})\%$
$A_{CP}(a_0(1450)^0 \pi^\pm) = (-19^{+14}_{-16})\%$
$A_{CP}(\phi(1680)\pi^\pm) = (-9 \pm 26)\%$
$A_{CP}(\pi^+ \pi^- \pi^\pm) = -0.02 \pm 0.04$
$A_{CP}(K^0_S K^\pm \pi^+ \pi^-) = -0.04 \pm 0.07$

T-violation decay-rate asymmetry

$A_T(K^0_S K^\pm \pi^+ \pi^-) = 0.02 \pm 0.07$

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

$r_v = 1.62 \pm 0.08$ (S = 1.5)
$r_2 = 0.83 \pm 0.05$
$r_3 = 0.0 \pm 0.4$
$\Gamma_L/\Gamma_T = 1.13 \pm 0.08$
$\Gamma_+/\Gamma_- = 0.22 \pm 0.06$ (S = 1.6)

Most decay modes (other than the semileptonic modes) that involve a neutral K meson are now given as K^0_S modes, not as $\overline{K}^0$ modes. Nearly always it is a K^0_S that is measured, and interference between Cabibbo-allowed and doubly Cabibbo-suppressed modes can invalidate the assumption that $2\,\Gamma(K^0_S) = \Gamma(\overline{K}^0)$.

D^+ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
Inclusive modes			
e^+ anything	(16.0 ±0.4) %		–
μ^+ anything	(17.6 ±3.2) %		–
K^- anything	(25.7 ±1.4) %		–
$\overline{K}^0$ anything + K^0 anything	(61 ±5) %		–
K^+ anything	(5.9 ±0.8) %		–
$K^*(892)^-$ anything	(6 ±5) %		–
$\overline{K}^*(892)^0$ anything	(23 ±5) %		–
$K^*(892)^0$ anything	< 6.6 %	CL=90%	–
η anything	(6.3 ±0.7) %		–
η' anything	(1.04±0.18) %		–
ϕ anything	(1.03±0.12) %		–
Leptonic and semileptonic modes			
$e^+\nu_e$	< 8.8 $\times 10^{-6}$	CL=90%	935
$\mu^+\nu_\mu$	(3.82±0.33) $\times 10^{-4}$		932
$\tau^+\nu_\tau$	< 1.2 $\times 10^{-3}$	CL=90%	90
$\overline{K}^0 e^+\nu_e$	(8.50±0.26) %		869
$\overline{K}^0\mu^+\nu_\mu$	(9.4 ±0.8) %	S=1.1	865
$K^-\pi^+e^+\nu_e$	(4.1 ±0.6) %	S=1.1	864
$\overline{K}^*(892)^0 e^+\nu_e$, $\overline{K}^*(892)^0 \to K^-\pi^+$	(3.67±0.21) %		722
$K^-\pi^+e^+\nu_e$ nonresonant	< 7 $\times 10^{-3}$	CL=90%	864
$K^-\pi^+\mu^+\nu_\mu$	(3.9 ±0.5) %		851
$\overline{K}^*(892)^0\mu^+\nu_\mu$, $\overline{K}^*(892)^0 \to K^-\pi^+$	(3.6 ±0.3) %		717
$K^-\pi^+\mu^+\nu_\mu$ nonresonant	(2.1 ±0.5) $\times 10^{-3}$		851
$K^-\pi^+\pi^0\mu^+\nu_\mu$	< 1.6 $\times 10^{-3}$	CL=90%	825
$\pi^0 e^+\nu_e$	(3.73±0.26) $\times 10^{-3}$		930
$\rho^0 e^+\nu_e$	(2.2 ±0.4) $\times 10^{-3}$		774
$\rho^0\mu^+\nu_\mu$	(2.5 ±0.4) $\times 10^{-3}$		770
$\omega e^+\nu_e$	(1.6 $^{+0.7}_{-0.6}$) $\times 10^{-3}$		771
$\phi e^+\nu_e$	< 2.01 %	CL=90%	657
$\phi\mu^+\nu_\mu$	< 2.04 %	CL=90%	651
$\eta\ell^+\nu_\ell$	< 6 $\times 10^{-3}$	CL=90%	855
$\eta'(958)\mu^+\nu_\mu$	< 1.1 %	CL=90%	684

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

$\overline{K}^*(892)^0 e^+ \nu_e$		(5.51±0.31) %	S=1.2	722
$\overline{K}^*(892)^0 \mu^+ \nu_\mu$		(5.4 ±0.5) %	S=1.1	717
$\overline{K}_0^*(1430)^0 \mu^+ \nu_\mu$		< 2.5 × 10^{-4}		380
$\overline{K}^*(1680)^0 \mu^+ \nu_\mu$		< 1.6 × 10^{-3}		105

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

$K_S^0 \pi^+$		(1.46±0.04) %	S=1.3	863
$K_L^0 \pi^+$		(1.46±0.05) %		863
$K^- 2\pi^+$	[b]	(9.29±0.25) %	S=1.4	846
$(K^-\pi^+)_{S-\text{wave}}\pi^+$		(7.62±0.25) %		846
$\overline{K}^*(892)^0\pi^+$,		(9.8 ±1.0) × 10^{-3}		714
$\overline{K}^*(892)^0 \to K^-\pi^+$				
$\overline{K}_2^*(1430)^0\pi^+$,		(2.1 ±0.4) × 10^{-4}		371
$\overline{K}_2^*(1430)^0 \to K^-\pi^+$				
$\overline{K}^*(1680)^0\pi^+$,	[c]	(2.3 ±1.1) × 10^{-4}		58
$\overline{K}^*(1680)^0 \to K^-\pi^+$				
$K^-(2\pi^+)_{I=2}$		(1.44±0.26) %		–
$K_S^0 \pi^+\pi^0$	[b]	(6.8 ±0.4) %	S=1.6	845
$K_S^0\rho^+$		(4.6 ±1.0) %		677
$\overline{K}^*(892)^0\pi^+$,		(1.3 ±0.6) %		714
$\overline{K}^*(892)^0 \to K_S^0\pi^0$				
$K_S^0\pi^+\pi^0$ nonresonant		(9 ±7) × 10^{-3}		845
$K^-\pi^+\pi^+\pi^0$	[b]	(6.04±0.22) %	S=1.3	816
$\overline{K}^*(892)^0\rho^+$ total,		(1.3 ±0.8) %		422
$\overline{K}^*(892)^0 \to K^-\pi^+$				
$\overline{K}_1(1400)^0\pi^+$,		(1.8 ±0.7) %		390
$\overline{K}_1(1400)^0 \to K^-\pi^+\pi^0$				
$K^-\rho^+\pi^+$ total		(2.9 ±1.0) %		613
$K^-\rho^+\pi^+$ 3-body		(1.0 ±0.4) %		613
$\overline{K}^*(892)^0\pi^+\pi^0$ total,		(4.2 ±0.6) %		690
$\overline{K}^*(892)^0 \to K^-\pi^+$				
$\overline{K}^*(892)^0\pi^+\pi^0$ 3-body,		(2.7 ±0.8) %		690
$\overline{K}^*(892)^0 \to K^-\pi^+$				
$K^*(892)^-\pi^+\pi^+$ 3-body,		(5 ±3) × 10^{-3}		688
$K^*(892)^- \to K^-\pi^0$				
$K^-\pi^+\pi^+\pi^0$ nonresonant	[d]	(1.1 ±0.5) %		816
$K_S^0\pi^+\pi^+\pi^-$	[b]	(3.04±0.11) %	S=1.2	814
$K_S^0 a_1(1260)^+$,		(1.8 ±0.3) %		328
$a_1(1260)^+ \to \pi^+\pi^+\pi^-$				
$\overline{K}_1(1400)^0\pi^+$,		(1.8 ±0.7) %		390
$\overline{K}_1(1400)^0 \to K_S^0\pi^+\pi^-$				

$K^*(892)^-\pi^+\pi^+$ 3-body, $K^*(892)^- \to K^0_S\pi^-$		(5 ±3) × 10^{-3}		688
$K^0_S\rho^0\pi^+$ total		(1.8 ±0.6) %		611
$K^0_S\rho^0\pi^+$ 3-body		(2.1 ±2.2) × 10^{-3}		611
$K^0_S\pi^+\pi^+\pi^-$ nonresonant		(3.6 ±1.9) × 10^{-3}		814
$K^-3\pi^+\pi^-$	[b]	(5.7 ±0.5) × 10^{-3}	S=1.1	772
$\overline{K}^*(892)^0\pi^+\pi^+\pi^-$, $\overline{K}^*(892)^0 \to K^-\pi^+$		(1.2 ±0.4) × 10^{-3}		645
$\overline{K}^*(892)^0\rho^0\pi^+$, $\overline{K}^*(892)^0 \to K^-\pi^+$		(2.3 ±0.4) × 10^{-3}		239
$K^-\rho^0\pi^+\pi^+$		(1.71±0.28) × 10^{-3}		524
$K^-3\pi^+\pi^-$ nonresonant		(4.0 ±2.9) × 10^{-4}		772
$K^+2K^0_S$		(4.5 ±2.1) × 10^{-3}		545
$K^+K^-K^0_S\pi^+$		(2.3 ±0.5) × 10^{-4}		436

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

$K^0_S a_1(1260)^+$		(3.5 ±0.6) %		329
$K^0_S a_2(1320)^+$		< 1.5 × 10^{-3}	CL=90%	200
$\overline{K}^*(892)^0\rho^+$ total	[d]	(2.0 ±1.2) %		422
$\overline{K}^*(892)^0\rho^+$ S-wave	[d]	(1.6 ±1.5) %		422
$\overline{K}^*(892)^0\rho^+$ P-wave		< 1 × 10^{-3}	CL=90%	422
$\overline{K}^*(892)^0\rho^+$ D-wave		(9 ±6) × 10^{-3}		422
$\overline{K}^*(892)^0\rho^+$ D-wave longitudinal		< 7 × 10^{-3}	CL=90%	422
$\overline{K}_1(1270)^0\pi^+$		< 7 × 10^{-3}	CL=90%	487
$\overline{K}_1(1400)^0\pi^+$		(3.8 ±1.3) %		390
$\overline{K}^*(892)^0\pi^+\pi^0$ total		(6.3 ±0.9) %		690
$\overline{K}^*(892)^0\pi^+\pi^0$ 3-body	[d]	(4.0 ±1.2) %		690
$K^*(892)^-\pi^+\pi^+$ total		—		689
$K^*(892)^-\pi^+\pi^+$ 3-body		(1.4 ±0.9) %		689
$\overline{K}^*(892)^0 a_1(1260)^+$		(9.2 ±1.8) × 10^{-3}		†

Pionic modes

$\pi^+\pi^0$		(1.25±0.08) × 10^{-3}		925
$\pi^+\pi^+\pi^-$		(3.24±0.19) × 10^{-3}		909
$\rho^0\pi^+$		(8.2 ±1.5) × 10^{-4}		767
$\pi^+(\pi^+\pi^-)_{S-\text{wave}}$		(1.81±0.17) × 10^{-3}		909
$\sigma\pi^+$, $\sigma \to \pi^+\pi^-$		(1.37±0.12) × 10^{-3}		–
$f_0(980)\pi^+$, $f_0(980) \to \pi^+\pi^-$		(1.55±0.33) × 10^{-4}		669
$f_0(1370)\pi^+$, $f_0(1370) \to \pi^+\pi^-$		(8 ±4) × 10^{-5}		–
$f_2(1270)\pi^+$, $f_2(1270) \to \pi^+\pi^-$		(5.0 ±0.9) × 10^{-4}		485

$\rho(1450)^0\pi^+$, $\rho(1450)^0 \to \pi^+\pi^-$		< 8	$\times 10^{-5}$	CL=95%	338
$f_0(1500)\pi^+$, $f_0(1500) \to \pi^+\pi^-$		$(1.1 \pm 0.4) \times 10^{-4}$			–
$f_0(1710)\pi^+$, $f_0(1710) \to \pi^+\pi^-$		< 5	$\times 10^{-5}$	CL=95%	–
$f_0(1790)\pi^+$, $f_0(1790) \to \pi^+\pi^-$		< 6	$\times 10^{-5}$	CL=95%	–
$(\pi^+\pi^+)_{S-\text{wave}}\pi^-$		< 1.2	$\times 10^{-4}$	CL=95%	909
$\pi^+\pi^+\pi^-$ nonresonant		< 1.1	$\times 10^{-4}$	CL=95%	909
$\pi^+ 2\pi^0$		$(4.6 \pm 0.4) \times 10^{-3}$			910
$\pi^+\pi^+\pi^-\pi^0$		(1.15 ± 0.08) %			883
$\eta\pi^+$, $\eta \to \pi^+\pi^-\pi^0$		$(7.7 \pm 0.7) \times 10^{-4}$			848
$\omega\pi^+$, $\omega \to \pi^+\pi^-\pi^0$		< 3	$\times 10^{-4}$	CL=90%	763
$3\pi^+ 2\pi^-$		$(1.64 \pm 0.16) \times 10^{-3}$		S=1.1	845

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

$\eta\pi^+$		$(3.36 \pm 0.18) \times 10^{-3}$		S=1.1	848
$\eta\pi^+\pi^0$		$(1.38 \pm 0.35) \times 10^{-3}$			830
$\eta\rho^+$		< 6	$\times 10^{-3}$	CL=90%	655
$\omega\pi^+$		< 3.4	$\times 10^{-4}$	CL=90%	764
$\eta'(958)\pi^+$		$(4.44 \pm 0.35) \times 10^{-3}$			681
$\eta'(958)\pi^+\pi^0$		$(1.6 \pm 0.5) \times 10^{-3}$			654
$\eta'(958)\rho^+$		< 5	$\times 10^{-3}$	CL=90%	349

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

$K^+ K^0_S$		$(3.05 \pm 0.13) \times 10^{-3}$		S=1.3	793
$K^+ K^-\pi^+$	[b]	$(9.72 \pm 0.33) \times 10^{-3}$		S=1.5	744
$\phi\pi^+$, $\phi \to K^+ K^-$		$(2.71 \pm 0.11) \times 10^{-3}$		S=1.4	647
$K^+\overline{K}^*(892)^0$, $\overline{K}^*(892)^0 \to K^-\pi^+$		$(2.50^{+0.10}_{-0.15}) \times 10^{-3}$			613
$K^+\overline{K}^*_0(1430)^0$, $\overline{K}^*_0(1430)^0 \to K^-\pi^+$		$(1.83 \pm 0.35) \times 10^{-3}$			–
$K^+\overline{K}^*_2(1430)^0$, $\overline{K}^*_2 \to K^-\pi^+$		$(1.7\ ^{+1.2}_{-0.8}) \times 10^{-4}$			–
$K^+\overline{K}^*_0(800)$, $\overline{K}^*_0 \to K^-\pi^+$		$(6.8\ ^{+3.5}_{-2.1}) \times 10^{-4}$			–
$a_0(1450)^0\pi^+$, $a^0_0 \to K^+ K^-$		$(4.5\ ^{+7.0}_{-1.8}) \times 10^{-4}$			–
$\phi(1680)\pi^+$, $\phi \to K^+ K^-$		$(5.0\ ^{+4.0}_{-1.9}) \times 10^{-5}$			–
$K^0_S K^0_S\pi^+$		—			741

$K^*(892)^+ K_S^0$, $K^*(892)^+ \to K_S^0 \pi^+$	(5.3 $\pm$2.3) $\times 10^{-3}$			611
$K^+ K^- \pi^+ \pi^0$	—			682
$\phi \pi^+ \pi^0$, $\phi \to K^+ K^-$	(1.1 $\pm$0.5) %			619
$\phi \rho^+$, $\phi \to K^+ K^-$	$<$ 7	$\times 10^{-3}$	CL=90%	258
$K^+ K^- \pi^+ \pi^0$ non-ϕ	(1.5 $^{+0.7}_{-0.6}$) %			682
$K^+ K_S^0 \pi^+ \pi^-$	(1.71$\pm$0.18) $\times 10^{-3}$			678
$K_S^0 K^- \pi^+ \pi^+$	(2.34$\pm$0.18) $\times 10^{-3}$			678
$K^+ K^- \pi^+ \pi^+ \pi^-$	(2.3 $\pm$1.2) $\times 10^{-4}$			600

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

$\phi \pi^+$	(5.53$\pm$0.24) $\times 10^{-3}$		S=1.4	647
$\phi \pi^+ \pi^0$	(2.3 $\pm$1.0) %			619
$\phi \rho^+$	$<$ 1.5	%	CL=90%	259
$K^+ \overline{K}^*(892)^0$	(3.80 $^{+0.15}_{-0.23}$) $\times 10^{-3}$			613
$K^*(892)^+ K_S^0$	(1.6 $\pm$0.7) %			612

Doubly Cabibbo-suppressed modes

$K^+ \pi^0$	(2.37$\pm$0.32) $\times 10^{-4}$			864
$K^+ \pi^+ \pi^-$	(6.3 $\pm$0.7) $\times 10^{-4}$			846
$K^+ \rho^0$	(2.4 $\pm$0.6) $\times 10^{-4}$			679
$K^*(892)^0 \pi^+$, $K^*(892)^0 \to K^+ \pi^-$	(2.9 $\pm$0.6) $\times 10^{-4}$			714
$K^+ f_0(980)$, $f_0(980) \to \pi^+ \pi^-$	(5.6 $\pm$3.4) $\times 10^{-5}$			–
$K_2^*(1430)^0 \pi^+$, $K_2^*(1430)^0 \to K^+ \pi^-$	(5.0 $\pm$3.4) $\times 10^{-5}$			–
$K^+ K^+ K^-$	(8.8 $\pm$2.0) $\times 10^{-5}$			550

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

$\pi^+ e^+ e^-$	*C1*	$<$ 7.4	$\times 10^{-6}$	CL=90%	930
$\pi^+ \phi$, $\phi \to e^+ e^-$	[e]	(2.7 $^{+4.0}_{-1.8}$) $\times 10^{-6}$			–
$\pi^+ \mu^+ \mu^-$	*C1*	$<$ 3.9	$\times 10^{-6}$	CL=90%	918
$\pi^+ \phi$, $\phi \to \mu^+ \mu^-$	[e]	(1.8 $\pm$0.8) $\times 10^{-6}$			–
$\rho^+ \mu^+ \mu^-$	*C1*	$<$ 5.6	$\times 10^{-4}$	CL=90%	757
$K^+ e^+ e^-$	[f]	$<$ 6.2	$\times 10^{-6}$	CL=90%	870
$K^+ \mu^+ \mu^-$	[f]	$<$ 9.2	$\times 10^{-6}$	CL=90%	856
$\pi^+ e^\pm \mu^\mp$	*LF*	[g] $<$ 3.4	$\times 10^{-5}$	CL=90%	927
$K^+ e^\pm \mu^\mp$	*LF*	[g] $<$ 6.8	$\times 10^{-5}$	CL=90%	866
$\pi^- e^+ e^+$	*L*	$<$ 3.6	$\times 10^{-6}$	CL=90%	930

$\pi^- \mu^+ \mu^+$	L	$<$ 4.8	$\times 10^{-6}$	CL=90%	918
$\pi^- e^+ \mu^+$	L	$<$ 5.0	$\times 10^{-5}$	CL=90%	927
$\rho^- \mu^+ \mu^+$	L	$<$ 5.6	$\times 10^{-4}$	CL=90%	757
$K^- e^+ e^+$	L	$<$ 4.5	$\times 10^{-6}$	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

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

Mass $m = 1864.84 \pm 0.17$ MeV (S = 1.1)
$m_{D^\pm} - m_{D^0} = 4.78 \pm 0.10$ MeV (S = 1.1)
Mean life $\tau = (410.1 \pm 1.5) \times 10^{-15}$ s
$c\tau = 122.9$ μm
$\left|m_{D_1^0} - m_{D_2^0}\right| = (2.37^{+0.66}_{-0.71}) \times 10^{10}\ \hbar\ \mathrm{s}^{-1}$
$(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma = 2y = (1.56^{+0.36}_{-0.38}) \times 10^{-2}$
$\left|q/p\right| = 0.86 \pm 0.31$
$A_\Gamma = (1.4 \pm 2.7) \times 10^{-3}$
$K^+\pi^-$ relative strong phase: $\cos\delta = 1.03^{+0.32}_{-0.18}$
$\Gamma(K^+\ell^-\overline{\nu}_\ell$ (via $\overline{D}^0$))$/\Gamma(K^-\ell^+\nu_\ell) < 6.1 \times 10^{-4}$, CL = 90%
$\Gamma\left(K^+\pi^-\text{via }\overline{D}^0\right)/\Gamma\left(K^-\pi^+\right) < 4.0 \times 10^{-4}$, CL = 95%
$\Gamma\left(K^0_S\pi^+\pi^-\text{in } D^0 \to \overline{D}^0\right)/\Gamma\left(K^0_S\pi^+\pi^-\right) < 0.0063$, CL = 95%

CP-violation decay-rate asymmetries (labeled by the D^0 decay)

$A_{CP}(K^+K^-) = (-0.17 \pm 0.31) \times 10^{-2}$ (S = 1.3)
$A_{CP}(2K^0_S) = -0.23 \pm 0.19$
$A_{CP}(\pi^+\pi^-) = (0.2 \pm 0.4) \times 10^{-2}$
$A_{CP}(2\pi^0) = 0.00 \pm 0.05$
$A_{CP}(\pi^+\pi^-\pi^0) = (0.3 \pm 0.4)\%$
$A_{CP}(\rho(770)^+\pi^- \to \pi^+\pi^-\pi^0) = (1.6 \pm 1.2)\%$
$A_{CP}(\rho(770)^0\pi^0 \to \pi^+\pi^-\pi^0) = (-1.6 \pm 1.5)\%$
$A_{CP}(\rho(770)^-\pi^+ \to \pi^+\pi^-\pi^0) = (-0.7 \pm 1.2)\%$
$A_{CP}(\rho(1450)^+\pi^- \to \pi^+\pi^-\pi^0) = (0.0 \pm 0.14)\%$
$A_{CP}(\rho(1450)^0\pi^0 \to \pi^+\pi^-\pi^0) = (-0.1 \pm 0.22)\%$
$A_{CP}(\rho(1450)^-\pi^+ \to \pi^+\pi^-\pi^0) = (0.2 \pm 0.32)\%$
$A_{CP}(\rho(1700)^+\pi^- \to \pi^+\pi^-\pi^0) = (-0.4 \pm 1.1)\%$
$A_{CP}(\rho(1700)^0\pi^0 \to \pi^+\pi^-\pi^0) = (1.3 \pm 0.9)\%$
$A_{CP}(\rho(1700)^-\pi^+ \to \pi^+\pi^-\pi^0) = (0.5 \pm 0.7)\%$
$A_{CP}(f_0(980)\pi^0 \to \pi^+\pi^-\pi^0) = (0.0 \pm 0.14)\%$
$A_{CP}(f_0(1370)\pi^0 \to \pi^+\pi^-\pi^0) = (0.2 \pm 0.14)\%$
$A_{CP}(f_0(1500)\pi^0 \to \pi^+\pi^-\pi^0) = (0.0 \pm 0.14)\%$

$A_{CP}(f_0(1710)\pi^0 \to \pi^+\pi^-\pi^0) = (0.0 \pm 0.14)\%$
$A_{CP}(f_2(1270)\pi^0 \to \pi^+\pi^-\pi^0) = (-0.1 \pm 0.14)\%$
$A_{CP}(\sigma(400)\pi^0 \to \pi^+\pi^-\pi^0) = (0.1 \pm 0.14)\%$
$A_{CP}(\text{nonresonant } \pi^+\pi^-\pi^0) = (-0.2 \pm 0.4)\%$
$A_{CP}(K^+K^-\pi^0) = (-1.0 \pm 1.7)\%$
$A_{CP}(K^*(892)^+K^- \to K^+K^-\pi^0) = (-0.8 \pm 1.2)\%$
$A_{CP}(K^*(1410)^+K^- \to K^+K^-\pi^0) = (-1.7 \pm 1.9)\%$
$A_{CP}((K^+\pi^0)_{S-wave}K^- \to K^+K^-\pi^0) = (2 \pm 5)\%$
$A_{CP}(\phi(1020)\pi^0 \to K^+K^-\pi^0) = (0.4 \pm 0.8)\%$
$A_{CP}(f_0(980)\pi^0 \to K^+K^-\pi^0) = (-0.4 \pm 2.6)\%$
$A_{CP}(a_0(980)^0\pi^0 \to K^+K^-\pi^0) = (-0.6 \pm 1.9)\%$
$A_{CP}(f_2'(1525)\pi^0 \to K^+K^-\pi^0) = (0.0 \pm 0.32)\%$
$A_{CP}(K^*(892)^-K^+ \to K^+K^-\pi^0) = (-1.7 \pm 1.4)\%$
$A_{CP}(K^*(1410)^-K^+ \to K^+K^-\pi^0) = (-1.7 \pm 2.9)\%$
$A_{CP}((K^-\pi^0)_{S-wave}K^+ \to K^+K^-\pi^0) = (-0.4 \pm 2.5)\%$
$A_{CP}(K^0_S\phi) = -0.03 \pm 0.09$
$A_{CP}(K^0_S\pi^0) = 0.001 \pm 0.013$
$A_{CP}(K^-\pi^+) = -0.004 \pm 0.010$
$A_{CP}(K^+\pi^-) = 0.022 \pm 0.032$
$A_{CP}(K^-\pi^+\pi^0) = 0.002 \pm 0.009$
$A_{CP}(K^+\pi^-\pi^0) = 0.00 \pm 0.05$
$A_{CP}(K^0_S\pi^+\pi^-) = -0.009^{+0.026}_{-0.060}$
$A_{CP}(K^*(892)^-\pi^+ \to K^0_S\pi^+\pi^-) < 3.5 \times 10^{-4}$, CL = 95%
$A_{CP}(K^*(892)^+\pi^- \to K^0_S\pi^+\pi^-) < 7.8 \times 10^{-4}$, CL = 95%
$A_{CP}(\overline{K}^0\rho^0 \to K^0_S\pi^+\pi^-) < 4.8 \times 10^{-4}$, CL = 95%
$A_{CP}(\overline{K}^0\omega \to K^0_S\pi^+\pi^-) < 9.2 \times 10^{-4}$, CL = 95%
$A_{CP}(\overline{K}^0 f_0(980) \to K^0_S\pi^+\pi^-) < 6.8 \times 10^{-4}$, CL = 95%
$A_{CP}(\overline{K}^0 f_2(1270) \to K^0_S\pi^+\pi^-) < 13.5 \times 10^{-4}$, CL = 95%
$A_{CP}(\overline{K}^0 f_0(1370) \to K^0_S\pi^+\pi^-) < 25.5 \times 10^{-4}$, CL = 95%
$A_{CP}(K^*_0(1430)^-\pi^+ \to K^0_S\pi^+\pi^-) < 9.0 \times 10^{-4}$, CL = 95%
$A_{CP}(K^*_2(1430)^-\pi^+ \to K^0_S\pi^+\pi^-) < 6.5 \times 10^{-4}$, CL = 95%
$A_{CP}(K^*(1680)^-\pi^+ \to K^0_S\pi^+\pi^-) < 28.4 \times 10^{-4}$, CL = 95%
$A_{CP}(K^-\pi^+\pi^+\pi^-) = 0.007 \pm 0.010$
$A_{CP}(K^+\pi^-\pi^+\pi^-) = -0.02 \pm 0.04$
$A_{CP}(K^+K^-\pi^+\pi^-) = -0.08 \pm 0.07$

T-violation decay-rate asymmetry

$A_T(K^+K^-\pi^+\pi^-) = 0.01 \pm 0.07$

CPT-violation decay-rate asymmetry

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

Most decay modes (other than the semileptonic modes) that involve a neutral K meson are now given as K^0_S modes, not as $\overline{K}^0$ modes. Nearly always it is a K^0_S that is measured, and interference between Cabibbo-allowed and doubly Cabibbo-suppressed modes can invalidate the assumption that $2\,\Gamma(K^0_S) = \Gamma(\overline{K}^0)$.

D^0 DECAY MODES		Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)
Topological modes				
0-prongs	[h]	(15 ±6) %		–
2-prongs		(70 ±6) %		–
4-prongs	[i]	(14.5 ±0.5) %		–
6-prongs		(6.5 ±1.3) $\times 10^{-4}$		–
Inclusive modes				
e^+ anything	[j]	(6.53 ±0.17) %		–
μ^+ anything		(6.7 ±0.6) %		–
K^- anything		(54.7 ±2.8) %	S=1.3	–
$\overline{K}^0$ anything + K^0 anything		(47 ±4) %		–
K^+ anything		(3.4 ±0.4) %		–
$K^*(892)^-$ anything		(15 ±9) %		–
$\overline{K}^*(892)^0$ anything		(9 ±4) %		–
$K^*(892)^+$ anything		< 3.6 %	CL=90%	–
$K^*(892)^0$ anything		(2.8 ±1.3) %		–
η anything		(9.5 ±0.9) %		–
η' anything		(2.48 ±0.27) %		–
ϕ anything		(1.05 ±0.11) %		–
Semileptonic modes				
$K^- e^+ \nu_e$		(3.61 ±0.05) %	S=1.1	867
$K^- \mu^+ \nu_\mu$		(3.32 ±0.13) %		864
$K^*(892)^- e^+ \nu_e$		(2.17 ±0.16) %		719
$K^*(892)^- \mu^+ \nu_\mu$		(1.98 ±0.24) %		714
$K^- \pi^0 e^+ \nu_e$		(1.6 $^{+1.3}_{-0.5}$) %		861
$\overline{K}^0 \pi^- e^+ \nu_e$		(2.7 $^{+0.9}_{-0.7}$) %		860
$K^- \pi^+ \pi^- e^+ \nu_e$		(2.8 $^{+1.4}_{-1.1}$) $\times 10^{-4}$		843
$K_1(1270)^- e^+ \nu_e$		(7.6 $^{+4.0}_{-3.1}$) $\times 10^{-4}$		498
$K^- \pi^+ \pi^- \mu^+ \nu_\mu$		< 1.2 $\times 10^{-3}$	CL=90%	821
$(\overline{K}^*(892)\pi)^- \mu^+ \nu_\mu$		< 1.4 $\times 10^{-3}$	CL=90%	692
$\pi^- e^+ \nu_e$		(2.98 ±0.12) $\times 10^{-3}$		927
$\pi^- \mu^+ \nu_\mu$		(2.38 ±0.24) $\times 10^{-3}$		924
$\rho^- e^+ \nu_e$		(1.9 ±0.4) $\times 10^{-3}$		771

Hadronic modes with one $\overline{K}$

$K^-\pi^+$		(3.91 $\pm$0.05) %		S=1.1	861
$K^0_S\pi^0$		(1.22 $\pm$0.05) %			860
$K^0_L\pi^0$		(10.0 $\pm$0.7) $\times 10^{-3}$			860
$K^0_S\pi^+\pi^-$	[b]	(2.94 $\pm$0.17) %		S=1.1	842
$K^0_S\rho^0$		(6.7 $^{+0.5}_{-0.6}$) $\times 10^{-3}$			674
$K^0_S\omega$, $\omega \to \pi^+\pi^-$		(2.1 $\pm$0.6) $\times 10^{-4}$			670
$K^0_S(\pi^+\pi^-)_{S-\text{wave}}$		(3.5 $\pm$0.8) $\times 10^{-3}$			842
$K^0_S f_0(980)$, $f_0(980) \to \pi^+\pi^-$		(1.38 $^{+0.30}_{-0.22}$) $\times 10^{-3}$			549
$K^0_S f_0(1370)$, $f_0(1370) \to \pi^+\pi^-$		(2.5 $\pm$0.6) $\times 10^{-3}$			†
$K^0_S f_2(1270)$, $f_2(1270) \to \pi^+\pi^-$		(1.4 $^{+1.0}_{-0.6}$) $\times 10^{-4}$			262
$K^*(892)^-\pi^+$, $K^*(892)^- \to K^0_S\pi^-$		(1.80 $^{+0.13}_{-0.14}$) %			711
$K^*_0(1430)^-\pi^+$, $K^*_0(1430)^- \to K^0_S\pi^-$		(2.95 $^{+0.40}_{-0.32}$) $\times 10^{-3}$			378
$K^*_2(1430)^-\pi^+$, $K^*_2(1430)^- \to K^0_S\pi^-$		(3.5 $^{+2.0}_{-1.1}$) $\times 10^{-4}$			367
$K^*(1680)^-\pi^+$, $K^*(1680)^- \to K^0_S\pi^-$		(5 $\pm$4) $\times 10^{-4}$			46
$K^*(892)^+\pi^-$, $K^*(892)^+ \to K^0_S\pi^+$	[k]	(1.18 $^{+0.60}_{-0.35}$) $\times 10^{-4}$			711
$K^*_0(1430)^+\pi^-$, $K^*_0(1430)^+ \to K^0_S\pi^+$	[k]	< 1.5	$\times 10^{-5}$	CL=95%	–
$K^*_2(1430)^+\pi^-$, $K^*_2(1430)^+ \to K^0_S\pi^+$	[k]	< 3.5	$\times 10^{-5}$	CL=95%	–
$K^0_S\pi^+\pi^-$ nonresonant		(2.6 $^{+6.0}_{-1.7}$) $\times 10^{-4}$			842
$K^-\pi^+\pi^0$	[b]	(14.0 $\pm$0.5) %		S=1.6	844
$K^-\rho^+$		(10.9 $\pm$0.7) %			675
$K^-\rho(1700)^+$, $\rho(1700)^+ \to \pi^+\pi^0$		(8.0 $\pm$1.7) $\times 10^{-3}$			†
$K^*(892)^-\pi^+$, $K^*(892)^- \to K^-\pi^0$		(2.23 $^{+0.40}_{-0.19}$) %			711
$\overline{K}^*(892)^0\pi^0$, $\overline{K}^*(892)^0 \to K^-\pi^+$		(1.89 $\pm$0.23) %			711
$K^*_0(1430)^-\pi^+$, $K^*_0(1430)^- \to K^-\pi^0$		(4.6 $\pm$2.1) $\times 10^{-3}$			378

$\overline{K}_0^*(1430)^0\pi^0$,		$(5.7\ {}^{+5.0}_{-1.5}) \times 10^{-3}$		379
$\overline{K}_0^*(1430)^0 \to K^-\pi^+$				
$K^*(1680)^-\pi^+$,		$(1.8 \pm 0.7) \times 10^{-3}$		46
$K^*(1680)^- \to K^-\pi^0$				
$K^-\pi^+\pi^0$ nonresonant		$(1.12\ {}^{+0.50}_{-0.19})$ %		844
$K_S^0 2\pi^0$		$(8.3 \pm 0.6) \times 10^{-3}$		843
$\overline{K}^*(892)^0\pi^0$,		$(6.7\ {}^{+1.8}_{-1.5}) \times 10^{-3}$		711
$\overline{K}^*(892)^0 \to K_S^0\pi^0$				
$K_S^0\pi^0\pi^0$ nonresonant		$(4.5 \pm 1.1) \times 10^{-3}$		843
$K^-\pi^+\pi^+\pi^-$	[b]	$(8.14\ {}^{+0.20}_{-0.18})$ %	S=1.3	813
$K^-\pi^+\rho^0$ total		(6.79 ± 0.33) %		609
$K^-\pi^+\rho^0$ 3-body		$(5.1 \pm 2.3) \times 10^{-3}$		609
$\overline{K}^*(892)^0\rho^0$,		(1.06 ± 0.23) %		416
$\overline{K}^*(892)^0 \to K^-\pi^+$				
$K^- a_1(1260)^+$,		(3.6 ± 0.6) %		327
$a_1(1260)^+ \to \pi^+\pi^+\pi^-$				
$\overline{K}^*(892)^0\pi^+\pi^-$ total,		(1.6 ± 0.4) %		685
$\overline{K}^*(892)^0 \to K^-\pi^+$				
$\overline{K}^*(892)^0\pi^+\pi^-$ 3-body,		(1.03 ± 0.22) %		685
$\overline{K}^*(892)^0 \to K^-\pi^+$				
$K_1(1270)^-\pi^+$,	[d]	$(2.9 \pm 0.3) \times 10^{-3}$		484
$K_1(1270)^- \to K^-\pi^+\pi^-$				
$K^-\pi^+\pi^+\pi^-$ nonresonant		(1.89 ± 0.26) %		813
$K_S^0\pi^+\pi^-\pi^0$	[b]	(5.4 ± 0.6) %		813
$K_S^0\eta$, $\eta \to \pi^+\pi^-\pi^0$		$(9.7 \pm 0.6) \times 10^{-4}$		772
$K_S^0\omega$, $\omega \to \pi^+\pi^-\pi^0$		(1.00 ± 0.05) %		670
$K^*(892)^-\rho^+$,		(2.1 ± 0.8) %		416
$K^*(892)^- \to K_S^0\pi^-$				
$K_1(1270)^-\pi^+$,	[d]	$(2.2 \pm 0.6) \times 10^{-3}$		484
$K_1(1270)^- \to K_S^0\pi^-\pi^0$				
$\overline{K}^*(892)^0\pi^+\pi^-$ 3-body,		$(2.6 \pm 0.6) \times 10^{-3}$		685
$\overline{K}^*(892)^0 \to K_S^0\pi^0$				
$K_S^0\pi^+\pi^-\pi^0$ nonresonant		(1.1 ± 1.1) %		813
$K^-\pi^+\pi^+\pi^-\pi^0$		(4.3 ± 0.4) %		771
$\overline{K}^*(892)^0\pi^+\pi^-\pi^0$,		(1.3 ± 0.6) %		643
$\overline{K}^*(892)^0 \to K^-\pi^+$				
$K^-\pi^+\omega$, $\omega \to \pi^+\pi^-\pi^0$		(2.7 ± 0.5) %		605
$\overline{K}^*(892)^0\omega$,		$(6.5 \pm 3.0) \times 10^{-3}$		410
$\overline{K}^*(892)^0 \to K^-\pi^+$,				
$\omega \to \pi^+\pi^-\pi^0$				
$K_S^0\eta\pi^0$		$(5.6 \pm 1.2) \times 10^{-3}$		721

$K^0_S\, a_0(980)$, $a_0(980) \to \eta\pi^0$		(6.7	$\pm$2.1)	$\times 10^{-3}$		–
$\overline{K}^*(892)^0\eta$, $\overline{K}^*(892)^0 \to K^0_S\pi^0$		(1.6	$\pm$0.5)	$\times 10^{-3}$		–
$K^0_S 2\pi^+2\pi^-$		(2.79	$\pm$0.30)	$\times 10^{-3}$		768
$K^0_S\rho^0\pi^+\pi^-$, no $K^*(892)^-$		(1.1	$\pm$0.7)	$\times 10^{-3}$		–
$K^*(892)^-\pi^+\pi^+\pi^-$, $K^*(892)^- \to K^0_S\pi^-$, no ρ^0		(5	$\pm$8)	$\times 10^{-4}$		642
$K^*(892)^-\rho^0\pi^+$, $K^*(892)^- \to K^0_S\pi^-$		(1.7	$\pm$0.7)	$\times 10^{-3}$		230
$K^0_S 2\pi^+2\pi^-$ nonresonant		< 1.3		$\times 10^{-3}$	CL=90%	768
$K^-3\pi^+2\pi^-$		(2.2	$\pm$0.6)	$\times 10^{-4}$		713

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 $\overline{K}^*(892)\rho$ submodes only appear below.)

$K^0_S\eta$		(4.29	$\pm$0.27)	$\times 10^{-3}$		772
$K^0_S\omega$		(1.12	$\pm$0.06)	%		670
$K^0_S\eta'(958)$		(9.3	$\pm$1.4)	$\times 10^{-3}$		565
$K^-a_1(1260)^+$		(7.9	$\pm$1.1)	%		327
$\overline{K}^0 a_1(1260)^0$		< 1.9		%	CL=90%	323
$K^-a_2(1320)^+$		< 2		$\times 10^{-3}$	CL=90%	198
$\overline{K}^*(892)^0\pi^+\pi^-$ total		(2.4	$\pm$0.5)	%		685
$\overline{K}^*(892)^0\pi^+\pi^-$ 3-body		(1.54	$\pm$0.34)	%		685
$\overline{K}^*(892)^0\rho^0$		(1.59	$\pm$0.35)	%		417
$\overline{K}^*(892)^0\rho^0$ transverse		(1.6	$\pm$0.6)	%		417
$\overline{K}^*(892)^0\rho^0$ S-wave		(3.1	$\pm$0.6)	%		417
$\overline{K}^*(892)^0\rho^0$ S-wave long.		< 3		$\times 10^{-3}$	CL=90%	417
$\overline{K}^*(892)^0\rho^0$ P-wave		< 3		$\times 10^{-3}$	CL=90%	417
$\overline{K}^*(892)^0\rho^0$ D-wave		(2.1	$\pm$0.6)	%		417
$K^*(892)^-\rho^+$		(6.5	$\pm$2.5)	%		417
$K^*(892)^-\rho^+$ longitudinal		(3.1	$\pm$1.2)	%		417
$K^*(892)^-\rho^+$ transverse		(3.4	$\pm$2.0)	%		417
$K^*(892)^-\rho^+$ P-wave		< 1.5		%	CL=90%	417
$K_1(1270)^-\pi^+$	[d]	(1.14	$\pm$0.32)	%		484
$K_1(1400)^-\pi^+$		< 1.2		%	CL=90%	386
$\overline{K}_1(1400)^0\pi^0$		< 3.7		%	CL=90%	387
$\overline{K}^*(892)^0\pi^+\pi^-\pi^0$		(1.9	$\pm$0.9)	%		643
$K^-\pi^+\omega$		(3.0	$\pm$0.6)	%		605
$\overline{K}^*(892)^0\omega$		(1.1	$\pm$0.5)	%		410
$K^-\pi^+\eta'(958)$		(7.6	$\pm$1.9)	$\times 10^{-3}$		479
$\overline{K}^*(892)^0\eta'(958)$		< 1.1		$\times 10^{-3}$	CL=90%	119

Hadronic modes with three K's

$K^0_S K^+ K^-$	$(\ 4.65 \pm 0.30\ ) \times 10^{-3}$		544
$K^0_S a_0(980)^0,\ a^0_0 \to\ K^+ K^-$	$(\ 3.1 \pm 0.4\ ) \times 10^{-3}$		–
$K^- a_0(980)^+,\ a^+_0 \to\ K^+ K^0_S$	$(\ 6.2 \pm 1.8\ ) \times 10^{-4}$		–
$K^+ a_0(980)^-,\ a^-_0 \to\ K^- K^0_S$	$< \ 1.2 \times 10^{-4}$	CL=95%	–
$K^0_S f_0(980),\ f_0 \to\ K^+ K^-$	$< \ 1.0 \times 10^{-4}$	CL=95%	–
$K^0_S \phi,\ \phi \to\ K^+ K^-$	$(\ 2.13 \pm 0.15\ ) \times 10^{-3}$		520
$K^0_S f_0(1370),\ f_0 \to\ K^+ K^-$	$(\ 1.8 \pm 1.1\ ) \times 10^{-4}$		–
$3K^0_S$	$(\ 9.5 \pm 1.3\ ) \times 10^{-4}$		539
$K^+ K^- K^- \pi^+$	$(\ 2.23 \pm 0.32\ ) \times 10^{-4}$		434
$K^+ K^- \overline{K}^*(892)^0,$ $\overline{K}^*(892)^0 \to\ K^- \pi^+$	$(\ 4.5 \pm 1.7\ ) \times 10^{-5}$		†
$K^- \pi^+ \phi,\ \phi \to\ K^+ K^-$	$(\ 4.0 \pm 1.7\ ) \times 10^{-5}$		422
$\phi \overline{K}^*(892)^0,$ $\phi \to\ K^+ K^-,$ $\overline{K}^*(892)^0 \to\ K^- \pi^+$	$(\ 1.07 \pm 0.20\ ) \times 10^{-4}$		†
$K^+ K^- K^- \pi^+$ nonresonant	$(\ 3.3 \pm 1.5\ ) \times 10^{-5}$		434
$K^0_S K^0_S K^\pm \pi^\mp$	$(\ 6.2 \pm 1.3\ ) \times 10^{-4}$		427

Pionic modes

$\pi^+ \pi^-$	$(\ 1.405 \pm 0.026) \times 10^{-3}$		922
$\pi^0 \pi^0$	$(\ 8.1 \pm 0.8\ ) \times 10^{-4}$		923
$\pi^+ \pi^- \pi^0$	$(\ 1.44 \pm 0.06\ )\ \%$	S=1.8	907
$\rho^+ \pi^-$	$(\ 9.8 \pm 0.4\ ) \times 10^{-3}$		764
$\rho^0 \pi^0$	$(\ 3.74 \pm 0.22\ ) \times 10^{-3}$		764
$\rho^- \pi^+$	$(\ 4.99 \pm 0.23\ ) \times 10^{-3}$		764
$\rho(1450)^+ \pi^-,\ \rho(1450)^+ \to$ $\pi^+ \pi^0$	$(\ 1.6 \pm 2.0\ ) \times 10^{-5}$		–
$\rho(1450)^0 \pi^0,\ \rho(1450)^0 \to$ $\pi^+ \pi^-$	$(\ 4.3 \pm 1.9\ ) \times 10^{-5}$		–
$\rho(1450)^- \pi^+,\ \rho(1450)^- \to$ $\pi^- \pi^0$	$(\ 2.6 \pm 0.4\ ) \times 10^{-4}$		–
$\rho(1700)^+ \pi^-,\ \rho(1700)^+ \to$ $\pi^+ \pi^0$	$(\ 5.9 \pm 1.4\ ) \times 10^{-4}$		–
$\rho(1700)^0 \pi^0,\ \rho(1700)^0 \to$ $\pi^+ \pi^-$	$(\ 7.2 \pm 1.7\ ) \times 10^{-4}$		–
$\rho(1700)^- \pi^+,\ \rho(1700)^- \to$ $\pi^- \pi^0$	$(\ 4.6 \pm 1.1\ ) \times 10^{-4}$		–
$f_0(980) \pi^0,\ f_0(980) \to$ $\pi^+ \pi^-$	$(\ 3.6 \pm 0.8\ ) \times 10^{-5}$		–
$f_0(600) \pi^0,\ f_0(600) \to$ $\pi^+ \pi^-$	$(\ 1.18 \pm 0.21\ ) \times 10^{-4}$		–
$f_0(1370) \pi^0,\ f_0(1370) \to$ $\pi^+ \pi^-$	$(\ 5.3 \pm 2.1\ ) \times 10^{-5}$		–
$f_0(1500) \pi^0,\ f_0(1500) \to$ $\pi^+ \pi^-$	$(\ 5.6 \pm 1.6\ ) \times 10^{-5}$		–

$f_0(1710)\pi^0$, $f_0(1710) \to \pi^+\pi^-$		$(4.5 \pm 1.5) \times 10^{-5}$			–
$f_2(1270)\pi^0$, $f_2(1270) \to \pi^+\pi^-$		$(1.91 \pm 0.20) \times 10^{-4}$			–
$\pi^+\pi^-\pi^0$ nonresonant		$(1.21 \pm 0.35) \times 10^{-4}$			907
$3\pi^0$		$< 3.5 \times 10^{-4}$		CL=90%	908
$2\pi^+2\pi^-$		$(7.48 \pm 0.21) \times 10^{-3}$		S=1.1	880
$a_1(1260)^+\pi^-$, $a_1^+ \to \pi^+\pi^-\pi^+$ total		$(4.49 \pm 0.31) \times 10^{-3}$			–
$a_1(1260)^+\pi^-$, $a_1^+ \to \rho^0\pi^+$ S-wave		$(3.24 \pm 0.25) \times 10^{-3}$			–
$a_1(1260)^+\pi^-$, $a_1^+ \to \rho^0\pi^+$ D-wave		$(1.9 \pm 0.5) \times 10^{-4}$			–
$a_1(1260)^+\pi^-$, $a_1^+ \to \sigma\pi^+$		$(6.2 \pm 0.7) \times 10^{-4}$			–
$2\rho^0$ total		$(1.83 \pm 0.13) \times 10^{-3}$			518
$2\rho^0$, parallel helicities		$(8.2 \pm 3.2) \times 10^{-5}$			–
$2\rho^0$, perpendicular helicities		$(4.8 \pm 0.6) \times 10^{-4}$			–
$2\rho^0$, longitudinal helicities		$(1.26 \pm 0.10) \times 10^{-3}$			–
Resonant $(\pi^+\pi^-)\pi^+\pi^-$ 3-body total		$(1.50 \pm 0.12) \times 10^{-3}$			–
$\sigma\pi^+\pi^-$		$(6.1 \pm 0.9) \times 10^{-4}$			–
$f_0(980)\pi^+\pi^-$, $f_0 \to \pi^+\pi^-$		$(1.8 \pm 0.5) \times 10^{-4}$			–
$f_2(1270)\pi^+\pi^-$, $f_2 \to \pi^+\pi^-$		$(3.7 \pm 0.6) \times 10^{-4}$			–
$\pi^+\pi^-2\pi^0$		(1.01 ± 0.09) %			882
$\eta\pi^0$	[*l*]	$(6.4 \pm 1.1) \times 10^{-4}$			846
$\omega\pi^0$	[*l*]	$< 2.6 \times 10^{-4}$		CL=90%	761
$2\pi^+2\pi^-\pi^0$		$(4.2 \pm 0.5) \times 10^{-3}$			844
$\eta\pi^+\pi^-$	[*l*]	$(1.09 \pm 0.16) \times 10^{-3}$			827
$\omega\pi^+\pi^-$	[*l*]	$(1.6 \pm 0.5) \times 10^{-3}$			738
$3\pi^+3\pi^-$		$(4.3 \pm 1.2) \times 10^{-4}$			795
$\eta'(958)\pi^0$		$(8.1 \pm 1.6) \times 10^{-4}$			678
$\eta'(958)\pi^+\pi^-$		$(4.5 \pm 1.7) \times 10^{-4}$			650
2η		$(1.67 \pm 0.19) \times 10^{-3}$			754
$\eta\eta'(958)$		$(1.26 \pm 0.27) \times 10^{-3}$			537

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

K^+K^-		$(3.97 \pm 0.07) \times 10^{-3}$		S=1.2	791
$2K_S^0$		$(2.0 \pm 0.7) \times 10^{-4}$		S=2.6	789
$K_S^0K^-\pi^+$		$(3.5 \pm 0.5) \times 10^{-3}$		S=1.1	739
$\overline{K}^*(892)^0K_S^0$, $\overline{K}^*(892)^0 \to K^-\pi^+$		$< 6 \times 10^{-4}$		CL=90%	608

$K^0_S K^+ \pi^-$		$(2.6 \pm 0.5) \times 10^{-3}$		739
$K^*(892)^0 K^0_S$, $K^*(892)^0 \to K^+ \pi^-$		$< 2.9 \times 10^{-4}$	CL=90%	608
$K^+ K^- \pi^0$		$(3.31 \pm 0.13) \times 10^{-3}$		743
$K^*(892)^+ K^-$, $K^*(892)^+ \to K^+ \pi^0$		$(1.47 \pm 0.07) \times 10^{-3}$		–
$K^*(892)^- K^+$, $K^*(892)^- \to K^- \pi^0$		$(5.1 \pm 0.5) \times 10^{-4}$		–
$(K^+ \pi^0)_{S-wave} K^-$		$(2.35 \pm 0.17) \times 10^{-3}$		743
$(K^- \pi^0)_{S-wave} K^+$		$(1.3 \pm 0.4) \times 10^{-4}$		743
$f_0(980)\pi^0$, $f_0 \to K^+ K^-$		$(3.5 \pm 0.6) \times 10^{-4}$		–
$\phi\pi^0$, $\phi \to K^+ K^-$		$(6.1 \pm 0.6) \times 10^{-4}$		–
$K^0_S K^0_S \pi^0$		$< 5.9 \times 10^{-4}$		740
$K^+ K^- \pi^+ \pi^-$	[m]	$(2.44 \pm 0.12) \times 10^{-3}$		677
$\phi\pi^+\pi^-$ 3-body, $\phi \to K^+ K^-$		$(2.4 \pm 2.4) \times 10^{-5}$		614
$\phi\rho^0$, $\phi \to K^+ K^-$		$(7.1 \pm 0.6) \times 10^{-4}$		250
$K^+ K^- \rho^0$ 3-body		$(5 \pm 7) \times 10^{-5}$		302
$f_0(980)\pi^+\pi^-$, $f_0 \to K^+ K^-$		$(3.7 \pm 0.9) \times 10^{-4}$		–
$K^*(892)^0 K^\mp \pi^\pm$ 3-body, $K^{*0} \to K^\pm \pi^\mp$	[n]	$(2.7 \pm 0.6) \times 10^{-4}$		531
$K^*(892)^0 \overline{K}{}^*(892)^0$, $K^{*0} \to K^\pm \pi^\mp$		$(7 \pm 5) \times 10^{-5}$		272
$K_1(1270)^\pm K^\mp$, $K_1(1270)^\pm \to K^\pm \pi^+ \pi^-$		$(8.1 \pm 1.8) \times 10^{-4}$		–
$K_1(1400)^\pm K^\mp$, $K_1(1400)^\pm \to K^\pm \pi^+ \pi^-$		$(5.4 \pm 1.2) \times 10^{-4}$		–
$K^0_S K^0_S \pi^+ \pi^-$		$(1.28 \pm 0.24) \times 10^{-3}$		673
$K^0_S K^- \pi^+ \pi^+ \pi^-$		$< 1.5 \times 10^{-4}$	CL=90%	595
$K^+ K^- \pi^+ \pi^- \pi^0$		$(3.1 \pm 2.0) \times 10^{-3}$		600

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

$\phi\pi^0$	$(7.7 \pm 0.4) \times 10^{-4}$		645
$\phi\eta$	$(1.4 \pm 0.5) \times 10^{-4}$		489
$\phi\omega$	$< 2.1 \times 10^{-3}$	CL=90%	238

Radiative modes

$\rho^0\gamma$	$< 2.4 \times 10^{-4}$	CL=90%	771
$\omega\gamma$	$< 2.4 \times 10^{-4}$	CL=90%	768
$\phi\gamma$	$(2.71 \pm 0.35) \times 10^{-5}$		654
$\overline{K}{}^*(892)^0\gamma$	$(3.30 \pm 0.34) \times 10^{-4}$		719

Doubly Cabibbo suppressed (*DC*) modes or $\Delta C = 2$ forbidden via mixing (*C2M*) modes

$K^+ \ell^- \overline{\nu}_\ell$ via $\overline{D}^0$		$<$	1.8	$\times 10^{-4}$	CL=90%	–
K^+ or $K^*(892)^+ e^- \overline{\nu}_e$ via $\overline{D}^0$		$<$	6	$\times 10^{-5}$	CL=90%	–
$K^+ \pi^-$	*DC*	(	1.48 $\pm$0.07)	$\times 10^{-4}$		861
$K^+ \pi^-$ via DCS		(	1.32 $\pm$0.09)	$\times 10^{-4}$		–
$K^+ \pi^-$ via $\overline{D}^0$		$<$	1.6	$\times 10^{-5}$	CL=95%	861
$K^0_S \pi^+ \pi^-$ in $D^0 \to \overline{D}^0$		$<$	1.9	$\times 10^{-4}$	CL=95%	–
$K^*(892)^+ \pi^-$, $K^*(892)^+ \to K^0_S \pi^+$	*DC*	(	1.18 $^{+0.60}_{-0.35}$)	$\times 10^{-4}$		711
$K^*_0(1430)^+ \pi^-$, $K^*_0(1430)^+ \to K^0_S \pi^+$	*DC*	$<$	1.5	$\times 10^{-5}$		–
$K^*_2(1430)^+ \pi^-$, $K^*_2(1430)^+ \to K^0_S \pi^+$	*DC*	$<$	3.5	$\times 10^{-5}$		–
$K^+ \pi^- \pi^0$	*DC*	(	3.06 $\pm$0.17)	$\times 10^{-4}$		844
$K^+ \pi^- \pi^0$ via $\overline{D}^0$		$<$	8	$\times 10^{-5}$	CL=95%	–
$K^+ \pi^- \pi^+ \pi^-$	*DC*	(	2.63 $^{+0.21}_{-0.19}$)	$\times 10^{-4}$		813
$K^+ \pi^- \pi^+ \pi^-$ via $\overline{D}^0$		$<$	4	$\times 10^{-4}$	CL=90%	812
μ^- anything via $\overline{D}^0$		$<$	4	$\times 10^{-4}$	CL=90%	–

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

$\gamma\gamma$	*C1*	$<$	2.7	$\times 10^{-5}$	CL=90%	932
$e^+ e^-$	*C1*	$<$	1.2	$\times 10^{-6}$	CL=90%	932
$\mu^+ \mu^-$	*C1*	$<$	1.3	$\times 10^{-6}$	CL=90%	926
$\pi^0 e^+ e^-$	*C1*	$<$	4.5	$\times 10^{-5}$	CL=90%	928
$\pi^0 \mu^+ \mu^-$	*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
$\overline{K}^0 e^+ e^-$		[*f*] $<$	1.1	$\times 10^{-4}$	CL=90%	866
$\overline{K}^0 \mu^+ \mu^-$		[*f*] $<$	2.6	$\times 10^{-4}$	CL=90%	852

$K^-\pi^+e^+e^-$	*C1*	$<$ 3.85	$\times10^{-4}$	CL=90%	861
$\overline{K}^*(892)^0e^+e^-$		[*f*] $<$ 4.7	$\times10^{-5}$	CL=90%	719
$K^-\pi^+\mu^+\mu^-$	*C1*	$<$ 3.59	$\times10^{-4}$	CL=90%	829
$\overline{K}^*(892)^0\mu^+\mu^-$		[*f*] $<$ 2.4	$\times10^{-5}$	CL=90%	700
$\pi^+\pi^-\pi^0\mu^+\mu^-$	*C1*	$<$ 8.1	$\times10^{-4}$	CL=90%	863
$\mu^\pm e^\mp$	*LF*	[*g*] $<$ 8.1	$\times10^{-7}$	CL=90%	929
$\pi^0e^\pm\mu^\mp$	*LF*	[*g*] $<$ 8.6	$\times10^{-5}$	CL=90%	924
$\eta e^\pm\mu^\mp$	*LF*	[*g*] $<$ 1.0	$\times10^{-4}$	CL=90%	848
$\pi^+\pi^-e^\pm\mu^\mp$	*LF*	[*g*] $<$ 1.5	$\times10^{-5}$	CL=90%	911
$\rho^0e^\pm\mu^\mp$	*LF*	[*g*] $<$ 4.9	$\times10^{-5}$	CL=90%	767
$\omega e^\pm\mu^\mp$	*LF*	[*g*] $<$ 1.2	$\times10^{-4}$	CL=90%	764
$K^-K^+e^\pm\mu^\mp$	*LF*	[*g*] $<$ 1.8	$\times10^{-4}$	CL=90%	754
$\phi e^\pm\mu^\mp$	*LF*	[*g*] $<$ 3.4	$\times10^{-5}$	CL=90%	648
$\overline{K}^0e^\pm\mu^\mp$	*LF*	[*g*] $<$ 1.0	$\times10^{-4}$	CL=90%	863
$K^-\pi^+e^\pm\mu^\mp$	*LF*	[*g*] $<$ 5.53	$\times10^{-4}$	CL=90%	848
$\overline{K}^*(892)^0e^\pm\mu^\mp$	*LF*	[*g*] $<$ 8.3	$\times10^{-5}$	CL=90%	714
$\pi^-\pi^-e^+e^+$ + c.c.	*L*	$<$ 1.12	$\times10^{-4}$	CL=90%	922
$\pi^-\pi^-\mu^+\mu^+$ + c.c.	*L*	$<$ 2.9	$\times10^{-5}$	CL=90%	894
$K^-\pi^-e^+e^+$ + c.c.	*L*	$<$ 2.06	$\times10^{-4}$	CL=90%	861
$K^-\pi^-\mu^+\mu^+$ + c.c.	*L*	$<$ 3.9	$\times10^{-4}$	CL=90%	829
$K^-K^-e^+e^+$ + c.c.	*L*	$<$ 1.52	$\times10^{-4}$	CL=90%	791
$K^-K^-\mu^+\mu^+$ + c.c.	*L*	$<$ 9.4	$\times10^{-5}$	CL=90%	710
$\pi^-\pi^-e^+\mu^+$ + c.c.	*L*	$<$ 7.9	$\times10^{-5}$	CL=90%	911
$K^-\pi^-e^+\mu^+$ + c.c.	*L*	$<$ 2.18	$\times10^{-4}$	CL=90%	848
$K^-K^-e^+\mu^+$ + c.c.	*L*	$<$ 5.7	$\times10^{-5}$	CL=90%	754

$D^*(2007)^0$

$I(J^P) = \frac{1}{2}(1^-)$
I, *J*, *P* need confirmation.

Mass $m = 2006.97 \pm 0.19$ MeV (S = 1.1)
$m_{D^{*0}} - m_{D^0} = 142.12 \pm 0.07$ MeV
Full width $\Gamma < 2.1$ MeV, CL = 90%

$\overline{D}^*(2007)^0$ 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 $m = 2010.27 \pm 0.17$ 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 $m = 2422.3 \pm 1.3$ MeV (S = 1.2)
$m_{D_1^0} - m_{D^{*+}} = 411.7 \pm 0.8$
Full width $\Gamma = 20.4 \pm 1.7$ MeV

$\overline{D}_1(2420)^0$ 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
$D^0\pi^+\pi^-$	seen	426
$D^+\pi^-$	not seen	474
$D^{*0}\pi^+\pi^-$	not seen	281

$D_2^*(2460)^0$

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

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

Mass $m = 2461.1 \pm 1.6$ MeV (S = 1.3)
$m_{D_2^{*0}} - m_{D^+} = 593.9 \pm 0.8$
Full width $\Gamma = 43 \pm 4$ MeV (S = 1.8)

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

$D_2^*(2460)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^+\pi^-$	seen	505
$D^*(2010)^+\pi^-$	seen	389
$D^0\pi^+\pi^-$	not seen	462
$D^{*0}\pi^+\pi^-$	not seen	324

$D_2^*(2460)^\pm$

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

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

Mass $m = 2460.1^{+2.6}_{-3.5}$ MeV (S = 1.5)
$m_{D_2^*(2460)^\pm} - m_{D_2^*(2460)^0} = 2.4 \pm 1.7$ MeV
Full width $\Gamma = 37 \pm 6$ MeV (S = 1.4)

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

$D_2^*(2460)^\pm$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^0\pi^+$	seen	508
$D^{*0}\pi^+$	seen	391
$D^+\pi^+\pi^-$	not seen	457
$D^{*+}\pi^+\pi^-$	not seen	320

NOTES

[*a*] This result applies to $Z^0 \to\ c\overline{c}$ decays only. Here ℓ^+ is an average (not a sum) of e^+ and μ^+ decays.

[*b*] 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.

[*c*] These subfractions of the $K^-\pi^+\pi^+$ mode are uncertain: see the Particle Listings.

[*d*] The two experiments measuring this fraction are in serious disagreement. See the Particle Listings.

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

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

[*g*] The value is for the sum of the charge states or particle/antiparticle states indicated.

[*h*] This value is obtained by subtracting the branching fractions for 2-, 4- and 6-prongs from unity.

[*i*] This is the sum of our $K^-\pi^+\pi^+\pi^-$, $K^-\pi^+\pi^+\pi^-\pi^0$, $\overline{K}^0 2\pi^+ 2\pi^-$, $2\pi^+ 2\pi^-$, $2\pi^+ 2\pi^-\pi^0$, $K^+K^-\pi^+\pi^-$, and $K^+K^-\pi^+\pi^-\pi^0$, branching fractions.

[*j*] The branching fractions for the $K^- e^+\nu_e$, $K^*(892)^- e^+\nu_e$, $\pi^- e^+\nu_e$, and $\rho^- e^+\nu_e$ modes add up to 6.27 $\pm$ 0.17 %.

[*k*] This is a doubly Cabibbo-suppressed mode.

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

[*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.