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 $m = 1869.59 \pm 0.09$ MeV
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

$A_{CP}(\mu^\pm\nu) = (8 \pm 8)\%$
$A_{CP}(K^0_L e^\pm \nu) = (-0.6 \pm 1.6)\%$
$A_{CP}(K^0_S \pi^\pm) = (-0.41 \pm 0.09)\%$
$A_{CP}(K^\mp 2\pi^\pm) = (-0.18 \pm 0.16)\%$
$A_{CP}(K^\mp \pi^\pm \pi^\pm \pi^0) = (-0.3 \pm 0.7)\%$
$A_{CP}(K^0_S \pi^\pm \pi^0) = (-0.1 \pm 0.7)\%$
$A_{CP}(K^0_S \pi^\pm \pi^+ \pi^-) = (0.0 \pm 1.2)\%$
$A_{CP}(\pi^\pm \pi^0) = (2.9 \pm 2.9)\%$
$A_{CP}(\pi^\pm \eta) = (1.0 \pm 1.5)\%$ (S = 1.4)
$A_{CP}(\pi^\pm \eta'(958)) = (-0.5 \pm 1.2)\%$ (S = 1.1)
$A_{CP}(\overline{K}^0 / K^0 K^\pm) = (0.11 \pm 0.17)\%$
$A_{CP}(K^0_S K^\pm) = (-0.11 \pm 0.25)\%$
$A_{CP}(K^+ K^- \pi^\pm) = (0.37 \pm 0.29)\%$
$A_{CP}(K^\pm K^{*0}) = (-0.3 \pm 0.4)\%$
$A_{CP}(\phi\pi^\pm) = (0.09 \pm 0.19)\%$ (S = 1.2)
$A_{CP}(K^\pm K^*_0(1430)^0) = (8^{+7}_{-6})\%$
$A_{CP}(K^\pm K^*_2(1430)^0) = (43^{+20}_{-26})\%$
$A_{CP}(K^\pm K^*_0(800)) = (-12^{+18}_{-13})\%$
$A_{CP}(a_0(1450)^0 \pi^\pm) = (-19^{+14}_{-16})\%$
$A_{CP}(\phi(1680)\pi^\pm) = (-9 \pm 26)\%$
$A_{CP}(\pi^+\pi^-\pi^\pm) = (-2 \pm 4)\%$
$A_{CP}(K^0_S K^\pm \pi^+ \pi^-) = (-4 \pm 7)\%$
$A_{CP}(K^\pm \pi^0) = (-4 \pm 11)\%$

χ^2 tests of *CP*-violation (*CPV*)

Local *CPV* in $D^\pm \to \pi^+\pi^-\pi^\pm = 78.1\%$
Local *CPV* in $D^\pm \to K^+K^-\pi^\pm = 31\%$

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

$A_T(K^0_S K^\pm \pi^+\pi^-) = (-12 \pm 11) \times 10^{-3}$ [b]

D^+ form factors

$f_+(0)|V_{cs}|$ in $\overline{K}^0 \ell^+ \nu_\ell = 0.725 \pm 0.015$ (S = 1.7)
$r_1 \equiv a_1/a_0$ in $\overline{K}^0 \ell^+ \nu_\ell = -1.8 \pm 0.4$
$r_2 \equiv a_2/a_0$ in $\overline{K}^0 \ell^+ \nu_\ell = -3 \pm 12$ (S = 1.5)
$f_+(0)|V_{cd}|$ in $\pi^0 \ell^+ \nu_\ell = 0.146 \pm 0.007$
$r_1 \equiv a_1/a_0$ in $\pi^0 \ell^+ \nu_\ell = -1.4 \pm 0.9$
$r_2 \equiv a_2/a_0$ in $\pi^0 \ell^+ \nu_\ell = -4 \pm 5$
$f_+(0)|V_{cd}|$ in $D^+ \to \eta e^+ \nu_e = 0.086 \pm 0.006$
$r_1 \equiv a_1/a_0$ in $D^+ \to \eta e^+ \nu_e = -1.8 \pm 2.2$
$r_v \equiv V(0)/A_1(0)$ in $D^+ \to \omega e^+ \nu_e = 1.24 \pm 0.11$
$r_2 \equiv A_2(0)/A_1(0)$ in $D^+ \to \omega e^+ \nu_e = 1.06 \pm 0.16$
$r_v \equiv V(0)/A_1(0)$ in $D^+, D^0 \to \rho e^+ \nu_e = 1.48 \pm 0.16$
$r_2 \equiv A_2(0)/A_1(0)$ in $D^+, D^0 \to \rho e^+ \nu_e = 0.83 \pm 0.12$
$r_v \equiv V(0)/A_1(0)$ in $\overline{K}^*(892)^0 \ell^+ \nu_\ell = 1.49 \pm 0.05$ (S = 2.1)
$r_2 \equiv A_2(0)/A_1(0)$ in $\overline{K}^*(892)^0 \ell^+ \nu_\ell = 0.802 \pm 0.021$
$r_3 \equiv A_3(0)/A_1(0)$ in $\overline{K}^*(892)^0 \ell^+ \nu_\ell = 0.0 \pm 0.4$
Γ_L/Γ_T in $\overline{K}^*(892)^0 \ell^+ \nu_\ell = 1.13 \pm 0.08$
Γ_+/Γ_- in $\overline{K}^*(892)^0 \ell^+ \nu_\ell = 0.22 \pm 0.06$ (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^+ semileptonic	(16.07±0.30) %		–
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
$\mu^+\nu_\mu$	(3.74±0.17)	$\times 10^{-4}$		932
$\tau^+\nu_\tau$	< 1.2	$\times 10^{-3}$	CL=90%	90
$\overline{K}^0 e^+\nu_e$	(8.82±0.13) %			869
$\overline{K}^0\mu^+\nu_\mu$	(8.74±0.19) %			865
$K^-\pi^+ e^+\nu_e$	(3.89±0.13) %		S=2.1	864
$\overline{K}^*(892)^0 e^+\nu_e$, $\overline{K}^*(892)^0 \to K^-\pi^+$	(3.66±0.12) %			722
$(K^-\pi^+)_{\text{[0.8–1.0]GeV}}\, e^+\nu_e$	(3.39±0.09) %			864
$(K^-\pi^+)_{S-wave}\, e^+\nu_e$	(2.28±0.11)	$\times 10^{-3}$		–
$\overline{K}^*(1410)^0 e^+\nu_e$, $\overline{K}^*(1410)^0 \to K^-\pi^+$	< 6	$\times 10^{-3}$	CL=90%	–
$\overline{K}_2^*(1430)^0 e^+\nu_e$, $\overline{K}_2^*(1430)^0 \to K^-\pi^+$	< 5	$\times 10^{-4}$	CL=90%	–
$K^-\pi^+ e^+\nu_e$ nonresonant	< 7	$\times 10^{-3}$	CL=90%	864
$K^-\pi^+\mu^+\nu_\mu$	(3.65±0.34) %			851
$\overline{K}^*(892)^0\mu^+\nu_\mu$, $\overline{K}^*(892)^0 \to K^-\pi^+$	(3.52±0.10) %			717
$K^-\pi^+\mu^+\nu_\mu$ nonresonant	(1.9 ±0.5)	$\times 10^{-3}$		851
$K^-\pi^+\pi^0\mu^+\nu_\mu$	< 1.5	$\times 10^{-3}$	CL=90%	825
$\pi^0 e^+\nu_e$	(4.05±0.18)	$\times 10^{-3}$		930
$\eta e^+\nu_e$	(1.14±0.10)	$\times 10^{-3}$		855
$\rho^0 e^+\nu_e$	($2.18^{+0.17}_{-0.25}$)	$\times 10^{-3}$		774
$\rho^0\mu^+\nu_\mu$	(2.4 ±0.4)	$\times 10^{-3}$		770
$\omega e^+\nu_e$	(1.69±0.11)	$\times 10^{-3}$		771
$\eta'(958) e^+\nu_e$	(2.2 ±0.5)	$\times 10^{-4}$		689
$\phi e^+\nu_e$	< 1.3	$\times 10^{-5}$	CL=90%	657

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

$\overline{K}^*(892)^0 e^+\nu_e$	(5.40±0.10) %		S=1.1	722
$\overline{K}^*(892)^0\mu^+\nu_\mu$	(5.25±0.15) %			717
$\overline{K}_0^*(1430)^0\mu^+\nu_\mu$	< 2.3	$\times 10^{-4}$	CL=90%	380
$\overline{K}^*(1680)^0\mu^+\nu_\mu$	< 1.5	$\times 10^{-3}$	CL=90%	105

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

$K^0_S\pi^+$		(1.47±0.08) %	S=3.0	863
$K^0_L\pi^+$		(1.46±0.05) %		863
$K^-2\pi^+$	[c]	(8.98±0.28) %	S=2.2	846
$(K^-\pi^+)_{S-\text{wave}}\pi^+$		(7.20±0.25) %		846
$\overline{K}^*_0(1430)^0\pi^+$, $\overline{K}^*_0(1430)^0 \to K^-\pi^+$	[d]	(1.19±0.07) %		382
$\overline{K}^*(892)^0\pi^+$, $\overline{K}^*(892)^0 \to K^-\pi^+$		$(10.0 \pm 1.1) \times 10^{-3}$		714
$\overline{K}^*(1410)^0\pi^+$, $\overline{K}^{*0} \to K^-\pi^+$		not seen		381
$\overline{K}^*_2(1430)^0\pi^+$, $\overline{K}^*_2(1430)^0 \to K^-\pi^+$	[d]	$(2.2 \pm 0.7) \times 10^{-4}$		371
$\overline{K}^*(1680)^0\pi^+$, $\overline{K}^*(1680)^0 \to K^-\pi^+$	[d]	$(2.1 \pm 1.0) \times 10^{-4}$		58
$K^-(2\pi^+)_{I=2}$		(1.39±0.26) %		–
$K^0_S\pi^+\pi^0$	[c]	(7.05±0.27) %		845
$K^0_S\rho^+$		$(5.9\ ^{+0.6}_{-0.4})$ %		677
$K^0_S\rho(1450)^+$, $\rho^+ \to \pi^+\pi^0$		$(1.5\ ^{+1.1}_{-1.4}) \times 10^{-3}$		–
$\overline{K}^*(892)^0\pi^+$, $\overline{K}^*(892)^0 \to K^0_S\pi^0$		$(2.52\pm0.31) \times 10^{-3}$		714
$\overline{K}^*_0(1430)^0\pi^+$, $\overline{K}^{*0}_0 \to K^0_S\pi^0$		$(2.6 \pm 0.9) \times 10^{-3}$		–
$\overline{K}^*_0(1680)^0\pi^+$, $\overline{K}^{*0}_0 \to K^0_S\pi^0$		$(9\ ^{+7}_{-9}) \times 10^{-4}$		–
$\overline{\kappa}^0\pi^+$, $\overline{\kappa}^0 \to K^0_S\pi^0$		$(5.4\ ^{+5.0}_{-3.5}) \times 10^{-3}$		–
$K^0_S\pi^+\pi^0$ nonresonant		$(3 \pm 4) \times 10^{-3}$		845
$K^0_S\pi^+\pi^0$ nonresonant and $\overline{\kappa}^0\pi^+$		$(1.31^{+0.21}_{-0.35})$ %		–
$(K^0_S\pi^0)_{S-\text{wave}}\pi^+$		$(1.22^{+0.26}_{-0.32})$ %		845
$K^-2\pi^+\pi^0$	[e]	(5.98±0.23) %		816
$K^0_S2\pi^+\pi^-$	[e]	(2.97±0.11) %		814
$K^-3\pi^+\pi^-$	[c]	$(5.5 \pm 0.5) \times 10^{-3}$	S=1.1	772
$\overline{K}^*(892)^0 2\pi^+\pi^-$, $\overline{K}^*(892)^0 \to K^-\pi^+$		$(1.2 \pm 0.4) \times 10^{-3}$		645
$\overline{K}^*(892)^0\rho^0\pi^+$, $\overline{K}^*(892)^0 \to K^-\pi^+$		$(2.2 \pm 0.4) \times 10^{-3}$		239
$\overline{K}^*(892)^0 a_1(1260)^+$	[f]	$(8.9 \pm 1.8) \times 10^{-3}$		†
$K^-\rho^0 2\pi^+$		$(1.65\pm0.27) \times 10^{-3}$		524

$K^-3\pi^+\pi^-$ nonresonant	(3.9 ±2.8) × 10^{-4}			772
$K^+2K^0_S$	(2.54±0.13) × 10^{-3}			545
$K^+K^-K^0_S\pi^+$	(2.3 ±0.5) × 10^{-4}			436

Pionic modes

$\pi^+\pi^0$	(1.17±0.06) × 10^{-3}			925
$2\pi^+\pi^-$	(3.13±0.19) × 10^{-3}			909
$\rho^0\pi^+$	(8.0 ±1.4) × 10^{-4}			767
$\pi^+(\pi^+\pi^-)_{S-\text{wave}}$	(1.75±0.16) × 10^{-3}			909
$\sigma\pi^+$, $\sigma \to \pi^+\pi^-$	(1.32±0.12) × 10^{-3}			–
$f_0(980)\pi^+$, $f_0(980) \to \pi^+\pi^-$	(1.50±0.32) × 10^{-4}			669
$f_0(1370)\pi^+$, $f_0(1370) \to \pi^+\pi^-$	(8 ±4) × 10^{-5}			–
$f_2(1270)\pi^+$, $f_2(1270) \to \pi^+\pi^-$	(4.8 ±0.8) × 10^{-4}			485
$\rho(1450)^0\pi^+$, $\rho(1450)^0 \to \pi^+\pi^-$	< 8	× 10^{-5}	CL=95%	338
$f_0(1500)\pi^+$, $f_0(1500) \to \pi^+\pi^-$	(1.1 ±0.4) × 10^{-4}			–
$f_0(1710)\pi^+$, $f_0(1710) \to \pi^+\pi^-$	< 5	× 10^{-5}	CL=95%	–
$f_0(1790)\pi^+$, $f_0(1790) \to \pi^+\pi^-$	< 6	× 10^{-5}	CL=95%	–
$(\pi^+\pi^+)_{S-\text{wave}}\pi^-$	< 1.2	× 10^{-4}	CL=95%	909
$2\pi^+\pi^-$ nonresonant	< 1.1	× 10^{-4}	CL=95%	909
$\pi^+2\pi^0$	(4.5 ±0.4) × 10^{-3}			910
$2\pi^+\pi^-\pi^0$	(1.11±0.08) %			883
$3\pi^+2\pi^-$	(1.59±0.16) × 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.

$\eta\pi^+$	(3.33±0.21) × 10^{-3}		S=1.4	848
$\eta\pi^+\pi^0$	(1.38±0.35) × 10^{-3}			830
$\omega\pi^+$	(2.8 ±0.6) × 10^{-4}			764
$\eta'(958)\pi^+$	(4.60±0.31) × 10^{-3}			681
$\eta'(958)\pi^+\pi^0$	(1.6 ±0.5) × 10^{-3}			654

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

$K^+K^0_S$		(2.83±0.16) × 10^{-3}		S=2.8	793
$K^+K^-\pi^+$	[c]	(9.51±0.34) × 10^{-3}		S=1.6	744
$\phi\pi^+$, $\phi \to K^+K^-$		(2.64±0.11) × 10^{-3}			647
$K^+\overline{K}^*(892)^0$, $\overline{K}^*(892)^0 \to K^-\pi^+$		($2.44^{+0.11}_{-0.15}$) × 10^{-3}			613

$K^+\overline{K}_0^*(1430)^0$, $\overline{K}_0^*(1430)^0 \to K^-\pi^+$		$(1.79\pm0.34)\times10^{-3}$		–
$K^+\overline{K}_2^*(1430)^0$, $\overline{K}_2^* \to K^-\pi^+$		$(1.6\ ^{+1.2}_{-0.8})\times10^{-4}$		–
$K^+\overline{K}_0^*(800)$, $\overline{K}_0^* \to K^-\pi^+$		$(6.7\ ^{+3.4}_{-2.1})\times10^{-4}$		–
$a_0(1450)^0\pi^+$, $a_0^0 \to K^+K^-$		$(4.4\ ^{+7.0}_{-1.8})\times10^{-4}$		–
$\phi(1680)\pi^+$, $\phi \to K^+K^-$		$(4.9\ ^{+4.0}_{-1.9})\times10^{-5}$		–
$K_S^0K_S^0\pi^+$		$(2.70\pm0.13)\times10^{-3}$		741
$K^+K_S^0\pi^+\pi^-$		$(1.67\pm0.18)\times10^{-3}$		678
$K_S^0K^-2\pi^+$		$(2.28\pm0.18)\times10^{-3}$		678
$K^+K^-2\pi^+\pi^-$		$(2.2\ \pm1.2\ )\times10^{-4}$		600

A few poorly measured branching fractions:

$\phi\pi^+\pi^0$		$(2.3\ \pm1.0\ )\%$		619
$\phi\rho^+$		< 1.4 %	CL=90%	260
$K^+K^-\pi^+\pi^0$ non-ϕ		$(1.5\ ^{+0.7}_{-0.6})\%$		682
$K^*(892)^+K_S^0$		$(1.6\ \pm0.7\ )\%$		611

Doubly Cabibbo-suppressed modes

$K^+\pi^0$		$(1.81\pm0.27)\times10^{-4}$	S=1.4	864
$K^+\eta$		$(1.02\pm0.16)\times10^{-4}$		776
$K^+\eta'(958)$		$(1.73\pm0.22)\times10^{-4}$		571
$K^+\pi^+\pi^-$		$(5.19\pm0.26)\times10^{-4}$		846
$K^+\rho^0$		$(2.0\ \pm0.5\ )\times10^{-4}$		679
$K^*(892)^0\pi^+$, $K^*(892)^0 \to K^+\pi^-$		$(2.4\ \pm0.4\ )\times10^{-4}$		714
$K^+f_0(980)$, $f_0(980) \to \pi^+\pi^-$		$(4.6\ \pm2.8\ )\times10^{-5}$		–
$K_2^*(1430)^0\pi^+$, $K_2^*(1430)^0 \to K^+\pi^-$		$(4.2\ \pm2.8\ )\times10^{-5}$		–
$K^+\pi^+\pi^-$ nonresonant		not seen		846
$2K^+K^-$		$(8.5\ \pm2.0\ )\times10^{-5}$		550

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

$\pi^+e^+e^-$	$C1$		< 1.1 $\times10^{-6}$	CL=90%	930
$\pi^+\phi$, $\phi \to e^+e^-$		[g]	$(1.7\ ^{+1.4}_{-0.9})\times10^{-6}$		–
$\pi^+\mu^+\mu^-$	$C1$		< 7.3 $\times10^{-8}$	CL=90%	918
$\pi^+\phi$, $\phi \to \mu^+\mu^-$		[g]	$(1.8\ \pm0.8\ )\times10^{-6}$		–
$\rho^+\mu^+\mu^-$	$C1$		< 5.6 $\times10^{-4}$	CL=90%	757
$K^+e^+e^-$		[h]	< 1.0 $\times10^{-6}$	CL=90%	870

$K^+\mu^+\mu^-$		[h]	< 4.3	$\times 10^{-6}$	CL=90%	856
$\pi^+e^+\mu^-$	LF		< 2.9	$\times 10^{-6}$	CL=90%	927
$\pi^+e^-\mu^+$	LF		< 3.6	$\times 10^{-6}$	CL=90%	927
$K^+e^+\mu^-$	LF		< 1.2	$\times 10^{-6}$	CL=90%	866
$K^+e^-\mu^+$	LF		< 2.8	$\times 10^{-6}$	CL=90%	866
π^-2e^+	L		< 1.1	$\times 10^{-6}$	CL=90%	930
$\pi^-2\mu^+$	L		< 2.2	$\times 10^{-8}$	CL=90%	918
$\pi^-e^+\mu^+$	L		< 2.0	$\times 10^{-6}$	CL=90%	927
$\rho^-2\mu^+$	L		< 5.6	$\times 10^{-4}$	CL=90%	757
K^-2e^+	L		< 9	$\times 10^{-7}$	CL=90%	870
$K^-2\mu^+$	L		< 1.0	$\times 10^{-5}$	CL=90%	856
$K^-e^+\mu^+$	L		< 1.9	$\times 10^{-6}$	CL=90%	866
$K^*(892)^-2\mu^+$	L		< 8.5	$\times 10^{-4}$	CL=90%	703

D^0

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

Mass $m = 1864.83 \pm 0.05$ MeV
$m_{D^\pm} - m_{D^0} = 4.75 \pm 0.08$ MeV
Mean life $\tau = (410.1 \pm 1.5) \times 10^{-15}$ s
$c\tau = 122.9$ μm

Mixing and related parameters

$\left|m_{D_1^0} - m_{D_2^0}\right| = (0.95^{+0.41}_{-0.44}) \times 10^{10}\ \hbar\ \mathrm{s}^{-1}$
$(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma = 2y = (1.29^{+0.14}_{-0.18}) \times 10^{-2}$
$\left|q/p\right| = 0.92^{+0.12}_{-0.09}$
$A_\Gamma = (-0.125 \pm 0.526) \times 10^{-3}$
$K^+\pi^-$ relative strong phase: $\cos\delta = 0.97 \pm 0.11$
$K^-\pi^+\pi^0$ coherence factor $R_{K\pi\pi^0} = 0.82 \pm 0.06$
$K^-\pi^+\pi^0$ average relative strong phase $\delta^{K\pi\pi^0} = (199 \pm 14)^\circ$
$K^-\pi^-2\pi^+$ coherence factor $R_{K3\pi} = 0.53^{+0.18}_{-0.21}$
$K^-\pi^-2\pi^+$ average relative strong phase $\delta^{K3\pi} = (125^{+22}_{-14})^\circ$
$D^0 \to K^-\pi^-2\pi^+$, $R_{K3\pi}$ (y $\cos\delta^{K3\pi}$ − x $\sin\delta^{K3\pi}$) $= (-3.0 \pm 0.7) \times 10^{-3}$ TeV^{-1}
$K^0_S K^+\pi^-$ coherence factor $R_{K^0_S K\pi} = 0.70 \pm 0.08$
$K^0_S K^+\pi^-$ average relative strong phase $\delta^{K^0_S K\pi} = (0 \pm 16)^\circ$
K^*K coherence factor $R_{K^*K} = 0.94 \pm 0.12$
K^*K average relative strong phase $\delta^{K^*K} = (-17 \pm 18)^\circ$

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

$A_{CP}(K^+K^-) = (-0.07 \pm 0.11)\%$
$A_{CP}(2K^0_S) = (-5 \pm 5)\%$
$A_{CP}(\pi^+\pi^-) = (0.13 \pm 0.14)\%$
$A_{CP}(\pi^0\pi^0) = (0.0 \pm 0.6)\%$
$A_{CP}(\rho\gamma) = (6 \pm 15) \times 10^{-2}$
$A_{CP}(\phi\gamma) = (-9 \pm 7) \times 10^{-2}$
$A_{CP}(\overline{K}^*(892)^0\gamma) = (-0.3 \pm 2.0) \times 10^{-2}$
$A_{CP}(\pi^+\pi^-\pi^0) = (0.3 \pm 0.4)\%$
$A_{CP}(\rho(770)^+\pi^- \to \pi^+\pi^-\pi^0) = (1.2 \pm 0.9)\%$ [i]
$A_{CP}(\rho(770)^0\pi^0 \to \pi^+\pi^-\pi^0) = (-3.1 \pm 3.0)\%$ [i]
$A_{CP}(\rho(770)^-\pi^+ \to \pi^+\pi^-\pi^0) = (-1.0 \pm 1.7)\%$ [i]
$A_{CP}(\rho(1450)^+\pi^- \to \pi^+\pi^-\pi^0) = (0 \pm 70)\%$ [i]
$A_{CP}(\rho(1450)^0\pi^0 \to \pi^+\pi^-\pi^0) = (-20 \pm 40)\%$ [i]
$A_{CP}(\rho(1450)^-\pi^+ \to \pi^+\pi^-\pi^0) = (6 \pm 9)\%$ [i]
$A_{CP}(\rho(1700)^+\pi^- \to \pi^+\pi^-\pi^0) = (-5 \pm 14)\%$ [i]
$A_{CP}(\rho(1700)^0\pi^0 \to \pi^+\pi^-\pi^0) = (13 \pm 9)\%$ [i]
$A_{CP}(\rho(1700)^-\pi^+ \to \pi^+\pi^-\pi^0) = (8 \pm 11)\%$ [i]
$A_{CP}(f_0(980)\pi^0 \to \pi^+\pi^-\pi^0) = (0 \pm 35)\%$ [i]
$A_{CP}(f_0(1370)\pi^0 \to \pi^+\pi^-\pi^0) = (25 \pm 18)\%$ [i]
$A_{CP}(f_0(1500)\pi^0 \to \pi^+\pi^-\pi^0) = (0 \pm 18)\%$ [i]
$A_{CP}(f_0(1710)\pi^0 \to \pi^+\pi^-\pi^0) = (0 \pm 24)\%$ [i]
$A_{CP}(f_2(1270)\pi^0 \to \pi^+\pi^-\pi^0) = (-4 \pm 6)\%$ [i]
$A_{CP}(\sigma(400)\pi^0 \to \pi^+\pi^-\pi^0) = (6 \pm 8)\%$ [i]
$A_{CP}(\text{nonresonant } \pi^+\pi^-\pi^0) = (-13 \pm 23)\%$ [i]
$A_{CP}(K^+K^-\pi^0) = (-1.0 \pm 1.7)\%$
$A_{CP}(K^*(892)^+K^- \to K^+K^-\pi^0) = (-0.9 \pm 1.3)\%$ [i]
$A_{CP}(K^*(1410)^+K^- \to K^+K^-\pi^0) = (-21 \pm 24)\%$ [i]
$A_{CP}((K^+\pi^0)_{S-wave}K^- \to K^+K^-\pi^0) = (7 \pm 15)\%$ [i]
$A_{CP}(\phi(1020)\pi^0 \to K^+K^-\pi^0) = (1.1 \pm 2.2)\%$ [i]
$A_{CP}(f_0(980)\pi^0 \to K^+K^-\pi^0) = (-3 \pm 19)\%$ [i]
$A_{CP}(a_0(980)^0\pi^0 \to K^+K^-\pi^0) = (-5 \pm 16)\%$ [i]
$A_{CP}(f'_2(1525)\pi^0 \to K^+K^-\pi^0) = (0 \pm 160)\%$ [i]
$A_{CP}(K^*(892)^-K^+ \to K^+K^-\pi^0) = (-5 \pm 4)\%$ [i]
$A_{CP}(K^*(1410)^-K^+ \to K^+K^-\pi^0) = (-17 \pm 29)\%$ [i]
$A_{CP}((K^-\pi^0)_{S-wave}K^+ \to K^+K^-\pi^0) = (-10 \pm 40)\%$ [i]
$A_{CP}(K^0_S\pi^0) = (-0.20 \pm 0.17)\%$
$A_{CP}(K^0_S\eta) = (0.5 \pm 0.5)\%$
$A_{CP}(K^0_S\eta') = (1.0 \pm 0.7)\%$
$A_{CP}(K^0_S\phi) = (-3 \pm 9)\%$

$A_{CP}(K^-\pi^+) = (0.3 \pm 0.7)\%$
$A_{CP}(K^+\pi^-) = (0.0 \pm 1.6)\%$
$A_{CP}(D_{CP(\pm1)} \to\ K^\mp\pi^\pm) = (12.7 \pm 1.5)\%$
$A_{CP}(K^-\pi^+\pi^0) = (0.1 \pm 0.5)\%$
$A_{CP}(K^+\pi^-\pi^0) = (0 \pm 5)\%$
$A_{CP}(K^0_S\pi^+\pi^-) = (-0.1 \pm 0.8)\%$
$A_{CP}(K^*(892)^-\pi^+ \to\ K^0_S\pi^+\pi^-) = (0.4 \pm 0.5)\%$
$A_{CP}(K^*(892)^+\pi^- \to\ K^0_S\pi^+\pi^-) = (1 \pm 6)\%$
$A_{CP}(\overline{K}^0\rho^0 \to\ K^0_S\pi^+\pi^-) = (-0.1 \pm 0.5)\%$
$A_{CP}(\overline{K}^0\omega \to\ K^0_S\pi^+\pi^-) = (-13 \pm 7)\%$
$A_{CP}(\overline{K}^0 f_0(980) \to\ K^0_S\pi^+\pi^-) = (-0.4 \pm 2.7)\%$
$A_{CP}(\overline{K}^0 f_2(1270) \to\ K^0_S\pi^+\pi^-) = (-4 \pm 5)\%$
$A_{CP}(\overline{K}^0 f_0(1370) \to\ K^0_S\pi^+\pi^-) = (-1 \pm 9)\%$
$A_{CP}(\overline{K}^0\rho^0(1450) \to\ K^0_S\pi^+\pi^-) = (-4 \pm 10)\%$
$A_{CP}(\overline{K}^0 f_0(600) \to\ K^0_S\pi^+\pi^-) = (-3 \pm 5)\%$
$A_{CP}(K^*(1410)^-\pi^+ \to\ K^0_S\pi^+\pi^-) = (-2 \pm 9)\%$
$A_{CP}(K^*_0(1430)^-\pi^+ \to\ K^0_S\pi^+\pi^-) = (4 \pm 4)\%$
$A_{CP}(K^*_0(1430)^+\pi^- \to\ K^0_S\pi^+\pi^-) = (12 \pm 15)\%$
$A_{CP}(K^*_2(1430)^-\pi^+ \to\ K^0_S\pi^+\pi^-) = (3 \pm 6)\%$
$A_{CP}(K^*_2(1430)^+\pi^- \to\ K^0_S\pi^+\pi^-) = (-10 \pm 32)\%$
$A_{CP}(K^-\pi^+\pi^+\pi^-) = (0.2 \pm 0.5)\%$
$A_{CP}(K^+\pi^-\pi^+\pi^-) = (-2 \pm 4)\%$
$A_{CP}(K^+K^-\pi^+\pi^-) = (-8 \pm 7)\%$
$A_{CP}(K^*_1(1270)^+K^- \to\ K^{*0}\pi^+K^-) = (-1 \pm 10)\%$
$A_{CP}(K^*_1(1270)^-K^+ \to\ \overline{K}^{*0}\pi^-K^+) = (-10 \pm 32)\%$
$A_{CP}(K^*_1(1270)^+K^- \to\ \rho^0K^+K^-) = (-7 \pm 17)\%$
$A_{CP}(K^*_1(1270)^-K^+ \to\ \rho^0K^-K^+) = (10 \pm 13)\%$
$A_{CP}(K^*(1410)^+K^- \to\ K^{*0}\pi^+K^-) = (-20 \pm 17)\%$
$A_{CP}(K^*(1410)^-K^+ \to\ \overline{K}^{*0}\pi^-K^+) = (-1 \pm 14)\%$
$A_{CP}(K^{*0}\overline{K}^{*0}$ S-wave$) = (10 \pm 14)\%$
$A_{CP}(\phi\rho^0$ S-wave$) = (-3 \pm 5)\%$
$A_{CP}(\phi\rho^0$ D-wave$) = (-37 \pm 19)\%$
$A_{CP}(\phi(\pi^+\pi^-)_{S-wave}) = (-9 \pm 10)\%$
$A_{CP}((K^-\pi^+)_{P-wave}\,(K^+\pi^-)_{S-wave}) = (3 \pm 11)\%$
CP-even fraction in $D^0 \to\ \pi^+\pi^-\pi^0$ decays $= (97.3 \pm 1.7)\%$
CP-even fraction in $D^0 \to\ K^+K^-\pi^0$ decays $= (73 \pm 6)\%$
CP-even fraction in $D^0 \to\ \pi^+\pi^-\pi^+\pi^-$ decays $= (73.7 \pm 2.8)\%$

CP-violation asymmetry difference

$\Delta A_{CP} = A_{CP}(K^+K^-) - A_{CP}(\pi^+\pi^-) = (-0.12 \pm 0.13)\%$ (S = 1.8)

χ^2 tests of *CP*-violation (*CPV*)

Local *CPV* in $D^0, \overline{D}^0 \to \pi^+\pi^-\pi^0 = 4.9\%$
Local *CPV* in $D^0, \overline{D}^0 \to \pi^+\pi^-\pi^+\pi^- = 41\%$
Local *CPV* in $D^0, \overline{D}^0 \to K^0_S\pi^+\pi^- = 96\%$
Local *CPV* in $D^0, \overline{D}^0 \to K^+K^-\pi^0 = 16.6\%$
Local *CPV* in $D^0, \overline{D}^0 \to K^+K^-\pi^+\pi^- = 9.1\%$

T-violation decay-rate asymmetry

$A_T(K^+K^-\pi^+\pi^-) = (1.7 \pm 2.7) \times 10^{-3}$ [b]

CPT-violation decay-rate asymmetry

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

Form factors

$r_V \equiv V(0)/A_1(0)$ in $D^0 \to K^*(892)^-\ell^+\nu_\ell = 1.7 \pm 0.8$
$r_2 \equiv A_2(0)/A_1(0)$ in $D^0 \to K^*(892)^-\ell^+\nu_\ell = 0.9 \pm 0.4$
$f_+(0)$ in $D^0 \to K^-\ell^+\nu_\ell = 0.736 \pm 0.004$
$f_+(0)|V_{cs}|$ in $D^0 \to K^-\ell^+\nu_\ell = 0.719 \pm 0.004$
$r_1 \equiv a_1/a_0$ in $D^0 \to K^-\ell^+\nu_\ell = -2.40 \pm 0.16$
$r_2 \equiv a_2/a_0$ in $D^0 \to K^-\ell^+\nu_\ell = 5 \pm 4$
$f_+(0)$ in $D^0 \to \pi^-\ell^+\nu_\ell = 0.637 \pm 0.009$
$f_+(0)|V_{cd}|$ in $D^0 \to \pi^-\ell^+\nu_\ell = 0.1436 \pm 0.0026$ (S = 1.5)
$r_1 \equiv a_1/a_0$ in $D^0 \to \pi^-\ell^+\nu_\ell = -1.97 \pm 0.28$ (S = 1.4)
$r_2 \equiv a_1/a_0$ in $D^0 \to \pi^-\ell^+\nu_\ell = -0.2 \pm 2.2$ (S = 1.7)

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	[j] (15 ± 6) %		–
2-prongs	(70 ± 6) %		–
4-prongs	[k] (14.5 ± 0.5) %		–
6-prongs	[l] (6.4 ± 1.3) $\times 10^{-4}$		–
Inclusive modes			
e^+ anything	[n] (6.49 ± 0.11) %		–
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) %			–
invisibles	< 9.4	$\times 10^{-5}$	CL=90%	–

Semileptonic modes

$K^- e^+ \nu_e$	(3.530± 0.028) %		S=1.1	867
$K^- \mu^+ \nu_\mu$	(3.31 ± 0.13) %			864
$K^*(892)^- e^+ \nu_e$	(2.15 ± 0.16) %			719
$K^*(892)^- \mu^+ \nu_\mu$	(1.86 ± 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
$\pi^- e^+ \nu_e$	(2.91 ± 0.04)	$\times 10^{-3}$	S=1.1	927
$\pi^- \mu^+ \nu_\mu$	(2.37 ± 0.24)	$\times 10^{-3}$		924
$\rho^- e^+ \nu_e$	(1.77 ± 0.16)	$\times 10^{-3}$		771

Hadronic modes with one $\overline{K}$

$K^- \pi^+$		(3.89 ± 0.04) %		S=1.1	861
$K^+ \pi^-$		(1.385± 0.027)	$\times 10^{-4}$		861
$K^0_S \pi^0$		(1.19 ± 0.04) %			860
$K^0_L \pi^0$		(10.0 ± 0.7)	$\times 10^{-3}$		860
$K^0_S \pi^+ \pi^-$	[c]	(2.75 ± 0.18) %		S=1.1	842
$K^0_S \rho^0$		(6.2 $^{+\ 0.6}_{-\ 0.8}$)	$\times 10^{-3}$		674
$K^0_S \omega,\ \omega \to \pi^+ \pi^-$		(2.0 ± 0.6)	$\times 10^{-4}$		670
$K^0_S (\pi^+ \pi^-)_{S-\text{wave}}$		(3.3 ± 0.7)	$\times 10^{-3}$		842
$K^0_S f_0(980),\ f_0(980) \to \pi^+ \pi^-$		(1.18 $^{+\ 0.40}_{-\ 0.23}$)	$\times 10^{-3}$		549
$K^0_S f_0(1370),\ f_0 \to \pi^+ \pi^-$		(2.7 $^{+\ 0.8}_{-\ 1.3}$)	$\times 10^{-3}$		†
$K^0_S f_2(1270),\ f_2 \to \pi^+ \pi^-$		(9 $^{+10}_{-\ 6}$)	$\times 10^{-5}$		262

$K^*(892)^-\pi^+$, $K^*(892)^- \to K^0_S\pi^-$		(1.62 $^{+\ 0.14}_{-\ 0.17}$) %			711
$K^*_0(1430)^-\pi^+$, $K^{*-}_0 \to K^0_S\pi^-$		(2.63 $^{+\ 0.40}_{-\ 0.32}$) $\times 10^{-3}$			378
$K^*_2(1430)^-\pi^+$, $K^{*-}_2 \to K^0_S\pi^-$		(3.3 $^{+\ 1.8}_{-\ 1.0}$) $\times 10^{-4}$			367
$K^*(1680)^-\pi^+$, $K^{*-} \to K^0_S\pi^-$		(4.3 $\pm$ 3.5) $\times 10^{-4}$			46
$K^*(892)^+\pi^-$, $K^*(892)^+ \to K^0_S\pi^+$	[o]	(1.11 $^{+\ 0.60}_{-\ 0.33}$) $\times 10^{-4}$			711
$K^*_0(1430)^+\pi^-$, $K^{*+}_0 \to K^0_S\pi^+$	[o]	$<$ 1.4	$\times 10^{-5}$	CL=95%	–
$K^*_2(1430)^+\pi^-$, $K^{*+}_2 \to K^0_S\pi^+$	[o]	$<$ 3.3	$\times 10^{-5}$	CL=95%	–
$K^0_S\pi^+\pi^-$ nonresonant		(2.5 $^{+\ 6.0}_{-\ 1.6}$) $\times 10^{-4}$			842
$K^-\pi^+\pi^0$	[c]	(14.2 $\pm$ 0.5) %		S=1.9	844
$K^-\rho^+$		(11.1 $\pm$ 0.7) %			675
$K^-\rho(1700)^+$, $\rho^+ \to \pi^+\pi^0$		(8.1 $\pm$ 1.7) $\times 10^{-3}$			†
$K^*(892)^-\pi^+$, $K^*(892)^- \to K^-\pi^0$		(2.27 $^{+\ 0.40}_{-\ 0.20}$) %			711
$\overline{K}^*(892)^0\pi^0$, $\overline{K}^*(892)^0 \to K^-\pi^+$		(1.93 $\pm$ 0.24) %			711
$K^*_0(1430)^-\pi^+$, $K^{*-}_0 \to K^-\pi^0$		(4.7 $\pm$ 2.2) $\times 10^{-3}$			378
$\overline{K}^*_0(1430)^0\pi^0$, $\overline{K}^{*0}_0 \to K^-\pi^+$		(5.8 $^{+\ 5.0}_{-\ 1.6}$) $\times 10^{-3}$			379
$K^*(1680)^-\pi^+$, $K^{*-} \to K^-\pi^0$		(1.8 $\pm$ 0.7) $\times 10^{-3}$			46
$K^-\pi^+\pi^0$ nonresonant		(1.14 $^{+\ 0.50}_{-\ 0.20}$) %			844
$K^0_S 2\pi^0$		(9.1 $\pm$ 1.1) $\times 10^{-3}$		S=2.2	843
$K^0_S(2\pi^0)$-S-wave		(2.6 $\pm$ 0.7) $\times 10^{-3}$			–
$\overline{K}^*(892)^0\pi^0$, $\overline{K}^{*0} \to K^0_S\pi^0$		(7.8 $\pm$ 0.7) $\times 10^{-3}$			711
$\overline{K}^*(1430)^0\pi^0$, $\overline{K}^{*0} \to K^0_S\pi^0$		(4 $\pm$23) $\times 10^{-5}$			–
$\overline{K}^*(1680)^0\pi^0$, $\overline{K}^{*0} \to K^0_S\pi^0$		(1.0 $\pm$ 0.4) $\times 10^{-3}$			–
$K^0_S f_2(1270)$, $f_2 \to 2\pi^0$		(2.3 $\pm$ 1.1) $\times 10^{-4}$			–
$2K^0_S$, one $K^0_S \to 2\pi^0$		(3.2 $\pm$ 1.1) $\times 10^{-4}$			–
$K^-2\pi^+\pi^-$	[c]	(8.11 $\pm$ 0.15) %		S=1.1	813
$K^-\pi^+\rho^0$ total		(6.77 $\pm$ 0.31) %			609

$K^-\pi^+\rho^0$ 3-body		(5.1 ± 2.3) $\times 10^{-3}$		609
$\overline{K}^*(892)^0\rho^0$, $\overline{K}^*(892)^0 \to K^-\pi^+$		(1.05 ± 0.23) %		416
$K^- a_1(1260)^+$, $a_1(1260)^+ \to 2\pi^+\pi^-$		(3.6 ± 0.6) %		327
$\overline{K}^*(892)^0\pi^+\pi^-$ total, $\overline{K}^*(892)^0 \to K^-\pi^+$		(1.6 ± 0.4) %		685
$\overline{K}^*(892)^0\pi^+\pi^-$ 3-body, $\overline{K}^*(892)^0 \to K^-\pi^+$		(9.9 ± 2.3) $\times 10^{-3}$		685
$K_1(1270)^-\pi^+$, $K_1(1270)^- \to K^-\pi^+\pi^-$	[p]	(2.9 ± 0.3) $\times 10^{-3}$		484
$K^- 2\pi^+\pi^-$ nonresonant		(1.89 ± 0.26) %		813
$K^0_S\pi^+\pi^-\pi^0$	[q]	(5.1 ± 0.6) %		813
$K^0_S\eta$, $\eta \to \pi^+\pi^-\pi^0$		(1.02 ± 0.09) $\times 10^{-3}$		772
$K^0_S\omega$, $\omega \to \pi^+\pi^-\pi^0$		(9.9 ± 0.5) $\times 10^{-3}$		670
$K^- 2\pi^+\pi^-\pi^0$		(4.2 ± 0.4) %		771
$\overline{K}^*(892)^0\pi^+\pi^-\pi^0$, $\overline{K}^*(892)^0 \to K^-\pi^+$		(1.3 ± 0.6) %		643
$K^-\pi^+\omega$, $\omega \to \pi^+\pi^-\pi^0$		(2.7 ± 0.5) %		605
$\overline{K}^*(892)^0\omega$, $\overline{K}^{*0} \to K^-\pi^+$, $\omega \to \pi^+\pi^-\pi^0$		(6.5 ± 3.0) $\times 10^{-3}$		410
$K^0_S\eta\pi^0$		(5.5 ± 1.1) $\times 10^{-3}$		721
$K^0_S a_0(980)$, $a_0 \to \eta\pi^0$		(6.5 ± 2.0) $\times 10^{-3}$		–
$\overline{K}^*(892)^0\eta$, $\overline{K}^{*0} \to K^0_S\pi^0$		(1.6 ± 0.5) $\times 10^{-3}$		–
$K^0_S 2\pi^+ 2\pi^-$		(2.61 ± 0.29) $\times 10^{-3}$		768
$K^0_S\rho^0\pi^+\pi^-$, no $K^*(892)^-$		(1.0 ± 0.7) $\times 10^{-3}$		–
$K^*(892)^- 2\pi^+\pi^-$, $K^*(892)^- \to K^0_S\pi^-$, no ρ^0		(4 ± 7) $\times 10^{-4}$		642
$K^*(892)^-\rho^0\pi^+$, $K^*(892)^- \to K^0_S\pi^-$		(1.6 ± 0.6) $\times 10^{-3}$		230
$K^0_S 2\pi^+ 2\pi^-$ nonresonant		< 1.2 $\times 10^{-3}$	CL=90%	768
$K^- 3\pi^+ 2\pi^-$		(2.2 ± 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.)

$K^0_S\eta$		(4.80 ± 0.30) $\times 10^{-3}$		772
$K^0_S\omega$		(1.11 ± 0.06) %		670
$K^0_S\eta'(958)$		(9.4 ± 0.5) $\times 10^{-3}$		565
$K^- a_1(1260)^+$		(7.9 ± 1.1) %		327

$K^- a_2(1320)^+$		< 2	$\times 10^{-3}$	CL=90%	198
$\overline{K}^*(892)^0 \pi^+ \pi^-$ total		(2.4 ± 0.5) %			685
$\overline{K}^*(892)^0 \pi^+ \pi^-$ 3-body		(1.48 ± 0.34) %			685
$\overline{K}^*(892)^0 \rho^0$		(1.58 ± 0.35) %			417
$\overline{K}^*(892)^0 \rho^0$ transverse		(1.7 ± 0.6) %			417
$\overline{K}^*(892)^0 \rho^0$ S-wave		(3.0 ± 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 ± 0.6) %			417
$K_1(1270)^- \pi^+$	[p]	(1.6 ± 0.8) %			484
$K_1(1400)^- \pi^+$		< 1.2	%	CL=90%	386
$\overline{K}^*(892)^0 \pi^+ \pi^- \pi^0$		(1.9 ± 0.9) %			643
$K^- \pi^+ \omega$		(3.0 ± 0.6) %			605
$\overline{K}^*(892)^0 \omega$		(1.1 ± 0.5) %			410
$K^- \pi^+ \eta'(958)$		$(7.5 \pm 1.9) \times 10^{-3}$			479
$\overline{K}^*(892)^0 \eta'(958)$		< 1.1	$\times 10^{-3}$	CL=90%	119

Hadronic modes with three K's

$K^0_S K^+ K^-$		$(4.35 \pm 0.32) \times 10^{-3}$			544
$K^0_S a_0(980)^0$, $a^0_0 \to K^+ K^-$		$(2.9 \pm 0.4) \times 10^{-3}$			–
$K^- a_0(980)^+$, $a^+_0 \to K^+ K^0_S$		$(5.8 \pm 1.7) \times 10^{-4}$			–
$K^+ a_0(980)^-$, $a^-_0 \to K^- K^0_S$		< 1.1	$\times 10^{-4}$	CL=95%	–
$K^0_S f_0(980)$, $f_0 \to K^+ K^-$		< 9	$\times 10^{-5}$	CL=95%	–
$K^0_S \phi$, $\phi \to K^+ K^-$		$(2.00 \pm 0.15) \times 10^{-3}$			520
$K^0_S f_0(1370)$, $f_0 \to K^+ K^-$		$(1.7 \pm 1.1) \times 10^{-4}$			–
$3K^0_S$		$(7.5 \pm 0.6) \times 10^{-4}$		S=1.3	539
$K^+ 2K^- \pi^+$		$(2.22 \pm 0.31) \times 10^{-4}$			434
$K^+ K^- \overline{K}^*(892)^0$, $\overline{K}^{*0} \to K^- \pi^+$		$(4.4 \pm 1.7) \times 10^{-5}$			†
$K^- \pi^+ \phi$, $\phi \to K^+ K^-$		$(4.0 \pm 1.7) \times 10^{-5}$			422
$\phi \overline{K}^*(892)^0$, $\phi \to K^+ K^-$, $\overline{K}^{*0} \to K^- \pi^+$		$(1.06 \pm 0.20) \times 10^{-4}$			†
$K^+ 2K^- \pi^+$ nonresonant		$(3.3 \pm 1.5) \times 10^{-5}$			434
$2K^0_S K^\pm \pi^\mp$		$(5.8 \pm 1.2) \times 10^{-4}$			427

Pionic modes

$\pi^+ \pi^-$		$(1.407 \pm 0.025) \times 10^{-3}$		S=1.1	922
$2\pi^0$		$(8.22 \pm 0.25) \times 10^{-4}$			923
$\pi^+ \pi^- \pi^0$		(1.47 ± 0.06) %		S=2.1	907
$\rho^+ \pi^-$		$(10.0 \pm 0.4) \times 10^{-3}$			764
$\rho^0 \pi^0$		$(3.81 \pm 0.23) \times 10^{-3}$			764
$\rho^- \pi^+$		$(5.08 \pm 0.25) \times 10^{-3}$			764
$\rho(1450)^+ \pi^-$, $\rho^+ \to \pi^+ \pi^0$		$(1.6 \pm 2.0) \times 10^{-5}$			–
$\rho(1450)^0 \pi^0$, $\rho^0 \to \pi^+ \pi^-$		$(4.4 \pm 1.9) \times 10^{-5}$			–
$\rho(1450)^- \pi^+$, $\rho^- \to \pi^- \pi^0$		$(2.6 \pm 0.4) \times 10^{-4}$			–

$\rho(1700)^+\pi^-$, $\rho^+ \to \pi^+\pi^0$		$(6.0 \pm 1.5) \times 10^{-4}$		–
$\rho(1700)^0\pi^0$, $\rho^0 \to \pi^+\pi^-$		$(7.3 \pm 1.7) \times 10^{-4}$		–
$\rho(1700)^-\pi^+$, $\rho^- \to \pi^-\pi^0$		$(4.7 \pm 1.1) \times 10^{-4}$		–
$f_0(980)\pi^0$, $f_0 \to \pi^+\pi^-$		$(3.7 \pm 0.8) \times 10^{-5}$		–
$f_0(500)\pi^0$, $f_0 \to \pi^+\pi^-$		$(1.20 \pm 0.21) \times 10^{-4}$		–
$f_0(1370)\pi^0$, $f_0 \to \pi^+\pi^-$		$(5.4 \pm 2.1) \times 10^{-5}$		–
$f_0(1500)\pi^0$, $f_0 \to \pi^+\pi^-$		$(5.7 \pm 1.6) \times 10^{-5}$		–
$f_0(1710)\pi^0$, $f_0 \to \pi^+\pi^-$		$(4.5 \pm 1.6) \times 10^{-5}$		–
$f_2(1270)\pi^0$, $f_2 \to \pi^+\pi^-$		$(1.94 \pm 0.21) \times 10^{-4}$		–
$\pi^+\pi^-\pi^0$ nonresonant		$(1.2 \pm 0.4) \times 10^{-4}$		907
$3\pi^0$		$< 3.5 \times 10^{-4}$	CL=90%	908
$2\pi^+2\pi^-$		$(7.45 \pm 0.20) \times 10^{-3}$		880
$a_1(1260)^+\pi^-$, $a_1^+ \to$ $2\pi^+\pi^-$ total		$(4.47 \pm 0.31) \times 10^{-3}$		–
$a_1(1260)^+\pi^-$, $a_1^+ \to$ $\rho^0\pi^+$ S-wave		$(3.23 \pm 0.25) \times 10^{-3}$		–
$a_1(1260)^+\pi^-$, $a_1^+ \to$ $\rho^0\pi^+$ 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		$(1.25 \pm 0.10) \times 10^{-3}$		–
Resonant $(\pi^+\pi^-)\pi^+\pi^-$ 3-body total		$(1.49 \pm 0.12) \times 10^{-3}$		–
$\sigma\pi^+\pi^-$		$(6.1 \pm 0.9) \times 10^{-4}$		–
$f_0(980)\pi^+\pi^-$, $f_0 \to$ $\pi^+\pi^-$		$(1.8 \pm 0.5) \times 10^{-4}$		–
$f_2(1270)\pi^+\pi^-$, $f_2 \to$ $\pi^+\pi^-$		$(3.7 \pm 0.6) \times 10^{-4}$		–
$\pi^+\pi^-2\pi^0$		(1.00 ± 0.09) %		882
$\eta\pi^0$	[r]	$(6.7 \pm 0.6) \times 10^{-4}$		846
$\omega\pi^0$	[r]	$(1.17 \pm 0.35) \times 10^{-4}$		761
$2\pi^+2\pi^-\pi^0$		$(4.2 \pm 0.5) \times 10^{-3}$		844
$\eta\pi^+\pi^-$	[r]	$(1.09 \pm 0.16) \times 10^{-3}$		827
$\omega\pi^+\pi^-$	[r]	$(1.6 \pm 0.5) \times 10^{-3}$		738
$3\pi^+3\pi^-$		$(4.2 \pm 1.2) \times 10^{-4}$		795
$\eta'(958)\pi^0$		$(9.0 \pm 1.4) \times 10^{-4}$		678
$\eta'(958)\pi^+\pi^-$		$(4.5 \pm 1.7) \times 10^{-4}$		650
2η		$(1.68 \pm 0.20) \times 10^{-3}$		754
$\eta\eta'(958)$		$(1.05 \pm 0.26) \times 10^{-3}$		537

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

K^+K^-	$(\ 3.97 \pm 0.07\ ) \times 10^{-3}$	S=1.4	791
$2K^0_S$	$(\ 1.70 \pm 0.12\ ) \times 10^{-4}$		789
$K^0_S K^-\pi^+$	$(\ 3.3 \pm 0.5\ ) \times 10^{-3}$	S=1.1	739
$\overline{K}^*(892)^0 K^0_S,\ \overline{K}^{*0} \to K^-\pi^+$	$(\ 8.1 \pm 1.6\ ) \times 10^{-5}$		608
$K^*(892)^+ K^-,\ K^{*+} \to K^0_S\pi^+$	$(\ 1.86 \pm 0.30\ ) \times 10^{-3}$		–
$\overline{K}^*(1410)^0 K^0_S,\ \overline{K}^{*0} \to K^-\pi^+$	$(\ 1.2 \pm 1.8\ ) \times 10^{-4}$		–
$K^*(1410)^+ K^-,\ K^{*+} \to K^0_S\pi^+$	$(\ 3.1 \pm 1.9\ ) \times 10^{-4}$		–
$(K^-\pi^+)_{S-wave} K^0_S$	$(\ 5.9 \pm 2.8\ ) \times 10^{-4}$		739
$(K^0_S\pi^+)_{S-wave} K^-$	$(\ 3.8 \pm 1.0\ ) \times 10^{-4}$		739
$a_0(980)^-\pi^+,\ a_0^- \to K^0_S K^-$	$(\ 1.3 \pm 1.4\ ) \times 10^{-4}$		–
$a_0(1450)^-\pi^+,\ a_0^- \to K^0_S K^-$	$(\ 2.4 \pm 2.0\ ) \times 10^{-5}$		–
$a_2(1320)^-\pi^+,\ a_2^- \to K^0_S K^-$	$(\ 5 \pm 5\ ) \times 10^{-6}$		–
$\rho(1450)^-\pi^+,\ \rho^- \to K^0_S K^-$	$(\ 4.6 \pm 2.5\ ) \times 10^{-5}$		–
$K^0_S K^+\pi^-$	$(\ 2.13 \pm 0.34\ ) \times 10^{-3}$	S=1.1	739
$K^*(892)^0 K^0_S,\ K^{*0} \to K^+\pi^-$	$(\ 1.10 \pm 0.21\ ) \times 10^{-4}$		608
$K^*(892)^- K^+,\ K^{*-} \to K^0_S\pi^-$	$(\ 6.1 \pm 1.0\ ) \times 10^{-4}$		–
$K^*(1410)^0 K^0_S,\ K^{*0} \to K^+\pi^+$	$(\ 5 \pm 8\ ) \times 10^{-5}$		–
$K^*(1410)^- K^+,\ K^{*-} \to K^0_S\pi^-$	$(\ 2.5 \pm 2.0\ ) \times 10^{-4}$		–
$(K^+\pi^-)_{S-wave} K^0_S$	$(\ 3.6 \pm 1.9\ ) \times 10^{-4}$		739
$(K^0_S\pi^-)_{S-wave} K^+$	$(\ 1.3 \pm 0.6\ ) \times 10^{-4}$		739
$a_0(980)^+\pi^-,\ a_0^+ \to K^0_S K^+$	$(\ 6 \pm 4\ ) \times 10^{-4}$		–
$a_0(1450)^+\pi^-,\ a_0^+ \to K^0_S K^+$	$(\ 3.2 \pm 2.5\ ) \times 10^{-5}$		–
$\rho(1700)^+\pi^-,\ \rho^+ \to K^0_S K^+$	$(\ 1.1 \pm 0.6\ ) \times 10^{-5}$		–
$K^+K^-\pi^0$	$(\ 3.37 \pm 0.15\ ) \times 10^{-3}$		743
$K^*(892)^+ K^-,\ K^*(892)^+ \to K^+\pi^0$	$(\ 1.50 \pm 0.07\ ) \times 10^{-3}$		–
$K^*(892)^- K^+,\ K^*(892)^- \to K^-\pi^0$	$(\ 5.4 \pm 0.4\ ) \times 10^{-4}$		–
$(K^+\pi^0)_{S-wave} K^-$	$(\ 2.40 \pm 0.17\ ) \times 10^{-3}$		743
$(K^-\pi^0)_{S-wave} K^+$	$(\ 1.3 \pm 0.5\ ) \times 10^{-4}$		743

$f_0(980)\pi^0$, $f_0 \to K^+K^-$		$(\ 3.5 \pm 0.6\ ) \times 10^{-4}$			–
$\phi\pi^0$, $\phi \to K^+K^-$		$(\ 6.5 \pm 0.4\ ) \times 10^{-4}$			–
$2K^0_S\pi^0$		$< 5.9 \times 10^{-4}$			740
$K^+K^-\pi^+\pi^-$		$(\ 2.44 \pm 0.11\ ) \times 10^{-3}$			677
$\phi(\pi^+\pi^-)_{S-wave}$, $\phi \to K^+K^-$		$(\ 2.51 \pm 0.33\ ) \times 10^{-4}$			614
$(\phi\rho^0)_{S-wave}$, $\phi \to K^+K^-$		$(\ 9.3 \pm 1.2\ ) \times 10^{-4}$			250
$(\phi\rho^0)_{D-wave}$, $\phi \to K^+K^-$		$(\ 8.3 \pm 2.3\ ) \times 10^{-5}$			–
$(K^{*0}\overline{K}^{*0})_{S-wave}$, $K^{*0} \to K^\pm\pi^\mp$		$(\ 1.49 \pm 0.30\ ) \times 10^{-4}$			–
$(K^-\pi^+)_{P-wave}$, $(K^+\pi^-)_{S-wave}$,		$(\ 2.7 \pm 0.5\ ) \times 10^{-4}$			–
$K_1(1270)^+K^-$, $K_1^+ \to K^{*0}\pi^+$		$(\ 1.8 \pm 0.5\ ) \times 10^{-4}$			–
$K_1(1270)^+K^-$, $K_1^+ \to \rho^0K^+$		$(\ 1.14 \pm 0.26\ ) \times 10^{-4}$			–
$K_1(1270)^-K^+$, $K_1^- \to \overline{K}^{*0}\pi^-$		$(\ 2.2 \pm 1.2\ ) \times 10^{-5}$			–
$K_1(1270)^-K^+$, $K_1^- \to \rho^0K^-$		$(\ 1.46 \pm 0.25\ ) \times 10^{-4}$			–
$K^*(1410)^+K^-$, $K^{*+} \to K^{*0}\pi^+$		$(\ 1.02 \pm 0.26\ ) \times 10^{-4}$			–
$K^*(1410)^-K^+$, $K^{*-} \to \overline{K}^{*0}\pi^-$		$(\ 1.14 \pm 0.25\ ) \times 10^{-4}$			–
$2K^0_S\pi^+\pi^-$		$(\ 1.20 \pm 0.23\ ) \times 10^{-3}$			673
$K^0_SK^-2\pi^+\pi^-$		$< 1.4 \times 10^{-4}$		CL=90%	595
$K^+K^-\pi^+\pi^-\pi^0$		$(\ 3.1 \pm 2.0\ ) \times 10^{-3}$			600

Other $K\overline{K}X$ modes. They include all decay modes of the ϕ, η, and ω.

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

Radiative modes

$\rho^0\gamma$		$(\ 1.76 \pm 0.31\ ) \times 10^{-5}$			771
$\omega\gamma$		$< 2.4 \times 10^{-4}$		CL=90%	768
$\phi\gamma$		$(\ 2.74 \pm 0.19\ ) \times 10^{-5}$			654
$\overline{K}^*(892)^0\gamma$		$(\ 4.1 \pm 0.7\ ) \times 10^{-4}$			719

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

$K^+\ell^-\overline{\nu}_\ell$ via $\overline{D}^0$		$< 2.2 \times 10^{-5}$		CL=90%	–
K^+ or $K^*(892)^+e^-\overline{\nu}_e$ via $\overline{D}^0$		$< 6 \times 10^{-5}$		CL=90%	–
$K^+\pi^-$	*DC*	$(\ 1.48 \pm 0.07\ ) \times 10^{-4}$		S=2.8	861
$K^+\pi^-$ via DCS		$(\ 1.31 \pm 0.08\ ) \times 10^{-4}$			–

$K^+\pi^-$ via $\overline{D}^0$		<	1.6	$\times 10^{-5}$	CL=95%	861
$K^0_S\pi^+\pi^-$ in $D^0 \to \overline{D}^0$		<	1.7	$\times 10^{-4}$	CL=95%	–
$K^*(892)^+\pi^-$, $K^{*+} \to K^0_S\pi^+$	*DC*	(	$1.11\ ^{+\ 0.60}_{-\ 0.33}$	$\times 10^{-4}$		711
$K^*_0(1430)^+\pi^-$, $K^{*+}_0 \to K^0_S\pi^+$	*DC*	<	1.4	$\times 10^{-5}$		–
$K^*_2(1430)^+\pi^-$, $K^{*+}_2 \to K^0_S\pi^+$	*DC*	<	3.3	$\times 10^{-5}$		–
$K^+\pi^-\pi^0$	*DC*	(	3.01 ± 0.15	$\times 10^{-4}$		844
$K^+\pi^-\pi^0$ via $\overline{D}^0$		(	7.5 ± 0.5	$\times 10^{-4}$		–
$K^+\pi^+2\pi^-$ via DCS		(	2.45 ± 0.07	$\times 10^{-4}$		–
$K^+\pi^+2\pi^-$	*DC*	(	2.61 ± 0.06	$\times 10^{-4}$		813
$K^+\pi^+2\pi^-$ via $\overline{D}^0$		(	7.8 ± 2.9	$\times 10^{-6}$		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, Lepton (*L*) or Baryon (*B*) number violating modes

$\gamma\gamma$	*C1*	<	8.5	$\times 10^{-7}$	CL=90%	932
e^+e^-	*C1*	<	7.9	$\times 10^{-8}$	CL=90%	932
$\mu^+\mu^-$	*C1*	<	6.2	$\times 10^{-9}$	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
ηe^+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*	<	5.5	$\times 10^{-7}$	CL=90%	894
$\rho^0\mu^+\mu^-$	*C1*	<	2.2	$\times 10^{-5}$	CL=90%	754
ωe^+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
ϕe^+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
$\overline{K}^0 e^+e^-$	[*h*]	<	1.1	$\times 10^{-4}$	CL=90%	866
$\overline{K}^0\mu^+\mu^-$	[*h*]	<	2.6	$\times 10^{-4}$	CL=90%	852
$K^-\pi^+e^+e^-$	*C1*	<	3.85	$\times 10^{-4}$	CL=90%	861
$\overline{K}^*(892)^0 e^+e^-$	[*h*]	<	4.7	$\times 10^{-5}$	CL=90%	719
$K^-\pi^+\mu^+\mu^-$	*C1*	<	3.59	$\times 10^{-4}$	CL=90%	829
$K^-\pi^+\mu^+\mu^-$, $675 < m_{\mu\mu} < 875$ MeV		(	4.2 ± 0.4	$\times 10^{-6}$		–
$\overline{K}^*(892)^0\mu^+\mu^-$	[*h*]	<	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	[s]	< 1.3	$\times 10^{-8}$	CL=90%	929
$\pi^0 e^\pm \mu^\mp$	LF	[s]	< 8.6	$\times 10^{-5}$	CL=90%	924
$\eta e^\pm \mu^\mp$	LF	[s]	< 1.0	$\times 10^{-4}$	CL=90%	848
$\pi^+\pi^- e^\pm \mu^\mp$	LF	[s]	< 1.5	$\times 10^{-5}$	CL=90%	911
$\rho^0 e^\pm \mu^\mp$	LF	[s]	< 4.9	$\times 10^{-5}$	CL=90%	767
$\omega e^\pm \mu^\mp$	LF	[s]	< 1.2	$\times 10^{-4}$	CL=90%	764
$K^- K^+ e^\pm \mu^\mp$	LF	[s]	< 1.8	$\times 10^{-4}$	CL=90%	754
$\phi e^\pm \mu^\mp$	LF	[s]	< 3.4	$\times 10^{-5}$	CL=90%	648
$\overline{K}^0 e^\pm \mu^\mp$	LF	[s]	< 1.0	$\times 10^{-4}$	CL=90%	863
$K^-\pi^+ e^\pm \mu^\mp$	LF	[s]	< 5.53	$\times 10^{-4}$	CL=90%	848
$\overline{K}^*(892)^0 e^\pm \mu^\mp$	LF	[s]	< 8.3	$\times 10^{-5}$	CL=90%	714
$2\pi^- 2e^+ +$ c.c.	L		< 1.12	$\times 10^{-4}$	CL=90%	922
$2\pi^- 2\mu^+ +$ c.c.	L		< 2.9	$\times 10^{-5}$	CL=90%	894
$K^-\pi^- 2e^+ +$ c.c.	L		< 2.06	$\times 10^{-4}$	CL=90%	861
$K^-\pi^- 2\mu^+ +$ c.c.	L		< 3.9	$\times 10^{-4}$	CL=90%	829
$2K^- 2e^+ +$ c.c.	L		< 1.52	$\times 10^{-4}$	CL=90%	791
$2K^- 2\mu^+ +$ c.c.	L		< 9.4	$\times 10^{-5}$	CL=90%	710
$\pi^-\pi^- e^+\mu^+ +$ c.c.	L		< 7.9	$\times 10^{-5}$	CL=90%	911
$K^-\pi^- e^+\mu^+ +$ c.c.	L		< 2.18	$\times 10^{-4}$	CL=90%	848
$2K^- e^+\mu^+ +$ c.c.	L		< 5.7	$\times 10^{-5}$	CL=90%	754
$p e^-$	L,B	[t]	< 1.0	$\times 10^{-5}$	CL=90%	696
$\overline{p} e^+$	L,B	[u]	< 1.1	$\times 10^{-5}$	CL=90%	696

$D^*(2007)^0$

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

Mass $m = 2006.85 \pm 0.05$ MeV (S = 1.1)
$m_{D^{*0}} - m_{D^0} = 142.016 \pm 0.030$ MeV (S = 1.5)
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)
$D^0\pi^0$	(64.7±0.9) %	43
$D^0\gamma$	(35.3±0.9) %	137

$D^*(2010)^\pm$

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

Mass $m = 2010.26 \pm 0.05$ MeV
$m_{D^*(2010)^+} - m_{D^+} = 140.67 \pm 0.08$ MeV
$m_{D^*(2010)^+} - m_{D^0} = 145.4257 \pm 0.0017$ MeV
Full width $\Gamma = 83.4 \pm 1.8$ 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

$D_0^*(2400)^0$

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

Mass $m = 2318 \pm 29$ MeV (S = 1.7)
Full width $\Gamma = 267 \pm 40$ MeV

$D_0^*(2400)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^+\pi^-$	seen	385

$D_1(2420)^0$

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

Mass $m = 2420.8 \pm 0.5$ MeV (S = 1.3)
$m_{D_1^0} - m_{D^{*+}} = 410.6 \pm 0.5$ (S = 1.3)
Full width $\Gamma = 31.7 \pm 2.5$ MeV (S = 3.5)

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

$D_1(2420)^0$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^*(2010)^+\pi^-$	seen	353
$D^0\pi^+\pi^-$	seen	425
$D^+\pi^-$	not seen	472
$D^{*0}\pi^+\pi^-$	not seen	279

$D_2^*(2460)^0$

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

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

Mass $m = 2460.7 \pm 0.4$ MeV (S = 3.1)
$m_{D_2^{*0}} - m_{D^+} = 591.1 \pm 0.4$ MeV (S = 2.6)
$m_{D_2^{*0}} - m_{D^{*+}} = 450.4 \pm 0.4$ MeV (S = 2.9)
Full width $\Gamma = 47.5 \pm 1.1$ 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 $m = 2465.4 \pm 1.3$ MeV (S = 3.1)
$m_{D_2^*(2460)^\pm} - m_{D_2^*(2460)^0} = 2.4 \pm 1.7$ MeV
Full width $\Gamma = 46.7 \pm 1.2$ MeV

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

$D_2^*(2460)^\pm$ DECAY MODES	Fraction (Γ_i/Γ)	p (MeV/c)
$D^0\pi^+$	seen	513
$D^{*0}\pi^+$	seen	396
$D^+\pi^+\pi^-$	not seen	462
$D^{*+}\pi^+\pi^-$	not seen	326

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

[*c*] 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.

[*d*] These subfractions of the $K^-2\pi^+$ mode are uncertain: see the Particle Listings.

[*e*] Submodes of the $D^+ \to K^-2\pi^+\pi^0$ and $K_S^0 2\pi^+\pi^-$ modes were studied by ANJOS 92C and COFFMAN 92B, but with at most 142 events for the first mode and 229 for the second – not enough for precise results. With nothing new for 18 years, we refer to our 2008 edition, Physics Letters **B667** 1 (2008), for those results.

[*f*] The unseen decay modes of the resonances are included.

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

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

[*i*] In the 2010 *Review*, the values for these quantities were given using a measure of the asymmetry that was inconsistent with the usual definition.

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

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

[*l*] This is the sum of our $K^- 3\pi^+ 2\pi^-$ and $3\pi^+ 3\pi^-$ branching fractions.

[*n*] 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 6.19 $\pm$ 0.17 %.

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

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

[*q*] Submodes of the $D^0 \rightarrow K^0_S \pi^+ \pi^- \pi^0$ mode with a K^* and/or ρ were studied by COFFMAN 92B, but with only 140 events. With nothing new for 18 years, we refer to our 2008 edition, Physics Letters **B667** 1 (2008), for those results.

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

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

[*t*] This limit is for either D^0 or $\overline{D}^0$ to $p e^-$.

[*u*] This limit is for either D^0 or $\overline{D}^0$ to $\overline{p} e^+$.