TESTS OF DISCRETE SPACE-TIME SYMMETRIES

CHARGE CONJUGATION (C) INVARIANCE

$\Gamma(\pi^0 \to\ 3\gamma)/\Gamma_{\text{total}}$		$<3.1 \times 10^{-8}$, CL = 90%
η C-nonconserving decay parameters		
$\pi^+\pi^-\pi^0$ left-right asymmetry		$(0.09^{+0.11}_{-0.12}) \times 10^{-2}$
$\pi^+\pi^-\pi^0$ sextant asymmetry		$(0.12^{+0.10}_{-0.11}) \times 10^{-2}$
$\pi^+\pi^-\pi^0$ quadrant asymmetry		$(-0.09 \pm 0.09) \times 10^{-2}$
$\pi^+\pi^-\gamma$ left-right asymmetry		$(0.9 \pm 0.4) \times 10^{-2}$
$\pi^+\pi^-\gamma$ parameter β (D-wave)		-0.02 ± 0.07 (S = 1.3)
$\Gamma(\eta \to\ \pi^0\gamma)/\Gamma_{\text{total}}$		$<9 \times 10^{-5}$, CL = 90%
$\Gamma(\eta \to\ 2\pi^0\gamma)/\Gamma_{\text{total}}$		$<5 \times 10^{-4}$, CL = 90%
$\Gamma(\eta \to\ 3\pi^0\gamma)/\Gamma_{\text{total}}$		$<6 \times 10^{-5}$, CL = 90%
$\Gamma(\eta \to\ 3\gamma)/\Gamma_{\text{total}}$		$<1.6 \times 10^{-5}$, CL = 90%
$\Gamma(\eta \to\ \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	[a]	$<4 \times 10^{-5}$, CL = 90%
$\Gamma(\eta \to\ \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	[a]	$<5 \times 10^{-6}$, CL = 90%
$\Gamma(\omega(782) \to\ \eta\pi^0)/\Gamma_{\text{total}}$		$<2.1 \times 10^{-4}$, CL = 90%
$\Gamma(\omega(782) \to\ 2\pi^0)/\Gamma_{\text{total}}$		$<2.1 \times 10^{-4}$, CL = 90%
$\Gamma(\omega(782) \to\ 3\pi^0)/\Gamma_{\text{total}}$		$<2.3 \times 10^{-4}$, CL = 90%
asymmetry parameter for $\eta'(958) \to\ \pi^+\pi^-\gamma$ decay		-0.03 ± 0.04
$\Gamma(\eta'(958) \to\ \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	[a]	$<1.4 \times 10^{-3}$, CL = 90%
$\Gamma(\eta'(958) \to\ \eta e^+ e^-)/\Gamma_{\text{total}}$	[a]	$<2.4 \times 10^{-3}$, CL = 90%
$\Gamma(\eta'(958) \to\ 3\gamma)/\Gamma_{\text{total}}$		$<1.0 \times 10^{-4}$, CL = 90%
$\Gamma(\eta'(958) \to\ \mu^+ \mu^- \pi^0)/\Gamma_{\text{total}}$	[a]	$<6.0 \times 10^{-5}$, CL = 90%
$\Gamma(\eta'(958) \to\ \mu^+ \mu^- \eta)/\Gamma_{\text{total}}$	[a]	$<1.5 \times 10^{-5}$, CL = 90%
$\Gamma(J/\psi(1S) \to\ \gamma\gamma)/\Gamma_{\text{total}}$		$<5 \times 10^{-6}$, CL = 90%

PARITY (P) INVARIANCE

e electric dipole moment	$<10.5 \times 10^{-28}$ e cm, CL = 90%
μ electric dipole moment	$(-0.1 \pm 0.9) \times 10^{-19}$ e cm
Re(d_τ = τ electric dipole moment)	-0.220 to 0.45×10^{-16} e cm, CL = 95%
$\Gamma(\eta \to\ \pi^+\pi^-)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-5}$, CL = 90%
$\Gamma(\eta \to\ 2\pi^0)/\Gamma_{\text{total}}$	$<3.5 \times 10^{-4}$, CL = 90%
$\Gamma(\eta \to\ 4\pi^0)/\Gamma_{\text{total}}$	$<6.9 \times 10^{-7}$, CL = 90%
$\Gamma(\eta'(958) \to\ \pi^+\pi^-)/\Gamma_{\text{total}}$	$<6 \times 10^{-5}$, CL = 90%
$\Gamma(\eta'(958) \to\ \pi^0\pi^0)/\Gamma_{\text{total}}$	$<4 \times 10^{-4}$, CL = 90%
$\Gamma(\eta_c(1S) \to\ \pi^+\pi^-)/\Gamma_{\text{total}}$	$<1.1 \times 10^{-4}$, CL = 90%

$\Gamma(\eta_c(1S) \to \pi^0\pi^0)/\Gamma_{\text{total}}$		$<3.5 \times 10^{-5}$, CL = 90%
$\Gamma(\eta_c(1S) \to K^+K^-)/\Gamma_{\text{total}}$		$<6 \times 10^{-4}$, CL = 90%
$\Gamma(\eta_c(1S) \to K^0_S K^0_S)/\Gamma_{\text{total}}$		$<3.1 \times 10^{-4}$, CL = 90%
p electric dipole moment		$<0.54 \times 10^{-23}$ e cm
n electric dipole moment		$<0.29 \times 10^{-25}$ e cm, CL = 90%
Λ electric dipole moment		$<1.5 \times 10^{-16}$ e cm, CL = 95%

TIME REVERSAL (T) INVARIANCE

e electric dipole moment		$<10.5 \times 10^{-28}$ e cm, CL = 90%
μ electric dipole moment		$(-0.1 \pm 0.9) \times 10^{-19}$ e cm
μ decay parameters		
transverse e^+ polarization normal to plane of μ spin, e^+ momentum		$(-2 \pm 8) \times 10^{-3}$
α'/A		$(-10 \pm 20) \times 10^{-3}$
β'/A		$(2 \pm 7) \times 10^{-3}$
Re($d_\tau = \tau$ electric dipole moment)		-0.220 to 0.45×10^{-16} e cm, CL = 95%
P_T in $K^+ \to \pi^0\mu^+\nu_\mu$		$(-1.7 \pm 2.5) \times 10^{-3}$
P_T in $K^+ \to \mu^+\nu_\mu\gamma$		$(-0.6 \pm 1.9) \times 10^{-2}$
Im(ξ) in $K^+ \to \pi^0\mu^+\nu_\mu$ decay (from transverse μ pol.)		-0.006 ± 0.008
asymmetry A_T in K^0-$\overline{K}^0$ mixing		$(6.6 \pm 1.6) \times 10^{-3}$
Im(ξ) in $K^0_{\mu 3}$ decay (from transverse μ pol.)		-0.007 ± 0.026
$A_T(D^\pm \to K^0_S K^\pm\pi^+\pi^-)$	[b]	$(-12 \pm 11) \times 10^{-3}$
$A_T(D^0 \to K^+K^-\pi^+\pi^-)$	[b]	$(1 \pm 7) \times 10^{-3}$
$A_T(D^\pm_s \to K^0_S K^\pm\pi^+\pi^-)$	[b]	$(-14 \pm 8) \times 10^{-3}$
$\Delta S^+_T\ (S^-_{\ell^-,K^0_S} - S^+_{\ell^+,K^0_S})$		-1.37 ± 0.15
$\Delta S^-_T\ (S^+_{\ell^-,K^0_S} - S^-_{\ell^+,K^0_S})$		1.17 ± 0.21
$\Delta C^+_T\ (C^-_{\ell^-,K^0_S} - C^+_{\ell^+,K^0_S})$		0.10 ± 0.16
$\Delta C^-_T\ (C^+_{\ell^-,K^0_S} - C^-_{\ell^+,K^0_S})$		0.04 ± 0.16
p electric dipole moment		$<0.54 \times 10^{-23}$ e cm
n electric dipole moment		$<0.29 \times 10^{-25}$ e cm, CL = 90%
$n \to p e^- \overline{\nu}_e$ decay parameters		
ϕ_{AV}, phase of g_A relative to g_V	[c]	$(180.017 \pm 0.026)^\circ$
triple correlation coefficient D	[d]	$(-1.2 \pm 2.0) \times 10^{-4}$
triple correlation coefficient R	[d]	0.004 ± 0.013
Λ electric dipole moment		$<1.5 \times 10^{-16}$ e cm, CL = 95%
triple correlation coefficient D for $\Sigma^- \to n e^- \overline{\nu}_e$		0.11 ± 0.10

CP INVARIANCE

$\mathrm{Re}(d_\tau^W)$		$<0.50\times10^{-17}$ e cm, CL = 95%
$\mathrm{Im}(d_\tau^W)$		$<1.1\times10^{-17}$ e cm, CL = 95%
$\eta \to \pi^+\pi^- e^+ e^-$ decay-plane asymmetry		$(-0.6\pm3.1)\times10^{-2}$
$\Gamma(\eta \to \pi^+\pi^-)/\Gamma_{\rm total}$		$<1.3\times10^{-5}$, CL = 90%
$\Gamma(\eta \to 2\pi^0)/\Gamma_{\rm total}$		$<3.5\times10^{-4}$, CL = 90%
$\Gamma(\eta \to 4\pi^0)/\Gamma_{\rm total}$		$<6.9\times10^{-7}$, CL = 90%
$\Gamma(\eta'(958) \to \pi^+\pi^-)/\Gamma_{\rm total}$		$<6\times10^{-5}$, CL = 90%
$\Gamma(\eta'(958) \to \pi^0\pi^0)/\Gamma_{\rm total}$		$<4\times10^{-4}$, CL = 90%
$K^\pm \to \pi^\pm\pi^+\pi^-$ rate difference/average		(0.08 ± 0.12)%
$K^\pm \to \pi^\pm\pi^0\pi^0$ rate difference/average		(0.0 ± 0.6)%
$K^\pm \to \pi^\pm\pi^0\gamma$ rate difference/average		(0.9 ± 3.3)%
$K^\pm \to \pi^\pm\pi^+\pi^-$ $(g_+ - g_-)\ /\ (g_+ + g_-)$		$(-1.5\pm2.2)\times10^{-4}$
$K^\pm \to \pi^\pm\pi^0\pi^0$ $(g_+ - g_-)\ /\ (g_+ + g_-)$		$(1.8\pm1.8)\times10^{-4}$
$\Delta(K^\pm_{\pi ee}) = \frac{\Gamma(K^+_{\pi ee})-\Gamma(K^-_{\pi ee})}{\Gamma(K^+_{\pi ee})+\Gamma(K^-_{\pi ee})}$		$(-2.2\pm1.6)\times10^{-2}$
$\Delta(K^\pm_{\pi\mu\mu}) = \frac{\Gamma(K^+_{\pi\mu\mu})-\Gamma(K^-_{\pi\mu\mu})}{\Gamma(K^+_{\pi\mu\mu})+\Gamma(K^-_{\pi\mu\mu})}$		0.010 ± 0.023
$\Delta(K^\pm_{\pi\pi\gamma}) = \frac{\Gamma(K^+_{\pi\pi\gamma})-\Gamma(K^-_{\pi\pi\gamma})}{\Gamma(K^+_{\pi\pi\gamma})+\Gamma(K^-_{\pi\pi\gamma})}$		$(0.0\pm1.2)\times10^{-3}$
$A_S = [\ \Gamma(K^0_S \to \pi^- e^+ \nu_e)$ - $\Gamma(K^0_S \to \pi^+ e^- \overline{\nu}_e)\ ]$ / SUM		$(2\pm10)\times10^{-3}$
$\mathrm{Im}(\eta_{+-0}) = \mathrm{Im}(\mathrm{A}(K^0_S \to \pi^+\pi^-\pi^0$, *CP*-violating) / $\mathrm{A}(K^0_L \to \pi^+\pi^-\pi^0))$		-0.002 ± 0.009
$\mathrm{Im}(\eta_{000}) = \mathrm{Im}(A(K^0_S \to \pi^0\pi^0\pi^0)/A(K^0_L \to \pi^0\pi^0\pi^0))$		$(-0.1\pm1.6)\times10^{-2}$
$\lvert\eta_{000}\rvert = \lvert A(K^0_S \to 3\pi^0)/A(K^0_L \to 3\pi^0)\rvert$		<0.018, CL = 90%
CP asymmetry A in $K^0_S \to \pi^+\pi^- e^+ e^-$		(-0.4 ± 0.8)%
$\Gamma(K^0_S \to 3\pi^0)/\Gamma_{\rm total}$		$<1.2\times10^{-7}$, CL = 90%
linear coefficient j for $K^0_L \to \pi^+\pi^-\pi^0$		0.0012 ± 0.0008
quadratic coefficient f for $K^0_L \to \pi^+\pi^-\pi^0$		0.004 ± 0.006
$\lvert\epsilon'_{+-\gamma}\rvert/\epsilon$ for $K^0_L \to \pi^+\pi^-\gamma$		<0.3, CL = 90%
$\lvert g_{E1}\rvert$ for $K^0_L \to \pi^+\pi^-\gamma$		<0.21, CL = 90%
$\Gamma(K^0_L \to \pi^0\mu^+\mu^-)/\Gamma_{\rm total}$	[e]	$<3.8\times10^{-10}$, CL = 90%
$\Gamma(K^0_L \to \pi^0 e^+ e^-)/\Gamma_{\rm total}$	[e]	$<2.8\times10^{-10}$, CL = 90%
$\Gamma(K^0_L \to \pi^0\nu\overline{\nu})/\Gamma_{\rm total}$	[f]	$<2.6\times10^{-8}$, CL = 90%
$A_{CP}(D^\pm \to \mu^\pm\nu)$		(8 ± 8)%
$A_{CP}(D^\pm \to K^0_S\pi^\pm)$		(-0.41 ± 0.09)%
$A_{CP}(D^\pm \to K^\mp 2\pi^\pm)$		(-0.1 ± 1.0)%
$A_{CP}(D^\pm \to K^\mp\pi^\pm\pi^\pm\pi^0)$		(1.0 ± 1.3)%

$A_{CP}(D^\pm \to K^0_S \pi^\pm \pi^0)$		$(0.3 \pm 0.9)\%$
$A_{CP}(D^\pm \to K^0_S \pi^\pm \pi^+ \pi^-)$		$(0.1 \pm 1.3)\%$
$A_{CP}(D^\pm \to \pi^\pm \pi^0)$		$(2.9 \pm 2.9)\%$
$A_{CP}(D^\pm \to \pi^\pm \eta)$		$(1.0 \pm 1.5)\%$ (S = 1.4)
$A_{CP}(D^\pm \to \pi^\pm \eta'(958))$		$(-0.5 \pm 1.2)\%$ (S = 1.1)
$A_{CP}(D^\pm \to K^0_S K^\pm)$		$(-0.23 \pm 0.31)\%$
$A_{CP}(D^\pm \to K^+ K^- \pi^\pm)$		$(0.3 \pm 0.6)\%$
$A_{CP}(D^\pm \to K^\pm K^{*0})$		$(0.1 \pm 1.3)\%$
$A_{CP}(D^\pm \to \phi \pi^\pm)$		$(0.42 \pm 0.28)\%$
$A_{CP}(D^\pm \to K^\pm K^*_0(1430)^0)$		$(8^{+7}_{-6})\%$
$A_{CP}(D^\pm \to K^\pm K^*_2(1430)^0)$		$(43^{+20}_{-26})\%$
$A_{CP}(D^\pm \to K^\pm K^*_0(800))$		$(-12^{+18}_{-13})\%$
$A_{CP}(D^\pm \to a_0(1450)^0 \pi^\pm)$		$(-19^{+14}_{-16})\%$
$A_{CP}(D^\pm \to \phi(1680) \pi^\pm)$		$(-9 \pm 26)\%$
$A_{CP}(D^\pm \to \pi^+ \pi^- \pi^\pm)$		$(-2 \pm 4)\%$
$A_{CP}(D^\pm \to K^0_S K^\pm \pi^+ \pi^-)$		$(-4 \pm 7)\%$
$A_{CP}(D^\pm \to K^\pm \pi^0)$		$(-4 \pm 11)\%$
$\lvert q/p \rvert$ of D^0–$\overline{D}^0$ mixing		$0.67^{+0.18}_{-0.14}$
A_Γ of D^0–$\overline{D}^0$ mixing		$(-0.22 \pm 1.61) \times 10^{-3}$

Where there is ambiguity, the *CP* test is labelled by the D^0 decay mode.

$A_{CP}(D^0 \to K^+ K^-)$		$(-0.21 \pm 0.17)\%$
$A_{CP}(D^0 \to K^0_S K^0_S)$		$(-23 \pm 19)\%$
$A_{CP}(D^0 \to \pi^+ \pi^-)$		$(0.22 \pm 0.21)\%$
$A_{CP}(D^0 \to \pi^0 \pi^0)$		$(0 \pm 5)\%$
$A_{CP}(D^0 \to \pi^+ \pi^- \pi^0)$		$(0.3 \pm 0.4)\%$
$A_{CP}(D^0 \to \rho(770)^+ \pi^- \to \pi^+ \pi^- \pi^0)$	[g]	$(1.2 \pm 0.9)\%$
$A_{CP}(D^0 \to \rho(770)^0 \pi^0 \to \pi^+ \pi^- \pi^0)$	[g]	$(-3.1 \pm 3.0)\%$
$A_{CP}(D^0 \to \rho(770)^- \pi^+ \to \pi^+ \pi^- \pi^0)$	[g]	$(-1.0 \pm 1.7)\%$
$A_{CP}(D^0 \to \rho(1450)^+ \pi^- \to \pi^+ \pi^- \pi^0)$	[g]	$(0 \pm 70)\%$
$A_{CP}(D^0 \to \rho(1450)^0 \pi^0 \to \pi^+ \pi^- \pi^0)$	[g]	$(-20 \pm 40)\%$
$A_{CP}(D^0 \to \rho(1450)^- \pi^+ \to \pi^+ \pi^- \pi^0)$	[g]	$(6 \pm 9)\%$
$A_{CP}(D^0 \to \rho(1700)^+ \pi^- \to \pi^+ \pi^- \pi^0)$	[g]	$(-5 \pm 14)\%$
$A_{CP}(D^0 \to \rho(1700)^0 \pi^0 \to \pi^+ \pi^- \pi^0)$	[g]	$(13 \pm 9)\%$
$A_{CP}(D^0 \to \rho(1700)^- \pi^+ \to \pi^+ \pi^- \pi^0)$	[g]	$(8 \pm 11)\%$
$A_{CP}(D^0 \to f_0(980) \pi^0 \to \pi^+ \pi^- \pi^0)$	[g]	$(0 \pm 35)\%$
$A_{CP}(D^0 \to f_0(1370) \pi^0 \to \pi^+ \pi^- \pi^0)$	[g]	$(25 \pm 18)\%$
$A_{CP}(D^0 \to f_0(1500) \pi^0 \to \pi^+ \pi^- \pi^0)$	[g]	$(0 \pm 18)\%$
$A_{CP}(D^0 \to f_0(1710) \pi^0 \to \pi^+ \pi^- \pi^0)$	[g]	$(0 \pm 24)\%$
$A_{CP}(D^0 \to f_2(1270) \pi^0 \to \pi^+ \pi^- \pi^0)$	[g]	$(-4 \pm 6)\%$
$A_{CP}(D^0 \to \sigma(400) \pi^0 \to \pi^+ \pi^- \pi^0)$	[g]	$(6 \pm 8)\%$

A_{CP}(nonresonant $D^0 \to \pi^+\pi^-\pi^0$)	[g]	$(-13 \pm 23)\%$
$A_{CP}(D^0 \to K^+K^-\pi^0)$		$(-1.0 \pm 1.7)\%$
$A_{CP}(D^0 \to K^*(892)^+K^- \to K^+K^-\pi^0)$	[g]	$(-0.9 \pm 1.3)\%$
$A_{CP}(D^0 \to K^*(1410)^+K^- \to K^+K^-\pi^0)$	[g]	$(-21 \pm 24)\%$
$A_{CP}(D^0 \to (K^+\pi^0)_S K^- \to K^+K^-\pi^0)$	[g]	$(7 \pm 15)\%$
$A_{CP}(D^0 \to \phi(1020)\pi^0 \to K^+K^-\pi^0)$	[g]	$(1.1 \pm 2.2)\%$
$A_{CP}(D^0 \to f_0(980)\pi^0 \to K^+K^-\pi^0)$	[g]	$(-3 \pm 19)\%$
$A_{CP}(D^0 \to a_0(980)^0\pi^0 \to K^+K^-\pi^0)$	[g]	$(-5 \pm 16)\%$
$A_{CP}(D^0 \to f_2'(1525)\pi^0 \to K^+K^-\pi^0)$	[g]	$(0 \pm 160)\%$
$A_{CP}(D^0 \to K^*(892)^-K^+ \to K^+K^-\pi^0)$	[g]	$(-5 \pm 4)\%$
$A_{CP}(D^0 \to K^*(1410)^-K^+ \to K^+K^-\pi^0)$	[g]	$(-17 \pm 29)\%$
$A_{CP}(D^0 \to (K^-\pi^0)_{S-wave}K^+ \to K^+K^-\pi^0)$	[g]	$(-10 \pm 40)\%$
$A_{CP}(D^0 \to K^0_S\pi^0)$		$(-0.27 \pm 0.21)\%$
$A_{CP}(D^0 \to K^0_S\eta)$		$(0.5 \pm 0.5)\%$
$A_{CP}(D^0 \to K^0_S\eta')$		$(1.0 \pm 0.7)\%$
$A_{CP}(D^0 \to K^0_S\phi)$		$(-3 \pm 9)\%$
$A_{CP}(D^0 \to K^-\pi^+)$		$(0.1 \pm 0.7)\%$
$A_{CP}(D^0 \to K^+\pi^-)$		$(2.2 \pm 3.2)\%$
$A_{CP}(D^0 \to K^-\pi^+\pi^0)$		$(0.2 \pm 0.9)\%$
$A_{CP}(D^0 \to K^+\pi^-\pi^0)$		$(0 \pm 5)\%$
$A_{CP}(D^0 \to K^0_S\pi^+\pi^-)$		$(-0.1 \pm 0.8)\%$
$A_{CP}(D^0 \to K^*(892)^-\pi^+ \to K^0_S\pi^+\pi^-)$		$(0.4 \pm 0.5)\%$
$A_{CP}(D^0 \to K^*(892)^+\pi^- \to K^0_S\pi^+\pi^-)$		$(1 \pm 6)\%$
$A_{CP}(D^0 \to K^0_S\rho^0 \to K^0_S\pi^+\pi^-)$		$(-0.1 \pm 0.5)\%$
$A_{CP}(D^0 \to K^0_S\omega \to K^0_S\pi^+\pi^-)$		$(-13 \pm 7)\%$
$A_{CP}(D^0 \to K^0_S f_0(980) \to K^0_S\pi^+\pi^-)$		$(-0.4 \pm 2.7)\%$
$A_{CP}(D^0 \to K^0_S f_2(1270) \to K^0_S\pi^+\pi^-)$		$(-4 \pm 5)\%$
$A_{CP}(D^0 \to K^0_S f_0(1370) \to K^0_S\pi^+\pi^-)$		$(-1 \pm 9)\%$
$A_{CP}(D^0 \to \overline{K}^0\rho^0(1450) \to K^0_S\pi^+\pi^-)$		$(-4 \pm 10)\%$
$A_{CP}(D^0 \to \overline{K}^0 f_0(600) \to K^0_S\pi^+\pi^-)$		$(-3 \pm 5)\%$
$A_{CP}(D^0 \to \overline{K}^0 f_2(1270) \to K^0_S\pi^+\pi^-)$		$(-7 \pm 8)\%$
$A_{CP}(D^0 \to K^*(1410)^-\pi^+ \to K^0_S\pi^+\pi^-)$		$(-2 \pm 9)\%$
$A_{CP}(D^0 \to K^*_0(1430)^-\pi^+ \to K^0_S\pi^+\pi^-)$		$(4 \pm 4)\%$
$A_{CP}(D^0 \to K^*_0(1430)^-\pi^+ \to K^0_S\pi^+\pi^-)$		$(12 \pm 15)\%$
$A_{CP}(D^0 \to K^*_2(1430)^-\pi^+ \to K^0_S\pi^+\pi^-)$		$(3 \pm 6)\%$
$A_{CP}(D^0 \to K^*_2(1430)^+\pi^- \to K^0_S\pi^+\pi^-)$		$(-10 \pm 32)\%$
$A_{CP}(D^0 \to K^*(1680)^-\pi^+ \to K^0_S\pi^+\pi^-)$		—
$A_{CP}(D^0 \to K^-\pi^+\pi^+\pi^-)$		$(0.7 \pm 1.0)\%$
$A_{CP}(D^0 \to K^+\pi^-\pi^+\pi^-)$		$(-2 \pm 4)\%$

$A_{CP}(D^0 \to K^+K^-\pi^+\pi^-)$	$(-8 \pm 7)\%$
$A_{CP}(D^0 \to K_1^*(1270)^+K^- \to K^{*0}\pi^+K^-)$	$(-1 \pm 10)\%$
$A_{CP}(D^0 \to K_1^*(1270)^-K^+ \to \overline{K}^{*0}\pi^-K^+)$	$(-10 \pm 32)\%$
$A_{CP}(D^0 \to K_1^*(1270)^+K^- \to \rho^0K^+K^-)$	$(-7 \pm 17)\%$
$A_{CP}(D^0 \to K_1^*(1270)^-K^+ \to \rho^0K^-K^+)$	$(10 \pm 13)\%$
$A_{CP}(D^0 \to K^*(1410)^+K^- \to K^{*0}\pi^+K^-)$	$(-20 \pm 17)\%$
$A_{CP}(D^0 \to K^*(1410)^-K^+ \to \overline{K}^{*0}\pi^-K^+)$	$(-1 \pm 14)\%$
$A_{CP}(D^0 \to K^{*0}\overline{K}^{*0}$ S-wave)	$(10 \pm 14)\%$
$A_{CP}(D^0 \to \phi\rho^0$ S-wave)	$(-3 \pm 5)\%$
$A_{CP}(D^0 \to \phi\rho^0$ D-wave)	$(-37 \pm 19)\%$
$A_{CP}(D^0 \to \phi(\pi^+\pi^-)_{S-wave})$	$(-9 \pm 10)\%$
$\Delta A_{CP}^{D^0} = A_{CP}(K^+K^-) - A_{CP}(\pi^+\pi^-)$	$(-0.68 \pm 0.16)\%$
$A_{CP}(D_s^\pm \to \mu^\pm\nu)$	$(5 \pm 6)\%$
$A_{CP}(D_s^\pm \to K^\pm K_S^0)$	$(0.3 \pm 0.4)\%$
$A_{CP}(D_s^\pm \to K^+K^-\pi^\pm)$	$(0.3 \pm 1.4)\%$
$A_{CP}(D_s^\pm \to K^+K^-\pi^\pm\pi^0)$	$(-6 \pm 4)\%$
$A_{CP}(D_s^\pm \to K_S^0K^\mp 2\pi^\pm)$	$(-1 \pm 4)\%$
$A_{CP}(D_s^\pm \to \pi^+\pi^-\pi^\pm)$	$(2 \pm 5)\%$
$A_{CP}(D_s^\pm \to \pi^\pm\eta)$	$(-4.6 \pm 2.9)\%$
$A_{CP}(D_s^\pm \to \pi^\pm\eta')$	$(-6.1 \pm 3.0)\%$
$A_{CP}(D_s^\pm \to K^\pm\pi^0)$	$(-27 \pm 24)\%$
$A_{CP}(D_s^\pm \to K_S^0\pi^\pm)$	$(6.6 \pm 3.3)\%$ (S = 1.4)
$A_{CP}(D_s^\pm \to K^\pm\pi^+\pi^-)$	$(11 \pm 7)\%$
$A_{CP}(D_s^\pm \to K^\pm\eta)$	$(9 \pm 15)\%$
$A_{CP}(D_s^\pm \to K^\pm\eta'(958))$	$(6 \pm 19)\%$
$A_{CP}(B^+ \to J/\psi(1S)K^+)$	$(1 \pm 7) \times 10^{-3}$ (S = 1.8)
$A_{CP}(B^+ \to J/\psi(1S)\pi^+)$	0.007 ± 0.033 (S = 1.3)
$A_{CP}(B^+ \to J/\psi\rho^+)$	-0.11 ± 0.14
$A_{CP}(B^+ \to J/\psi K^*(892)^+)$	-0.048 ± 0.033
$A_{CP}(B^+ \to \eta_c K^+)$	-0.16 ± 0.08
$A_{CP}(B^+ \to \psi(2S)\pi^+)$	0.03 ± 0.06
$A_{CP}(B^+ \to \psi(2S)K^+)$	0.008 ± 0.021 (S = 1.6)
$A_{CP}(B^+ \to \psi(2S)K^*(892)^+)$	0.08 ± 0.21
$A_{CP}(B^+ \to \chi_{c1}(1P)\pi^+)$	0.07 ± 0.18
$A_{CP}(B^+ \to \chi_{c0}K^+)$	-0.20 ± 0.18 (S = 1.5)
$A_{CP}(B^+ \to \chi_{c1}K^+)$	-0.009 ± 0.033
$A_{CP}(B^+ \to \chi_{c1}K^*(892)^+)$	0.5 ± 0.5
$A_{CP}(B^+ \to \overline{D}^0\pi^+)$	-0.008 ± 0.008
$A_{CP}(B^+ \to D_{CP(+1)}\pi^+)$	0.035 ± 0.024

$A_{CP}(B^+ \to D_{CP(-1)}\pi^+)$	0.017 ± 0.026
$A_{CP}(B^+ \to \overline{D}^0 K^+)$	0.07 ± 0.04
$r_B(B^+ \to D^0 K^+)$	0.096 ± 0.014 (S = 1.2)
$\delta_B(B^+ \to D^0 K^+)$	$(115 \pm 13)^\circ$
$r_B(B^+ \to \overline{D}^0 K^{*+})$	0.17 ± 0.11 (S = 2.3)
$\delta_B(B^+ \to D^0 K^{*+})$	$(155 \pm 70)^\circ$ (S = 2.0)
$A_{CP}(B^+ \to [K^-\pi^+]_D K^+)$	-0.58 ± 0.21
$A_{CP}(B^+ \to [K^-\pi^+]_{\overline{D}} K^*(892)^+)$	-0.3 ± 0.5
$A_{CP}(B^+ \to [K^-\pi^+]_D \pi^+)$	0.00 ± 0.09
$A_{CP}(B^+ \to [K^-\pi^+]_{(D\pi)}\pi^+)$	-0.09 ± 0.27
$A_{CP}(B^+ \to [K^-\pi^+]_{(D\gamma)}\pi^+)$	-0.7 ± 0.6
$A_{CP}(B^+ \to [K^-\pi^+]_{(D\pi)} K^+)$	0.8 ± 0.4
$A_{CP}(B^+ \to [K^-\pi^+]_{(D\gamma)} K^+)$	0.4 ± 1.0
$A_{CP}(B^+ \to [\pi^+\pi^-\pi^0]_D K^+)$	-0.02 ± 0.15
$A_{ADS}(B^+ \to D\pi^+)$	0.14 ± 0.06
$A_{CP}(B^+ \to D_{CP(-1)} K^+)$	-0.10 ± 0.07
$A_{CP}(B^+ \to \overline{D}^{*0}\pi^+)$	-0.014 ± 0.015
$A_{CP}(B^+ \to (D^*_{CP(+1)})^0\pi^+)$	-0.02 ± 0.05
$A_{CP}(B^+ \to (D^*_{CP(-1)})^0\pi^+)$	-0.09 ± 0.05
$A_{CP}(B^+ \to D^{*0} K^+)$	-0.07 ± 0.04
$r^*_B(B^+ \to D^{*0} K^+)$	$0.114^{+0.023}_{-0.040}$ (S = 1.2)
$\delta^*_B(B^+ \to D^{*0} K^+)$	$(310^{+22}_{-28})^\circ$ (S = 1.3)
$A_{CP}(B^+ \to D^{*0}_{CP(+1)} K^+)$	-0.12 ± 0.08
$A_{CP}(B^+ \to D^*_{CP(-1)} K^+)$	0.07 ± 0.10
$A_{CP}(B^+ \to D_{CP(+1)} K^*(892)^+)$	0.09 ± 0.14
$A_{CP}(B^+ \to D_{CP(-1)} K^*(892)^+)$	-0.23 ± 0.22
$A_{CP}(B^+ \to D_s^+ \phi)$	0.0 ± 0.4
$A_{CP}(B^+ \to D^{*+}\overline{D}^{*0})$	-0.15 ± 0.11
$A_{CP}(B^+ \to D^{*+}\overline{D}^0)$	-0.06 ± 0.13
$A_{CP}(B^+ \to D^+\overline{D}^{*0})$	0.13 ± 0.18
$A_{CP}(B^+ \to D^+\overline{D}^0)$	-0.03 ± 0.07
$A_{CP}(B^+ \to K^0_S\pi^+)$	-0.014 ± 0.019
$A_{CP}(B^+ \to K^+\pi^0)$	0.037 ± 0.021
$A_{CP}(B^+ \to \eta' K^+)$	0.013 ± 0.017
$A_{CP}(B^+ \to \eta' K^*(892)^+)$	-0.26 ± 0.27
$A_{CP}(B^+ \to \eta' K^*_0(1430)^+)$	0.06 ± 0.20
$A_{CP}(B^+ \to \eta' K^*_2(1430)^+)$	0.15 ± 0.13
$A_{CP}(B^+ \to \eta K^*(892)^+)$	0.02 ± 0.06

$A_{CP}(B^+ \to \eta K_0^*(1430)^+)$	0.05 ± 0.13
$A_{CP}(B^+ \to \eta K_2^*(1430)^+)$	-0.45 ± 0.30
$A_{CP}(B^+ \to \omega K^+)$	0.02 ± 0.05
$A_{CP}(B^+ \to \omega K^{*+})$	0.29 ± 0.35
$A_{CP}(B^+ \to \omega (K\pi)_0^{*+})$	-0.10 ± 0.09
$A_{CP}(B^+ \to \omega K_2^*(1430)^+)$	0.14 ± 0.15
$A_{CP}(B^+ \to K^{*0}\pi^+)$	-0.04 ± 0.09 (S = 2.1)
$A_{CP}(B^+ \to K^*(892)^+\pi^0)$	-0.06 ± 0.24
$A_{CP}(B^+ \to K^+\pi^-\pi^+)$	0.038 ± 0.022
$A_{CP}(B^+ \to K^+K^-K^+$ nonresonant)	0.06 ± 0.05
$A_{CP}(B^+ \to f(980)^0 K^+)$	-0.08 ± 0.09
$A_{CP}(B^+ \to f_0(1500) K^+)$	0.28 ± 0.30
$A_{CP}(B^+ \to f_2'(1525)^0 K^+)$	$-0.08^{+0.05}_{-0.04}$
$A_{CP}(B^+ \to K_0^*(1430)^0 \pi^+)$	0.055 ± 0.033
$A_{CP}(B^+ \to K_2^*(1430)^0 \pi^+)$	$0.05^{+0.29}_{-0.24}$
$A_{CP}(B^+ \to K^+\pi^0\pi^0)$	-0.06 ± 0.07
$A_{CP}(B^+ \to K^0\rho^+)$	-0.12 ± 0.17
$A_{CP}(B^+ \to K^{*+}\pi^+\pi^-)$	0.07 ± 0.08
$A_{CP}(B^+ \to \rho^0 K^*(892)^+)$	0.31 ± 0.13
$A_{CP}(B^+ \to K^*(892)^+ f_0(980))$	-0.15 ± 0.12
$A_{CP}(B^+ \to a_1^+ K^0)$	0.12 ± 0.11
$A_{CP}(B^+ \to b_1^+ K^0)$	-0.03 ± 0.15
$A_{CP}(B^+ \to K^*(892)^0 \rho^+)$	-0.01 ± 0.16
$A_{CP}(B^+ \to b_1^0 K^+)$	-0.46 ± 0.20
$A_{CP}(B^+ \to K^0 K^+)$	0.04 ± 0.14
$A_{CP}(B^+ \to K^+ K_S^0 K_S^0)$	$0.04^{+0.04}_{-0.05}$
$A_{CP}(B^+ \to K^+K^-\pi^+)$	0.00 ± 0.10
$A_{CP}(B^+ \to K^+K^-K^+)$	$-0.017^{+0.024}_{-0.020}$
$A_{CP}(B^+ \to \phi K^+)$	0.10 ± 0.04
$A_{CP}(B^+ \to X_0(1550) K^+)$	-0.04 ± 0.07
$A_{CP}(B^+ \to K^{*+}K^+K^-)$	0.11 ± 0.09
$A_{CP}(B^+ \to \phi K^*(892)^+)$	-0.01 ± 0.08
$A_{CP}(B^+ \to \phi (K\pi)_0^{*+})$	0.04 ± 0.16
$A_{CP}(B^+ \to \phi K_1(1270)^+)$	0.15 ± 0.20
$A_{CP}(B^+ \to \phi K_2^*(1430)^+)$	-0.23 ± 0.20
$A_{CP}(B^+ \to K^+\phi\phi)$	-0.10 ± 0.08
$A_{CP}(B^+ \to K^+[\phi\phi]_{\eta_c})$	0.09 ± 0.10
$A_{CP}(B^+ \to K^*(892)^+\gamma)$	0.018 ± 0.029
$A_{CP}(B^+ \to \eta K^+\gamma)$	-0.12 ± 0.07
$A_{CP}(B^+ \to \phi K^+\gamma)$	-0.13 ± 0.11 (S = 1.1)

$A_{CP}(B^+ \to \rho^+\gamma)$	-0.11 ± 0.33
$A_{CP}(B^+ \to \pi^+\pi^0)$	0.03 ± 0.04
$A_{CP}(B^+ \to \pi^+\pi^-\pi^+)$	0.03 ± 0.06
$A_{CP}(B^+ \to \rho^0\pi^+)$	$0.18^{+0.09}_{-0.17}$
$A_{CP}(B^+ \to f_2(1270)\pi^+)$	0.41 ± 0.30
$A_{CP}(B^+ \to \rho^0(1450)\pi^+)$	$-0.1^{+0.4}_{-0.5}$
$A_{CP}(B^+ \to \pi^+\pi^-\pi^+$ nonresonant)	$-0.14^{+0.23}_{-0.16}$
$A_{CP}(B^+ \to \rho^+\pi^0)$	0.02 ± 0.11
$A_{CP}(B^+ \to \rho^+\rho^0)$	-0.05 ± 0.05
$A_{CP}(B^+ \to \omega\pi^+)$	-0.04 ± 0.06
$A_{CP}(B^+ \to \omega\rho^+)$	-0.20 ± 0.09
$A_{CP}(B^+ \to \eta\pi^+)$	-0.14 ± 0.07 (S = 1.4)
$A_{CP}(B^+ \to \eta\rho^+)$	0.11 ± 0.11
$A_{CP}(B^+ \to \eta'\pi^+)$	0.06 ± 0.16
$A_{CP}(B^+ \to \eta'\rho^+)$	0.26 ± 0.17
$A_{CP}(B^+ \to b_1^0\pi^+)$	0.05 ± 0.16
$A_{CP}(B^+ \to p\overline{p}\pi^+)$	0.00 ± 0.04
$A_{CP}(B^+ \to p\overline{p}K^+)$	-0.16 ± 0.07
$A_{CP}(B^+ \to p\overline{p}K^*(892)^+)$	0.21 ± 0.16 (S = 1.4)
$A_{CP}(B^+ \to p\overline{\Lambda}\gamma)$	0.17 ± 0.17
$A_{CP}(B^+ \to p\overline{\Lambda}\pi^0)$	0.01 ± 0.17
$A_{CP}(B^+ \to K^+\ell^+\ell^-)$	-0.02 ± 0.08
$A_{CP}(B^+ \to K^+e^+e^-)$	0.14 ± 0.14
$A_{CP}(B^+ \to K^+\mu^+\mu^-)$	-0.05 ± 0.13
$A_{CP}(B^+ \to K^{*+}\ell^+\ell^-)$	-0.09 ± 0.14
$A_{CP}(B^+ \to K^*e^+e^-)$	-0.14 ± 0.23
$A_{CP}(B^+ \to K^*\mu^+\mu^-)$	-0.12 ± 0.24
$\mathrm{Re}(\epsilon_{B^0})/(1+\lvert\epsilon_{B^0}\rvert^2)$	$(-0.2 \pm 0.7) \times 10^{-3}$
$A_{T/CP}$	0.005 ± 0.018
$A_{CP}(B^0 \to D^*(2010)^+D^-)$	0.037 ± 0.034
$A_{CP}(B^0 \to [K^+K^-]_D K^*(892)^0)$	-0.45 ± 0.23
$A_{CP}(B^0 \to [K^+\pi^-]_D K^*(892)^0)$	-0.08 ± 0.08
$A_{CP}(B^0 \to \eta' K^*(892)^0)$	0.02 ± 0.23
$A_{CP}(B^0 \to \eta' K_0^*(1430)^0)$	-0.19 ± 0.17
$A_{CP}(B^0 \to \eta' K_2^*(1430)^0)$	0.14 ± 0.18
$A_{CP}(B^0 \to \eta K_0^*(1430)^0)$	0.06 ± 0.13
$A_{CP}(B^0 \to \eta K_2^*(1430)^0)$	-0.07 ± 0.19
$A_{CP}(B^0 \to b_1 K^+)$	-0.07 ± 0.12
$A_{CP}(B^0 \to \omega K^{*0})$	0.45 ± 0.25
$A_{CP}(B^0 \to \omega(K\pi)_0^{*0})$	-0.07 ± 0.09

$A_{CP}(B^0 \to \omega K_2^*(1430)^0)$	-0.37 ± 0.17
$A_{CP}(B^0 \to K^+\pi^-\pi^0)$	$(0 \pm 6) \times 10^{-2}$
$A_{CP}(B^0 \to \rho^- K^+)$	0.20 ± 0.11
$A_{CP}(B^0 \to \rho(1450)^- K^+)$	-0.10 ± 0.33
$A_{CP}(B^0 \to \rho(1700)^- K^+)$	-0.4 ± 0.6
$A_{CP}(B^0 \to K^+\pi^-\pi^0 \text{nonresonant})$	0.10 ± 0.18
$A_{CP}(B^0 \to K^0\pi^+\pi^-)$	-0.01 ± 0.05
$A_{CP}(B^0 \to K^*(892)^+\pi^-)$	-0.22 ± 0.06
$A_{CP}(B^0 \to (K\pi)_0^{*+}\pi^-)$	0.09 ± 0.07
$A_{CP}(B^0 \to (K\pi)_0^{*0}\pi^0)$	-0.15 ± 0.11
$A_{CP}(B^0 \to K^{*0}\pi^0)$	-0.15 ± 0.13
$A_{CP}(B^0 \to K^*(892)^0\pi^+\pi^-)$	0.07 ± 0.05
$A_{CP}(B^0 \to K^*(892)^0\rho^0)$	-0.06 ± 0.09
$A_{CP}(B^0 \to K^{*0} f_0(980))$	0.07 ± 0.10
$A_{CP}(B^0 \to K^{*+}\rho^-)$	0.21 ± 0.15
$A_{CP}(B^0 \to K^*(892)^0 K^+K^-)$	0.01 ± 0.05
$A_{CP}(B^0 \to a_1^- K^+)$	-0.16 ± 0.12
$A_{CP}(B^0 \to K^0 K^0)$	-0.6 ± 0.7
$A_{CP}(B^0 \to K^*(892)^0\phi)$	0.01 ± 0.05
$A_{CP}(B^0 \to K^*(892)^0 K^-\pi^+)$	0.2 ± 0.4
$A_{CP}(B^0 \to \phi(K\pi)_0^{*0})$	0.20 ± 0.15
$A_{CP}(B^0 \to \phi K_2^*(1430)^0)$	-0.08 ± 0.13
$A_{CP}(B^0 \to K^*(892)^0\gamma)$	-0.002 ± 0.015
$A_{CP}(B^0 \to K_2^*(1430)^0\gamma)$	-0.08 ± 0.15
$A_{CP}(B^0 \to \rho^+\pi^-)$	0.08 ± 0.12 (S = 2.0)
$A_{CP}(B^0 \to \rho^-\pi^+)$	-0.16 ± 0.23 (S = 1.7)
$A_{CP}(B^0 \to a_1(1260)^\pm\pi^\mp)$	-0.07 ± 0.06
$A_{CP}(B^0 \to b_1^-\pi^+)$	-0.05 ± 0.10
$A_{CP}(B^0 \to p\overline{p}K^*(892)^0)$	0.05 ± 0.12
$A_{CP}(B^0 \to p\overline{\Lambda}\pi^-)$	0.04 ± 0.07
$A_{CP}(B^0 \to K^{*0}\ell^+\ell^-)$	-0.05 ± 0.10
$A_{CP}(B^0 \to K^{*0}e^+e^-)$	-0.21 ± 0.19
$A_{CP}(B^0 \to K^{*0}\mu^+\mu^-)$	-0.07 ± 0.04
$C_{D^*(2010)^- D^+}$ $(B^0 \to D^*(2010)^- D^+)$	-0.01 ± 0.11
$C_{D^*(2010)^+ D^-}$ $(B^0 \to D^*(2010)^+ D^-)$	0.00 ± 0.13 (S = 1.3)
$C_{D^{*+}D^{*-}}$ $(B^0 \to D^{*+}D^{*-})$	0.01 ± 0.09 (S = 1.6)
C_+ $(B^0 \to D^{*+}D^{*-})$	0.00 ± 0.10 (S = 1.6)
C_- $(B^0 \to D^{*+}D^{*-})$	0.19 ± 0.31
S_- $(B^0 \to D^{*+}D^{*-})$	0.1 ± 1.6 (S = 3.5)
C $(B^0 \to D^*(2010)^+ D^*(2010)^- K_S^0)$	0.01 ± 0.29

$S\,(B^0 \to\ D^*(2010)^+ D^*(2010)^- K^0_S)$	0.1 ± 0.4
$C_{D^+D^-}\ (B^0 \to\ D^+ D^-)$	-0.46 ± 0.21 (S = 1.8)
$C_{J/\psi(1S)\pi^0}\ (B^0 \to\ J/\psi(1S)\pi^0)$	-0.13 ± 0.13
$C_{D^{(*)}_{CP} h^0}\ (B^0 \to\ D^{(*)}_{CP} h^0)$	-0.23 ± 0.16
$S_{D^{(*)}_{CP} h^0}\ (B^0 \to\ D^{(*)}_{CP} h^0)$	-0.56 ± 0.24
$C_{K^0\pi^0}\ (B^0 \to\ K^0\pi^0)$	0.00 ± 0.13 (S = 1.4)
$C_{\eta'(958) K^0_S}\ (B^0 \to\ \eta'(958) K^0_S)$	-0.04 ± 0.20 (S = 2.5)
$S_{\eta'(958) K^0_S}\ (B^0 \to\ \eta'(958) K^0_S)$	0.43 ± 0.17 (S = 1.5)
$C_{\eta' K^0}\ (B^0 \to\ \eta' K^0)$	-0.05 ± 0.05
$C_{\omega K^0_S}\ (B^0 \to\ \omega K^0_S)$	-0.30 ± 0.28 (S = 1.6)
$S_{\omega K^0_S}\ (B^0 \to\ \omega K^0_S)$	0.43 ± 0.24
$C\,(B^0 \to\ K^0_S\pi^0\pi^0)$	0.2 ± 0.5
$S\,(B^0 \to\ K^0_S\pi^0\pi^0)$	0.7 ± 0.7
$C_{\rho^0 K^0_S}\ (B^0 \to\ \rho^0 K^0_S)$	-0.04 ± 0.20
$S_{\rho^0 K^0_S}\ (B^0 \to\ \rho^0 K^0_S)$	$0.50^{+0.17}_{-0.21}$
$C_{f_0(980) K^0_S}\ (B^0 \to\ f_0(980) K^0_S)$	0.29 ± 0.20
$S_{f_0(980) K^0_S}\ (B^0 \to\ f_0(980) K^0_S)$	-0.50 ± 0.16
$S_{f_2(1270) K^0_S}\ (B^0 \to\ f_2(1270) K^0_S)$	-0.5 ± 0.5
$C_{f_2(1270) K^0_S}\ (B^0 \to\ f_2(1270) K^0_S)$	0.3 ± 0.4
$S_{f_x(1300) K^0_S}\ (B^0 \to\ f_x(1300) K^0_S)$	-0.2 ± 0.5
$C_{f_x(1300) K^0_S}\ (B^0 \to\ f_x(1300) K^0_S)$	0.13 ± 0.35
$S_{K^0\pi^+\pi^-}\ (B^0 \to\ K^0\pi^+\pi^-$ nonresonant)	-0.01 ± 0.33
$C_{K^0\pi^+\pi^-}\ (B^0 \to\ K^0\pi^+\pi^-$ nonresonant)	0.01 ± 0.26
$C_{K^0_S K^0_S}\ (B^0 \to\ K^0_S K^0_S)$	0.0 ± 0.4 (S = 1.4)
$S_{K^0_S K^0_S}\ (B^0 \to\ K^0_S K^0_S)$	-0.8 ± 0.5
$C_{K^+K^- K^0_S}\ (B^0 \to\ K^+K^- K^0_S$ nonresonant)	0.06 ± 0.08
$C_{K^+K^- K^0_S}\ (B^0 \to\ K^+K^- K^0_S$ inclusive)	0.01 ± 0.09
$C_{\phi K^0_S}\ (B^0 \to\ \phi K^0_S)$	0.01 ± 0.14
$S_{\phi K^0_S}\ (B^0 \to\ \phi K^0_S)$	0.59 ± 0.14
$C_{K_S K_S K_S}(B^0 \to\ K_S K_S K_S)$	-0.23 ± 0.14
$S_{K_S K_S K_S}(B^0 \to\ K_S K_S K_S)$	-0.5 ± 0.6 (S = 3.0)

$C_{K^0_S\pi^0\gamma}(B^0 \to K^0_S\pi^0\gamma)$	0.36 ± 0.33
$S_{K^0_S\pi^0\gamma}(B^0 \to K^0_S\pi^0\gamma)$	-0.8 ± 0.6
$C_{K^*(892)^0\gamma}\ (B^0 \to K^*(892)^0\gamma)$	-0.04 ± 0.16 (S = 1.2)
$S_{K^*(892)^0\gamma}\ (B^0 \to K^*(892)^0\gamma)$	-0.15 ± 0.22
$C_{\eta K^0\gamma}\ (B^0 \to \eta K^0\gamma)$	-0.3 ± 0.4
$S_{\eta K^0\gamma}\ (B^0 \to \eta K^0\gamma)$	-0.2 ± 0.5
$C_{K^0\phi\gamma}\ (B^0 \to K^0\phi\gamma)$	-0.3 ± 0.6
$S_{K^0\phi\gamma}\ (B^0 \to K^0\phi\gamma)$	$0.7^{+0.7}_{-1.1}$
$C(B^0 \to K^0_S\rho^0\gamma)$	-0.05 ± 0.19
$S(B^0 \to K^0_S\rho^0\gamma)$	0.11 ± 0.34
$C\ (B^0 \to \rho^0\gamma)$	0.4 ± 0.5
$S\ (B^0 \to \rho^0\gamma)$	-0.8 ± 0.7
$C_{\pi\pi}\ (B^0 \to \pi^+\pi^-)$	-0.38 ± 0.15 (S = 2.4)
$C_{\pi^0\pi^0}(B^0 \to \pi^0\pi^0)$	-0.43 ± 0.24
$C_{\rho\pi}\ (B^0 \to \rho^+\pi^-)$	0.01 ± 0.14 (S = 1.9)
$S_{\rho\pi}\ (B^0 \to \rho^+\pi^-)$	0.01 ± 0.09
$\Delta S_{\rho\pi}\ (B^0 \to \rho^+\pi^-)$	-0.05 ± 0.10
$C_{\rho^0\pi^0}\ (B^0 \to \rho^0\pi^0)$	0.3 ± 0.4
$S_{\rho^0\pi^0}\ (B^0 \to \rho^0\pi^0)$	0.1 ± 0.4
$C_{a_1\pi}\ (B^0 \to a_1(1260)^+\pi^-)$	-0.05 ± 0.11
$S_{a_1\pi}\ (B^0 \to a_1(1260)^+\pi^-)$	-0.2 ± 0.4 (S = 3.2)
$\Delta C_{a_1\pi}\ (B^0 \to a_1(1260)^+\pi^-)$	0.43 ± 0.14 (S = 1.3)
$\Delta S_{a_1\pi}\ (B^0 \to a_1(1260)^+\pi^-)$	-0.11 ± 0.12
$C\ (B^0 \to b_1^- K^+)$	-0.22 ± 0.24
$\Delta C\ (B^0 \to b_1^- \pi^+)$	-1.04 ± 0.24
$C_{\rho^0\rho^0}\ (B^0 \to \rho^0\rho^0)$	0.2 ± 0.9
$S_{\rho^0\rho^0}\ (B^0 \to \rho^0\rho^0)$	0.3 ± 0.7
$C_{\rho\rho}\ (B^0 \to \rho^+\rho^-)$	-0.05 ± 0.13
$S_{\rho\rho}\ (B^0 \to \rho^+\rho^-)$	-0.06 ± 0.17
$\lvert\lambda\rvert\ (B^0 \to J/\psi K^*(892)^0)$	<0.25, CL = 95%
$\cos 2\beta\ (B^0 \to J/\psi K^*(892)^0)$	$1.7^{+0.7}_{-0.9}$ (S = 1.6)
$\cos 2\beta\ (B^0 \to [K^0_S\pi^+\pi^-]_{D^{(*)}}\ h^0)$	$1.0^{+0.6}_{-0.7}$ (S = 1.8)
$(S_+ + S_-)/2\ (B^0 \to D^{*-}\pi^+)$	-0.039 ± 0.011
$(S_- - S_+)/2\ (B^0 \to D^{*-}\pi^+)$	-0.009 ± 0.015
$(S_+ + S_-)/2\ (B^0 \to D^-\pi^+)$	-0.046 ± 0.023
$(S_- - S_+)/2\ (B^0 \to D^-\pi^+)$	-0.022 ± 0.021

$(S_+ + S_-)/2$ $(B^0 \to D^- \rho^+)$	-0.024 ± 0.032
$(S_- - S_+)/2$ $(B^0 \to D^- \rho^+)$	-0.10 ± 0.06
$C_{\eta_c K^0_S}$ $(B^0 \to \eta_c K^0_S)$	0.08 ± 0.13
$C_{c\overline{c}K^{(*)0}}$ $(B^0 \to c\overline{c}K^{(*)0})$	$(0.5 \pm 1.7) \times 10^{-2}$
$C_{J/\psi(nS)K^0}$ $(B^0 \to J/\psi(nS)K^0)$	$(0.5 \pm 2.0) \times 10^{-2}$
$C_{J/\psi K^{*0}}$ $(B^0 \to J/\psi K^{*0})$	0.03 ± 0.10
$S_{J/\psi K^{*0}}$ $(B^0 \to J/\psi K^{*0})$	0.60 ± 0.25
$C_{\chi_{c0} K^0_S}$ $(B^0 \to \chi_{c0} K^0_S)$	$-0.3^{+0.5}_{-0.4}$
$S_{\chi_{c0} K^0_S}$ $(B^0 \to \chi_{c0} K^0_S)$	-0.7 ± 0.5
$C_{\chi_{c1} K^0_S}$ $(B^0 \to \chi_{c1} K^0_S)$	0.06 ± 0.07
$\sin(2\beta_{\rm eff})(B^0 \to \phi K^0)$	0.22 ± 0.30
$\sin(2\beta_{\rm eff})(B^0 \to \phi K^*_0(1430)^0)$	$0.97^{+0.03}_{-0.52}$
$\sin(2\beta_{\rm eff})(B^0 \to [K^0_S \pi^+ \pi^-]_{D^{(*)}} h^0)$	0.45 ± 0.28
$\lvert\lambda\rvert$ $(B^0 \to [K^0_S \pi^+ \pi^-]_{D^{(*)}} h^0)$	1.01 ± 0.08
$\lvert\sin(2\beta+\gamma)\rvert$	>0.40, CL = 90%
$2\beta+\gamma$	$(83 \pm 60)^\circ$
$\gamma(B^0 \to D^0 K^{*0})$	$(162 \pm 60)^\circ$
$A_{CP}(B \to K^*(892)\gamma)$	-0.003 ± 0.017
$A_{CP}(b \to s\gamma)$	-0.008 ± 0.029
$A_{CP}(b \to (s+d)\gamma)$	-0.01 ± 0.05
$A_{CP}(B \to X_s \ell^+ \ell^-)$	-0.22 ± 0.26
$A_{CP}(B \to K^* e^+ e^-)$	-0.18 ± 0.15
$A_{CP}(B \to K^* \mu^+ \mu^-)$	-0.03 ± 0.13
$A_{CP}(B \to K^* \ell^+ \ell^-)$	-0.04 ± 0.07
$A_{CP}(B \to \eta$ anything)	$-0.13^{+0.04}_{-0.05}$
$\mathrm{Re}(\epsilon_{B^0_s}) / (1 + \lvert\epsilon_{B^0_s}\rvert^2)$	$(-4.3 \pm 1.4) \times 10^{-3}$
CP Violation phase β_s	$(4^{+10}_{-13}) \times 10^{-2}$
$A_{CP}(B_s \to \pi^+ K^-)$	0.29 ± 0.07
$A_{CP}(B^0_s \to [K^+ K^-]_D \overline{K}^*(892)^0)$	0.04 ± 0.16
$\Gamma(\eta_c(1S) \to \pi^+ \pi^-)/\Gamma_{\rm total}$	$<1.1 \times 10^{-4}$, CL = 90%
$\Gamma(\eta_c(1S) \to \pi^0 \pi^0)/\Gamma_{\rm total}$	$<3.5 \times 10^{-5}$, CL = 90%
$\Gamma(\eta_c(1S) \to K^+ K^-)/\Gamma_{\rm total}$	$<6 \times 10^{-4}$, CL = 90%
$\Gamma(\eta_c(1S) \to K^0_S K^0_S)/\Gamma_{\rm total}$	$<3.1 \times 10^{-4}$, CL = 90%
$(\alpha+\overline{\alpha})/(\alpha-\overline{\alpha})$ in $\Lambda \to p\pi^-$, $\overline{\Lambda} \to \overline{p}\pi^+$	0.006 ± 0.021
$\frac{[\alpha(\Xi^-)\alpha_-(\Lambda)-\alpha(\overline{\Xi}^+)\alpha_+(\overline{\Lambda})]}{[\alpha(\Xi^-)\alpha_-(\Lambda)+\alpha(\overline{\Xi}^+)\alpha_+(\overline{\Lambda})]}$	$(0 \pm 7) \times 10^{-4}$
$(\alpha+\overline{\alpha})/(\alpha-\overline{\alpha})$ in $\Omega^- \to \Lambda K^-$, $\overline{\Omega}^+ \to \overline{\Lambda} K^+$	-0.02 ± 0.13
$(\alpha+\overline{\alpha})/(\alpha-\overline{\alpha})$ in $\Lambda_c^+ \to \Lambda\pi^+$, $\overline{\Lambda}_c^- \to \overline{\Lambda}\pi^-$	-0.07 ± 0.31

$(\alpha+\overline{\alpha})/(\alpha-\overline{\alpha})$ in $\Lambda_c^+ \to \Lambda e^+\nu_e$, $\overline{\Lambda}_c^- \to \overline{\Lambda} e^-\overline{\nu}_e$		0.00 ± 0.04
$A_{CP}(\Lambda_b \to p\pi^-)$		0.03 ± 0.18
$A_{CP}(\Lambda_b \to pK^-)$		0.37 ± 0.17

CP VIOLATION OBSERVED

Re(ϵ)		$(1.596 \pm 0.013) \times 10^{-3}$
charge asymmetry in $K^0_{\ell 3}$ decays		
A_L = weighted average of $A_L(\mu)$ and $A_L(e)$		$(0.332 \pm 0.006)\%$
$A_L(\mu) = [\Gamma(\pi^-\mu^+\nu_\mu) - \Gamma(\pi^+\mu^-\overline{\nu}_\mu)]$/sum		$(0.304 \pm 0.025)\%$
$A_L(e) = [\Gamma(\pi^- e^+\nu_e) - \Gamma(\pi^+ e^-\overline{\nu}_e)]$/sum		$(0.334 \pm 0.007)\%$
parameters for $K^0_L \to 2\pi$ decay		
$\lvert\eta_{00}\rvert = \lvert A(K^0_L \to 2\pi^0) / A(K^0_S \to 2\pi^0)\rvert$		$(2.220 \pm 0.011) \times 10^{-3}$ (S = 1.8)
$\lvert\eta_{+-}\rvert = \lvert A(K^0_L \to \pi^+\pi^-) / A(K^0_S \to \pi^+\pi^-)\rvert$		$(2.232 \pm 0.011) \times 10^{-3}$ (S = 1.8)
$\lvert\epsilon\rvert = (2\lvert\eta_{+-}\rvert + \lvert\eta_{00}\rvert)/3$		$(2.228 \pm 0.011) \times 10^{-3}$ (S = 1.8)
$\lvert\eta_{00}/\eta_{+-}\rvert$	[h]	0.9950 ± 0.0007 (S = 1.6)
Re(ϵ'/ϵ) $= (1-\lvert\eta_{00}/\eta_{+-}\rvert)/3$	[h]	$(1.66 \pm 0.23) \times 10^{-3}$ (S = 1.6)
Assuming *CPT*		
ϕ_{+-}, phase of η_{+-}		$(43.51 \pm 0.05)^\circ$ (S = 1.2)
ϕ_{00}, phase of η_{00}		$(43.52 \pm 0.05)^\circ$ (S = 1.3)
$\phi_\epsilon = (2\phi_{+-} + \phi_{00})/3$		$(43.52 \pm 0.05)^\circ$ (S = 1.2)
Not assuming *CPT*		
ϕ_{+-}, phase of η_{+-}		$(43.4 \pm 0.5)^\circ$ (S = 1.2)
ϕ_{00}, phase of η_{00}		$(43.7 \pm 0.6)^\circ$ (S = 1.2)
$\phi_\epsilon = (2\phi_{+-} + \phi_{00})/3$		$(43.5 \pm 0.5)^\circ$ (S = 1.3)
CP asymmetry *A* in $K^0_L \to \pi^+\pi^- e^+ e^-$		$(13.7 \pm 1.5)\%$
β_{CP} from $K^0_L \to e^+e^-e^+e^-$		-0.19 ± 0.07
γ_{CP} from $K^0_L \to e^+e^-e^+e^-$		0.01 ± 0.11 (S = 1.6)
parameters for $K^0_L \to \pi^+\pi^-\gamma$ decay		
$\lvert\eta_{+-\gamma}\rvert = \lvert A(K^0_L \to \pi^+\pi^-\gamma,\ CP$ violating$)/A(K^0_S \to \pi^+\pi^-\gamma)\rvert$		$(2.35 \pm 0.07) \times 10^{-3}$
$\phi_{+-\gamma}$ = phase of $\eta_{+-\gamma}$		$(44 \pm 4)^\circ$
$\Gamma(K^0_L \to \pi^+\pi^-)/\Gamma_{\text{total}}$	[i]	$(1.967 \pm 0.010) \times 10^{-3}$ (S = 1.5)
$\Gamma(K^0_L \to \pi^0\pi^0)/\Gamma_{\text{total}}$		$(8.64 \pm 0.06) \times 10^{-4}$ (S = 1.8)
$A_{CP}(B^+ \to D_{CP(+1)}K^+)$		0.170 ± 0.033 (S = 1.2)
$A_{ADS}(B^+ \to DK^+)$		-0.52 ± 0.15
$A_{CP}(B^+ \to \eta K^+)$		-0.37 ± 0.08

$A_{CP}(B^+ \to f_2(1270)K^+)$	$-0.68^{+0.19}_{-0.17}$
$A_{CP}(B^+ \to \rho^0 K^+)$	0.37 ± 0.10
$A_{CP}(B^+ \to f_0(1370)\pi^+)$	0.72 ± 0.22
$\gamma(B^+ \to D^{(*)0}K^{(*)+})$	$(72 \pm 11)^\circ$
$A_{CP}\ (B^0 \to K^+\pi^-)$	-0.087 ± 0.008
$A_{CP}(B^0 \to \eta K^*(892)^0)$	0.19 ± 0.05
$S_{D^*(2010)^- D^+}\ (B^0 \to D^*(2010)^- D^+)$	-0.72 ± 0.15
$S_{D^*(2010)^+ D^-}\ (B^0 \to D^*(2010)^+ D^-)$	-0.73 ± 0.14
$S_{D^{*+}D^{*-}}\ (B^0 \to D^{*+}D^{*-})$	-0.59 ± 0.14 (S = 1.8)
$S_+\ (B^0 \to D^{*+}D^{*-})$	-0.73 ± 0.09
$S_{D^+D^-}\ (B^0 \to D^+D^-)$	$-0.99^{+0.17}_{-0.14}$
$S_{J/\psi(1S)\pi^0}\ (B^0 \to J/\psi(1S)\pi^0)$	-0.94 ± 0.29 (S = 1.9)
$S_{K^0\pi^0}\ (B^0 \to K^0\pi^0)$	0.58 ± 0.17
$S_{\eta' K^0}\ (B^0 \to \eta' K^0)$	0.60 ± 0.07
$S_{K^+K^-K^0_S}\ (B^0 \to K^+K^-K^0_S$ nonresonant)	-0.66 ± 0.11
$S_{K^+K^-K^0_S}\ (B^0 \to K^+K^-K^0_S$ inclusive)	-0.65 ± 0.12
$S_{\pi\pi}\ (B^0 \to \pi^+\pi^-)$	-0.65 ± 0.07
$\Delta C_{\rho\pi}\ (B^0 \to \rho^+\pi^-)$	0.37 ± 0.08
$S_{\eta_c K^0_S}\ (B^0 \to \eta_c K^0_S)$	0.93 ± 0.17
$\sin(2\beta)\ (B^0 \to J/\psi K^0_S)$	0.682 ± 0.019
$S_{J/\psi(\mathrm{nS})K^0}\ (B^0 \to J/\psi(\mathrm{nS})K^0)$	0.676 ± 0.021
$S_{\chi_{c1}K^0_S}\ (B^0 \to \chi_{c1}K^0_S)$	0.63 ± 0.10
$\sin(2\beta_{\mathrm{eff}})(B^0 \to K^+K^-K^0_S)$	$0.77^{+0.13}_{-0.12}$
α	$(90 \pm 5)^\circ$
$\mathrm{Re}(\epsilon_b)\ /\ (1 + \lvert\epsilon_b\rvert^2)$	$(-2.0 \pm 0.5) \times 10^{-3}$

CPT INVARIANCE

$(m_{W^+} - m_{W^-})\ /\ m_{\mathrm{average}}$	-0.002 ± 0.007
$(m_{e^+} - m_{e^-})\ /\ m_{\mathrm{average}}$	$<8 \times 10^{-9}$, CL = 90%
$\lvert q_{e^+} + q_{e^-}\rvert/e$	$<4 \times 10^{-8}$
$(g_{e^+} - g_{e^-})\ /\ g_{\mathrm{average}}$	$(-0.5 \pm 2.1) \times 10^{-12}$
$(\tau_{\mu^+} - \tau_{\mu^-})\ /\ \tau_{\mathrm{average}}$	$(2 \pm 8) \times 10^{-5}$
$(g_{\mu^+} - g_{\mu^-})\ /\ g_{\mathrm{average}}$	$(-0.11 \pm 0.12) \times 10^{-8}$
$(m_{\tau^+} - m_{\tau^-})/m_{\mathrm{average}}$	$<2.8 \times 10^{-4}$, CL = 90%
$m_t - m_{\overline{t}}$	-0.6 ± 0.6 GeV (S = 1.2)

$(m_{\pi^+} - m_{\pi^-}) / m_{\text{average}}$		$(2 \pm 5) \times 10^{-4}$
$(\tau_{\pi^+} - \tau_{\pi^-}) / \tau_{\text{average}}$		$(6 \pm 7) \times 10^{-4}$
$(m_{K^+} - m_{K^-}) / m_{\text{average}}$		$(-0.6 \pm 1.8) \times 10^{-4}$
$(\tau_{K^+} - \tau_{K^-}) / \tau_{\text{average}}$		$(0.10 \pm 0.09)\%$ (S = 1.2)
$K^\pm \to \mu^\pm \nu_\mu$ rate difference/average		$(-0.5 \pm 0.4)\%$
$K^\pm \to \pi^\pm \pi^0$ rate difference/average	[j]	$(0.8 \pm 1.2)\%$
δ in $K^0 - \overline{K}^0$ mixing		
real part of δ		$(2.5 \pm 2.3) \times 10^{-4}$
imaginary part of δ		$(-1.5 \pm 1.6) \times 10^{-5}$
Re(y), K_{e3} parameter		$(0.4 \pm 2.5) \times 10^{-3}$
Re(x_), K_{e3} parameter		$(-2.9 \pm 2.0) \times 10^{-3}$
$\lvert m_{K^0} - m_{\overline{K}^0} \rvert / m_{\text{average}}$	[k]	$<6 \times 10^{-19}$, CL = 90%
$(\Gamma_{K^0} - \Gamma_{\overline{K}^0})/m_{\text{average}}$		$(8 \pm 8) \times 10^{-18}$
phase difference $\phi_{00} - \phi_{+-}$		$(0.34 \pm 0.32)^\circ$
$\text{Re}(\frac{2}{3}\eta_{+-} + \frac{1}{3}\eta_{00}) - \frac{A_L}{2}$		$(-3 \pm 35) \times 10^{-6}$
$A_{CPT}(D^0 \to K^- \pi^+)$		0.008 ± 0.008
ΔS^+_{CPT} $(S^-_{\ell^+,K^0_S} - S^+_{\ell^+,K^0_S})$		0.16 ± 0.23
ΔS^-_{CPT} $(S^+_{\ell^+,K^0_S} - S^-_{\ell^+,K^0_S})$		-0.03 ± 0.14
ΔC^+_{CPT} $(C^-_{\ell^+,K^0_S} - C^+_{\ell^+,K^0_S})$		0.14 ± 0.17
ΔC^-_{CPT} $(C^+_{\ell^+,K^0_S} - C^-_{\ell^+,K^0_S})$		0.03 ± 0.14
$\lvert m_p - m_{\overline{p}} \rvert / m_p$	[l]	$<2 \times 10^{-9}$, CL = 90%
$(\lvert \frac{q_{\overline{p}}}{m_{\overline{p}}} \rvert - \frac{q_p}{m_p}) / \frac{q_p}{m_p}$		$(-9 \pm 9) \times 10^{-11}$
$\lvert q_p + q_{\overline{p}} \rvert / e$	[l]	$<2 \times 10^{-9}$, CL = 90%
$(\mu_p + \mu_{\overline{p}}) / \mu_p$		$(0 \pm 5) \times 10^{-6}$
$(m_n - m_{\overline{n}}) / m_n$		$(9 \pm 6) \times 10^{-5}$
$(m_\Lambda - m_{\overline{\Lambda}}) / m_\Lambda$		$(-0.1 \pm 1.1) \times 10^{-5}$ (S = 1.6)
$(\tau_\Lambda - \tau_{\overline{\Lambda}}) / \tau_\Lambda$		-0.001 ± 0.009
$(\tau_{\Sigma^+} - \tau_{\overline{\Sigma}^-}) / \tau_{\Sigma^+}$		$(-0.6 \pm 1.2) \times 10^{-3}$
$(\mu_{\Sigma^+} + \mu_{\overline{\Sigma}^-}) / \mu_{\Sigma^+}$		0.014 ± 0.015
$(m_{\Xi^-} - m_{\overline{\Xi}^+}) / m_{\Xi^-}$		$(-3 \pm 9) \times 10^{-5}$
$(\tau_{\Xi^-} - \tau_{\overline{\Xi}^+}) / \tau_{\Xi^-}$		-0.01 ± 0.07
$(\mu_{\Xi^-} + \mu_{\overline{\Xi}^+}) / \lvert \mu_{\Xi^-} \rvert$		$+0.01 \pm 0.05$
$(m_{\Omega^-} - m_{\overline{\Omega}^+}) / m_{\Omega^-}$		$(-1 \pm 8) \times 10^{-5}$
$(\tau_{\Omega^-} - \tau_{\overline{\Omega}^+}) / \tau_{\Omega^-}$		0.00 ± 0.05

TESTS OF NUMBER CONSERVATION LAWS

LEPTON FAMILY NUMBER

Lepton family number conservation means separate conservation of each of L_e, L_μ, L_τ.

$\Gamma(Z \to e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[n]	$<1.7 \times 10^{-6}$, CL = 95%
$\Gamma(Z \to e^\pm \tau^\mp)/\Gamma_{\text{total}}$	[n]	$<9.8 \times 10^{-6}$, CL = 95%
$\Gamma(Z \to \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	[n]	$<1.2 \times 10^{-5}$, CL = 95%
$\sigma(e^+e^- \to e^\pm\tau^\mp) \,/\, \sigma(e^+e^- \to \mu^+\mu^-)$		$<8.9 \times 10^{-6}$, CL = 95%
$\sigma(e^+e^- \to \mu^\pm\tau^\mp) \,/\, \sigma(e^+e^- \to \mu^+\mu^-)$		$<4.0 \times 10^{-6}$, CL = 95%
limit on $\mu^- \to e^-$ conversion		
$\sigma(\mu^- {}^{32}\text{S} \to e^- {}^{32}\text{S}) \,/\, \sigma(\mu^- {}^{32}\text{S} \to \nu_\mu {}^{32}\text{P}^*)$		$<7 \times 10^{-11}$, CL = 90%
$\sigma(\mu^- \text{Ti} \to e^- \text{Ti}) \,/\, \sigma(\mu^- \text{Ti} \to \text{capture})$		$<4.3 \times 10^{-12}$, CL = 90%
$\sigma(\mu^- \text{Pb} \to e^- \text{Pb}) \,/\, \sigma(\mu^- \text{Pb} \to \text{capture})$		$<4.6 \times 10^{-11}$, CL = 90%
limit on muonium $\to$ antimuonium conversion $R_g = G_C \,/\, G_F$		<0.0030, CL = 90%
$\Gamma(\mu^- \to e^- \nu_e \overline{\nu}_\mu)/\Gamma_{\text{total}}$	[o]	$<1.2 \times 10^{-2}$, CL = 90%
$\Gamma(\mu^- \to e^- \gamma)/\Gamma_{\text{total}}$		$<2.4 \times 10^{-12}$, CL = 90%
$\Gamma(\mu^- \to e^- e^+ e^-)/\Gamma_{\text{total}}$		$<1.0 \times 10^{-12}$, CL = 90%
$\Gamma(\mu^- \to e^- 2\gamma)/\Gamma_{\text{total}}$		$<7.2 \times 10^{-11}$, CL = 90%
$\Gamma(\tau^- \to e^- \gamma)/\Gamma_{\text{total}}$		$<3.3 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \gamma)/\Gamma_{\text{total}}$		$<4.4 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- \pi^0)/\Gamma_{\text{total}}$		$<8.0 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \pi^0)/\Gamma_{\text{total}}$		$<1.1 \times 10^{-7}$, CL = 90%
$\Gamma(\tau^- \to e^- K^0_S)/\Gamma_{\text{total}}$		$<2.6 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- K^0_S)/\Gamma_{\text{total}}$		$<2.3 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- \eta)/\Gamma_{\text{total}}$		$<9.2 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \eta)/\Gamma_{\text{total}}$		$<6.5 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- \rho^0)/\Gamma_{\text{total}}$		$<1.8 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \rho^0)/\Gamma_{\text{total}}$		$<1.2 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- \omega)/\Gamma_{\text{total}}$		$<4.8 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \omega)/\Gamma_{\text{total}}$		$<4.7 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- K^*(892)^0)/\Gamma_{\text{total}}$		$<3.2 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- K^*(892)^0)/\Gamma_{\text{total}}$		$<5.9 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- \overline{K}^*(892)^0)/\Gamma_{\text{total}}$		$<3.4 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \overline{K}^*(892)^0)/\Gamma_{\text{total}}$		$<7.0 \times 10^{-8}$, CL = 90%

$\Gamma(\tau^- \to e^- \eta'(958))/\Gamma_{\text{total}}$		$<1.6 \times 10^{-7}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \eta'(958))/\Gamma_{\text{total}}$		$<1.3 \times 10^{-7}$, CL = 90%
$\Gamma(\tau^- \to e^- f_0(980) \to e^- \pi^+ \pi^-)/\Gamma_{\text{total}}$		$<3.2 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- f_0(980) \to \mu^- \pi^+ \pi^-)/\Gamma_{\text{total}}$		$<3.4 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- \phi)/\Gamma_{\text{total}}$		$<3.1 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \phi)/\Gamma_{\text{total}}$		$<8.4 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- e^+ e^-)/\Gamma_{\text{total}}$		$<2.7 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- \mu^+ \mu^-)/\Gamma_{\text{total}}$		$<2.7 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^+ \mu^- \mu^-)/\Gamma_{\text{total}}$		$<1.7 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- e^+ e^-)/\Gamma_{\text{total}}$		$<1.8 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^+ e^- e^-)/\Gamma_{\text{total}}$		$<1.5 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \mu^+ \mu^-)/\Gamma_{\text{total}}$		$<2.1 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- \pi^+ \pi^-)/\Gamma_{\text{total}}$		$<2.3 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \pi^+ \pi^-)/\Gamma_{\text{total}}$		$<2.1 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- \pi^+ K^-)/\Gamma_{\text{total}}$		$<3.7 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- \pi^- K^+)/\Gamma_{\text{total}}$		$<3.1 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- K^0_S K^0_S)/\Gamma_{\text{total}}$		$<7.1 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- K^+ K^-)/\Gamma_{\text{total}}$		$<3.4 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \pi^+ K^-)/\Gamma_{\text{total}}$		$<8.6 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \pi^- K^+)/\Gamma_{\text{total}}$		$<4.5 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- K^0_S K^0_S)/\Gamma_{\text{total}}$		$<8.0 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \mu^- K^+ K^-)/\Gamma_{\text{total}}$		$<4.4 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to e^- \pi^0 \pi^0)/\Gamma_{\text{total}}$		$<6.5 \times 10^{-6}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \pi^0 \pi^0)/\Gamma_{\text{total}}$		$<1.4 \times 10^{-5}$, CL = 90%
$\Gamma(\tau^- \to e^- \eta\eta)/\Gamma_{\text{total}}$		$<3.5 \times 10^{-5}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \eta\eta)/\Gamma_{\text{total}}$		$<6.0 \times 10^{-5}$, CL = 90%
$\Gamma(\tau^- \to e^- \pi^0 \eta)/\Gamma_{\text{total}}$		$<2.4 \times 10^{-5}$, CL = 90%
$\Gamma(\tau^- \to \mu^- \pi^0 \eta)/\Gamma_{\text{total}}$		$<2.2 \times 10^{-5}$, CL = 90%
$\Gamma(\tau^- \to e^-$ light boson$)/\Gamma_{\text{total}}$		$<2.7 \times 10^{-3}$, CL = 95%
$\Gamma(\tau^- \to \mu^-$ light boson$)/\Gamma_{\text{total}}$		$<5 \times 10^{-3}$, CL = 95%

LEPTON FAMILY NUMBER VIOLATION IN NEUTRINOS

Solar Neutrinos		
$\sin^2(2\theta_{12})$		0.857 ± 0.024
Δm^2_{21}		$(7.50 \pm 0.20) \times 10^{-5}$ eV^2
Atmospheric Neutrinos		
$\sin^2(2\theta_{23})$	[p]	>0.95
Δm^2_{32}	[q]	$(2.32^{+0.12}_{-0.08}) \times 10^{-3}$ eV^2
Reactor Neutrinos		
$\sin^2(2\theta_{13})$		0.095 ± 0.010
$\Gamma(\pi^+ \to \mu^+ \nu_e)/\Gamma_{\text{total}}$	[r]	$<8.0 \times 10^{-3}$, CL = 90%
$\Gamma(\pi^+ \to \mu^- e^+ e^+ \nu)/\Gamma_{\text{total}}$		$<1.6 \times 10^{-6}$, CL = 90%
$\Gamma(\pi^0 \to \mu^+ e^-)/\Gamma_{\text{total}}$		$<3.8 \times 10^{-10}$, CL = 90%

$\Gamma(\pi^0 \to \mu^- e^+)/\Gamma_{\text{total}}$		$<3.4 \times 10^{-9}$, CL = 90%
$\Gamma(\pi^0 \to \mu^+ e^- + \mu^- e^+)/\Gamma_{\text{total}}$		$<3.6 \times 10^{-10}$, CL = 90%
$\Gamma(\eta \to \mu^+ e^- + \mu^- e^+)/\Gamma_{\text{total}}$		$<6 \times 10^{-6}$, CL = 90%
$\Gamma(\eta'(958) \to e\mu)/\Gamma_{\text{total}}$		$<4.7 \times 10^{-4}$, CL = 90%
$\Gamma(\phi(1020) \to e^{\pm}\mu^{\mp})/\Gamma_{\text{total}}$		$<2 \times 10^{-6}$, CL = 90%
$\Gamma(K^+ \to \mu^- \nu e^+ e^+)/\Gamma_{\text{total}}$		$<2.1 \times 10^{-8}$, CL = 90%
$\Gamma(K^+ \to \mu^+ \nu_e)/\Gamma_{\text{total}}$	[r]	$<4 \times 10^{-3}$, CL = 90%
$\Gamma(K^+ \to \pi^+ \mu^+ e^-)/\Gamma_{\text{total}}$		$<1.3 \times 10^{-11}$, CL = 90%
$\Gamma(K^+ \to \pi^+ \mu^- e^+)/\Gamma_{\text{total}}$		$<5.2 \times 10^{-10}$, CL = 90%
$\Gamma(K_L^0 \to e^{\pm}\mu^{\mp})/\Gamma_{\text{total}}$	[n]	$<4.7 \times 10^{-12}$, CL = 90%
$\Gamma(K_L^0 \to e^{\pm} e^{\pm} \mu^{\mp} \mu^{\mp})/\Gamma_{\text{total}}$	[n]	$<4.12 \times 10^{-11}$, CL = 90%
$\Gamma(K_L^0 \to \pi^0 \mu^{\pm} e^{\mp})/\Gamma_{\text{total}}$	[n]	$<7.6 \times 10^{-11}$, CL = 90%
$\Gamma(K_L^0 \to \pi^0 \pi^0 \mu^{\pm} e^{\mp})/\Gamma_{\text{total}}$		$<1.7 \times 10^{-10}$, CL = 90%
$\Gamma(D^+ \to \pi^+ e^+ \mu^-)/\Gamma_{\text{total}}$		$<2.9 \times 10^{-6}$, CL = 90%
$\Gamma(D^+ \to \pi^+ e^- \mu^+)/\Gamma_{\text{total}}$		$<3.6 \times 10^{-6}$, CL = 90%
$\Gamma(D^+ \to K^+ e^+ \mu^-)/\Gamma_{\text{total}}$		$<1.2 \times 10^{-6}$, CL = 90%
$\Gamma(D^+ \to K^+ e^- \mu^+)/\Gamma_{\text{total}}$		$<2.8 \times 10^{-6}$, CL = 90%
$\Gamma(D^0 \to \mu^{\pm} e^{\mp})/\Gamma_{\text{total}}$	[n]	$<2.6 \times 10^{-7}$, CL = 90%
$\Gamma(D^0 \to \pi^0 e^{\pm} \mu^{\mp})/\Gamma_{\text{total}}$	[n]	$<8.6 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to \eta e^{\pm} \mu^{\mp})/\Gamma_{\text{total}}$	[n]	$<1.0 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to \pi^+ \pi^- e^{\pm} \mu^{\mp})/\Gamma_{\text{total}}$	[n]	$<1.5 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to \rho^0 e^{\pm} \mu^{\mp})/\Gamma_{\text{total}}$	[n]	$<4.9 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to \omega e^{\pm} \mu^{\mp})/\Gamma_{\text{total}}$	[n]	$<1.2 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to K^- K^+ e^{\pm} \mu^{\mp})/\Gamma_{\text{total}}$	[n]	$<1.8 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to \phi e^{\pm} \mu^{\mp})/\Gamma_{\text{total}}$	[n]	$<3.4 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to \overline{K}^0 e^{\pm} \mu^{\mp})/\Gamma_{\text{total}}$	[n]	$<1.0 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to K^- \pi^+ e^{\pm} \mu^{\mp})/\Gamma_{\text{total}}$	[n]	$<5.53 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to \overline{K}^*(892)^0 e^{\pm} \mu^{\mp})/\Gamma_{\text{total}}$	[n]	$<8.3 \times 10^{-5}$, CL = 90%
$\Gamma(D_s^+ \to \pi^+ e^+ \mu^-)/\Gamma_{\text{total}}$		$<1.2 \times 10^{-5}$, CL = 90%
$\Gamma(D_s^+ \to \pi^+ e^- \mu^+)/\Gamma_{\text{total}}$		$<2.0 \times 10^{-5}$, CL = 90%
$\Gamma(D_s^+ \to K^+ e^+ \mu^-)/\Gamma_{\text{total}}$		$<1.4 \times 10^{-5}$, CL = 90%
$\Gamma(D_s^+ \to K^+ e^- \mu^+)/\Gamma_{\text{total}}$		$<9.7 \times 10^{-6}$, CL = 90%
$\Gamma(B^+ \to \pi^+ e^+ \mu^-)/\Gamma_{\text{total}}$		$<6.4 \times 10^{-3}$, CL = 90%
$\Gamma(B^+ \to \pi^+ e^- \mu^+)/\Gamma_{\text{total}}$		$<6.4 \times 10^{-3}$, CL = 90%
$\Gamma(B^+ \to \pi^+ e^{\pm} \mu^{\mp})/\Gamma_{\text{total}}$		$<1.7 \times 10^{-7}$, CL = 90%
$\Gamma(B^+ \to \pi^+ e^+ \tau^-)/\Gamma_{\text{total}}$		$<7.4 \times 10^{-5}$, CL = 90%
$\Gamma(B^+ \to \pi^+ e^- \tau^+)/\Gamma_{\text{total}}$		$<2.0 \times 10^{-5}$, CL = 90%
$\Gamma(B^+ \to \pi^+ e^{\pm} \tau^{\mp})/\Gamma_{\text{total}}$		$<7.5 \times 10^{-5}$, CL = 90%
$\Gamma(B^+ \to \pi^+ \mu^+ \tau^-)/\Gamma_{\text{total}}$		$<6.2 \times 10^{-5}$, CL = 90%
$\Gamma(B^+ \to \pi^+ \mu^- \tau^+)/\Gamma_{\text{total}}$		$<4.5 \times 10^{-5}$, CL = 90%
$\Gamma(B^+ \to \pi^+ \mu^{\pm} \tau^{\mp})/\Gamma_{\text{total}}$		$<7.2 \times 10^{-5}$, CL = 90%

$\Gamma(B^+ \to K^+ e^+ \mu^-)/\Gamma_{\text{total}}$		$<9.1 \times 10^{-8}$, CL = 90%
$\Gamma(B^+ \to K^+ e^- \mu^+)/\Gamma_{\text{total}}$		$<1.3 \times 10^{-7}$, CL = 90%
$\Gamma(B^+ \to K^+ e^\pm \mu^\mp)/\Gamma_{\text{total}}$		$<9.1 \times 10^{-8}$, CL = 90%
$\Gamma(B^+ \to K^+ e^+ \tau^-)/\Gamma_{\text{total}}$		$<4.3 \times 10^{-5}$, CL = 90%
$\Gamma(B^+ \to K^+ e^- \tau^+)/\Gamma_{\text{total}}$		$<1.5 \times 10^{-5}$, CL = 90%
$\Gamma(B^+ \to K^+ e^\pm \tau^\mp)/\Gamma_{\text{total}}$		$<3.0 \times 10^{-5}$, CL = 90%
$\Gamma(B^+ \to K^+ \mu^+ \tau^-)/\Gamma_{\text{total}}$		$<4.5 \times 10^{-5}$, CL = 90%
$\Gamma(B^+ \to K^+ \mu^- \tau^+)/\Gamma_{\text{total}}$		$<2.8 \times 10^{-5}$, CL = 90%
$\Gamma(B^+ \to K^+ \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$		$<4.8 \times 10^{-5}$, CL = 90%
$\Gamma(B^+ \to K^*(892)^+ e^+ \mu^-)/\Gamma_{\text{total}}$		$<1.3 \times 10^{-6}$, CL = 90%
$\Gamma(B^+ \to K^*(892)^+ e^- \mu^+)/\Gamma_{\text{total}}$		$<9.9 \times 10^{-7}$, CL = 90%
$\Gamma(B^+ \to K^*(892)^+ e^\pm \mu^\mp)/\Gamma_{\text{total}}$		$<1.4 \times 10^{-6}$, CL = 90%
$\Gamma(B^0 \to e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[n]	$<6.4 \times 10^{-8}$, CL = 90%
$\Gamma(B^0 \to \pi^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$		$<1.4 \times 10^{-7}$, CL = 90%
$\Gamma(B^0 \to K^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$		$<2.7 \times 10^{-7}$, CL = 90%
$\Gamma(B^0 \to K^*(892)^0 e^+ \mu^-)/\Gamma_{\text{total}}$		$<5.3 \times 10^{-7}$, CL = 90%
$\Gamma(B^0 \to K^*(892)^0 e^- \mu^+)/\Gamma_{\text{total}}$		$<3.4 \times 10^{-7}$, CL = 90%
$\Gamma(B^0 \to K^*(892)^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$		$<5.8 \times 10^{-7}$, CL = 90%
$\Gamma(B^0 \to e^\pm \tau^\mp)/\Gamma_{\text{total}}$	[n]	$<2.8 \times 10^{-5}$, CL = 90%
$\Gamma(B^0 \to \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	[n]	$<2.2 \times 10^{-5}$, CL = 90%
$\Gamma(B \to s e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[n]	$<2.2 \times 10^{-5}$, CL = 90%
$\Gamma(B \to \pi e^\pm \mu^\mp)/\Gamma_{\text{total}}$		$<9.2 \times 10^{-8}$, CL = 90%
$\Gamma(B \to \rho e^\pm \mu^\mp)/\Gamma_{\text{total}}$		$<3.2 \times 10^{-6}$, CL = 90%
$\Gamma(B \to K e^\pm \mu^\mp)/\Gamma_{\text{total}}$		$<3.8 \times 10^{-8}$, CL = 90%
$\Gamma(B \to K^*(892) e^\pm \mu^\mp)/\Gamma_{\text{total}}$		$<5.1 \times 10^{-7}$, CL = 90%
$\Gamma(B_s^0 \to e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[n]	$<2.0 \times 10^{-7}$, CL = 90%
$\Gamma(J/\psi(1S) \to e^\pm \mu^\mp)/\Gamma_{\text{total}}$		$<1.1 \times 10^{-6}$, CL = 90%
$\Gamma(J/\psi(1S) \to e^\pm \tau^\mp)/\Gamma_{\text{total}}$		$<8.3 \times 10^{-6}$, CL = 90%
$\Gamma(J/\psi(1S) \to \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$		$<2.0 \times 10^{-6}$, CL = 90%
$\Gamma(\Upsilon(1S) \to \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$		$<6.0 \times 10^{-6}$, CL = 95%
$\Gamma(\Upsilon(2S) \to e^\pm \tau^\mp)/\Gamma_{\text{total}}$		$<3.2 \times 10^{-6}$, CL = 90%
$\Gamma(\Upsilon(2S) \to \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$		$<3.3 \times 10^{-6}$, CL = 90%
$\Gamma(\Upsilon(3S) \to e^\pm \tau^\mp)/\Gamma_{\text{total}}$		$<4.2 \times 10^{-6}$, CL = 90%
$\Gamma(\Upsilon(3S) \to \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$		$<3.1 \times 10^{-6}$, CL = 90%
$\Gamma(\Lambda_c^+ \to p e^+ \mu^-)/\Gamma_{\text{total}}$		$<9.9 \times 10^{-6}$, CL = 90%
$\Gamma(\Lambda_c^+ \to p e^- \mu^+)/\Gamma_{\text{total}}$		$<1.9 \times 10^{-5}$, CL = 90%

TOTAL LEPTON NUMBER

Violation of total lepton number conservation also implies violation of lepton family number conservation.

$\Gamma(Z \to\ pe)/\Gamma_{\text{total}}$		$<1.8 \times 10^{-6}$, CL = 95%
$\Gamma(Z \to\ p\mu)/\Gamma_{\text{total}}$		$<1.8 \times 10^{-6}$, CL = 95%
limit on $\mu^- \to\ e^+$ conversion		
$\sigma(\mu^- {}^{32}\text{S} \to\ e^+ {}^{32}\text{Si}^*)$ / $\sigma(\mu^- {}^{32}\text{S} \to\ \nu_\mu {}^{32}\text{P}^*)$		$<9 \times 10^{-10}$, CL = 90%
$\sigma(\mu^- {}^{127}\text{I} \to\ e^+ {}^{127}\text{Sb}^*)$ / $\sigma(\mu^- {}^{127}\text{I} \to\ \text{anything})$		$<3 \times 10^{-10}$, CL = 90%
$\sigma(\mu^- \text{Ti} \to\ e^+ \text{Ca})$ / $\sigma(\mu^- \text{Ti} \to\ \text{capture})$		$<3.6 \times 10^{-11}$, CL = 90%
$\Gamma(\tau^- \to\ e^+\pi^-\pi^-)/\Gamma_{\text{total}}$		$<2.0 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to\ \mu^+\pi^-\pi^-)/\Gamma_{\text{total}}$		$<3.9 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to\ e^+\pi^- K^-)/\Gamma_{\text{total}}$		$<3.2 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to\ e^+ K^- K^-)/\Gamma_{\text{total}}$		$<3.3 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to\ \mu^+\pi^- K^-)/\Gamma_{\text{total}}$		$<4.8 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to\ \mu^+ K^- K^-)/\Gamma_{\text{total}}$		$<4.7 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to\ \overline{p}\gamma)/\Gamma_{\text{total}}$		$<3.5 \times 10^{-6}$, CL = 90%
$\Gamma(\tau^- \to\ \overline{p}\pi^0)/\Gamma_{\text{total}}$		$<1.5 \times 10^{-5}$, CL = 90%
$\Gamma(\tau^- \to\ \overline{p}2\pi^0)/\Gamma_{\text{total}}$		$<3.3 \times 10^{-5}$, CL = 90%
$\Gamma(\tau^- \to\ \overline{p}\eta)/\Gamma_{\text{total}}$		$<8.9 \times 10^{-6}$, CL = 90%
$\Gamma(\tau^- \to\ \overline{p}\pi^0\eta)/\Gamma_{\text{total}}$		$<2.7 \times 10^{-5}$, CL = 90%
$\Gamma(\tau^- \to\ \Lambda\pi^-)/\Gamma_{\text{total}}$		$<7.2 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to\ \overline{\Lambda}\pi^-)/\Gamma_{\text{total}}$		$<1.4 \times 10^{-7}$, CL = 90%
$t_{1/2}(\ {}^{76}\text{Ge} \to\ {}^{76}\text{Se} + 2\ e^-\ )$		$>1.9 \times 10^{25}$ yr, CL = 90%
$\Gamma(\pi^+ \to\ \mu^+\overline{\nu}_e)/\Gamma_{\text{total}}$	[r]	$<1.5 \times 10^{-3}$, CL = 90%
$\Gamma(K^+ \to\ \pi^-\mu^+ e^+)/\Gamma_{\text{total}}$		$<5.0 \times 10^{-10}$, CL = 90%
$\Gamma(K^+ \to\ \pi^- e^+ e^+)/\Gamma_{\text{total}}$		$<6.4 \times 10^{-10}$, CL = 90%
$\Gamma(K^+ \to\ \pi^-\mu^+\mu^+)/\Gamma_{\text{total}}$	[r]	$<1.1 \times 10^{-9}$, CL = 90%
$\Gamma(K^+ \to\ \mu^+\overline{\nu}_e)/\Gamma_{\text{total}}$	[r]	$<3.3 \times 10^{-3}$, CL = 90%
$\Gamma(K^+ \to\ \pi^0 e^+\overline{\nu}_e)/\Gamma_{\text{total}}$		$<3 \times 10^{-3}$, CL = 90%
$\Gamma(D^+ \to\ \pi^- 2e^+)/\Gamma_{\text{total}}$		$<1.1 \times 10^{-6}$, CL = 90%
$\Gamma(D^+ \to\ \pi^- 2\mu^+)/\Gamma_{\text{total}}$		$<2.0 \times 10^{-6}$, CL = 90%
$\Gamma(D^+ \to\ \pi^- e^+\mu^+)/\Gamma_{\text{total}}$		$<2.0 \times 10^{-6}$, CL = 90%
$\Gamma(D^+ \to\ \rho^- 2\mu^+)/\Gamma_{\text{total}}$		$<5.6 \times 10^{-4}$, CL = 90%
$\Gamma(D^+ \to\ K^- 2e^+)/\Gamma_{\text{total}}$		$<9 \times 10^{-7}$, CL = 90%
$\Gamma(D^+ \to\ K^- 2\mu^+)/\Gamma_{\text{total}}$		$<1.0 \times 10^{-5}$, CL = 90%
$\Gamma(D^+ \to\ K^- e^+\mu^+)/\Gamma_{\text{total}}$		$<1.9 \times 10^{-6}$, CL = 90%
$\Gamma(D^+ \to\ K^*(892)^- 2\mu^+)/\Gamma_{\text{total}}$		$<8.5 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to\ 2\pi^- 2e^+ + \text{c.c.})/\Gamma_{\text{total}}$		$<1.12 \times 10^{-4}$, CL = 90%

$\Gamma(D^0 \to 2\pi^- 2\mu^+ + \text{c.c.})/\Gamma_{\text{total}}$		$<2.9 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to K^- \pi^- 2e^+ + \text{c.c.})/\Gamma_{\text{total}}$		$<2.06 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to K^- \pi^- 2\mu^+ + \text{c.c.})/\Gamma_{\text{total}}$		$<3.9 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to 2K^- 2e^+ + \text{c.c.})/\Gamma_{\text{total}}$		$<1.52 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to 2K^- 2\mu^+ + \text{c.c.})/\Gamma_{\text{total}}$		$<9.4 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to \pi^- \pi^- e^+ \mu^+ + \text{c.c.})/\Gamma_{\text{total}}$		$<7.9 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to K^- \pi^- e^+ \mu^+ + \text{c.c.})/\Gamma_{\text{total}}$		$<2.18 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to 2K^- e^+ \mu^+ + \text{c.c.})/\Gamma_{\text{total}}$		$<5.7 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to p e^-)/\Gamma_{\text{total}}$	[s]	$<1.0 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to \overline{p} e^+)/\Gamma_{\text{total}}$	[t]	$<1.1 \times 10^{-5}$, CL = 90%
$\Gamma(D_s^+ \to \pi^- 2e^+)/\Gamma_{\text{total}}$		$<4.1 \times 10^{-6}$, CL = 90%
$\Gamma(D_s^+ \to \pi^- 2\mu^+)/\Gamma_{\text{total}}$		$<1.4 \times 10^{-5}$, CL = 90%
$\Gamma(D_s^+ \to \pi^- e^+ \mu^+)/\Gamma_{\text{total}}$		$<8.4 \times 10^{-6}$, CL = 90%
$\Gamma(D_s^+ \to K^- 2e^+)/\Gamma_{\text{total}}$		$<5.2 \times 10^{-6}$, CL = 90%
$\Gamma(D_s^+ \to K^- 2\mu^+)/\Gamma_{\text{total}}$		$<1.3 \times 10^{-5}$, CL = 90%
$\Gamma(D_s^+ \to K^- e^+ \mu^+)/\Gamma_{\text{total}}$		$<6.1 \times 10^{-6}$, CL = 90%
$\Gamma(D_s^+ \to K^*(892)^- 2\mu^+)/\Gamma_{\text{total}}$		$<1.4 \times 10^{-3}$, CL = 90%
$\Gamma(B^+ \to \pi^- e^+ e^+)/\Gamma_{\text{total}}$		$<2.3 \times 10^{-8}$, CL = 90%
$\Gamma(B^+ \to \pi^- \mu^+ \mu^+)/\Gamma_{\text{total}}$		$<1.3 \times 10^{-8}$, CL = 95%
$\Gamma(B^+ \to \pi^- e^+ \mu^+)/\Gamma_{\text{total}}$		$<1.3 \times 10^{-6}$, CL = 90%
$\Gamma(B^+ \to \rho^- e^+ e^+)/\Gamma_{\text{total}}$		$<2.6 \times 10^{-6}$, CL = 90%
$\Gamma(B^+ \to \rho^- \mu^+ \mu^+)/\Gamma_{\text{total}}$		$<5.0 \times 10^{-6}$, CL = 90%
$\Gamma(B^+ \to \rho^- e^+ \mu^+)/\Gamma_{\text{total}}$		$<3.3 \times 10^{-6}$, CL = 90%
$\Gamma(B^+ \to K^- e^+ e^+)/\Gamma_{\text{total}}$		$<3.0 \times 10^{-8}$, CL = 90%
$\Gamma(B^+ \to K^- \mu^+ \mu^+)/\Gamma_{\text{total}}$		$<4.1 \times 10^{-8}$, CL = 90%
$\Gamma(B^+ \to K^- e^+ \mu^+)/\Gamma_{\text{total}}$		$<2.0 \times 10^{-6}$, CL = 90%
$\Gamma(B^+ \to K^*(892)^- e^+ e^+)/\Gamma_{\text{total}}$		$<2.8 \times 10^{-6}$, CL = 90%
$\Gamma(B^+ \to K^*(892)^- \mu^+ \mu^+)/\Gamma_{\text{total}}$		$<8.3 \times 10^{-6}$, CL = 90%
$\Gamma(B^+ \to K^*(892)^- e^+ \mu^+)/\Gamma_{\text{total}}$		$<4.4 \times 10^{-6}$, CL = 90%
$\Gamma(B^+ \to D^- e^+ e^+)/\Gamma_{\text{total}}$		$<2.6 \times 10^{-6}$, CL = 90%
$\Gamma(B^+ \to D^- e^+ \mu^+)/\Gamma_{\text{total}}$		$<1.8 \times 10^{-6}$, CL = 90%
$\Gamma(B^+ \to D^- \mu^+ \mu^+)/\Gamma_{\text{total}}$		$<6.9 \times 10^{-7}$, CL = 95%
$\Gamma(B^+ \to D^{*-} \mu^+ \mu^+)/\Gamma_{\text{total}}$		$<2.4 \times 10^{-6}$, CL = 95%
$\Gamma(B^+ \to D_s^- \mu^+ \mu^+)/\Gamma_{\text{total}}$		$<5.8 \times 10^{-7}$, CL = 95%
$\Gamma(B^+ \to \overline{D}^0 \pi^- \mu^+ \mu^+)/\Gamma_{\text{total}}$		$<1.5 \times 10^{-6}$, CL = 95%
$\Gamma(B^+ \to \Lambda^0 \mu^+)/\Gamma_{\text{total}}$		$<6 \times 10^{-8}$, CL = 90%
$\Gamma(B^+ \to \Lambda^0 e^+)/\Gamma_{\text{total}}$		$<3.2 \times 10^{-8}$, CL = 90%
$\Gamma(B^+ \to \overline{\Lambda}^0 \mu^+)/\Gamma_{\text{total}}$		$<6 \times 10^{-8}$, CL = 90%
$\Gamma(B^+ \to \overline{\Lambda}^0 e^+)/\Gamma_{\text{total}}$		$<8 \times 10^{-8}$, CL = 90%
$\Gamma(B^0 \to \Lambda_c^+ \mu^-)/\Gamma_{\text{total}}$		$<1.8 \times 10^{-6}$, CL = 90%
$\Gamma(B^0 \to \Lambda_c^+ e^-)/\Gamma_{\text{total}}$		$<5 \times 10^{-6}$, CL = 90%

$\Gamma(\Xi^- \to p\mu^-\mu^-)/\Gamma_{\text{total}}$		$<4 \times 10^{-8}$, CL = 90%
$\Gamma(\Lambda_c^+ \to \overline{p}2e^+)/\Gamma_{\text{total}}$		$<2.7 \times 10^{-6}$, CL = 90%
$\Gamma(\Lambda_c^+ \to \overline{p}2\mu^+)/\Gamma_{\text{total}}$		$<9.4 \times 10^{-6}$, CL = 90%
$\Gamma(\Lambda_c^+ \to \overline{p}e^+\mu^+)/\Gamma_{\text{total}}$		$<1.6 \times 10^{-5}$, CL = 90%
$\Gamma(\Lambda_c^+ \to \Sigma^-\mu^+\mu^+)/\Gamma_{\text{total}}$		$<7.0 \times 10^{-4}$, CL = 90%

BARYON NUMBER

$\Gamma(Z \to pe)/\Gamma_{\text{total}}$		$<1.8 \times 10^{-6}$, CL = 95%
$\Gamma(Z \to p\mu)/\Gamma_{\text{total}}$		$<1.8 \times 10^{-6}$, CL = 95%
$\Gamma(\tau^- \to \overline{p}\gamma)/\Gamma_{\text{total}}$		$<3.5 \times 10^{-6}$, CL = 90%
$\Gamma(\tau^- \to \overline{p}\pi^0)/\Gamma_{\text{total}}$		$<1.5 \times 10^{-5}$, CL = 90%
$\Gamma(\tau^- \to \overline{p}2\pi^0)/\Gamma_{\text{total}}$		$<3.3 \times 10^{-5}$, CL = 90%
$\Gamma(\tau^- \to \overline{p}\eta)/\Gamma_{\text{total}}$		$<8.9 \times 10^{-6}$, CL = 90%
$\Gamma(\tau^- \to \overline{p}\pi^0\eta)/\Gamma_{\text{total}}$		$<2.7 \times 10^{-5}$, CL = 90%
$\Gamma(\tau^- \to \Lambda\pi^-)/\Gamma_{\text{total}}$		$<7.2 \times 10^{-8}$, CL = 90%
$\Gamma(\tau^- \to \overline{\Lambda}\pi^-)/\Gamma_{\text{total}}$		$<1.4 \times 10^{-7}$, CL = 90%
$\Gamma(D^0 \to pe^-)/\Gamma_{\text{total}}$	[s]	$<1.0 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to \overline{p}e^+)/\Gamma_{\text{total}}$	[t]	$<1.1 \times 10^{-5}$, CL = 90%
$\Gamma(B^+ \to \Lambda^0\mu^+)/\Gamma_{\text{total}}$		$<6 \times 10^{-8}$, CL = 90%
$\Gamma(B^+ \to \Lambda^0 e^+)/\Gamma_{\text{total}}$		$<3.2 \times 10^{-8}$, CL = 90%
$\Gamma(B^+ \to \overline{\Lambda}^0\mu^+)/\Gamma_{\text{total}}$		$<6 \times 10^{-8}$, CL = 90%
$\Gamma(B^+ \to \overline{\Lambda}^0 e^+)/\Gamma_{\text{total}}$		$<8 \times 10^{-8}$, CL = 90%
$\Gamma(B^0 \to \Lambda_c^+\mu^-)/\Gamma_{\text{total}}$		$<1.8 \times 10^{-6}$, CL = 90%
$\Gamma(B^0 \to \Lambda_c^+ e^-)/\Gamma_{\text{total}}$		$<5 \times 10^{-6}$, CL = 90%
p mean life	[u]	$>2.1 \times 10^{29}$ years, CL = 90%

A few examples of proton or bound neutron decay follow. For limits on many other nucleon decay channels, see the Baryon Summary Table.

$\tau(N \to e^+\pi)$		$>$ 2000 (n), $>$ 8200 (p) $\times 10^{30}$ years, CL = 90%
$\tau(N \to \mu^+\pi)$		$>$ 1000 (n), $>$ 6600 (p) $\times 10^{30}$ years, CL = 90%
$\tau(N \to e^+K)$		$>$ 17 (n), $>$ 1000 (p) $\times 10^{30}$ years, CL = 90%
$\tau(N \to \mu^+K)$		$>$ 26 (n), $>$ 1600 (p) $\times 10^{30}$ years, CL = 90%
limit on $n\overline{n}$ oscillations (free n)		$>0.86 \times 10^8$ s, CL = 90%
limit on $n\overline{n}$ oscillations (bound n)	[v]	$>1.3 \times 10^8$ s, CL = 90%
$\Gamma(\Lambda_c^+ \to \overline{p}2e^+)/\Gamma_{\text{total}}$		$<2.7 \times 10^{-6}$, CL = 90%
$\Gamma(\Lambda_c^+ \to \overline{p}2\mu^+)/\Gamma_{\text{total}}$		$<9.4 \times 10^{-6}$, CL = 90%
$\Gamma(\Lambda_c^+ \to \overline{p}e^+\mu^+)/\Gamma_{\text{total}}$		$<1.6 \times 10^{-5}$, CL = 90%

ELECTRIC CHARGE (Q)

$e \to \nu_e \gamma$ and astrophysical limits	[x]	$>4.6 \times 10^{26}$ yr, CL = 90%
$\Gamma(n \to p\nu_e\overline{\nu}_e)/\Gamma_{\text{total}}$		$<8 \times 10^{-27}$, CL = 68%

$\Delta S = \Delta Q$ RULE

Violations allowed in second-order weak interactions.

$\Gamma(K^+ \to \pi^+\pi^+ e^-\overline{\nu}_e)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-8}$, CL = 90%
$\Gamma(K^+ \to \pi^+\pi^+ \mu^-\overline{\nu}_\mu)/\Gamma_{\text{total}}$	$<3.0 \times 10^{-6}$, CL = 95%
Re(x_+), K_{e3} parameter	$(-0.9 \pm 3.0) \times 10^{-3}$
$x = A(\overline{K}^0 \to \pi^-\ell^+\nu)/A(K^0 \to \pi^-\ell^+\nu) = A(\Delta S{=}-\Delta Q)/A(\Delta S{=}\Delta Q)$	
real part of x	-0.002 ± 0.006
imaginary part of x	0.0012 ± 0.0021
$\Gamma(\Sigma^+ \to n\ell^+\nu)/\Gamma(\Sigma^- \to n\ell^-\overline{\nu})$	<0.043
$\Gamma(\Sigma^+ \to ne^+\nu_e)/\Gamma_{\text{total}}$	$<5 \times 10^{-6}$, CL = 90%
$\Gamma(\Sigma^+ \to n\mu^+\nu_\mu)/\Gamma_{\text{total}}$	$<3.0 \times 10^{-5}$, CL = 90%
$\Gamma(\Xi^0 \to \Sigma^- e^+\nu_e)/\Gamma_{\text{total}}$	$<9 \times 10^{-4}$, CL = 90%
$\Gamma(\Xi^0 \to \Sigma^- \mu^+\nu_\mu)/\Gamma_{\text{total}}$	$<9 \times 10^{-4}$, CL = 90%

$\Delta S = 2$ FORBIDDEN

Allowed in second-order weak interactions.

$\Gamma(\Xi^0 \to p\pi^-)/\Gamma_{\text{total}}$	$<8 \times 10^{-6}$, CL = 90%
$\Gamma(\Xi^0 \to pe^-\overline{\nu}_e)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-3}$
$\Gamma(\Xi^0 \to p\mu^-\overline{\nu}_\mu)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-3}$
$\Gamma(\Xi^- \to n\pi^-)/\Gamma_{\text{total}}$	$<1.9 \times 10^{-5}$, CL = 90%
$\Gamma(\Xi^- \to ne^-\overline{\nu}_e)/\Gamma_{\text{total}}$	$<3.2 \times 10^{-3}$, CL = 90%
$\Gamma(\Xi^- \to n\mu^-\overline{\nu}_\mu)/\Gamma_{\text{total}}$	$<1.5 \times 10^{-2}$, CL = 90%
$\Gamma(\Xi^- \to p\pi^-\pi^-)/\Gamma_{\text{total}}$	$<4 \times 10^{-4}$, CL = 90%
$\Gamma(\Xi^- \to p\pi^- e^-\overline{\nu}_e)/\Gamma_{\text{total}}$	$<4 \times 10^{-4}$, CL = 90%
$\Gamma(\Xi^- \to p\pi^-\mu^-\overline{\nu}_\mu)/\Gamma_{\text{total}}$	$<4 \times 10^{-4}$, CL = 90%
$\Gamma(\Omega^- \to \Lambda\pi^-)/\Gamma_{\text{total}}$	$<2.9 \times 10^{-6}$, CL = 90%

$\Delta S = 2$ VIA MIXING

Allowed in second-order weak interactions, e.g. mixing.

$m_{K_L^0} - m_{K_S^0}$		$(0.5293 \pm 0.0009) \times 10^{10}\ \hbar\ \mathrm{s}^{-1}$ (S = 1.3)
$m_{K_L^0} - m_{K_S^0}$		$(3.484 \pm 0.006) \times 10^{-12}$ MeV

$\Delta C = 2$ VIA MIXING

Allowed in second-order weak interactions, e.g. mixing.

$\lvert m_{D_1^0} - m_{D_2^0} \rvert = x\Gamma$		$(1.18^{+0.43}_{-0.47}) \times 10^{10}\ \hbar\ \mathrm{s}^{-1}$
$(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma = 2y$		$(1.43 \pm 0.19) \times 10^{-2}$

$\Delta B = 2$ VIA MIXING

Allowed in second-order weak interactions, e.g. mixing.

χ_d		0.1875 ± 0.0020
$\Delta m_{B^0} = m_{B_H^0} - m_{B_L^0}$		$(0.510 \pm 0.004) \times 10^{12}\ \hbar\ \mathrm{s}^{-1}$
$x_d = \Delta m_{B^0}/\Gamma_{B^0}$		0.775 ± 0.006
$\Delta m_{B_s^0} = m_{B_{sH}^0} - m_{B_{sL}^0}$		$(17.69 \pm 0.08) \times 10^{12}\ \hbar\ \mathrm{s}^{-1}$
$x_s = \Delta m_{B_s^0}/\Gamma_{B_s^0}$		26.82 ± 0.23
χ_s		0.499309 ± 0.000012

$\Delta S = 1$ WEAK NEUTRAL CURRENT FORBIDDEN

Allowed by higher-order electroweak interactions.

$\Gamma(K^+ \to \pi^+ e^+ e^-)/\Gamma_{\text{total}}$		$(3.00 \pm 0.09) \times 10^{-7}$
$\Gamma(K^+ \to \pi^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(9.4 \pm 0.6) \times 10^{-8}$ (S = 2.6)
$\Gamma(K^+ \to \pi^+ \nu\overline{\nu})/\Gamma_{\text{total}}$		$(1.7 \pm 1.1) \times 10^{-10}$
$\Gamma(K^+ \to \pi^+ \pi^0 \nu\overline{\nu})/\Gamma_{\text{total}}$		$<4.3 \times 10^{-5}$, CL = 90%
$\Gamma(K_S^0 \to \mu^+ \mu^-)/\Gamma_{\text{total}}$		$<9 \times 10^{-9}$, CL = 90%
$\Gamma(K_S^0 \to e^+ e^-)/\Gamma_{\text{total}}$		$<9 \times 10^{-9}$, CL = 90%
$\Gamma(K_S^0 \to \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	[y]	$(3.0^{+1.5}_{-1.2}) \times 10^{-9}$
$\Gamma(K_S^0 \to \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(2.9^{+1.5}_{-1.2}) \times 10^{-9}$
$\Gamma(K_L^0 \to \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(6.84 \pm 0.11) \times 10^{-9}$

$\Gamma(K_L^0 \to e^+ e^-)/\Gamma_{\text{total}}$		$(9^{+6}_{-4}) \times 10^{-12}$
$\Gamma(K_L^0 \to \pi^+ \pi^- e^+ e^-)/\Gamma_{\text{total}}$	[z]	$(3.11 \pm 0.19) \times 10^{-7}$
$\Gamma(K_L^0 \to \pi^0 \pi^0 e^+ e^-)/\Gamma_{\text{total}}$		$<6.6 \times 10^{-9}$, CL = 90%
$\Gamma(K_L^0 \to \pi^0 \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$		$<9.2 \times 10^{-11}$, CL = 90%
$\Gamma(K_L^0 \to \mu^+ \mu^- e^+ e^-)/\Gamma_{\text{total}}$		$(2.69 \pm 0.27) \times 10^{-9}$
$\Gamma(K_L^0 \to e^+ e^- e^+ e^-)/\Gamma_{\text{total}}$		$(3.56 \pm 0.21) \times 10^{-8}$
$\Gamma(K_L^0 \to \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$		$<3.8 \times 10^{-10}$, CL = 90%
$\Gamma(K_L^0 \to \pi^0 e^+ e^-)/\Gamma_{\text{total}}$		$<2.8 \times 10^{-10}$, CL = 90%
$\Gamma(K_L^0 \to \pi^0 \nu \overline{\nu})/\Gamma_{\text{total}}$		$<2.6 \times 10^{-8}$, CL = 90%
$\Gamma(K_L^0 \to \pi^0 \pi^0 \nu \overline{\nu})/\Gamma_{\text{total}}$		$<8.1 \times 10^{-7}$, CL = 90%
$\Gamma(\Sigma^+ \to p e^+ e^-)/\Gamma_{\text{total}}$		$<7 \times 10^{-6}$
$\Gamma(\Sigma^+ \to p \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(9^{+9}_{-8}) \times 10^{-8}$

$\Delta C = 1$ WEAK NEUTRAL CURRENT FORBIDDEN

Allowed by higher-order electroweak interactions.

$\Gamma(D^+ \to \pi^+ e^+ e^-)/\Gamma_{\text{total}}$	$<1.1 \times 10^{-6}$, CL = 90%
$\Gamma(D^+ \to \pi^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<3.9 \times 10^{-6}$, CL = 90%
$\Gamma(D^+ \to \rho^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<5.6 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to \gamma\gamma)/\Gamma_{\text{total}}$	$<2.2 \times 10^{-6}$, CL = 90%
$\Gamma(D^0 \to e^+ e^-)/\Gamma_{\text{total}}$	$<7.9 \times 10^{-8}$, CL = 90%
$\Gamma(D^0 \to \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-7}$, CL = 90%
$\Gamma(D^0 \to \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	$<4.5 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to \eta e^+ e^-)/\Gamma_{\text{total}}$	$<1.1 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to \eta \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<5.3 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to \pi^+ \pi^- e^+ e^-)/\Gamma_{\text{total}}$	$<3.73 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to \rho^0 e^+ e^-)/\Gamma_{\text{total}}$	$<1.0 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to \pi^+ \pi^- \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<3.0 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to \rho^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<2.2 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to \omega e^+ e^-)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to \omega \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<8.3 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to K^- K^+ e^+ e^-)/\Gamma_{\text{total}}$	$<3.15 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to \phi e^+ e^-)/\Gamma_{\text{total}}$	$<5.2 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to K^- K^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<3.3 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to \phi \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<3.1 \times 10^{-5}$, CL = 90%
$\Gamma(D^0 \to K^- \pi^+ e^+ e^-)/\Gamma_{\text{total}}$	$<3.85 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to K^- \pi^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<3.59 \times 10^{-4}$, CL = 90%
$\Gamma(D^0 \to \pi^+ \pi^- \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<8.1 \times 10^{-4}$, CL = 90%

$\Gamma(D_s^+ \to K^+ e^+ e^-)/\Gamma_{\text{total}}$		$<3.7 \times 10^{-6}$, CL = 90%
$\Gamma(D_s^+ \to K^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$		$<2.1 \times 10^{-5}$, CL = 90%
$\Gamma(D_s^+ \to K^*(892)^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$		$<1.4 \times 10^{-3}$, CL = 90%
$\Gamma(\Lambda_c^+ \to p e^+ e^-)/\Gamma_{\text{total}}$		$<5.5 \times 10^{-6}$, CL = 90%
$\Gamma(\Lambda_c^+ \to p \mu^+ \mu^-)/\Gamma_{\text{total}}$		$<4.4 \times 10^{-5}$, CL = 90%

$\Delta B = 1$ WEAK NEUTRAL CURRENT FORBIDDEN

Allowed by higher-order electroweak interactions.

$\Gamma(B^+ \to \pi^+ \ell^+ \ell^-)/\Gamma_{\text{total}}$		$<4.9 \times 10^{-8}$, CL = 90%
$\Gamma(B^+ \to \pi^+ e^+ e^-)/\Gamma_{\text{total}}$		$<8.0 \times 10^{-8}$, CL = 90%
$\Gamma(B^+ \to \pi^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(2.4 \pm 0.6) \times 10^{-8}$
$\Gamma(B^+ \to \pi^+ \nu \overline{\nu})/\Gamma_{\text{total}}$		$<1.0 \times 10^{-4}$, CL = 90%
$\Gamma(B^+ \to K^+ \ell^+ \ell^-)/\Gamma_{\text{total}}$	[aa]	$(4.51 \pm 0.23) \times 10^{-7}$ (S = 1.1)
$\Gamma(B^+ \to K^+ e^+ e^-)/\Gamma_{\text{total}}$		$(5.5 \pm 0.7) \times 10^{-7}$
$\Gamma(B^+ \to K^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(4.49 \pm 0.23) \times 10^{-7}$ (S = 1.1)
$\Gamma(B^+ \to K^+ \overline{\nu} \nu)/\Gamma_{\text{total}}$		$<1.3 \times 10^{-5}$, CL = 90%
$\Gamma(B^+ \to \rho^+ \nu \overline{\nu})/\Gamma_{\text{total}}$		$<1.5 \times 10^{-4}$, CL = 90%
$\Gamma(B^+ \to K^*(892)^+ \ell^+ \ell^-)/\Gamma_{\text{total}}$	[aa]	$(1.29 \pm 0.21) \times 10^{-6}$
$\Gamma(B^+ \to K^*(892)^+ e^+ e^-)/\Gamma_{\text{total}}$		$(1.55^{+0.40}_{-0.31}) \times 10^{-6}$
$\Gamma(B^+ \to K^*(892)^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(1.12 \pm 0.15) \times 10^{-6}$
$\Gamma(B^+ \to K^*(892)^+ \nu \overline{\nu})/\Gamma_{\text{total}}$		$<8 \times 10^{-5}$, CL = 90%
$\Gamma(B^0 \to \gamma\gamma)/\Gamma_{\text{total}}$		$<3.2 \times 10^{-7}$, CL = 90%
$\Gamma(B^0 \to e^+ e^-)/\Gamma_{\text{total}}$		$<8.3 \times 10^{-8}$, CL = 90%
$\Gamma(B^0 \to e^+ e^- \gamma)/\Gamma_{\text{total}}$		$<1.2 \times 10^{-7}$, CL = 90%
$\Gamma(B^0 \to \mu^+ \mu^-)/\Gamma_{\text{total}}$		$<8.0 \times 10^{-10}$, CL = 90%
$\Gamma(B^0 \to \mu^+ \mu^- \gamma)/\Gamma_{\text{total}}$		$<1.6 \times 10^{-7}$, CL = 90%
$\Gamma(B^0 \to \tau^+ \tau^-)/\Gamma_{\text{total}}$		$<4.1 \times 10^{-3}$, CL = 90%
$\Gamma(B^0 \to \pi^0 \ell^+ \ell^-)/\Gamma_{\text{total}}$		$<1.2 \times 10^{-7}$, CL = 90%
$\Gamma(B^0 \to \pi^0 e^+ e^-)/\Gamma_{\text{total}}$		$<1.4 \times 10^{-7}$, CL = 90%
$\Gamma(B^0 \to \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$		$<1.8 \times 10^{-7}$, CL = 90%
$\Gamma(B^0 \to \pi^0 \nu \overline{\nu})/\Gamma_{\text{total}}$		$<2.2 \times 10^{-4}$, CL = 90%
$\Gamma(B^0 \to K^0 \ell^+ \ell^-)/\Gamma_{\text{total}}$	[aa]	$(3.1^{+0.8}_{-0.7}) \times 10^{-7}$
$\Gamma(B^0 \to K^0 e^+ e^-)/\Gamma_{\text{total}}$		$(1.6^{+1.0}_{-0.8}) \times 10^{-7}$
$\Gamma(B^0 \to K^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(3.4 \pm 0.5) \times 10^{-7}$
$\Gamma(B^0 \to K^0 \nu \overline{\nu})/\Gamma_{\text{total}}$		$<5.6 \times 10^{-5}$, CL = 90%
$\Gamma(B^0 \to \rho^0 \nu \overline{\nu})/\Gamma_{\text{total}}$		$<4.4 \times 10^{-4}$, CL = 90%
$\Gamma(B^0 \to K^*(892)^0 \ell^+ \ell^-)/\Gamma_{\text{total}}$	[aa]	$(9.9^{+1.2}_{-1.1}) \times 10^{-7}$
$\Gamma(B^0 \to K^*(892)^0 e^+ e^-)/\Gamma_{\text{total}}$		$(1.03^{+0.19}_{-0.17}) \times 10^{-6}$

$\Gamma(B^0 \to K^*(892)^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(1.06 \pm 0.10) \times 10^{-6}$
$\Gamma(B^0 \to K^*(892)^0 \nu\overline{\nu})/\Gamma_{\text{total}}$		$<1.2 \times 10^{-4}$, CL = 90%
$\Gamma(B^0 \to \phi\nu\overline{\nu})/\Gamma_{\text{total}}$		$<5.8 \times 10^{-5}$, CL = 90%
$\Gamma(B^0 \to \text{invisible})/\Gamma_{\text{total}}$		$<2.4 \times 10^{-5}$, CL = 90%
$\Gamma(B^0 \to \nu\overline{\nu}\gamma)/\Gamma_{\text{total}}$		$<1.7 \times 10^{-5}$, CL = 90%
$\Gamma(B \to s e^+ e^-)/\Gamma_{\text{total}}$		$(4.7 \pm 1.3) \times 10^{-6}$
$\Gamma(B \to s \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(4.3 \pm 1.2) \times 10^{-6}$
$\Gamma(B \to s \ell^+ \ell^-)/\Gamma_{\text{total}}$	[*aa*]	$(4.5 \pm 1.0) \times 10^{-6}$
$\Gamma(B \to \pi \ell^+ \ell^-)/\Gamma_{\text{total}}$		$<6.2 \times 10^{-8}$, CL = 90%
$\Gamma(B \to K e^+ e^-)/\Gamma_{\text{total}}$		$(4.4 \pm 0.6) \times 10^{-7}$
$\Gamma(B \to K^*(892) e^+ e^-)/\Gamma_{\text{total}}$		$(1.19 \pm 0.20) \times 10^{-6}$ (S = 1.2)
$\Gamma(B \to K \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(4.4 \pm 0.4) \times 10^{-7}$
$\Gamma(B \to K^*(892) \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(1.06 \pm 0.09) \times 10^{-6}$
$\Gamma(B \to K \ell^+ \ell^-)/\Gamma_{\text{total}}$		$(4.8 \pm 0.4) \times 10^{-7}$
$\Gamma(B \to K^*(892) \ell^+ \ell^-)/\Gamma_{\text{total}}$		$(1.05 \pm 0.10) \times 10^{-6}$
$\Gamma(B \to K \nu\overline{\nu})/\Gamma_{\text{total}}$		$<1.4 \times 10^{-5}$, CL = 90%
$\Gamma(B \to K^* \nu\overline{\nu})/\Gamma_{\text{total}}$		$<8 \times 10^{-5}$, CL = 90%
$\Gamma(\overline{b} \to \overline{s}\overline{\nu}\nu)/\Gamma_{\text{total}}$		$<6.4 \times 10^{-4}$, CL = 90%
$\Gamma(\overline{b} \to e^+ e^- \text{ anything})/\Gamma_{\text{total}}$		—
$\Gamma(\overline{b} \to \mu^+ \mu^- \text{ anything})/\Gamma_{\text{total}}$		$<3.2 \times 10^{-4}$, CL = 90%
$\Gamma(\overline{b} \to \nu\overline{\nu} \text{anything})/\Gamma_{\text{total}}$		—
$\Gamma(B_s^0 \to \gamma\gamma)/\Gamma_{\text{total}}$		$<8.7 \times 10^{-6}$, CL = 90%
$\Gamma(B_s^0 \to \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(3.2^{+1.5}_{-1.2}) \times 10^{-9}$
$\Gamma(B_s^0 \to e^+ e^-)/\Gamma_{\text{total}}$		$<2.8 \times 10^{-7}$, CL = 90%
$\Gamma(B_s^0 \to \phi(1020) \mu^+ \mu^-)/\Gamma_{\text{total}}$		$(1.13^{+0.40}_{-0.29}) \times 10^{-6}$
$\Gamma(B_s^0 \to \phi\nu\overline{\nu})/\Gamma_{\text{total}}$		$<5.4 \times 10^{-3}$, CL = 90%

$\Delta T = 1$ WEAK NEUTRAL CURRENT FORBIDDEN

Allowed by higher-order electroweak interactions.

$\Gamma(t \to Z q (q{=}u,c))/\Gamma_{\text{total}}$	[*bb*]	$<2.1 \times 10^{-3}$, CL = 95%

NOTES

[*a*] *C* parity forbids this to occur as a single-photon process.

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

[*c*] Time-reversal invariance requires this to be 0° or 180°.

[*d*] This coefficient is zero if time invariance is not violated.

[*e*] Allowed by higher-order electroweak interactions.

[*f*] Violates *CP* in leading order. Test of direct *CP* violation since the indirect *CP*-violating and *CP*-conserving contributions are expected to be suppressed.

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

[*h*] $\mathrm{Re}(\epsilon'/\epsilon) = \epsilon'/\epsilon$ to a very good approximation provided the phases satisfy *CPT* invariance.

[*i*] This mode includes gammas from inner bremsstrahlung but not the direct emission mode $K_L^0 \to \pi^+\pi^-\gamma$(DE).

[*j*] Neglecting photon channels. See, *e.g.*, A. Pais and S.B. Treiman, Phys. Rev. **D12**, 2744 (1975).

[*k*] Derived from measured values of ϕ_{+-}, ϕ_{00}, $|\eta|$, $|m_{K_L^0} - m_{K_S^0}|$, and $\tau_{K_S^0}$, as described in the introduction to "Tests of Conservation Laws."

[*l*] The $|m_p - m_{\overline{p}}|/m_p$ and $|q_p + q_{\overline{p}}|/e$ are not independent, and both use the more precise measurement of $|q_{\overline{p}}/m_{\overline{p}}|/(q_p/m_p)$.

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

[*o*] A test of additive vs. multiplicative lepton family number conservation.

[*p*] The limit quoted corresponds to the projection onto the $\sin^2(2\theta_{23})$ axis of the 90% CL contour in the $\sin^2(2\theta_{23})-\Delta m^2_{32}$ plane.

[*q*] The sign of Δm^2_{32} is not known at this time. The range quoted is for the absolute value.

[*r*] Derived from an analysis of neutrino-oscillation experiments.

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

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

[*u*] The first limit is for $p \to$ anything or "disappearance" modes of a bound proton. The second entry, a rough range of limits, assumes the dominant decay modes are among those investigated. For antiprotons the best limit, inferred from the observation of cosmic ray $\overline{p}$'s is $\tau_{\overline{p}} > 10^7$ yr, the cosmic-ray storage time, but this limit depends on a number of assumptions. The best direct observation of stored antiprotons gives $\tau_{\overline{p}}/\mathrm{B}(\overline{p} \to e^-\gamma) > 7 \times 10^5$ yr.

[*v*] There is some controversy about whether nuclear physics and model dependence complicate the analysis for bound neutrons (from which the best limit comes). The first limit here is from reactor experiments with free neutrons.

[*x*] This is the best limit for the mode $e^- \to \nu\gamma$. The best limit for "electron disappearance" is 6.4×10^{24} yr.

[*y*] See the K^0_S Particle Listings for the energy limits used in this measurement.

[*z*] See the K^0_L Particle Listings for the energy limits used in this measurement.

[*aa*] An ℓ indicates an e or a μ mode, not a sum over these modes.

[*bb*] This limit is for $\Gamma(t \to Zq)/\Gamma(t \to Wb)$.