

TESTS OF DISCRETE SPACE-TIME SYMMETRIES

CHARGE CONJUGATION (C) INVARIANCE

CONLAW=C

$\Gamma(\pi^0 \rightarrow 3\gamma)/\Gamma_{\text{total}}$	$<3.1 \times 10^{-8}$, CL = 90%	PAR=S009;DESIG=4
η C-nonconserving decay parameters		NODE=S014230
$\pi^+ \pi^- \pi^0$ left-right asymmetry	$(0.09^{+0.11}_{-0.12}) \times 10^{-2}$	NODE=S014A1
$\pi^+ \pi^- \pi^0$ sextant asymmetry	$(0.12^{+0.10}_{-0.11}) \times 10^{-2}$	NODE=S014AS
$\pi^+ \pi^- \pi^0$ quadrant asymmetry	$(-0.09 \pm 0.09) \times 10^{-2}$	NODE=S014AQ
$\pi^+ \pi^- \gamma$ left-right asymmetry	$(0.9 \pm 0.4) \times 10^{-2}$	NODE=S014A2
$\pi^+ \pi^- \gamma$ parameter β (<i>D</i> -wave)	-0.02 ± 0.07 ($S = 1.3$)	NODE=S014BET
$\Gamma(\eta \rightarrow \pi^0 \gamma)/\Gamma_{\text{total}}$	$<9 \times 10^{-5}$, CL = 90%	PAR=S014;DESIG=104
$\Gamma(\eta \rightarrow 2\pi^0 \gamma)/\Gamma_{\text{total}}$	$<5 \times 10^{-4}$, CL = 90%	PAR=S014;DESIG=103
$\Gamma(\eta \rightarrow 3\pi^0 \gamma)/\Gamma_{\text{total}}$	$<6 \times 10^{-5}$, CL = 90%	PAR=S014;DESIG=106
$\Gamma(\eta \rightarrow 3\gamma)/\Gamma_{\text{total}}$	$<1.6 \times 10^{-5}$, CL = 90%	PAR=S014;DESIG=18
$\Gamma(\eta \rightarrow \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	[a] $<4 \times 10^{-5}$, CL = 90%	PAR=S014;DESIG=5
$\Gamma(\eta \rightarrow \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	[a] $<5 \times 10^{-6}$, CL = 90%	PAR=S014;DESIG=14
$\Gamma(\omega(782) \rightarrow \eta \pi^0)/\Gamma_{\text{total}}$	$<2.1 \times 10^{-4}$, CL = 90%	PAR=M001;DESIG=9
$\Gamma(\omega(782) \rightarrow 2\pi^0)/\Gamma_{\text{total}}$	$<2.1 \times 10^{-4}$, CL = 90%	PAR=M001;DESIG=193
$\Gamma(\omega(782) \rightarrow 3\pi^0)/\Gamma_{\text{total}}$	$<2.3 \times 10^{-4}$, CL = 90%	PAR=M001;DESIG=16
asymmetry parameter for $\eta'(958) \rightarrow \pi^+ \pi^- \gamma$ decay	-0.03 ± 0.04	NODE=M002A
$\Gamma(\eta'(958) \rightarrow \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	[a] $<1.4 \times 10^{-3}$, CL = 90%	PAR=M002;DESIG=16
$\Gamma(\eta'(958) \rightarrow \eta e^+ e^-)/\Gamma_{\text{total}}$	[a] $<2.4 \times 10^{-3}$, CL = 90%	PAR=M002;DESIG=17
$\Gamma(\eta'(958) \rightarrow 3\gamma)/\Gamma_{\text{total}}$	$<1.0 \times 10^{-4}$, CL = 90%	PAR=M002;DESIG=23
$\Gamma(\eta'(958) \rightarrow \mu^+ \mu^- \pi^0)/\Gamma_{\text{total}}$	[a] $<6.0 \times 10^{-5}$, CL = 90%	PAR=M002;DESIG=22
$\Gamma(\eta'(958) \rightarrow \mu^+ \mu^- \eta)/\Gamma_{\text{total}}$	[a] $<1.5 \times 10^{-5}$, CL = 90%	PAR=M002;DESIG=21
$\Gamma(J/\psi(1S) \rightarrow \gamma \gamma)/\Gamma_{\text{total}}$	$<5 \times 10^{-6}$, CL = 90%	PAR=M070;DESIG=80

PARITY (P) INVARIANCE

CONLAW=P

e electric dipole moment	$<10.5 \times 10^{-28}$ e cm, CL = 90%	NODE=S003EDM
μ electric dipole moment	$(-0.1 \pm 0.9) \times 10^{-19}$ e cm	NODE=S004EDM
$\text{Re}(d_\tau = \tau \text{ electric dipole moment})$	$-0.220 \text{ to } 0.45 \times 10^{-16}$ e cm, CL = 95%	NODE=S035EDM
$\Gamma(\eta \rightarrow \pi^+ \pi^-)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-5}$, CL = 90%	PAR=S014;DESIG=15
$\Gamma(\eta \rightarrow 2\pi^0)/\Gamma_{\text{total}}$	$<3.5 \times 10^{-4}$, CL = 90%	PAR=S014;DESIG=21
$\Gamma(\eta \rightarrow 4\pi^0)/\Gamma_{\text{total}}$	$<6.9 \times 10^{-7}$, CL = 90%	PAR=S014;DESIG=24
$\Gamma(\eta'(958) \rightarrow \pi^+ \pi^-)/\Gamma_{\text{total}}$	$<6 \times 10^{-5}$, CL = 90%	PAR=M002;DESIG=111
$\Gamma(\eta'(958) \rightarrow \pi^0 \pi^0)/\Gamma_{\text{total}}$	$<4 \times 10^{-4}$, CL = 90%	PAR=M002;DESIG=25
$\Gamma(\eta_c(1S) \rightarrow \pi^+ \pi^-)/\Gamma_{\text{total}}$	$<1.1 \times 10^{-4}$, CL = 90%	PAR=M026;DESIG=51
$\Gamma(\eta_c(1S) \rightarrow \pi^0 \pi^0)/\Gamma_{\text{total}}$	$<3.5 \times 10^{-5}$, CL = 90%	PAR=M026;DESIG=52
$\Gamma(\eta_c(1S) \rightarrow K^+ K^-)/\Gamma_{\text{total}}$	$<6 \times 10^{-4}$, CL = 90%	PAR=M026;DESIG=53
$\Gamma(\eta_c(1S) \rightarrow K_S^0 K_S^0)/\Gamma_{\text{total}}$	$<3.1 \times 10^{-4}$, CL = 90%	PAR=M026;DESIG=54
p electric dipole moment	$<0.54 \times 10^{-23}$ e cm	NODE=S016EDM
n electric dipole moment	$<0.29 \times 10^{-25}$ e cm, CL = 90%	NODE=S017EDM
Λ electric dipole moment	$<1.5 \times 10^{-16}$ e cm, CL = 95%	NODE=S018EDM

TIME REVERSAL (T) INVARIANCE

CONLAW=T

e electric dipole moment	$<10.5 \times 10^{-28}$ ecm, CL = 90%	NODE=S003EDM
μ electric dipole moment	$(-0.1 \pm 0.9) \times 10^{-19}$ ecm	NODE=S004EDM
μ decay parameters		NODE=S004260
transverse e^+ polarization normal to plane of μ spin, e^+ momentum	$(-2 \pm 8) \times 10^{-3}$	NODE=S004PT2
α'/A	$(-10 \pm 20) \times 10^{-3}$	NODE=S004ALP
β'/A	$(2 \pm 7) \times 10^{-3}$	NODE=S004BTP
$\text{Re}(d_\tau = \tau$ electric dipole moment)	-0.220 to 0.45×10^{-16} ecm, CL = 95%	NODE=S035EDM
P_T in $K^+ \rightarrow \pi^0 \mu^+ \nu_\mu$	$(-1.7 \pm 2.5) \times 10^{-3}$	NODE=S010PTM
P_T in $K^+ \rightarrow \mu^+ \nu_\mu \gamma$	$(-0.6 \pm 1.9) \times 10^{-2}$	NODE=S010PT
$\text{Im}(\xi)$ in $K^+ \rightarrow \pi^0 \mu^+ \nu_\mu$ decay (from transverse μ pol.)	-0.006 ± 0.008	NODE=S010IXI
asymmetry A_T in K^0 - \bar{K}^0 mixing	$(6.6 \pm 1.6) \times 10^{-3}$	NODE=S011AT
$\text{Im}(\xi)$ in $K_{\mu 3}^0$ decay (from transverse μ pol.)	-0.007 ± 0.026	NODE=S013IXI
$A_T(D^\pm \rightarrow K_S^0 K^\pm \pi^+ \pi^-)$	[b] $(-12 \pm 11) \times 10^{-3}$	NODE=S031TV0
$A_T(D^0 \rightarrow K^+ K^- \pi^+ \pi^-)$	[b] $(1 \pm 7) \times 10^{-3}$	NODE=S032TV0
$A_T(D_S^\pm \rightarrow K_S^0 K^\pm \pi^+ \pi^-)$	[b] $(-14 \pm 8) \times 10^{-3}$	NODE=S034TV0
p electric dipole moment	$<0.54 \times 10^{-23}$ ecm	NODE=S016EDM
n electric dipole moment	$<0.29 \times 10^{-25}$ ecm, CL = 90%	NODE=S017EDM
$n \rightarrow p e^- \bar{\nu}_e$ decay parameters		NODE=S017255
ϕ_{AV} , phase of g_A relative to g_V	[c] $(180.018 \pm 0.026)^\circ$	NODE=S017F
triple correlation coefficient D	[d] $(-1.2 \pm 2.0) \times 10^{-4}$	NODE=S017D1
triple correlation coefficient R	[d] 0.008 ± 0.016	NODE=S017TCC
Λ electric dipole moment	$<1.5 \times 10^{-16}$ ecm, CL = 95%	NODE=S018EDM
triple correlation coefficient D for $\Sigma^- \rightarrow n e^- \bar{\nu}_e$	0.11 ± 0.10	NODE=S020TC

CP INVARIANCE

CONLAW=CP

$\text{Re}(d_\tau^W)$	$<0.50 \times 10^{-17}$ ecm, CL = 95%	NODE=S035WDM
$\text{Im}(d_\tau^W)$	$<1.1 \times 10^{-17}$ ecm, CL = 95%	NODE=S035WDI
$\eta \rightarrow \pi^+ \pi^- e^+ e^-$ decay-plane asymmetry	$(-0.6 \pm 3.1) \times 10^{-2}$	NODE=S014AET
$\Gamma(\eta \rightarrow \pi^+ \pi^-) / \Gamma_{\text{total}}$	$<1.3 \times 10^{-5}$, CL = 90%	PAR=S014;DESIG=15
$\Gamma(\eta \rightarrow 2\pi^0) / \Gamma_{\text{total}}$	$<3.5 \times 10^{-4}$, CL = 90%	PAR=S014;DESIG=21
$\Gamma(\eta \rightarrow 4\pi^0) / \Gamma_{\text{total}}$	$<6.9 \times 10^{-7}$, CL = 90%	PAR=S014;DESIG=24
$\Gamma(\eta'(958) \rightarrow \pi^+ \pi^-) / \Gamma_{\text{total}}$	$<6 \times 10^{-5}$, CL = 90%	PAR=M002;DESIG=111
$\Gamma(\eta'(958) \rightarrow \pi^0 \pi^0) / \Gamma_{\text{total}}$	$<4 \times 10^{-4}$, CL = 90%	PAR=M002;DESIG=25
$K^\pm \rightarrow \pi^\pm \pi^+ \pi^-$ rate difference/average	$(0.08 \pm 0.12)\%$	NODE=S010D2
$K^\pm \rightarrow \pi^\pm \pi^0 \pi^0$ rate difference/average	$(0.0 \pm 0.6)\%$	NODE=S010D3
$K^\pm \rightarrow \pi^\pm \pi^0 \gamma$ rate difference/average	$(0.9 \pm 3.3)\%$	NODE=S010D5
$K^\pm \rightarrow \pi^\pm \pi^+ \pi^- (g_+ - g_-) / (g_+ + g_-)$	$(-1.5 \pm 2.2) \times 10^{-4}$	NODE=S010DG
$K^\pm \rightarrow \pi^\pm \pi^0 \pi^0 (g_+ - g_-) / (g_+ + g_-)$	$(1.8 \pm 1.8) \times 10^{-4}$	NODE=S010DGO
$\Delta(K_{\pi ee}^\pm) = \frac{\Gamma(K_{\pi ee}^+) - \Gamma(K_{\pi ee}^-)}{\Gamma(K_{\pi ee}^+) + \Gamma(K_{\pi ee}^-)}$	$(-2.2 \pm 1.6) \times 10^{-2}$	NODE=S010CPE
$\Delta(K_{\pi \mu \mu}^\pm) = \frac{\Gamma(K_{\pi \mu \mu}^+) - \Gamma(K_{\pi \mu \mu}^-)}{\Gamma(K_{\pi \mu \mu}^+) + \Gamma(K_{\pi \mu \mu}^-)}$	0.010 ± 0.023	NODE=S010CP
$\Delta(K_{\pi \pi \gamma}^\pm) = \frac{\Gamma(K_{\pi \pi \gamma}^+) - \Gamma(K_{\pi \pi \gamma}^-)}{\Gamma(K_{\pi \pi \gamma}^+) + \Gamma(K_{\pi \pi \gamma}^-)}$	$(0.0 \pm 1.2) \times 10^{-3}$	NODE=S010CPG
$A_S = [\Gamma(K_S^0 \rightarrow \pi^- e^+ \nu_e) - \Gamma(K_S^0 \rightarrow \pi^+ e^- \bar{\nu}_e)] / \text{SUM}$	$(2 \pm 10) \times 10^{-3}$	NODE=S012AS
$\text{Im}(\eta_{+-0}) = \text{Im}(A(K_S^0 \rightarrow \pi^+ \pi^- \pi^0, CP\text{-violating}) / A(K_L^0 \rightarrow \pi^+ \pi^- \pi^0))$	-0.002 ± 0.009	NODE=S012E+

$\text{Im}(\eta_{000}) = \text{Im}(A(K_S^0 \rightarrow \pi^0 \pi^0 \pi^0)/A(K_L^0 \rightarrow \pi^0 \pi^0 \pi^0))$	$(-0.1 \pm 1.6) \times 10^{-2}$	NODE=S012E0
$ \eta_{000} = A(K_S^0 \rightarrow 3\pi^0)/A(K_L^0 \rightarrow 3\pi^0) $	<0.018, CL = 90%	NODE=S012AE0
CP asymmetry A in $K_S^0 \rightarrow \pi^+ \pi^- e^+ e^-$	$(-0.4 \pm 0.8)\%$	NODE=S012DPA
$\Gamma(K_S^0 \rightarrow 3\pi^0)/\Gamma_{\text{total}}$	$<1.2 \times 10^{-7}$, CL = 90%	PAR=S012;DESIG=7
linear coefficient j for $K_L^0 \rightarrow \pi^+ \pi^- \pi^0$	0.0012 ± 0.0008	NODE=S013JT0
quadratic coefficient f for $K_L^0 \rightarrow \pi^+ \pi^- \pi^0$	0.004 ± 0.006	NODE=S013FT0
$ \epsilon'_{+-\gamma} /\epsilon$ for $K_L^0 \rightarrow \pi^+ \pi^- \gamma$	<0.3, CL = 90%	NODE=S013EPG
$ g_{E1} $ for $K_L^0 \rightarrow \pi^+ \pi^- \gamma$	<0.21, CL = 90%	NODE=S013GE1
$\Gamma(K_L^0 \rightarrow \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	[e] $<3.8 \times 10^{-10}$, CL = 90%	PAR=S013;DESIG=16
$\Gamma(K_L^0 \rightarrow \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	[e] $<2.8 \times 10^{-10}$, CL = 90%	PAR=S013;DESIG=20
$\Gamma(K_L^0 \rightarrow \pi^0 \nu \bar{\nu})/\Gamma_{\text{total}}$	[f] $<2.6 \times 10^{-8}$, CL = 90%	PAR=S013;DESIG=43
$A_{CP}(D^\pm \rightarrow \mu^\pm \nu)$	$(8 \pm 8)\%$	NODE=S031A05
$A_{CP}(D^\pm \rightarrow K_S^0 \pi^\pm)$	$(-0.54 \pm 0.14)\%$	NODE=S031A5
$A_{CP}(D^\pm \rightarrow K^\mp 2\pi^\pm)$	$(-0.1 \pm 1.0)\%$	NODE=S031A01
$A_{CP}(D^\pm \rightarrow K^\mp \pi^\pm \pi^\pm \pi^0)$	$(1.0 \pm 1.3)\%$	NODE=S031A02
$A_{CP}(D^\pm \rightarrow K_S^0 \pi^\pm \pi^0)$	$(0.3 \pm 0.9)\%$	NODE=S031A03
$A_{CP}(D^\pm \rightarrow K_S^0 \pi^\pm \pi^+ \pi^-)$	$(0.1 \pm 1.3)\%$	NODE=S031A04
$A_{CP}(D^\pm \rightarrow \pi^\pm \pi^0)$	$(2.9 \pm 2.9)\%$	NODE=S031A11
$A_{CP}(D^\pm \rightarrow \pi^\pm \eta)$	$(1.0 \pm 1.5)\%$ (S = 1.4)	NODE=S031A12
$A_{CP}(D^\pm \rightarrow \pi^\pm \eta' (958))$	$(-0.5 \pm 1.2)\%$ (S = 1.1)	NODE=S031A13
$A_{CP}(D^\pm \rightarrow K_S^0 K^\pm)$	$(-0.1 \pm 0.6)\%$	NODE=S031A6
$A_{CP}(D^\pm \rightarrow K^+ K^- \pi^\pm)$	$(0.3 \pm 0.6)\%$	NODE=S031A1
$A_{CP}(D^\pm \rightarrow K^\pm K^{*0})$	$(0.1 \pm 1.3)\%$	NODE=S031A2
$A_{CP}(D^\pm \rightarrow \phi \pi^\pm)$	$(0.42 \pm 0.28)\%$	NODE=S031A3
$A_{CP}(D^\pm \rightarrow K^\pm K_0^*(1430)^0)$	$(8^{+7}_{-6})\%$	NODE=S031A06
$A_{CP}(D^\pm \rightarrow K^\pm K_2^*(1430)^0)$	$(43^{+20}_{-26})\%$	NODE=S031A07
$A_{CP}(D^\pm \rightarrow K^\pm K_0^*(800))$	$(-12^{+18}_{-13})\%$	NODE=S031A08
$A_{CP}(D^\pm \rightarrow a_0(1450)^0 \pi^\pm)$	$(-19^{+14}_{-16})\%$	NODE=S031A09
$A_{CP}(D^\pm \rightarrow \phi(1680) \pi^\pm)$	$(-9 \pm 26)\%$	NODE=S031A10
$A_{CP}(D^\pm \rightarrow \pi^+ \pi^- \pi^\pm)$	$(-2 \pm 4)\%$	NODE=S031A4
$A_{CP}(D^\pm \rightarrow K_S^0 K^\pm \pi^+ \pi^-)$	$(-4 \pm 7)\%$	NODE=S031CPK
$A_{CP}(D^\pm \rightarrow K^\pm \pi^0)$	$(-4 \pm 11)\%$	NODE=S031A14
$ q/p $ of $D^0-\bar{D}^0$ mixing	$0.88^{+0.16}_{-0.15}$	NODE=S032QP; → NOT CHECKED ←; OUR EVAL
A_Γ of $D^0-\bar{D}^0$ mixing	$(0.26 \pm 2.31) \times 10^{-3}$	NODE=S032AG; → NOT CHECKED ←; OUR EVAL
Where there is ambiguity, the CP test is labelled by the D^0 decay mode.		
$A_{CP}(D^0 \rightarrow K^+ K^-)$	$(-0.21 \pm 0.17)\%$	NODE=S032A1
$A_{CP}(D^0 \rightarrow K_S^0 K_S^0)$	$(-23 \pm 19)\%$	NODE=S032A8
$A_{CP}(D^0 \rightarrow \pi^+ \pi^-)$	$(0.22 \pm 0.21)\%$	NODE=S032A4
$A_{CP}(D^0 \rightarrow \pi^0 \pi^0)$	$(0 \pm 5)\%$	NODE=S032A7
$A_{CP}(D^0 \rightarrow \pi^+ \pi^- \pi^0)$	$(0.3 \pm 0.4)\%$	NODE=S032A12
$A_{CP}(D^0 \rightarrow \rho(770)^+ \pi^- \rightarrow \pi^+ \pi^- \pi^0)$	[g] $(1.2 \pm 0.9)\%$	NODE=S032A25
$A_{CP}(D^0 \rightarrow \rho(770)^0 \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[g] $(-3.1 \pm 3.0)\%$	NODE=S032A26
$A_{CP}(D^0 \rightarrow \rho(770)^- \pi^+ \rightarrow \pi^+ \pi^- \pi^0)$	[g] $(-1.0 \pm 1.7)\%$	NODE=S032A27
$A_{CP}(D^0 \rightarrow \rho(1450)^+ \pi^- \rightarrow \pi^+ \pi^- \pi^0)$	[g] $(0 \pm 70)\%$	NODE=S032A28
$A_{CP}(D^0 \rightarrow \rho(1450)^0 \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[g] $(-20 \pm 40)\%$	NODE=S032A29
$A_{CP}(D^0 \rightarrow \rho(1450)^- \pi^+ \rightarrow \pi^+ \pi^- \pi^0)$	[g] $(6 \pm 9)\%$	NODE=S032A30
$A_{CP}(D^0 \rightarrow \rho(1700)^+ \pi^- \rightarrow \pi^+ \pi^- \pi^0)$	[g] $(-5 \pm 14)\%$	NODE=S032A31
$A_{CP}(D^0 \rightarrow \rho(1700)^0 \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[g] $(13 \pm 9)\%$	NODE=S032A32
$A_{CP}(D^0 \rightarrow \rho(1700)^- \pi^+ \rightarrow \pi^+ \pi^- \pi^0)$	[g] $(8 \pm 11)\%$	NODE=S032A33
$A_{CP}(D^0 \rightarrow f_0(980) \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[g] $(0 \pm 35)\%$	NODE=S032A34
$A_{CP}(D^0 \rightarrow f_0(1370) \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[g] $(25 \pm 18)\%$	NODE=S032A35
$A_{CP}(D^0 \rightarrow f_0(1500) \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[g] $(0 \pm 18)\%$	NODE=S032A36

$A_{CP}(D^0 \rightarrow f_0(1710)\pi^0 \rightarrow \pi^+\pi^-\pi^0)$	[g] $(0 \pm 24)\%$	NODE=S032A37
$A_{CP}(D^0 \rightarrow f_2(1270)\pi^0 \rightarrow \pi^+\pi^-\pi^0)$	[g] $(-4 \pm 6)\%$	NODE=S032A38
$A_{CP}(D^0 \rightarrow \sigma(400)\pi^0 \rightarrow \pi^+\pi^-\pi^0)$	[g] $(6 \pm 8)\%$	NODE=S032A39
$A_{CP}(\text{nonresonant } D^0 \rightarrow \pi^+\pi^-\pi^0)$	[g] $(-13 \pm 23)\%$	NODE=S032A40
$A_{CP}(D^0 \rightarrow K^+K^-\pi^0)$	$(-1.0 \pm 1.7)\%$	NODE=S032A41
$A_{CP}(D^0 \rightarrow K^*(892)^+K^- \rightarrow K^+K^-\pi^0)$	[g] $(-0.9 \pm 1.3)\%$	NODE=S032A42
$A_{CP}(D^0 \rightarrow K^*(1410)^+K^- \rightarrow K^+K^-\pi^0)$	[g] $(-21 \pm 24)\%$	NODE=S032A43
$A_{CP}(D^0 \rightarrow (K^+\pi^0)_S K^- \rightarrow K^+K^-\pi^0)$	[g] $(7 \pm 15)\%$	NODE=S032A44
$A_{CP}(D^0 \rightarrow \phi(1020)\pi^0 \rightarrow K^+K^-\pi^0)$	[g] $(1.1 \pm 2.2)\%$	NODE=S032A45
$A_{CP}(D^0 \rightarrow f_0(980)\pi^0 \rightarrow K^+K^-\pi^0)$	[g] $(-3 \pm 19)\%$	NODE=S032A46
$A_{CP}(D^0 \rightarrow a_0(980)^0\pi^0 \rightarrow K^+K^-\pi^0)$	[g] $(-5 \pm 16)\%$	NODE=S032A47
$A_{CP}(D^0 \rightarrow f_2'(1525)\pi^0 \rightarrow K^+K^-\pi^0)$	[g] $(0 \pm 160)\%$	NODE=S032A48
$A_{CP}(D^0 \rightarrow K^*(892)^-K^+ \rightarrow K^+K^-\pi^0)$	[g] $(-5 \pm 4)\%$	NODE=S032A49
$A_{CP}(D^0 \rightarrow K^*(1410)^-K^+ \rightarrow K^+K^-\pi^0)$	[g] $(-17 \pm 29)\%$	NODE=S032A50
$A_{CP}(D^0 \rightarrow (K^-\pi^0)_{S\text{-wave}} K^+ \rightarrow K^+K^-\pi^0)$	[g] $(-10 \pm 40)\%$	NODE=S032A51
$A_{CP}(D^0 \rightarrow K_S^0\pi^0)$	$(-0.27 \pm 0.21)\%$	NODE=S032A3
$A_{CP}(D^0 \rightarrow K_S^0\eta)$	$(0.5 \pm 0.5)\%$	NODE=S032A52
$A_{CP}(D^0 \rightarrow K_S^0\eta')$	$(1.0 \pm 0.7)\%$	NODE=S032A53
$A_{CP}(D^0 \rightarrow K_S^0\phi)$	$(-3 \pm 9)\%$	NODE=S032A2
$A_{CP}(D^0 \rightarrow K^-\pi^+)$	$(0.1 \pm 0.7)\%$	NODE=S032A23
$A_{CP}(D^0 \rightarrow K^+\pi^-)$	$(2.2 \pm 3.2)\%$	NODE=S032A5
$A_{CP}(D^0 \rightarrow K^-\pi^+\pi^0)$	$(0.2 \pm 0.9)\%$	NODE=S032A6
$A_{CP}(D^0 \rightarrow K^+\pi^-\pi^0)$	$(0 \pm 5)\%$	NODE=S032A9
$A_{CP}(D^0 \rightarrow K_S^0\pi^+\pi^-)$	$(-0.9^{+2.6}_{-6.0})\%$	NODE=S032A10
$A_{CP}(D^0 \rightarrow K^*(892)^-\pi^+ \rightarrow K_S^0\pi^+\pi^-)$	$<3.5 \times 10^{-4}$, CL = 95%	NODE=S032A13
$A_{CP}(D^0 \rightarrow K^*(892)^+\pi^- \rightarrow K_S^0\pi^+\pi^-)$	$<7.8 \times 10^{-4}$, CL = 95%	NODE=S032A14
$A_{CP}(D^0 \rightarrow K_S^0\rho^0 \rightarrow K_S^0\pi^+\pi^-)$	$<4.8 \times 10^{-4}$, CL = 95%	NODE=S032A15
$A_{CP}(D^0 \rightarrow K_S^0\omega \rightarrow K_S^0\pi^+\pi^-)$	$<9.2 \times 10^{-4}$, CL = 95%	NODE=S032A16
$A_{CP}(D^0 \rightarrow K_S^0 f_0(980) \rightarrow K_S^0\pi^+\pi^-)$	$<6.8 \times 10^{-4}$, CL = 95%	NODE=S032A17
$A_{CP}(D^0 \rightarrow K_S^0 f_2(1270) \rightarrow K_S^0\pi^+\pi^-)$	$<13.5 \times 10^{-4}$, CL = 95%	NODE=S032A18
$A_{CP}(D^0 \rightarrow K_S^0 f_0(1370) \rightarrow K_S^0\pi^+\pi^-)$	$<25.5 \times 10^{-4}$, CL = 95%	NODE=S032A19
$A_{CP}(D^0 \rightarrow K_0^*(1430)^-\pi^+ \rightarrow K_S^0\pi^+\pi^-)$	$<9.0 \times 10^{-4}$, CL = 95%	NODE=S032A20
$A_{CP}(D^0 \rightarrow K_2^*(1430)^-\pi^+ \rightarrow K_S^0\pi^+\pi^-)$	$<6.5 \times 10^{-4}$, CL = 95%	NODE=S032A21
$A_{CP}(D^0 \rightarrow K^*(1680)^-\pi^+ \rightarrow K_S^0\pi^+\pi^-)$	$<28.4 \times 10^{-4}$, CL = 95%	NODE=S032A22
$A_{CP}(D^0 \rightarrow K^-\pi^+\pi^+\pi^-)$	$(0.7 \pm 1.0)\%$	NODE=S032A24
$A_{CP}(D^0 \rightarrow K^+\pi^-\pi^+\pi^-)$	$(-2 \pm 4)\%$	NODE=S032A11
$A_{CP}(D^0 \rightarrow K^+K^-\pi^+\pi^-)$	$(-8 \pm 7)\%$	NODE=S032CPK
$\Delta A_{CP}^{D^0} = A_{CP}(K^+K^-) - A_{CP}(\pi^+\pi^-)$	$(-0.65 \pm 0.18)\%$	NODE=S032DCP
$A_{CP}(D_S^\pm \rightarrow \mu^\pm\nu)$	$(5 \pm 6)\%$	NODE=S034A13
$A_{CP}(D_S^\pm \rightarrow K^\pm K_S^0)$	$(0.3 \pm 0.4)\%$	NODE=S034A05
$A_{CP}(D_S^\pm \rightarrow K^+K^-\pi^\pm)$	$(0.3 \pm 1.4)\%$	NODE=S034A06
$A_{CP}(D_S^\pm \rightarrow K^+K^-\pi^\pm\pi^0)$	$(-6 \pm 4)\%$	NODE=S034A07
$A_{CP}(D_S^\pm \rightarrow K_S^0 K^\mp 2\pi^\pm)$	$(-1 \pm 4)\%$	NODE=S034A08
$A_{CP}(D_S^\pm \rightarrow \pi^+\pi^-\pi^\pm)$	$(2 \pm 5)\%$	NODE=S034A09
$A_{CP}(D_S^\pm \rightarrow \pi^\pm\eta)$	$(-4.6 \pm 2.9)\%$	NODE=S034A10
$A_{CP}(D_S^\pm \rightarrow \pi^\pm\eta')$	$(-6.1 \pm 3.0)\%$	NODE=S034A11
$A_{CP}(D_S^\pm \rightarrow K^\pm\pi^0)$	$(-27 \pm 24)\%$	NODE=S034A01

$A_{CP}(D_S^\pm \rightarrow K_S^0 \pi^\pm)$	$(6.6 \pm 3.3)\%$ ($S = 1.4$)	NODE=S034A02
$A_{CP}(D_S^\pm \rightarrow K^\pm \pi^+ \pi^-)$	$(11 \pm 7)\%$	NODE=S034A12
$A_{CP}(D_S^\pm \rightarrow K^\pm \eta)$	$(9 \pm 15)\%$	NODE=S034A03
$A_{CP}(D_S^\pm \rightarrow K^\pm \eta'(958))$	$(6 \pm 19)\%$	NODE=S034A04
$A_{CP}(B^+ \rightarrow J/\psi(1S) K^+)$	$(1 \pm 7) \times 10^{-3}$ ($S = 1.8$)	NODE=S041AX1
$A_{CP}(B^+ \rightarrow J/\psi(1S) \pi^+)$	0.01 ± 0.07 ($S = 1.3$)	NODE=S041AX9
$A_{CP}(B^+ \rightarrow J/\psi \rho^+)$	-0.11 ± 0.14	NODE=S041AC5
$A_{CP}(B^+ \rightarrow J/\psi K^*(892)^+)$	-0.048 ± 0.033	NODE=S041AW1
$A_{CP}(B^+ \rightarrow \eta_c K^+)$	-0.16 ± 0.08	NODE=S041ABE
$A_{CP}(B^+ \rightarrow \psi(2S) \pi^+)$	0.02 ± 0.09	NODE=S041AZ2
$A_{CP}(B^+ \rightarrow \psi(2S) K^+)$	-0.025 ± 0.024	NODE=S041AX2
$A_{CP}(B^+ \rightarrow \psi(2S) K^*(892)^+)$	0.08 ± 0.21	NODE=S041AW2
$A_{CP}(B^+ \rightarrow \chi_{c1}(1P) \pi^+)$	0.07 ± 0.18	NODE=S041AW5
$A_{CP}(B^+ \rightarrow \chi_{c0} K^+)$	-0.20 ± 0.18 ($S = 1.5$)	NODE=S041CQ9
$A_{CP}(B^+ \rightarrow \chi_{c1} K^+)$	-0.009 ± 0.033	NODE=S041AW3
$A_{CP}(B^+ \rightarrow \chi_{c1} K^*(892)^+)$	0.5 ± 0.5	NODE=S041AW4
$A_{CP}(B^+ \rightarrow \bar{D}^0 \pi^+)$	-0.008 ± 0.008	NODE=S041AD2
$A_{CP}(B^+ \rightarrow D_{CP(+1)} \pi^+)$	0.035 ± 0.024	NODE=S041AD3
$A_{CP}(B^+ \rightarrow D_{CP(-1)} \pi^+)$	0.017 ± 0.026	NODE=S041AD4
$A_{CP}(B^+ \rightarrow \bar{D}^0 K^+)$	0.07 ± 0.04	NODE=S041AY2
$r_B(B^+ \rightarrow D^0 K^+)$	$0.113^{+0.024}_{-0.021}$	NODE=S041ARX
$\delta_B(B^+ \rightarrow D^0 K^+)$	$(125 \pm 16)^\circ$	NODE=S041DRX
$r_B(B^+ \rightarrow DK^{*+})$	0.34 ± 0.09 ($S = 1.3$)	NODE=S041ARZ
$\delta_B(B^+ \rightarrow DK^{*+})$	$(157 \pm 70)^\circ$ ($S = 2.0$)	NODE=S041DRZ
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_D K^+)$	-0.58 ± 0.21	NODE=S041AC0
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_{\bar{D}} K^*(892)^+)$	-0.3 ± 0.5	NODE=S041AC4
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_D \pi^+)$	0.00 ± 0.09	NODE=S041AC1
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_{(D\pi)} \pi^+)$	-0.09 ± 0.27	NODE=S041AC6
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_{(D\gamma)} \pi^+)$	-0.7 ± 0.6	NODE=S041AC7
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_{(D\pi)} K^+)$	0.8 ± 0.4	NODE=S041AC8
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_{(D\gamma)} K^+)$	0.4 ± 1.0	NODE=S041AC9
$A_{CP}(B^+ \rightarrow [\pi^+ \pi^- \pi^0]_D K^+)$	-0.02 ± 0.15	NODE=S041AC2
$A_{CP}(B^+ \rightarrow D_{CP(+1)} K^+)$	0.24 ± 0.06 ($S = 1.1$)	NODE=S041AY3
$A_{CP}(B^+ \rightarrow D_{CP(-1)} K^+)$	-0.10 ± 0.07	NODE=S041AY4
$A_{CP}(B^+ \rightarrow \bar{D}^{*0} \pi^+)$	-0.014 ± 0.015	NODE=S041AD5
$A_{CP}(B^+ \rightarrow (D_{CP(+1)}^*)^0 \pi^+)$	-0.02 ± 0.05	NODE=S041AD6
$A_{CP}(B^+ \rightarrow (D_{CP(-1)}^*)^0 \pi^+)$	-0.09 ± 0.05	NODE=S041AD7
$A_{CP}(B^+ \rightarrow D^{*0} K^+)$	-0.07 ± 0.04	NODE=S041AD8
$r_B^*(B^+ \rightarrow D^{*0} K^+)$	$0.123^{+0.026}_{-0.029}$	NODE=S041ARY
$\delta_B^*(B^+ \rightarrow D^{*0} K^+)$	$(300 \pm 30)^\circ$ ($S = 1.7$)	NODE=S041DRY
$A_{CP}(B^+ \rightarrow D_{CP(+1)}^{*0} K^+)$	-0.12 ± 0.08	NODE=S041AC+
$A_{CP}(B^+ \rightarrow D_{CP(-1)}^{*0} K^+)$	0.07 ± 0.10	NODE=S041AD1
$A_{CP}(B^+ \rightarrow D_{CP(+1)} K^*(892)^+)$	0.09 ± 0.14	NODE=S041AD+
$A_{CP}(B^+ \rightarrow D_{CP(-1)} K^*(892)^+)$	-0.23 ± 0.22	NODE=S041AD-
$A_{CP}(B^+ \rightarrow D^{*+} \bar{D}^{*0})$	-0.15 ± 0.11	NODE=S041AS1
$A_{CP}(B^+ \rightarrow D^{*+} \bar{D}^0)$	-0.06 ± 0.13	NODE=S041AS2
$A_{CP}(B^+ \rightarrow D^+ \bar{D}^{*0})$	0.13 ± 0.18	NODE=S041AS3
$A_{CP}(B^+ \rightarrow D^+ \bar{D}^0)$	-0.03 ± 0.07	NODE=S041AS4
$A_{CP}(B^+ \rightarrow K_S^0 \pi^+)$	0.009 ± 0.029 ($S = 1.2$)	NODE=S041AX4
$A_{CP}(B^+ \rightarrow K^+ \pi^0)$	0.051 ± 0.025	NODE=S041AX3
$A_{CP}(B^+ \rightarrow \eta' K^+)$	0.013 ± 0.017	NODE=S041AX5
$A_{CP}(B^+ \rightarrow \eta' K^*(892)^+)$	-0.26 ± 0.27	NODE=S041CR7

$A_{CP}(B^+ \rightarrow \eta' K_0^*(1430)^+)$	0.06 ± 0.20	NODE=S041CT7
$A_{CP}(B^+ \rightarrow \eta' K_2^*(1430)^+)$	0.15 ± 0.13	NODE=S041CT8
$A_{CP}(B^+ \rightarrow \eta K^+)$	-0.37 ± 0.08	NODE=S041CP3
$A_{CP}(B^+ \rightarrow \eta K^*(892)^+)$	0.02 ± 0.06	NODE=S041CP1
$A_{CP}(B^+ \rightarrow \eta K_0^*(1430)^+)$	0.05 ± 0.13	NODE=S041CR5
$A_{CP}(B^+ \rightarrow \eta K_2^*(1430)^+)$	-0.45 ± 0.30	NODE=S041CR6
$A_{CP}(B^+ \rightarrow \omega K^+)$	0.02 ± 0.05	NODE=S041AY1
$A_{CP}(B^+ \rightarrow \omega K^{*+})$	0.29 ± 0.35	NODE=S041CT0
$A_{CP}(B^+ \rightarrow \omega(K\pi)_0^{*+})$	-0.10 ± 0.09	NODE=S041CT2
$A_{CP}(B^+ \rightarrow \omega K_2^*(1430)^+)$	0.14 ± 0.15	NODE=S041CT3
$A_{CP}(B^+ \rightarrow K^{*0} \pi^+)$	-0.04 ± 0.09 (S = 2.1)	NODE=S041CQ4
$A_{CP}(B^+ \rightarrow K^*(892)^+ \pi^0)$	-0.06 ± 0.24	NODE=S041CP8
$A_{CP}(B^+ \rightarrow K^+ \pi^- \pi^+)$	0.038 ± 0.022	NODE=S041AY6
$A_{CP}(B^+ \rightarrow f_0(980) K^+)$	$-0.09^{+0.05}_{-0.04}$ (S = 1.1)	NODE=S041CQ5
$A_{CP}(B^+ \rightarrow f_2(1270) K^+)$	$-0.68^{+0.19}_{-0.17}$	NODE=S041CR0
$A_{CP}(B^+ \rightarrow f_0(1500) K^+)$	0.28 ± 0.30	NODE=S041CS5
$A_{CP}(B^+ \rightarrow \rho^0 K^+)$	0.37 ± 0.10	NODE=S041CQ6
$A_{CP}(B^+ \rightarrow K_0^*(1430)^0 \pi^+)$	0.055 ± 0.033	NODE=S041CQ7
$A_{CP}(B^+ \rightarrow K_2^*(1430)^0 \pi^+)$	$0.05^{+0.29}_{-0.24}$	NODE=S041CS4
$A_{CP}(B^+ \rightarrow K^+ \pi^0 \pi^0)$	-0.06 ± 0.07	NODE=S041CU4
$A_{CP}(B^+ \rightarrow K^0 \rho^+)$	-0.12 ± 0.17	NODE=S041CR9
$A_{CP}(B^+ \rightarrow K^{*+} \pi^+ \pi^-)$	0.07 ± 0.08	NODE=S041AKP
$A_{CP}(B^+ \rightarrow \rho^0 K^*(892)^+)$	0.31 ± 0.13	NODE=S041AZ1
$A_{CP}(B^+ \rightarrow K^*(892)^+ f_0(980))$	-0.15 ± 0.12	NODE=S041CR3
$A_{CP}(B^+ \rightarrow a_1^+ K^0)$	0.12 ± 0.11	NODE=S041CS1
$A_{CP}(B^+ \rightarrow b_1^+ K^0)$	-0.03 ± 0.15	NODE=S041CS6
$A_{CP}(B^+ \rightarrow K^*(892)^0 \rho^+)$	-0.01 ± 0.16	NODE=S041CR4
$A_{CP}(B^+ \rightarrow b_1^0 K^+)$	-0.46 ± 0.20	NODE=S041CS2
$A_{CP}(B^+ \rightarrow K^0 K^+)$	0.12 ± 0.18	NODE=S041CQ8
$A_{CP}(B^+ \rightarrow K^+ K_S^0 K_S^0)$	-0.04 ± 0.11	NODE=S041AY8
$A_{CP}(B^+ \rightarrow K^+ K^- \pi^+)$	0.00 ± 0.10	NODE=S041CKK
$A_{CP}(B^+ \rightarrow K^+ K^- K^+)$	-0.017 ± 0.030	NODE=S041AY7
$A_{CP}(B^+ \rightarrow \phi K^+)$	-0.01 ± 0.06	NODE=S041AX7
$A_{CP}(B^+ \rightarrow X_0(1550) K^+)$	-0.04 ± 0.07	NODE=S041CXK
$A_{CP}(B^+ \rightarrow K^{*+} K^+ K^-)$	0.11 ± 0.09	NODE=S041AKK
$A_{CP}(B^+ \rightarrow \phi K^*(892)^+)$	-0.01 ± 0.08	NODE=S041AX8
$A_{CP}(B^+ \rightarrow \phi(K\pi)_0^{*+})$	0.04 ± 0.16	NODE=S041CT1
$A_{CP}(B^+ \rightarrow \phi K_1(1270)^+)$	0.15 ± 0.20	NODE=S041CS8
$A_{CP}(B^+ \rightarrow \phi K_2^*(1430)^+)$	-0.23 ± 0.20	NODE=S041CS9
$A_{CP}(B^+ \rightarrow K^+ \phi \phi)$	-0.10 ± 0.08	NODE=S041CT9
$A_{CP}(B^+ \rightarrow K^+ [\phi \phi]_{\eta_c})$	0.09 ± 0.10	NODE=S041CTB
$A_{CP}(B^+ \rightarrow K^*(892)^+ \gamma)$	0.018 ± 0.029	NODE=S041AKG
$A_{CP}(B^+ \rightarrow \eta K^+ \gamma)$	-0.12 ± 0.07	NODE=S041CQ3
$A_{CP}(B^+ \rightarrow \phi K^+ \gamma)$	-0.13 ± 0.11 (S = 1.1)	NODE=S041APK
$A_{CP}(B^+ \rightarrow \rho^+ \gamma)$	-0.11 ± 0.33	NODE=S041CS7
$A_{CP}(B^+ \rightarrow \pi^+ \pi^0)$	0.06 ± 0.05	NODE=S041AX0
$A_{CP}(B^+ \rightarrow \pi^+ \pi^- \pi^+)$	0.03 ± 0.06	NODE=S041AY5
$A_{CP}(B^+ \rightarrow \rho^0 \pi^+)$	$0.18^{+0.09}_{-0.17}$	NODE=S041CP4
$A_{CP}(B^+ \rightarrow f_2(1270) \pi^+)$	0.41 ± 0.30	NODE=S041CQ0
$A_{CP}(B^+ \rightarrow \rho^0(1450) \pi^+)$	$-0.1^{+0.4}_{-0.5}$	NODE=S041CT4
$A_{CP}(B^+ \rightarrow f_0(1370) \pi^+)$	0.72 ± 0.22	NODE=S041CT5
$A_{CP}(B^+ \rightarrow \pi^+ \pi^- \pi^+ \text{ nonresonant})$	$-0.14^{+0.23}_{-0.16}$	NODE=S041CT6
$A_{CP}(B^+ \rightarrow \rho^+ \pi^0)$	0.02 ± 0.11	NODE=S041CP5
$A_{CP}(B^+ \rightarrow \rho^+ \rho^0)$	-0.05 ± 0.05	NODE=S041AY9

$A_{CP}(B^+ \rightarrow \omega\pi^+)$	-0.04 ± 0.06	NODE=S041AX6
$A_{CP}(B^+ \rightarrow \omega\rho^+)$	-0.20 ± 0.09	NODE=S041CP9
$A_{CP}(B^+ \rightarrow \eta\pi^+)$	-0.14 ± 0.07 (S = 1.4)	NODE=S041CP2
$A_{CP}(B^+ \rightarrow \eta\rho^+)$	0.11 ± 0.11	NODE=S041CQ2
$A_{CP}(B^+ \rightarrow \eta'\pi^+)$	0.06 ± 0.16	NODE=S041CQ1
$A_{CP}(B^+ \rightarrow \eta'\rho^+)$	0.26 ± 0.17	NODE=S041CR8
$A_{CP}(B^+ \rightarrow b_1^0\pi^+)$	0.05 ± 0.16	NODE=S041CS3
$A_{CP}(B^+ \rightarrow \rho\bar{\rho}\pi^+)$	0.00 ± 0.04	NODE=S041CP6
$A_{CP}(B^+ \rightarrow \rho\bar{\rho}K^+)$	-0.16 ± 0.07	NODE=S041CP7
$A_{CP}(B^+ \rightarrow \rho\bar{\rho}K^*(892)^+)$	0.21 ± 0.16 (S = 1.4)	NODE=S041AW6
$A_{CP}(B^+ \rightarrow \rho\bar{\rho}\gamma)$	0.17 ± 0.17	NODE=S041CLG
$A_{CP}(B^+ \rightarrow \rho\bar{\rho}\pi^0)$	0.01 ± 0.17	NODE=S041CS0
$A_{CP}(B^+ \rightarrow K^+\ell^+\ell^-)$	-0.01 ± 0.09 (S = 1.1)	NODE=S041CR1
$A_{CP}(B^+ \rightarrow K^+e^+e^-)$	0.14 ± 0.14	NODE=S041CU0
$A_{CP}(B^+ \rightarrow K^+\mu^+\mu^-)$	-0.05 ± 0.13	NODE=S041CU1
$A_{CP}(B^+ \rightarrow K^{*+}\ell^+\ell^-)$	-0.09 ± 0.14	NODE=S041CR2
$A_{CP}(B^+ \rightarrow K^*e^+e^-)$	-0.14 ± 0.23	NODE=S041CU2
$A_{CP}(B^+ \rightarrow K^*\mu^+\mu^-)$	-0.12 ± 0.24	NODE=S041CU3
$\text{Re}(\epsilon_{B^0})/(1+ \epsilon_{B^0} ^2)$	$(-0.8 \pm 0.8) \times 10^{-3}$	NODE=S042EPS; → NOT CHECKED ←; OUR EVAL NODE=S042Y3
$A_{T/CP}$	0.005 ± 0.018	
$A_{CP}(B^0 \rightarrow D^*(2010)^+D^-)$	0.02 ± 0.04	NODE=S042AC4
$A_{CP}(B^0 \rightarrow \eta'K^*(892)^0)$	0.02 ± 0.23	NODE=S042CP4
$A_{CP}(B^0 \rightarrow \eta'K_0^*(1430)^0)$	-0.19 ± 0.17	NODE=S042CT2
$A_{CP}(B^0 \rightarrow \eta'K_2^*(1430)^0)$	0.14 ± 0.18	NODE=S042CT3
$A_{CP}(B^0 \rightarrow \eta K_0^*(1430)^0)$	0.06 ± 0.13	NODE=S042AD1
$A_{CP}(B^0 \rightarrow \eta K_2^*(1430)^0)$	-0.07 ± 0.19	NODE=S042AD2
$A_{CP}(B^0 \rightarrow b_1 K^+)$	-0.07 ± 0.12	NODE=S042CQ2
$A_{CP}(B^0 \rightarrow \omega K^{*0})$	0.45 ± 0.25	NODE=S042CQ8
$A_{CP}(B^0 \rightarrow \omega(K\pi)_0^{*0})$	-0.07 ± 0.09	NODE=S042CR0
$A_{CP}(B^0 \rightarrow \omega K_2^*(1430)^0)$	-0.37 ± 0.17	NODE=S042CR1
$A_{CP}(B^0 \rightarrow K^+\pi^-\pi^0)$	$(0 \pm 6) \times 10^{-2}$	NODE=S042AC7
$A_{CP}(B^0 \rightarrow \rho^- K^+)$	0.20 ± 0.11	NODE=S042AC6
$A_{CP}(B^0 \rightarrow \rho(1450)^- K^+)$	-0.10 ± 0.33	NODE=S042CT4
$A_{CP}(B^0 \rightarrow \rho(1700)^- K^+)$	-0.4 ± 0.6	NODE=S042CT5
$A_{CP}(B^0 \rightarrow K^+\pi^-\pi^0 \text{ nonresonant})$	0.10 ± 0.18	NODE=S042CQ5
$A_{CP}(B^0 \rightarrow K_0^0\pi^+\pi^-)$	-0.01 ± 0.05	NODE=S042CQ9
$A_{CP}(B^0 \rightarrow K^*(892)^+\pi^-)$	-0.22 ± 0.06	NODE=S042AC3
$A_{CP}(B^0 \rightarrow (K\pi)_0^{*+}\pi^-)$	0.09 ± 0.07	NODE=S042CQ6
$A_{CP}(B^0 \rightarrow (K\pi)_0^{*0}\pi^0)$	-0.15 ± 0.11	NODE=S042CQ7
$A_{CP}(B^0 \rightarrow K^{*0}\pi^0)$	-0.15 ± 0.13	NODE=S042CQ4
$A_{CP}(B^0 \rightarrow K^*(892)^0\pi^+\pi^-)$	0.07 ± 0.05	NODE=S042CP6
$A_{CP}(B^0 \rightarrow K^*(892)^0\rho^0)$	0.09 ± 0.19	NODE=S042AC9
$A_{CP}(B^0 \rightarrow K^{*0}f_0(980))$	-0.17 ± 0.28	NODE=S042AD0
$A_{CP}(B^0 \rightarrow K^*(892)^0 K^+ K^-)$	0.01 ± 0.05	NODE=S042CP7
$A_{CP}(B^0 \rightarrow a_1^- K^+)$	-0.16 ± 0.12	NODE=S042CQ1
$A_{CP}(B^0 \rightarrow K^0 K^0)$	-0.6 ± 0.7	NODE=S042CP5
$A_{CP}(B^0 \rightarrow K^*(892)^0\phi)$	0.01 ± 0.05	NODE=S042AC1
$A_{CP}(B^0 \rightarrow K^*(892)^0 K^- \pi^+)$	0.2 ± 0.4	NODE=S042CP8
$A_{CP}(B^0 \rightarrow \phi(K\pi)_0^{*0})$	0.20 ± 0.15	NODE=S042CP2
$A_{CP}(B^0 \rightarrow \phi K_2^*(1430)^0)$	-0.08 ± 0.13	NODE=S042CP3
$A_{CP}(B^0 \rightarrow K_2^*(1430)^0\gamma)$	-0.08 ± 0.15	NODE=S042AC8
$A_{CP}(B^0 \rightarrow \rho^+\pi^-)$	0.08 ± 0.12 (S = 2.0)	NODE=S042AC5
$A_{CP}(B^0 \rightarrow \rho^-\pi^+)$	-0.16 ± 0.23 (S = 1.7)	NODE=S042AC0
$A_{CP}(B^0 \rightarrow a_1(1260)^\pm\pi^\mp)$	-0.07 ± 0.07	NODE=S042AAP
$A_{CP}(B^0 \rightarrow b_1\pi^+)$	-0.05 ± 0.10	NODE=S042CQ3

$A_{CP}(B^0 \rightarrow p\bar{p}K^*(892)^0)$	0.05 ± 0.12	NODE=S042CQ0
$A_{CP}(B^0 \rightarrow p\bar{\Lambda}\pi^-)$	0.04 ± 0.07	NODE=S042CLP
$A_{CP}(B^0 \rightarrow K^{*0}\ell^+\ell^-)$	-0.05 ± 0.10	NODE=S042CT1
$A_{CP}(B^0 \rightarrow K^{*0}e^+e^-)$	-0.21 ± 0.19	NODE=S042CU0
$A_{CP}(B^0 \rightarrow K^{*0}\mu^+\mu^-)$	0.00 ± 0.15	NODE=S042CU1
$C_{D^*(2010)^-D^+}(B^0 \rightarrow D^*(2010)^-D^+)$	0.07 ± 0.14	NODE=S042CPJ
$C_{D^*(2010)^+D^-}(B^0 \rightarrow D^*(2010)^+D^-)$	-0.09 ± 0.22 (S = 1.6)	NODE=S042CPK
$C_{D^{*+}D^{*-}}(B^0 \rightarrow D^{*+}D^{*-})$	-0.01 ± 0.09 (S = 1.2)	NODE=S042LD1
$C_+(B^0 \rightarrow D^{*+}D^{*-})$	0.00 ± 0.12	NODE=S042CD+
$C_-(B^0 \rightarrow D^{*+}D^{*-})$	0.4 ± 0.5	NODE=S042CD-
$S_-(B^0 \rightarrow D^{*+}D^{*-})$	-1.8 ± 0.7	NODE=S042SD-
$C(B^0 \rightarrow D^*(2010)^+D^*(2010)^-K_S^0)$	0.01 ± 0.29	NODE=S042CDS
$S(B^0 \rightarrow D^*(2010)^+D^*(2010)^-K_S^0)$	0.1 ± 0.4	NODE=S042SDS
$C_{D^+D^-}(B^0 \rightarrow D^+D^-)$	-0.5 ± 0.4 (S = 2.5)	NODE=S042CPD
$C_{J/\psi(1S)\pi^0}(B^0 \rightarrow J/\psi(1S)\pi^0)$	-0.13 ± 0.13	NODE=S042CPL
$C_{D_{CP}^{(*)}h^0}(B^0 \rightarrow D_{CP}^{(*)}h^0)$	-0.23 ± 0.16	NODE=S042CDH
$S_{D_{CP}^{(*)}h^0}(B^0 \rightarrow D_{CP}^{(*)}h^0)$	-0.56 ± 0.24	NODE=S042SDH
$C_{K^0\pi^0}(B^0 \rightarrow K^0\pi^0)$	0.00 ± 0.13 (S = 1.4)	NODE=S042CKP
$C_{\eta'(958)K_S^0}(B^0 \rightarrow \eta'(958)K_S^0)$	-0.04 ± 0.20 (S = 2.5)	NODE=S042Y1
$S_{\eta'(958)K_S^0}(B^0 \rightarrow \eta'(958)K_S^0)$	0.43 ± 0.17 (S = 1.5)	NODE=S042Y2
$C_{\eta'K^0}(B^0 \rightarrow \eta'K^0)$	-0.05 ± 0.05	NODE=S042CEK
$C_{\omega K_S^0}(B^0 \rightarrow \omega K_S^0)$	-0.30 ± 0.28 (S = 1.6)	NODE=S042CW1
$S_{\omega K_S^0}(B^0 \rightarrow \omega K_S^0)$	0.43 ± 0.24	NODE=S042SW1
$C(B^0 \rightarrow K_S^0\pi^0\pi^0)$	0.2 ± 0.5	NODE=S042CK2
$S(B^0 \rightarrow K_S^0\pi^0\pi^0)$	0.7 ± 0.7	NODE=S042SK2
$C_{\rho^0 K_S^0}(B^0 \rightarrow \rho^0 K_S^0)$	-0.04 ± 0.20	NODE=S042CX7
$S_{\rho^0 K_S^0}(B^0 \rightarrow \rho^0 K_S^0)$	$0.50^{+0.17}_{-0.21}$	NODE=S042SX7
$C_{f_0(980)K_S^0}(B^0 \rightarrow f_0(980)K_S^0)$	0.14 ± 0.17	NODE=S042CF1
$S_{f_0(980)K_S^0}(B^0 \rightarrow f_0(980)K_S^0)$	$-0.73^{+0.27}_{-0.09}$ (S = 1.6)	NODE=S042SF1
$S_{f_2(1270)K_S^0}(B^0 \rightarrow f_2(1270)K_S^0)$	-0.5 ± 0.5	NODE=S042SF2
$C_{f_2(1270)K_S^0}(B^0 \rightarrow f_2(1270)K_S^0)$	0.3 ± 0.4	NODE=S042CF2
$S_{f_x(1300)K_S^0}(B^0 \rightarrow f_x(1300)K_S^0)$	-0.2 ± 0.5	NODE=S042SF3
$C_{f_x(1300)K_S^0}(B^0 \rightarrow f_x(1300)K_S^0)$	0.13 ± 0.35	NODE=S042CF3
$S_{K^0\pi^+\pi^-}(B^0 \rightarrow K^0\pi^+\pi^- \text{ nonresonant})$	-0.01 ± 0.33	NODE=S042SF4
$C_{K^0\pi^+\pi^-}(B^0 \rightarrow K^0\pi^+\pi^- \text{ nonresonant})$	0.01 ± 0.26	NODE=S042CF4
$C_{K_S^0 K_S^0}(B^0 \rightarrow K_S^0 K_S^0)$	0.0 ± 0.4 (S = 1.4)	NODE=S042CKS
$S_{K_S^0 K_S^0}(B^0 \rightarrow K_S^0 K_S^0)$	-0.8 ± 0.5	NODE=S042SKS
$C_{K^+K^-K_S^0}(B^0 \rightarrow K^+K^-K_S^0 \text{ nonresonant})$	0.09 ± 0.09	NODE=S042CX2
$C_{K^+K^-K_S^0}(B^0 \rightarrow K^+K^-K_S^0 \text{ inclusive})$	0.01 ± 0.09	NODE=S042CKK
$C_{\phi K_S^0}(B^0 \rightarrow \phi K_S^0)$	0.03 ± 0.14	NODE=S042CX1
$S_{\phi K_S^0}(B^0 \rightarrow \phi K_S^0)$	0.39 ± 0.17	NODE=S042SX1
$C_{K_S K_S K_S}(B^0 \rightarrow K_S K_S K_S)$	-0.15 ± 0.16 (S = 1.1)	NODE=S042CX5
$S_{K_S K_S K_S}(B^0 \rightarrow K_S K_S K_S)$	-0.4 ± 0.5 (S = 2.5)	NODE=S042SX5
$C_{K_S^0\pi^0\gamma}(B^0 \rightarrow K_S^0\pi^0\gamma)$	0.36 ± 0.33	NODE=S042CKG

$S_{K_S^0 \pi^0 \gamma} (B^0 \rightarrow K_S^0 \pi^0 \gamma)$	-0.8 ± 0.6	NODE=S042SKG
$C_{K^*(892)^0 \gamma} (B^0 \rightarrow K^*(892)^0 \gamma)$	$-0.04 \pm 0.16 (S = 1.2)$	NODE=S042CX4
$S_{K^*(892)^0 \gamma} (B^0 \rightarrow K^*(892)^0 \gamma)$	-0.15 ± 0.22	NODE=S042SX4
$C_{\eta K^0 \gamma} (B^0 \rightarrow \eta K^0 \gamma)$	-0.3 ± 0.4	NODE=S042CEG
$S_{\eta K^0 \gamma} (B^0 \rightarrow \eta K^0 \gamma)$	-0.2 ± 0.5	NODE=S042SEG
$C_{K^0 \phi \gamma} (B^0 \rightarrow K^0 \phi \gamma)$	-0.3 ± 0.6	NODE=S042CPG
$S_{K^0 \phi \gamma} (B^0 \rightarrow K^0 \phi \gamma)$	$0.7^{+0.7}_{-1.1}$	NODE=S042SPG
$C(B^0 \rightarrow K_S^0 \rho^0 \gamma)$	-0.05 ± 0.19	NODE=S042CKR
$S(B^0 \rightarrow K_S^0 \rho^0 \gamma)$	0.11 ± 0.34	NODE=S042SKR
$C(B^0 \rightarrow \rho^0 \gamma)$	0.4 ± 0.5	NODE=S042CX8
$S(B^0 \rightarrow \rho^0 \gamma)$	-0.8 ± 0.7	NODE=S042SX8
$C_{\pi\pi} (B^0 \rightarrow \pi^+ \pi^-)$	$-0.38 \pm 0.17 (S = 2.6)$	NODE=S042CPI
$C_{\pi^0 \pi^0} (B^0 \rightarrow \pi^0 \pi^0)$	-0.48 ± 0.30	NODE=S042CX6
$C_{\rho\pi} (B^0 \rightarrow \rho^+ \pi^-)$	$0.01 \pm 0.14 (S = 1.9)$	NODE=S042CRP
$S_{\rho\pi} (B^0 \rightarrow \rho^+ \pi^-)$	0.01 ± 0.09	NODE=S042SRP
$\Delta S_{\rho\pi} (B^0 \rightarrow \rho^+ \pi^-)$	-0.05 ± 0.10	NODE=S042SDT
$C_{\rho^0 \pi^0} (B^0 \rightarrow \rho^0 \pi^0)$	0.3 ± 0.4	NODE=S042CRH
$S_{\rho^0 \pi^0} (B^0 \rightarrow \rho^0 \pi^0)$	0.1 ± 0.4	NODE=S042SRH
$C_{a_1 \pi} (B^0 \rightarrow a_1(1260)^+ \pi^-)$	-0.10 ± 0.17	NODE=S042CAP
$S_{a_1 \pi} (B^0 \rightarrow a_1(1260)^+ \pi^-)$	0.37 ± 0.22	NODE=S042SAP
$\Delta C_{a_1 \pi} (B^0 \rightarrow a_1(1260)^+ \pi^-)$	0.26 ± 0.17	NODE=S042CDA
$\Delta S_{a_1 \pi} (B^0 \rightarrow a_1(1260)^+ \pi^-)$	-0.14 ± 0.22	NODE=S042SDA
$C(B^0 \rightarrow b_1^- K^+)$	-0.22 ± 0.24	NODE=S042CAQ
$\Delta C(B^0 \rightarrow b_1^- \pi^+)$	-1.04 ± 0.24	NODE=S042SDB
$C_{\rho^0 \rho^0} (B^0 \rightarrow \rho^0 \rho^0)$	0.2 ± 0.9	NODE=S042CX9
$S_{\rho^0 \rho^0} (B^0 \rightarrow \rho^0 \rho^0)$	0.3 ± 0.7	NODE=S042SX9
$C_{\rho\rho} (B^0 \rightarrow \rho^+ \rho^-)$	-0.05 ± 0.13	NODE=S042CRR
$S_{\rho\rho} (B^0 \rightarrow \rho^+ \rho^-)$	-0.06 ± 0.17	NODE=S042SRR
$ \lambda (B^0 \rightarrow J/\psi K^*(892)^0)$	$<0.25, CL = 95\%$	NODE=S042LD9
$\cos 2\beta (B^0 \rightarrow J/\psi K^*(892)^0)$	$1.7^{+0.7}_{-0.9} (S = 1.6)$	NODE=S042CJ1
$\cos 2\beta (B^0 \rightarrow [K_S^0 \pi^+ \pi^-]_{D^{(*)}} h^0)$	$1.0^{+0.6}_{-0.7} (S = 1.8)$	NODE=S042CJ2
$(S_+ + S_-)/2 (B^0 \rightarrow D^{*-} \pi^+)$	-0.039 ± 0.011	NODE=S042LD3
$(S_- - S_+)/2 (B^0 \rightarrow D^{*-} \pi^+)$	-0.009 ± 0.015	NODE=S042LD4
$(S_+ + S_-)/2 (B^0 \rightarrow D^- \pi^+)$	-0.046 ± 0.023	NODE=S042LD5
$(S_- - S_+)/2 (B^0 \rightarrow D^- \pi^+)$	-0.022 ± 0.021	NODE=S042LD6
$(S_+ + S_-)/2 (B^0 \rightarrow D^- \rho^+)$	-0.024 ± 0.032	NODE=S042DR+
$(S_- - S_+)/2 (B^0 \rightarrow D^- \rho^+)$	-0.10 ± 0.06	NODE=S042DR-
$C_{\eta_c K_S^0} (B^0 \rightarrow \eta_c K_S^0)$	0.08 ± 0.13	NODE=S042CEC
$C_{c\bar{c}K^{(*)0}} (B^0 \rightarrow c\bar{c}K^{(*)0})$	$(0.5 \pm 1.7) \times 10^{-2}$	NODE=S042CCC; → NOT CHECKED ←; OUR EVAL
$C_{J/\psi(nS)K^0} (B^0 \rightarrow J/\psi(nS)K^0)$	$(0.5 \pm 2.0) \times 10^{-2}$	NODE=S042CJK; → NOT CHECKED ←; OUR EVAL
$C_{J/\psi K^{*0}} (B^0 \rightarrow J/\psi K^{*0})$	0.03 ± 0.10	NODE=S042CJS
$S_{J/\psi K^{*0}} (B^0 \rightarrow J/\psi K^{*0})$	0.60 ± 0.25	NODE=S042SJS
$C_{\chi_{c0} K_S^0} (B^0 \rightarrow \chi_{c0} K_S^0)$	$-0.3^{+0.5}_{-0.4}$	NODE=S042CC2
$S_{\chi_{c0} K_S^0} (B^0 \rightarrow \chi_{c0} K_S^0)$	-0.7 ± 0.5	NODE=S042SC2
$C_{\chi_{c1} K_S^0} (B^0 \rightarrow \chi_{c1} K_S^0)$	0.13 ± 0.11	NODE=S042CC1
$\sin(2\beta_{\text{eff}})(B^0 \rightarrow \phi K^0)$	0.22 ± 0.30	NODE=S042BTF
$\sin(2\beta_{\text{eff}})(B^0 \rightarrow \phi K_0^*(1430)^0)$	$0.97^{+0.03}_{-0.52}$	NODE=S042BFK
$\sin(2\beta_{\text{eff}})(B^0 \rightarrow [K_S^0 \pi^+ \pi^-]_{D^{(*)}} h^0)$	0.45 ± 0.28	NODE=S042BTM

$ \lambda (B^0 \rightarrow [K_S^0 \pi^+ \pi^-]_{D^*}) h^0)$	1.01 ± 0.08	NODE=S042LDH
$ \sin(2\beta + \gamma) $	>0.40 , CL = 90%	NODE=S042BGA
$2\beta + \gamma$	$(83 \pm 60)^\circ$	NODE=S042BG0
$\gamma(B^0 \rightarrow D^0 K^*0)$	$(162 \pm 60)^\circ$	NODE=S042GAM
$A_{CP}(B \rightarrow K^*(892)\gamma)$	-0.003 ± 0.017	NODE=S049CP1
$A_{CP}(b \rightarrow s\gamma)$	-0.008 ± 0.029	NODE=S049CP2
$A_{CP}(b \rightarrow (s+d)\gamma)$	-0.09 ± 0.07	NODE=S049CP4
$A_{CP}(B \rightarrow X_S \ell^+ \ell^-)$	-0.22 ± 0.26	NODE=S049CP3
$A_{CP}(B \rightarrow K^* e^+ e^-)$	-0.18 ± 0.15	NODE=S049CP6
$A_{CP}(B \rightarrow K^* \mu^+ \mu^-)$	-0.03 ± 0.13	NODE=S049CP7
$A_{CP}(B \rightarrow K^* \ell^+ \ell^-)$	-0.07 ± 0.08	NODE=S049CP5
$A_{CP}(B \rightarrow \eta \text{anything})$	$-0.13^{+0.04}_{-0.05}$	NODE=S049CP8
$\text{Re}(\epsilon_{B_S^0}) / (1 + \epsilon_{B_S^0} ^2)$	$(-2.6 \pm 1.6) \times 10^{-3}$	NODE=S086EPS; → NOT CHECKED ←; OUR EVAL
CP Violation phase β_S	$0.08^{+0.05}_{-0.07}$	NODE=S086PHS; → NOT CHECKED ←; OUR EVAL
$A_{CP}(B_S \rightarrow \pi^+ K^-)$	0.39 ± 0.17	NODE=S086CP1
$\Gamma(\eta_c(1S) \rightarrow \pi^+ \pi^-) / \Gamma_{\text{total}}$	$<1.1 \times 10^{-4}$, CL = 90%	PAR=M026;DESIG=51
$\Gamma(\eta_c(1S) \rightarrow \pi^0 \pi^0) / \Gamma_{\text{total}}$	$<3.5 \times 10^{-5}$, CL = 90%	PAR=M026;DESIG=52
$\Gamma(\eta_c(1S) \rightarrow K^+ K^-) / \Gamma_{\text{total}}$	$<6 \times 10^{-4}$, CL = 90%	PAR=M026;DESIG=53
$\Gamma(\eta_c(1S) \rightarrow K_S^0 K_S^0) / \Gamma_{\text{total}}$	$<3.1 \times 10^{-4}$, CL = 90%	PAR=M026;DESIG=54
$(\alpha + \bar{\alpha}) / (\alpha - \bar{\alpha})$ in $\Lambda \rightarrow p\pi^-, \bar{\Lambda} \rightarrow \bar{p}\pi^+$	0.006 ± 0.021	NODE=S018AL
$\frac{[\alpha(\Xi^-)\alpha_-(\Lambda) - \alpha(\Xi^+)\alpha_+(\bar{\Lambda})]}{[\alpha(\Xi^-)\alpha_-(\Lambda) + \alpha(\Xi^+)\alpha_+(\bar{\Lambda})]}$	$(0 \pm 7) \times 10^{-4}$	NODE=S022ACP
$(\alpha + \bar{\alpha}) / (\alpha - \bar{\alpha})$ in $\Omega^- \rightarrow \Lambda K^-, \bar{\Omega}^+ \rightarrow \bar{\Lambda} K^+$	-0.02 ± 0.13	NODE=S024ALD
$(\alpha + \bar{\alpha}) / (\alpha - \bar{\alpha})$ in $\Lambda_c^+ \rightarrow \Lambda \pi^+, \bar{\Lambda}_c^- \rightarrow \bar{\Lambda} \pi^-$	-0.07 ± 0.31	NODE=S033AC1
$(\alpha + \bar{\alpha}) / (\alpha - \bar{\alpha})$ in $\Lambda_c^+ \rightarrow \Lambda e^+ \nu_e, \bar{\Lambda}_c^- \rightarrow \bar{\Lambda} e^- \bar{\nu}_e$	0.00 ± 0.04	NODE=S033ACP
$A_{CP}(\Lambda_b \rightarrow p\pi^-)$	0.03 ± 0.18	NODE=S040CP1
$A_{CP}(\Lambda_b \rightarrow pK^-)$	0.37 ± 0.17	NODE=S040CP2

CP VIOLATION OBSERVED

CONLAW=CPV

Re(ϵ)	$(1.596 \pm 0.013) \times 10^{-3}$	NODE=S011REP
charge asymmetry in $K_{\ell 3}^0$ decays		NODE=S013310
$A_L =$ weighted average of $A_L(\mu)$ and $A_L(e)$	$(0.332 \pm 0.006)\%$	NODE=S013AL
$A_L(\mu) = [\Gamma(\pi^- \mu^+ \nu_\mu) - \Gamma(\pi^+ \mu^- \bar{\nu}_\mu)] / \text{sum}$	$(0.304 \pm 0.025)\%$	NODE=S013A1
$A_L(e) = [\Gamma(\pi^- e^+ \nu_e) - \Gamma(\pi^+ e^- \bar{\nu}_e)] / \text{sum}$	$(0.334 \pm 0.007)\%$	NODE=S013A2
parameters for $K_L^0 \rightarrow 2\pi$ decay		NODE=S013315
$ \eta_{00} = A(K_L^0 \rightarrow 2\pi^0) / A(K_S^0 \rightarrow 2\pi^0) $	$(2.220 \pm 0.011) \times 10^{-3}$ (S = 1.8)	NODE=S013E00
$ \eta_{+-} = A(K_L^0 \rightarrow \pi^+ \pi^-) / A(K_S^0 \rightarrow \pi^+ \pi^-) $	$(2.232 \pm 0.011) \times 10^{-3}$ (S = 1.8)	NODE=S013E+-
$ \epsilon = (2 \eta_{+-} + \eta_{00}) / 3$	$(2.228 \pm 0.011) \times 10^{-3}$ (S = 1.8)	NODE=S013EP
$ \eta_{00} / \eta_{+-} $	[h] 0.9950 ± 0.0007 (S = 1.6)	NODE=S013ER
$\text{Re}(\epsilon' / \epsilon) = (1 - \eta_{00} / \eta_{+-}) / 3$	[h] $(1.66 \pm 0.23) \times 10^{-3}$ (S = 1.6)	NODE=S013EPS NODE=S013F+-
Assuming CPT		
ϕ_{+-} , phase of η_{+-}	$(43.51 \pm 0.05)^\circ$ (S = 1.2)	NODE=S013F+-
ϕ_{00} , phase of η_{00}	$(43.52 \pm 0.05)^\circ$ (S = 1.3)	NODE=S013FOO
$\phi_\epsilon = (2\phi_{+-} + \phi_{00}) / 3$	$(43.52 \pm 0.05)^\circ$ (S = 1.2)	NODE=S013EPH NODE=S013F+2

Not assuming CPT

ϕ_{+-} , phase of η_{+-}	$(43.4 \pm 0.7)^\circ$ (S = 1.3)	NODE=S013F+2; → NOT CHECKED ←; OUR EVAL
ϕ_{00} , phase of η_{00}	$(43.7 \pm 0.8)^\circ$ (S = 1.2)	NODE=S013FO2; → NOT CHECKED ←; OUR EVAL
$\phi_\epsilon = (2\phi_{+-} + \phi_{00})/3$	$(43.5 \pm 0.7)^\circ$ (S = 1.3)	NODE=S013EP1; → NOT CHECKED ←; OUR EVAL
CP asymmetry A in $K_L^0 \rightarrow \pi^+ \pi^- e^+ e^-$	$(13.7 \pm 1.5)\%$	NODE=S013DPA
β_{CP} from $K_L^0 \rightarrow e^+ e^- e^+ e^-$	-0.19 ± 0.07	NODE=S013BCP
γ_{CP} from $K_L^0 \rightarrow e^+ e^- e^+ e^-$	0.01 ± 0.11 (S = 1.6)	NODE=S013GCP
parameters for $K_L^0 \rightarrow \pi^+ \pi^- \gamma$ decay		NODE=S013307
$ \eta_{+-\gamma} = A(K_L^0 \rightarrow \pi^+ \pi^- \gamma, CP \text{ violating})/A(K_S^0 \rightarrow \pi^+ \pi^- \gamma) $	$(2.35 \pm 0.07) \times 10^{-3}$	NODE=S013E+G
$\phi_{+-\gamma}$ = phase of $\eta_{+-\gamma}$	$(44 \pm 4)^\circ$	NODE=S013P+G
$\Gamma(K_L^0 \rightarrow \pi^+ \pi^-)/\Gamma_{\text{total}}$	[i] $(1.967 \pm 0.010) \times 10^{-3}$ (S = 1.5)	PAR=S013;DESIG=5
$\Gamma(K_L^0 \rightarrow \pi^0 \pi^0)/\Gamma_{\text{total}}$	$(8.64 \pm 0.06) \times 10^{-4}$ (S = 1.8)	PAR=S013;DESIG=11
$\gamma(B^+ \rightarrow D^{(*)} K^{(*)+})$	$(73 \pm 10)^\circ$	NODE=S041GAM
$A_{CP}(B^0 \rightarrow K^+ \pi^-)$	-0.097 ± 0.012	NODE=S042ACP
$A_{CP}(B^0 \rightarrow \eta K^*(892)^0)$	0.19 ± 0.05	NODE=S042CP1
$S_{D^*(2010)^- D^+} (B^0 \rightarrow D^*(2010)^- D^+)$	-0.78 ± 0.21	NODE=S042SPJ
$S_{D^*(2010)^+ D^-} (B^0 \rightarrow D^*(2010)^+ D^-)$	-0.61 ± 0.19	NODE=S042SPK
$S_{D^{*+} D^{*-}} (B^0 \rightarrow D^{*+} D^{*-})$	-0.76 ± 0.14	NODE=S042LD2
$S_+ (B^0 \rightarrow D^{*+} D^{*-})$	-0.76 ± 0.16	NODE=S042SD+
$S_{D^+ D^-} (B^0 \rightarrow D^+ D^-)$	-0.87 ± 0.26	NODE=S042SPD
$S_{J/\psi(1S) \pi^0} (B^0 \rightarrow J/\psi(1S) \pi^0)$	-0.94 ± 0.29 (S = 1.9)	NODE=S042SPL
$S_{K^0 \pi^0} (B^0 \rightarrow K^0 \pi^0)$	0.58 ± 0.17	NODE=S042SKP
$S_{\eta' K^0} (B^0 \rightarrow \eta' K^0)$	0.60 ± 0.07	NODE=S042SEK
$S_{K^+ K^- K_S^0} (B^0 \rightarrow K^+ K^- K_S^0)$ nonresonant)	$-0.74^{+0.12}_{-0.10}$	NODE=S042SX2
$S_{K^+ K^- K_S^0} (B^0 \rightarrow K^+ K^- K_S^0 \text{ inclusive})$	-0.65 ± 0.12	NODE=S042SKK
$S_{\pi\pi} (B^0 \rightarrow \pi^+ \pi^-)$	-0.61 ± 0.08	NODE=S042SPI
$\Delta C_{\rho\pi} (B^0 \rightarrow \rho^+ \pi^-)$	0.37 ± 0.08	NODE=S042CDT
$S_{\eta_c K_S^0} (B^0 \rightarrow \eta_c K_S^0)$	0.93 ± 0.17	NODE=S042SEC
$\sin(2\beta) (B^0 \rightarrow J/\psi K_S^0)$	0.679 ± 0.020	NODE=S042BET; → NOT CHECKED ←; OUR EVAL
$S_{J/\psi(nS) K^0} (B^0 \rightarrow J/\psi(nS) K^0)$	0.676 ± 0.021	NODE=S042SJK; → NOT CHECKED ←; OUR EVAL
$S_{\chi_{c1} K_S^0} (B^0 \rightarrow \chi_{c1} K_S^0)$	0.61 ± 0.16	NODE=S042SC1
$\sin(2\beta_{\text{eff}})(B^0 \rightarrow K^+ K^- K_S^0)$	$0.77^{+0.13}_{-0.12}$	NODE=S042BTK
α	$(90 \pm 5)^\circ$	NODE=S042ALP
$\text{Re}(\epsilon_b) / (1 + \epsilon_b ^2)$	$(-2.0 \pm 0.5) \times 10^{-3}$	NODE=S051EPS

CPT INVARIANCE

CONLAW=CPT

$(m_{W^+} - m_{W^-}) / m_{\text{average}}$	-0.002 ± 0.007	NODE=S043MDA;OUR EVAL
$(m_{e^+} - m_{e^-}) / m_{\text{average}}$	$< 8 \times 10^{-9}$, CL = 90%	NODE=S003DM
$ q_{e^+} + q_{e^-} /e$	$< 4 \times 10^{-8}$	NODE=S003DQ
$(g_{e^+} - g_{e^-}) / g_{\text{average}}$	$(-0.5 \pm 2.1) \times 10^{-12}$	NODE=S003MMR
$(\tau_{\mu^+} - \tau_{\mu^-}) / \tau_{\text{average}}$	$(2 \pm 8) \times 10^{-5}$	NODE=S004DTT;OUR EVAL
$(g_{\mu^+} - g_{\mu^-}) / g_{\text{average}}$	$(-0.11 \pm 0.12) \times 10^{-8}$	NODE=S004MMR
$(m_{\tau^+} - m_{\tau^-})/m_{\text{average}}$	$< 2.8 \times 10^{-4}$, CL = 90%	NODE=S035MDF
$m_t - m_{\bar{t}}$	-1.4 ± 2.0 GeV (S = 1.6)	NODE=Q007CPT
$(m_{\pi^+} - m_{\pi^-}) / m_{\text{average}}$	$(2 \pm 5) \times 10^{-4}$	NODE=S008DM
$(\tau_{\pi^+} - \tau_{\pi^-}) / \tau_{\text{average}}$	$(6 \pm 7) \times 10^{-4}$	NODE=S008DT
$(m_{K^+} - m_{K^-}) / m_{\text{average}}$	$(-0.6 \pm 1.8) \times 10^{-4}$	NODE=S010DMA;OUR EVAL
$(\tau_{K^+} - \tau_{K^-}) / \tau_{\text{average}}$	$(0.10 \pm 0.09)\%$ (S = 1.2)	NODE=S010DT
$K^{\pm} \rightarrow \mu^{\pm} \nu_{\mu}$ rate difference/average	$(-0.5 \pm 0.4)\%$	NODE=S010D1
$K^{\pm} \rightarrow \pi^{\pm} \pi^0$ rate difference/average	[j] $(0.8 \pm 1.2)\%$	NODE=S010D4 NODE=S011DRE
δ in $K^0 - \bar{K}^0$ mixing		
real part of δ	$(2.5 \pm 2.3) \times 10^{-4}$	NODE=S011DRE
imaginary part of δ	$(-1.5 \pm 1.6) \times 10^{-5}$	NODE=S011DIM
Re(y), K_{e3} parameter	$(0.4 \pm 2.5) \times 10^{-3}$	NODE=S011YRE
Re(x ₋), K_{e3} parameter	$(-2.9 \pm 2.0) \times 10^{-3}$	NODE=S011XRM
$ m_{K^0} - m_{\bar{K}^0} / m_{\text{average}}$	[k] $< 6 \times 10^{-19}$, CL = 90%	NODE=S011DMM
$(\Gamma_{K^0} - \Gamma_{\bar{K}^0})/m_{\text{average}}$	$(8 \pm 8) \times 10^{-18}$	NODE=S011DGM
phase difference $\phi_{00} - \phi_{+-}$	$(0.2 \pm 0.4)^{\circ}$	NODE=S013DF1; → NOT CHECKED ←; OUR EVAL
$\text{Re}(\frac{2}{3}\eta_{+-} + \frac{1}{3}\eta_{00}) - \frac{A_f}{2}$	$(-3 \pm 35) \times 10^{-6}$	NODE=S013CPT
$A_{CPT}(D^0 \rightarrow K^- \pi^+)$	0.008 ± 0.008	NODE=S032CPT
$ m_{\bar{p}} - m_p /m_p$	[l] $< 2 \times 10^{-9}$, CL = 90%	NODE=S016DM
$(\frac{q_{\bar{p}}}{m_{\bar{p}}} - \frac{q_p}{m_p})/\frac{q_p}{m_p}$	$(-9 \pm 9) \times 10^{-11}$	NODE=S016DMM; → NOT CHECKED ←; OUR EVAL
$ q_p + q_{\bar{p}} /e$	[l] $< 2 \times 10^{-9}$, CL = 90%	NODE=S016DQ2
$(\mu_p + \mu_{\bar{p}}) / \mu_p$	$(-0.1 \pm 2.1) \times 10^{-3}$	NODE=S016MMD; → NOT CHECKED ←; OUR EVAL
$(m_n - m_{\bar{n}}) / m_n$	$(9 \pm 6) \times 10^{-5}$	NODE=S017DMM; → NOT CHECKED ←; OUR EVAL
$(m_{\Lambda} - m_{\bar{\Lambda}}) / m_{\Lambda}$	$(-0.1 \pm 1.1) \times 10^{-5}$ (S = 1.6)	NODE=S018DM
$(\tau_{\Lambda} - \tau_{\bar{\Lambda}}) / \tau_{\Lambda}$	-0.001 ± 0.009	NODE=S018DT
$(\tau_{\Sigma^+} - \tau_{\bar{\Sigma}^-}) / \tau_{\Sigma^+}$	$(-0.6 \pm 1.2) \times 10^{-3}$	NODE=S019DT
$(\mu_{\Sigma^+} + \mu_{\bar{\Sigma}^-}) / \mu_{\Sigma^+}$	0.014 ± 0.015	NODE=S019MMD
$(m_{\Xi^-} - m_{\bar{\Xi}^+}) / m_{\Xi^-}$	$(-3 \pm 9) \times 10^{-5}$	NODE=S022DMM
$(\tau_{\Xi^-} - \tau_{\bar{\Xi}^+}) / \tau_{\Xi^-}$	-0.01 ± 0.07	NODE=S022DT
$(\mu_{\Xi^-} + \mu_{\bar{\Xi}^+}) / \mu_{\Xi^-} $	$+0.01 \pm 0.05$	NODE=S022MMD; → NOT CHECKED ←; OUR EVAL
$(m_{\Omega^-} - m_{\bar{\Omega}^+}) / m_{\Omega^-}$	$(-1 \pm 8) \times 10^{-5}$	NODE=S024DMM
$(\tau_{\Omega^-} - \tau_{\bar{\Omega}^+}) / \tau_{\Omega^-}$	0.00 ± 0.05	NODE=S024TD; → NOT CHECKED ←;OUR EST
$m_{\Sigma_b^+} - m_{\Sigma_b^-}$	-4.2 ± 1.1 MeV	NODE=S026DMI
$m_{\Sigma_b^{*+}} - m_{\Sigma_b^{*-}}$	$-3.0_{-0.9}^{+1.0}$ MeV	NODE=S062DMI

TESTS OF NUMBER CONSERVATION LAWS

LEPTON FAMILY NUMBER

CONLAW=LF

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

$\Gamma(Z \rightarrow e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<1.7 \times 10^{-6}$, CL = 95%	PAR=S044;DESIG=5
$\Gamma(Z \rightarrow e^\pm \tau^\mp)/\Gamma_{\text{total}}$	[m] $<9.8 \times 10^{-6}$, CL = 95%	PAR=S044;DESIG=25
$\Gamma(Z \rightarrow \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	[m] $<1.2 \times 10^{-5}$, CL = 95%	PAR=S044;DESIG=26
$\sigma(e^+ e^- \rightarrow e^\pm \tau^\mp) / \sigma(e^+ e^- \rightarrow \mu^+ \mu^-)$	$<8.9 \times 10^{-6}$, CL = 95%	NODE=S003RET
$\sigma(e^+ e^- \rightarrow \mu^\pm \tau^\mp) / \sigma(e^+ e^- \rightarrow \mu^+ \mu^-)$	$<4.0 \times 10^{-6}$, CL = 95%	NODE=S003RMT
limit on $\mu^- \rightarrow e^-$ conversion		NODE=S004245
$\sigma(\mu^- {}^{32}\text{S} \rightarrow e^- {}^{32}\text{S}) / \sigma(\mu^- {}^{32}\text{S} \rightarrow \nu_\mu {}^{32}\text{p}^*)$	$<7 \times 10^{-11}$, CL = 90%	NODE=S004RE
$\sigma(\mu^- \text{Ti} \rightarrow e^- \text{Ti}) / \sigma(\mu^- \text{Ti} \rightarrow \text{capture})$	$<4.3 \times 10^{-12}$, CL = 90%	NODE=S004RG
$\sigma(\mu^- \text{Pb} \rightarrow e^- \text{Pb}) / \sigma(\mu^- \text{Pb} \rightarrow \text{capture})$	$<4.6 \times 10^{-11}$, CL = 90%	NODE=S004RH
limit on muonium \rightarrow antimuonium conversion $R_g = G_C / G_F$	<0.0030 , CL = 90%	NODE=S004MC
$\Gamma(\mu^- \rightarrow e^- \nu_e \bar{\nu}_\mu)/\Gamma_{\text{total}}$	[n] $<1.2 \times 10^{-2}$, CL = 90%	PAR=S004;DESIG=3
$\Gamma(\mu^- \rightarrow e^- \gamma)/\Gamma_{\text{total}}$	$<2.4 \times 10^{-12}$, CL = 90%	PAR=S004;DESIG=4
$\Gamma(\mu^- \rightarrow e^- e^+ e^-)/\Gamma_{\text{total}}$	$<1.0 \times 10^{-12}$, CL = 90%	PAR=S004;DESIG=5
$\Gamma(\mu^- \rightarrow e^- 2\gamma)/\Gamma_{\text{total}}$	$<7.2 \times 10^{-11}$, CL = 90%	PAR=S004;DESIG=6
$\Gamma(\tau^- \rightarrow e^- \gamma)/\Gamma_{\text{total}}$	$<3.3 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=32
$\Gamma(\tau^- \rightarrow \mu^- \gamma)/\Gamma_{\text{total}}$	$<4.4 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=31
$\Gamma(\tau^- \rightarrow e^- \pi^0)/\Gamma_{\text{total}}$	$<8.0 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=40
$\Gamma(\tau^- \rightarrow \mu^- \pi^0)/\Gamma_{\text{total}}$	$<1.1 \times 10^{-7}$, CL = 90%	PAR=S035;DESIG=39
$\Gamma(\tau^- \rightarrow e^- K_S^0)/\Gamma_{\text{total}}$	$<2.6 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=42
$\Gamma(\tau^- \rightarrow \mu^- K_S^0)/\Gamma_{\text{total}}$	$<2.3 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=41
$\Gamma(\tau^- \rightarrow e^- \eta)/\Gamma_{\text{total}}$	$<9.2 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=67
$\Gamma(\tau^- \rightarrow \mu^- \eta)/\Gamma_{\text{total}}$	$<6.5 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=114
$\Gamma(\tau^- \rightarrow e^- \rho^0)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=44
$\Gamma(\tau^- \rightarrow \mu^- \rho^0)/\Gamma_{\text{total}}$	$<1.2 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=43
$\Gamma(\tau^- \rightarrow e^- \omega)/\Gamma_{\text{total}}$	$<4.8 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=305
$\Gamma(\tau^- \rightarrow \mu^- \omega)/\Gamma_{\text{total}}$	$<4.7 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=306
$\Gamma(\tau^- \rightarrow e^- K^*(892)^0)/\Gamma_{\text{total}}$	$<3.2 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=53
$\Gamma(\tau^- \rightarrow \mu^- K^*(892)^0)/\Gamma_{\text{total}}$	$<5.9 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=54
$\Gamma(\tau^- \rightarrow e^- \bar{K}^*(892)^0)/\Gamma_{\text{total}}$	$<3.4 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=131
$\Gamma(\tau^- \rightarrow \mu^- \bar{K}^*(892)^0)/\Gamma_{\text{total}}$	$<7.0 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=132
$\Gamma(\tau^- \rightarrow e^- \eta'(958))/\Gamma_{\text{total}}$	$<1.6 \times 10^{-7}$, CL = 90%	PAR=S035;DESIG=292
$\Gamma(\tau^- \rightarrow \mu^- \eta'(958))/\Gamma_{\text{total}}$	$<1.3 \times 10^{-7}$, CL = 90%	PAR=S035;DESIG=293
$\Gamma(\tau^- \rightarrow e^- f_0(980) \rightarrow e^- \pi^+ \pi^-)/\Gamma_{\text{total}}$	$<3.2 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=307
$\Gamma(\tau^- \rightarrow \mu^- f_0(980) \rightarrow \mu^- \pi^+ \pi^-)/\Gamma_{\text{total}}$	$<3.4 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=308
$\Gamma(\tau^- \rightarrow e^- \phi)/\Gamma_{\text{total}}$	$<3.1 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=255
$\Gamma(\tau^- \rightarrow \mu^- \phi)/\Gamma_{\text{total}}$	$<8.4 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=256
$\Gamma(\tau^- \rightarrow e^- e^+ e^-)/\Gamma_{\text{total}}$	$<2.7 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=38
$\Gamma(\tau^- \rightarrow e^- \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<2.7 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=36
$\Gamma(\tau^- \rightarrow e^+ \mu^- \mu^-)/\Gamma_{\text{total}}$	$<1.7 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=55
$\Gamma(\tau^- \rightarrow \mu^- e^+ e^-)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=37
$\Gamma(\tau^- \rightarrow \mu^+ e^- e^-)/\Gamma_{\text{total}}$	$<1.5 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=56
$\Gamma(\tau^- \rightarrow \mu^- \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<2.1 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=35
$\Gamma(\tau^- \rightarrow e^- \pi^+ \pi^-)/\Gamma_{\text{total}}$	$<4.4 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=45

$\Gamma(\tau^- \rightarrow \mu^- \pi^+ \pi^-)/\Gamma_{\text{total}}$	$<3.3 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=47
$\Gamma(\tau^- \rightarrow e^- \pi^+ K^-)/\Gamma_{\text{total}}$	$<5.8 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=49
$\Gamma(\tau^- \rightarrow e^- \pi^- K^+)/\Gamma_{\text{total}}$	$<5.2 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=77
$\Gamma(\tau^- \rightarrow e^- K_S^0 K_S^0)/\Gamma_{\text{total}}$	$<7.1 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=288
$\Gamma(\tau^- \rightarrow e^- K^+ K^-)/\Gamma_{\text{total}}$	$<5.4 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=251
$\Gamma(\tau^- \rightarrow \mu^- \pi^+ K^-)/\Gamma_{\text{total}}$	$<1.6 \times 10^{-7}$, CL = 90%	PAR=S035;DESIG=51
$\Gamma(\tau^- \rightarrow \mu^- \pi^- K^+)/\Gamma_{\text{total}}$	$<1.0 \times 10^{-7}$, CL = 90%	PAR=S035;DESIG=78
$\Gamma(\tau^- \rightarrow \mu^- K_S^0 K_S^0)/\Gamma_{\text{total}}$	$<8.0 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=289
$\Gamma(\tau^- \rightarrow \mu^- K^+ K^-)/\Gamma_{\text{total}}$	$<6.8 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=253
$\Gamma(\tau^- \rightarrow e^- \pi^0 \pi^0)/\Gamma_{\text{total}}$	$<6.5 \times 10^{-6}$, CL = 90%	PAR=S035;DESIG=224
$\Gamma(\tau^- \rightarrow \mu^- \pi^0 \pi^0)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-5}$, CL = 90%	PAR=S035;DESIG=225
$\Gamma(\tau^- \rightarrow e^- \eta \eta)/\Gamma_{\text{total}}$	$<3.5 \times 10^{-5}$, CL = 90%	PAR=S035;DESIG=226
$\Gamma(\tau^- \rightarrow \mu^- \eta \eta)/\Gamma_{\text{total}}$	$<6.0 \times 10^{-5}$, CL = 90%	PAR=S035;DESIG=227
$\Gamma(\tau^- \rightarrow e^- \pi^0 \eta)/\Gamma_{\text{total}}$	$<2.4 \times 10^{-5}$, CL = 90%	PAR=S035;DESIG=228
$\Gamma(\tau^- \rightarrow \mu^- \pi^0 \eta)/\Gamma_{\text{total}}$	$<2.2 \times 10^{-5}$, CL = 90%	PAR=S035;DESIG=229
$\Gamma(\tau^- \rightarrow e^- \text{light boson})/\Gamma_{\text{total}}$	$<2.7 \times 10^{-3}$, CL = 95%	PAR=S035;DESIG=102
$\Gamma(\tau^- \rightarrow \mu^- \text{light boson})/\Gamma_{\text{total}}$	$<5 \times 10^{-3}$, CL = 95%	PAR=S035;DESIG=103 NODE=S067T12

LEPTON FAMILY NUMBER VIOLATION IN NEUTRINOS

Solar Neutrinos		
$\sin^2(2\theta_{12})$	0.857 ± 0.024	NODE=S067T12
Δm_{21}^2	$(7.50 \pm 0.20) \times 10^{-5} \text{ eV}^2$	NODE=S067DM3 NODE=S067T23
Atmospheric Neutrinos		
$\sin^2(2\theta_{23})$	[ρ] >0.95	NODE=S067T23
Δm_{32}^2	[ρ] $(2.32^{+0.12}_{-0.08}) \times 10^{-3} \text{ eV}^2$	NODE=S067DM1
$\Gamma(\pi^+ \rightarrow \mu^+ \nu_e)/\Gamma_{\text{total}}$	[q] $<8.0 \times 10^{-3}$, CL = 90%	PAR=S008;DESIG=8
$\Gamma(\pi^+ \rightarrow \mu^- e^+ e^+ \nu)/\Gamma_{\text{total}}$	$<1.6 \times 10^{-6}$, CL = 90%	PAR=S008;DESIG=9
$\Gamma(\pi^0 \rightarrow \mu^+ e^-)/\Gamma_{\text{total}}$	$<3.8 \times 10^{-10}$, CL = 90%	PAR=S009;DESIG=14
$\Gamma(\pi^0 \rightarrow \mu^- e^+)/\Gamma_{\text{total}}$	$<3.4 \times 10^{-9}$, CL = 90%	PAR=S009;DESIG=22
$\Gamma(\pi^0 \rightarrow \mu^+ e^- + \mu^- e^+)/\Gamma_{\text{total}}$	$<3.6 \times 10^{-10}$, CL = 90%	PAR=S009;DESIG=8
$\Gamma(\eta \rightarrow \mu^+ e^- + \mu^- e^+)/\Gamma_{\text{total}}$	$<6 \times 10^{-6}$, CL = 90%	PAR=S014;DESIG=20
$\Gamma(\eta'(958) \rightarrow e \mu)/\Gamma_{\text{total}}$	$<4.7 \times 10^{-4}$, CL = 90%	PAR=M002;DESIG=27
$\Gamma(\phi(1020) \rightarrow e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<2 \times 10^{-6}$, CL = 90%	PAR=M004;DESIG=258
$\Gamma(K^+ \rightarrow \mu^- \nu e^+ e^+)/\Gamma_{\text{total}}$	$<2.0 \times 10^{-8}$, CL = 90%	PAR=S010;DESIG=31
$\Gamma(K^+ \rightarrow \mu^+ \nu_e)/\Gamma_{\text{total}}$	[q] $<4 \times 10^{-3}$, CL = 90%	PAR=S010;DESIG=34
$\Gamma(K^+ \rightarrow \pi^+ \mu^+ e^-)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-11}$, CL = 90%	PAR=S010;DESIG=29
$\Gamma(K^+ \rightarrow \pi^+ \mu^- e^+)/\Gamma_{\text{total}}$	$<5.2 \times 10^{-10}$, CL = 90%	PAR=S010;DESIG=25
$\Gamma(K_L^0 \rightarrow e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<4.7 \times 10^{-12}$, CL = 90%	PAR=S013;DESIG=8
$\Gamma(K_L^0 \rightarrow e^\pm e^\pm \mu^\mp \mu^\mp)/\Gamma_{\text{total}}$	[m] $<4.12 \times 10^{-11}$, CL = 90%	PAR=S013;DESIG=24
$\Gamma(K_L^0 \rightarrow \pi^0 \mu^\pm e^\mp)/\Gamma_{\text{total}}$	[m] $<7.6 \times 10^{-11}$, CL = 90%	PAR=S013;DESIG=36
$\Gamma(K_L^0 \rightarrow \pi^0 \pi^0 \mu^\pm e^\mp)/\Gamma_{\text{total}}$	$<1.7 \times 10^{-10}$, CL = 90%	PAR=S013;DESIG=53
$\Gamma(D^+ \rightarrow \pi^+ e^+ \mu^-)/\Gamma_{\text{total}}$	$<2.9 \times 10^{-6}$, CL = 90%	PAR=S031;DESIG=110
$\Gamma(D^+ \rightarrow \pi^+ e^- \mu^+)/\Gamma_{\text{total}}$	$<3.6 \times 10^{-6}$, CL = 90%	PAR=S031;DESIG=111
$\Gamma(D^+ \rightarrow K^+ e^+ \mu^-)/\Gamma_{\text{total}}$	$<1.2 \times 10^{-6}$, CL = 90%	PAR=S031;DESIG=115
$\Gamma(D^+ \rightarrow K^+ e^- \mu^+)/\Gamma_{\text{total}}$	$<2.8 \times 10^{-6}$, CL = 90%	PAR=S031;DESIG=116
$\Gamma(D^0 \rightarrow \mu^\pm e^\mp)/\Gamma_{\text{total}}$	[m] $<2.6 \times 10^{-7}$, CL = 90%	PAR=S032;DESIG=40
$\Gamma(D^0 \rightarrow \pi^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<8.6 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=234
$\Gamma(D^0 \rightarrow \eta e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<1.0 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=235
$\Gamma(D^0 \rightarrow \pi^+ \pi^- e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<1.5 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=268
$\Gamma(D^0 \rightarrow \rho^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<4.9 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=236
$\Gamma(D^0 \rightarrow \omega e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<1.2 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=237
$\Gamma(D^0 \rightarrow K^- K^+ e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<1.8 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=270
$\Gamma(D^0 \rightarrow \phi e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<3.4 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=238
$\Gamma(D^0 \rightarrow \bar{K}^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<1.0 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=239
$\Gamma(D^0 \rightarrow K^- \pi^+ e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<5.53 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=269
$\Gamma(D^0 \rightarrow \bar{K}^*(892)^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<8.3 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=240

$\Gamma(D_s^+ \rightarrow \pi^+ e^+ \mu^-)/\Gamma_{\text{total}}$	$<1.2 \times 10^{-5}$, CL = 90%	PAR=S034;DESIG=156
$\Gamma(D_s^+ \rightarrow \pi^+ e^- \mu^+)/\Gamma_{\text{total}}$	$<2.0 \times 10^{-5}$, CL = 90%	PAR=S034;DESIG=157
$\Gamma(D_s^+ \rightarrow K^+ e^+ \mu^-)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-5}$, CL = 90%	PAR=S034;DESIG=158
$\Gamma(D_s^+ \rightarrow K^+ e^- \mu^+)/\Gamma_{\text{total}}$	$<9.7 \times 10^{-6}$, CL = 90%	PAR=S034;DESIG=159
$\Gamma(B^+ \rightarrow \pi^+ e^+ \mu^-)/\Gamma_{\text{total}}$	$<6.4 \times 10^{-3}$, CL = 90%	PAR=S041;DESIG=86
$\Gamma(B^+ \rightarrow \pi^+ e^- \mu^+)/\Gamma_{\text{total}}$	$<6.4 \times 10^{-3}$, CL = 90%	PAR=S041;DESIG=87
$\Gamma(B^+ \rightarrow \pi^+ e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<1.7 \times 10^{-7}$, CL = 90%	PAR=S041;DESIG=476
$\Gamma(B^+ \rightarrow K^+ e^+ \mu^-)/\Gamma_{\text{total}}$	$<9.1 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=89
$\Gamma(B^+ \rightarrow K^+ e^- \mu^+)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-7}$, CL = 90%	PAR=S041;DESIG=90
$\Gamma(B^+ \rightarrow K^+ e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<9.1 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=446
$\Gamma(B^+ \rightarrow K^+ \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<7.7 \times 10^{-5}$, CL = 90%	PAR=S041;DESIG=486
$\Gamma(B^+ \rightarrow K^*(892)^+ e^+ \mu^-)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=447
$\Gamma(B^+ \rightarrow K^*(892)^+ e^- \mu^+)/\Gamma_{\text{total}}$	$<9.9 \times 10^{-7}$, CL = 90%	PAR=S041;DESIG=448
$\Gamma(B^+ \rightarrow K^*(892)^+ e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=296
$\Gamma(B^0 \rightarrow e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<6.4 \times 10^{-8}$, CL = 90%	PAR=S042;DESIG=8
$\Gamma(B^0 \rightarrow \pi^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-7}$, CL = 90%	PAR=S042;DESIG=383
$\Gamma(B^0 \rightarrow K^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<2.7 \times 10^{-7}$, CL = 90%	PAR=S042;DESIG=221
$\Gamma(B^0 \rightarrow K^*(892)^0 e^+ \mu^-)/\Gamma_{\text{total}}$	$<5.3 \times 10^{-7}$, CL = 90%	PAR=S042;DESIG=334
$\Gamma(B^0 \rightarrow K^*(892)^0 e^- \mu^+)/\Gamma_{\text{total}}$	$<3.4 \times 10^{-7}$, CL = 90%	PAR=S042;DESIG=335
$\Gamma(B^0 \rightarrow K^*(892)^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<5.8 \times 10^{-7}$, CL = 90%	PAR=S042;DESIG=222
$\Gamma(B^0 \rightarrow e^\pm \tau^\mp)/\Gamma_{\text{total}}$	[m] $<2.8 \times 10^{-5}$, CL = 90%	PAR=S042;DESIG=121
$\Gamma(B^0 \rightarrow \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	[m] $<2.2 \times 10^{-5}$, CL = 90%	PAR=S042;DESIG=122
$\Gamma(B \rightarrow s e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<2.2 \times 10^{-5}$, CL = 90%	PAR=S049;DESIG=33
$\Gamma(B \rightarrow \pi e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<9.2 \times 10^{-8}$, CL = 90%	PAR=S049;DESIG=243
$\Gamma(B \rightarrow \rho e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<3.2 \times 10^{-6}$, CL = 90%	PAR=S049;DESIG=244
$\Gamma(B \rightarrow K e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<3.8 \times 10^{-8}$, CL = 90%	PAR=S049;DESIG=241
$\Gamma(B \rightarrow K^*(892) e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<5.1 \times 10^{-7}$, CL = 90%	PAR=S049;DESIG=242
$\Gamma(B_s^0 \rightarrow e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[m] $<2.0 \times 10^{-7}$, CL = 90%	PAR=S086;DESIG=23
$\Gamma(J/\psi(1S) \rightarrow e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<1.1 \times 10^{-6}$, CL = 90%	PAR=M070;DESIG=177
$\Gamma(J/\psi(1S) \rightarrow e^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<8.3 \times 10^{-6}$, CL = 90%	PAR=M070;DESIG=178
$\Gamma(J/\psi(1S) \rightarrow \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<2.0 \times 10^{-6}$, CL = 90%	PAR=M070;DESIG=179
$\Gamma(\Upsilon(1S) \rightarrow \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<6.0 \times 10^{-6}$, CL = 95%	PAR=M049;DESIG=116
$\Gamma(\Upsilon(2S) \rightarrow e^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<3.2 \times 10^{-6}$, CL = 90%	PAR=M052;DESIG=107
$\Gamma(\Upsilon(2S) \rightarrow \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<3.3 \times 10^{-6}$, CL = 90%	PAR=M052;DESIG=104
$\Gamma(\Upsilon(3S) \rightarrow e^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<4.2 \times 10^{-6}$, CL = 90%	PAR=M048;DESIG=111
$\Gamma(\Upsilon(3S) \rightarrow \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<3.1 \times 10^{-6}$, CL = 90%	PAR=M048;DESIG=105
$\Gamma(\Lambda_c^+ \rightarrow p e^+ \mu^-)/\Gamma_{\text{total}}$	$<9.9 \times 10^{-6}$, CL = 90%	PAR=S033;DESIG=109
$\Gamma(\Lambda_c^+ \rightarrow p e^- \mu^+)/\Gamma_{\text{total}}$	$<1.9 \times 10^{-5}$, CL = 90%	PAR=S033;DESIG=110

TOTAL LEPTON NUMBER

CONLAW=L

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

$\Gamma(Z \rightarrow pe)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-6}$, CL = 95%	PAR=S044;DESIG=71
$\Gamma(Z \rightarrow p\mu)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-6}$, CL = 95%	PAR=S044;DESIG=72
limit on $\mu^- \rightarrow e^+$ conversion		NODE=S004250
$\sigma(\mu^- 32\text{S} \rightarrow e^+ 32\text{Si}^*) /$ $\sigma(\mu^- 32\text{S} \rightarrow \nu_\mu 32\text{P}^*)$	$<9 \times 10^{-10}$, CL = 90%	NODE=S004RP1
$\sigma(\mu^- 127\text{I} \rightarrow e^+ 127\text{Sb}^*) /$ $\sigma(\mu^- 127\text{I} \rightarrow \text{anything})$	$<3 \times 10^{-10}$, CL = 90%	NODE=S004RP2
$\sigma(\mu^- \text{Ti} \rightarrow e^+ \text{Ca}) /$ $\sigma(\mu^- \text{Ti} \rightarrow \text{capture})$	$<3.6 \times 10^{-11}$, CL = 90%	NODE=S004RP4
$\Gamma(\tau^- \rightarrow e^+ \pi^- \pi^-)/\Gamma_{\text{total}}$	$<8.8 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=46
$\Gamma(\tau^- \rightarrow \mu^+ \pi^- \pi^-)/\Gamma_{\text{total}}$	$<3.7 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=48
$\Gamma(\tau^- \rightarrow e^+ \pi^- K^-)/\Gamma_{\text{total}}$	$<6.7 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=50
$\Gamma(\tau^- \rightarrow e^+ K^- K^-)/\Gamma_{\text{total}}$	$<6.0 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=252
$\Gamma(\tau^- \rightarrow \mu^+ \pi^- K^-)/\Gamma_{\text{total}}$	$<9.4 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=52
$\Gamma(\tau^- \rightarrow \mu^+ K^- K^-)/\Gamma_{\text{total}}$	$<9.6 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=254
$\Gamma(\tau^- \rightarrow \bar{p}\gamma)/\Gamma_{\text{total}}$	$<3.5 \times 10^{-6}$, CL = 90%	PAR=S035;DESIG=104
$\Gamma(\tau^- \rightarrow \bar{p}\pi^0)/\Gamma_{\text{total}}$	$<1.5 \times 10^{-5}$, CL = 90%	PAR=S035;DESIG=105
$\Gamma(\tau^- \rightarrow \bar{p}2\pi^0)/\Gamma_{\text{total}}$	$<3.3 \times 10^{-5}$, CL = 90%	PAR=S035;DESIG=268
$\Gamma(\tau^- \rightarrow \bar{p}\eta)/\Gamma_{\text{total}}$	$<8.9 \times 10^{-6}$, CL = 90%	PAR=S035;DESIG=106
$\Gamma(\tau^- \rightarrow \bar{p}\pi^0\eta)/\Gamma_{\text{total}}$	$<2.7 \times 10^{-5}$, CL = 90%	PAR=S035;DESIG=269
$\Gamma(\tau^- \rightarrow \Lambda\pi^-)/\Gamma_{\text{total}}$	$<7.2 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=297
$\Gamma(\tau^- \rightarrow \bar{\Lambda}\pi^-)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-7}$, CL = 90%	PAR=S035;DESIG=298
$t_{1/2}(76\text{Ge} \rightarrow 76\text{Se} + 2e^-)$	$>1.9 \times 10^{25}$ yr, CL = 90%	NODE=S076HCL; → NOT CHECKED ←; OUR EVAL
$\Gamma(\pi^+ \rightarrow \mu^+ \bar{\nu}_e)/\Gamma_{\text{total}}$	[q] $<1.5 \times 10^{-3}$, CL = 90%	PAR=S008;DESIG=7
$\Gamma(K^+ \rightarrow \pi^- \mu^+ e^+)/\Gamma_{\text{total}}$	$<5.0 \times 10^{-10}$, CL = 90%	PAR=S010;DESIG=45
$\Gamma(K^+ \rightarrow \pi^- e^+ e^+)/\Gamma_{\text{total}}$	$<6.4 \times 10^{-10}$, CL = 90%	PAR=S010;DESIG=19
$\Gamma(K^+ \rightarrow \pi^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	[q] $<1.1 \times 10^{-9}$, CL = 90%	PAR=S010;DESIG=46
$\Gamma(K^+ \rightarrow \mu^+ \bar{\nu}_e)/\Gamma_{\text{total}}$	[q] $<3.3 \times 10^{-3}$, CL = 90%	PAR=S010;DESIG=35
$\Gamma(K^+ \rightarrow \pi^0 e^+ \bar{\nu}_e)/\Gamma_{\text{total}}$	$<3 \times 10^{-3}$, CL = 90%	PAR=S010;DESIG=36
$\Gamma(D^+ \rightarrow \pi^- 2e^+)/\Gamma_{\text{total}}$	$<1.1 \times 10^{-6}$, CL = 90%	PAR=S031;DESIG=117
$\Gamma(D^+ \rightarrow \pi^- 2\mu^+)/\Gamma_{\text{total}}$	$<2.0 \times 10^{-6}$, CL = 90%	PAR=S031;DESIG=118
$\Gamma(D^+ \rightarrow \pi^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<2.0 \times 10^{-6}$, CL = 90%	PAR=S031;DESIG=119
$\Gamma(D^+ \rightarrow \rho^- 2\mu^+)/\Gamma_{\text{total}}$	$<5.6 \times 10^{-4}$, CL = 90%	PAR=S031;DESIG=199
$\Gamma(D^+ \rightarrow K^- 2e^+)/\Gamma_{\text{total}}$	$<9 \times 10^{-7}$, CL = 90%	PAR=S031;DESIG=120
$\Gamma(D^+ \rightarrow K^- 2\mu^+)/\Gamma_{\text{total}}$	$<1.0 \times 10^{-5}$, CL = 90%	PAR=S031;DESIG=121
$\Gamma(D^+ \rightarrow K^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<1.9 \times 10^{-6}$, CL = 90%	PAR=S031;DESIG=122
$\Gamma(D^+ \rightarrow K^*(892)^- 2\mu^+)/\Gamma_{\text{total}}$	$<8.5 \times 10^{-4}$, CL = 90%	PAR=S031;DESIG=200
$\Gamma(D^0 \rightarrow 2\pi^- 2e^+ + \text{c.c.})/\Gamma_{\text{total}}$	$<1.12 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=253
$\Gamma(D^0 \rightarrow 2\pi^- 2\mu^+ + \text{c.c.})/\Gamma_{\text{total}}$	$<2.9 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=254
$\Gamma(D^0 \rightarrow K^- \pi^- 2e^+ + \text{c.c.})/\Gamma_{\text{total}}$	$<2.06 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=255
$\Gamma(D^0 \rightarrow K^- \pi^- 2\mu^+ + \text{c.c.})/\Gamma_{\text{total}}$	$<3.9 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=256
$\Gamma(D^0 \rightarrow 2K^- 2e^+ + \text{c.c.})/\Gamma_{\text{total}}$	$<1.52 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=257
$\Gamma(D^0 \rightarrow 2K^- 2\mu^+ + \text{c.c.})/\Gamma_{\text{total}}$	$<9.4 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=258
$\Gamma(D^0 \rightarrow \pi^- \pi^- e^+ \mu^+ + \text{c.c.})/\Gamma_{\text{total}}$	$<7.9 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=259
$\Gamma(D^0 \rightarrow K^- \pi^- e^+ \mu^+ + \text{c.c.})/\Gamma_{\text{total}}$	$<2.18 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=260
$\Gamma(D^0 \rightarrow 2K^- e^+ \mu^+ + \text{c.c.})/\Gamma_{\text{total}}$	$<5.7 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=261
$\Gamma(D^0 \rightarrow pe^-)/\Gamma_{\text{total}}$	[r] $<1.0 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=387
$\Gamma(D^0 \rightarrow \bar{p}e^+)/\Gamma_{\text{total}}$	[s] $<1.1 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=388
$\Gamma(D_s^+ \rightarrow \pi^- 2e^+)/\Gamma_{\text{total}}$	$<4.1 \times 10^{-6}$, CL = 90%	PAR=S034;DESIG=97
$\Gamma(D_s^+ \rightarrow \pi^- 2\mu^+)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-5}$, CL = 90%	PAR=S034;DESIG=76
$\Gamma(D_s^+ \rightarrow \pi^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<8.4 \times 10^{-6}$, CL = 90%	PAR=S034;DESIG=98
$\Gamma(D_s^+ \rightarrow K^- 2e^+)/\Gamma_{\text{total}}$	$<5.2 \times 10^{-6}$, CL = 90%	PAR=S034;DESIG=99

$\Gamma(D_s^+ \rightarrow K^- 2\mu^+)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-5}$, CL = 90%	PAR=S034;DESIG=77
$\Gamma(D_s^+ \rightarrow K^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<6.1 \times 10^{-6}$, CL = 90%	PAR=S034;DESIG=100
$\Gamma(D_s^+ \rightarrow K^*(892)^- 2\mu^+)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-3}$, CL = 90%	PAR=S034;DESIG=78
$\Gamma(B^+ \rightarrow \pi^- e^+ e^+)/\Gamma_{\text{total}}$	$<1.6 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=91
$\Gamma(B^+ \rightarrow \pi^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<4.4 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=93
$\Gamma(B^+ \rightarrow \pi^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=92
$\Gamma(B^+ \rightarrow \rho^- e^+ e^+)/\Gamma_{\text{total}}$	$<2.6 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=291
$\Gamma(B^+ \rightarrow \rho^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<5.0 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=295
$\Gamma(B^+ \rightarrow \rho^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<3.3 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=294
$\Gamma(B^+ \rightarrow K^- e^+ e^+)/\Gamma_{\text{total}}$	$<1.0 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=94
$\Gamma(B^+ \rightarrow K^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<4.1 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=96
$\Gamma(B^+ \rightarrow K^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<2.0 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=95
$\Gamma(B^+ \rightarrow K^*(892)^- e^+ e^+)/\Gamma_{\text{total}}$	$<2.8 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=290
$\Gamma(B^+ \rightarrow K^*(892)^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<8.3 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=292
$\Gamma(B^+ \rightarrow K^*(892)^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<4.4 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=293
$\Gamma(B^+ \rightarrow D^- e^+ e^+)/\Gamma_{\text{total}}$	$<2.6 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=572
$\Gamma(B^+ \rightarrow D^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=573
$\Gamma(B^+ \rightarrow D^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<1.1 \times 10^{-6}$, CL = 90%	PAR=S041;DESIG=574
$\Gamma(B^+ \rightarrow \Lambda^0 \mu^+)/\Gamma_{\text{total}}$	$<6 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=567
$\Gamma(B^+ \rightarrow \Lambda^0 e^+)/\Gamma_{\text{total}}$	$<3.2 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=568
$\Gamma(B^+ \rightarrow \bar{\Lambda}^0 \mu^+)/\Gamma_{\text{total}}$	$<6 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=569
$\Gamma(B^+ \rightarrow \bar{\Lambda}^0 e^+)/\Gamma_{\text{total}}$	$<8 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=570
$\Gamma(B^0 \rightarrow \Lambda_c^+ \mu^-)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-6}$, CL = 90%	PAR=S042;DESIG=491
$\Gamma(B^0 \rightarrow \Lambda_c^+ e^-)/\Gamma_{\text{total}}$	$<5 \times 10^{-6}$, CL = 90%	PAR=S042;DESIG=492
$\Gamma(\Xi^- \rightarrow p \mu^- \mu^-)/\Gamma_{\text{total}}$	$<4 \times 10^{-8}$, CL = 90%	PAR=S022;DESIG=14
$\Gamma(\Lambda_c^+ \rightarrow \bar{p} 2e^+)/\Gamma_{\text{total}}$	$<2.7 \times 10^{-6}$, CL = 90%	PAR=S033;DESIG=111
$\Gamma(\Lambda_c^+ \rightarrow \bar{p} 2\mu^+)/\Gamma_{\text{total}}$	$<9.4 \times 10^{-6}$, CL = 90%	PAR=S033;DESIG=112
$\Gamma(\Lambda_c^+ \rightarrow \bar{p} e^+ \mu^+)/\Gamma_{\text{total}}$	$<1.6 \times 10^{-5}$, CL = 90%	PAR=S033;DESIG=113
$\Gamma(\Lambda_c^+ \rightarrow \Sigma^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<7.0 \times 10^{-4}$, CL = 90%	PAR=S033;DESIG=61

BARYON NUMBER

CONLAW=B

$\Gamma(Z \rightarrow p e)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-6}$, CL = 95%	PAR=S044;DESIG=71
$\Gamma(Z \rightarrow p \mu)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-6}$, CL = 95%	PAR=S044;DESIG=72
$\Gamma(\tau^- \rightarrow \bar{p} \gamma)/\Gamma_{\text{total}}$	$<3.5 \times 10^{-6}$, CL = 90%	PAR=S035;DESIG=104
$\Gamma(\tau^- \rightarrow \bar{p} \pi^0)/\Gamma_{\text{total}}$	$<1.5 \times 10^{-5}$, CL = 90%	PAR=S035;DESIG=105
$\Gamma(\tau^- \rightarrow \bar{p} 2\pi^0)/\Gamma_{\text{total}}$	$<3.3 \times 10^{-5}$, CL = 90%	PAR=S035;DESIG=268
$\Gamma(\tau^- \rightarrow \bar{p} \eta)/\Gamma_{\text{total}}$	$<8.9 \times 10^{-6}$, CL = 90%	PAR=S035;DESIG=106
$\Gamma(\tau^- \rightarrow \bar{p} \pi^0 \eta)/\Gamma_{\text{total}}$	$<2.7 \times 10^{-5}$, CL = 90%	PAR=S035;DESIG=269
$\Gamma(\tau^- \rightarrow \Lambda \pi^-)/\Gamma_{\text{total}}$	$<7.2 \times 10^{-8}$, CL = 90%	PAR=S035;DESIG=297
$\Gamma(\tau^- \rightarrow \bar{\Lambda} \pi^-)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-7}$, CL = 90%	PAR=S035;DESIG=298
$\Gamma(D^0 \rightarrow p e^-)/\Gamma_{\text{total}}$	[r] $<1.0 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=387
$\Gamma(D^0 \rightarrow \bar{p} e^+)/\Gamma_{\text{total}}$	[s] $<1.1 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=388
$\Gamma(B^+ \rightarrow \Lambda^0 \mu^+)/\Gamma_{\text{total}}$	$<6 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=567
$\Gamma(B^+ \rightarrow \Lambda^0 e^+)/\Gamma_{\text{total}}$	$<3.2 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=568
$\Gamma(B^+ \rightarrow \bar{\Lambda}^0 \mu^+)/\Gamma_{\text{total}}$	$<6 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=569
$\Gamma(B^+ \rightarrow \bar{\Lambda}^0 e^+)/\Gamma_{\text{total}}$	$<8 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=570
$\Gamma(B^0 \rightarrow \Lambda_c^+ \mu^-)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-6}$, CL = 90%	PAR=S042;DESIG=491
$\Gamma(B^0 \rightarrow \Lambda_c^+ e^-)/\Gamma_{\text{total}}$	$<5 \times 10^{-6}$, CL = 90%	PAR=S042;DESIG=492

 p mean life[t] $>2.1 \times 10^{29}$ years, CL = 90%

NODE=S016T

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

PAR=S016;DESIG=6

$\tau(N \rightarrow e^+ \pi)$ > 158 (n), > 8200 (p) $\times 10^{30}$ years, CL = 90%

PAR=S016;DESIG=6;→ NOT CHECKED ←; OUR LIM

$\tau(N \rightarrow \mu^+ \pi)$ > 100 (n), > 6600 (p) $\times 10^{30}$ years, CL = 90%

PAR=S016;DESIG=7;→ NOT CHECKED ←; OUR LIM

$\tau(N \rightarrow e^+ K)$	$> 17 (n), > 150 (p) \times 10^{30}$ years, CL = 90%	PAR=S016;DESIG=8;→ NOT CHECKED ←; OUR LIM
$\tau(N \rightarrow \mu^+ K)$	$> 26 (n), > 120 (p) \times 10^{30}$ years, CL = 90%	PAR=S016;DESIG=9;→ NOT CHECKED ←; OUR LIM
limit on $n\bar{n}$ oscillations (free n)	$> 0.86 \times 10^8$ s, CL = 90%	NODE=S017NA2;→ NOT CHECKED ←; OUR LIM
limit on $n\bar{n}$ oscillations (bound n)	$[u] > 1.3 \times 10^8$ s, CL = 90%	NODE=S017NA1;→ NOT CHECKED ←; OUR LIM
$\Gamma(\Lambda_c^+ \rightarrow \bar{p}2e^+)/\Gamma_{\text{total}}$	$< 2.7 \times 10^{-6}$, CL = 90%	PAR=S033;DESIG=111
$\Gamma(\Lambda_c^+ \rightarrow \bar{p}2\mu^+)/\Gamma_{\text{total}}$	$< 9.4 \times 10^{-6}$, CL = 90%	PAR=S033;DESIG=112
$\Gamma(\Lambda_c^+ \rightarrow \bar{p}e^+\mu^+)/\Gamma_{\text{total}}$	$< 1.6 \times 10^{-5}$, CL = 90%	PAR=S033;DESIG=113

ELECTRIC CHARGE (Q)

CONLAW=Q

$e \rightarrow \nu_e \gamma$ and astrophysical limits	$[\nu] > 4.6 \times 10^{26}$ yr, CL = 90%	NODE=S003T
$\Gamma(n \rightarrow p\nu_e\bar{\nu}_e)/\Gamma_{\text{total}}$	$< 8 \times 10^{-27}$, CL = 68%	PAR=S017;DESIG=2

$\Delta S = \Delta Q$ RULE

CONLAW=SQ

Violations allowed in second-order weak interactions.

$\Gamma(K^+ \rightarrow \pi^+ \pi^+ e^- \bar{\nu}_e)/\Gamma_{\text{total}}$	$< 1.2 \times 10^{-8}$, CL = 90%	PAR=S010;DESIG=8
$\Gamma(K^+ \rightarrow \pi^+ \pi^+ \mu^- \bar{\nu}_\mu)/\Gamma_{\text{total}}$	$< 3.0 \times 10^{-6}$, CL = 95%	PAR=S010;DESIG=10
Re(x_+), K_{e3} parameter	$(-0.9 \pm 3.0) \times 10^{-3}$	NODE=S011XRP
$x = A(\bar{K}^0 \rightarrow \pi^- \ell^+ \nu)/A(K^0 \rightarrow \pi^- \ell^+ \nu) = A(\Delta S = -\Delta Q)/A(\Delta S = \Delta Q)$		NODE=S013250
real part of x	-0.002 ± 0.006	NODE=S013REX
imaginary part of x	0.0012 ± 0.0021	NODE=S013IMX
$\Gamma(\Sigma^+ \rightarrow n\ell^+ \nu)/\Gamma(\Sigma^- \rightarrow n\ell^- \bar{\nu})$	< 0.043	NODE=S019R7;→ NOT CHECKED ←;OUR LIM
$\Gamma(\Sigma^+ \rightarrow ne^+ \nu_e)/\Gamma_{\text{total}}$	$< 5 \times 10^{-6}$, CL = 90%	PAR=S019;DESIG=7;→ NOT CHECKED ←;OUR LIM
$\Gamma(\Sigma^+ \rightarrow n\mu^+ \nu_\mu)/\Gamma_{\text{total}}$	$< 3.0 \times 10^{-5}$, CL = 90%	PAR=S019;DESIG=6;→ NOT CHECKED ←;OUR LIM
$\Gamma(\Xi^0 \rightarrow \Sigma^- e^+ \nu_e)/\Gamma_{\text{total}}$	$< 9 \times 10^{-4}$, CL = 90%	PAR=S023;DESIG=5
$\Gamma(\Xi^0 \rightarrow \Sigma^- \mu^+ \nu_\mu)/\Gamma_{\text{total}}$	$< 9 \times 10^{-4}$, CL = 90%	PAR=S023;DESIG=7

$\Delta S = 2$ FORBIDDEN

CONLAW=S2

Allowed in second-order weak interactions.

$\Gamma(\Xi^0 \rightarrow p\pi^-)/\Gamma_{\text{total}}$	$< 8 \times 10^{-6}$, CL = 90%	PAR=S023;DESIG=2
$\Gamma(\Xi^0 \rightarrow pe^- \bar{\nu}_e)/\Gamma_{\text{total}}$	$< 1.3 \times 10^{-3}$	PAR=S023;DESIG=3
$\Gamma(\Xi^0 \rightarrow p\mu^- \bar{\nu}_\mu)/\Gamma_{\text{total}}$	$< 1.3 \times 10^{-3}$	PAR=S023;DESIG=8
$\Gamma(\Xi^- \rightarrow n\pi^-)/\Gamma_{\text{total}}$	$< 1.9 \times 10^{-5}$, CL = 90%	PAR=S022;DESIG=3
$\Gamma(\Xi^- \rightarrow ne^- \bar{\nu}_e)/\Gamma_{\text{total}}$	$< 3.2 \times 10^{-3}$, CL = 90%	PAR=S022;DESIG=7
$\Gamma(\Xi^- \rightarrow n\mu^- \bar{\nu}_\mu)/\Gamma_{\text{total}}$	$< 1.5 \times 10^{-2}$, CL = 90%	PAR=S022;DESIG=8
$\Gamma(\Xi^- \rightarrow p\pi^- \pi^-)/\Gamma_{\text{total}}$	$< 4 \times 10^{-4}$, CL = 90%	PAR=S022;DESIG=10
$\Gamma(\Xi^- \rightarrow p\pi^- e^- \bar{\nu}_e)/\Gamma_{\text{total}}$	$< 4 \times 10^{-4}$, CL = 90%	PAR=S022;DESIG=11
$\Gamma(\Xi^- \rightarrow p\pi^- \mu^- \bar{\nu}_\mu)/\Gamma_{\text{total}}$	$< 4 \times 10^{-4}$, CL = 90%	PAR=S022;DESIG=12
$\Gamma(\Omega^- \rightarrow \Lambda\pi^-)/\Gamma_{\text{total}}$	$< 2.9 \times 10^{-6}$, CL = 90%	PAR=S024;DESIG=4

$\Delta S = 2$ VIA MIXING

CONLAW=S2M

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

$m_{K_L^0} - m_{K_S^0}$	$(0.5293 \pm 0.0009) \times 10^{10} \hbar s^{-1}$ (S = 1.3)	NODE=S013D
$m_{K_L^0} - m_{K_S^0}$	$(3.484 \pm 0.006) \times 10^{-12}$ MeV	NODE=S013D1;OUR EVAL

$\Delta C = 2$ VIA MIXING

CONLAW=C2M

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

$$|m_{D_1^0} - m_{D_2^0}| = x\Gamma \quad (1.44^{+0.48}_{-0.50}) \times 10^{10} \hbar s^{-1}$$

$$(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma = 2y \quad (1.60^{+0.25}_{-0.26}) \times 10^{-2}$$

NODE=S032D;→ NOT CHECKED ←;OUR
EVAL

NODE=S032DT;→ NOT CHECKED ←;OUR
EVAL

 $\Delta B = 2$ VIA MIXING

CONLAW=B2M

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

$$\chi_d \quad 0.1862 \pm 0.0023$$

$$\Delta m_{B^0} = m_{B_H^0} - m_{B_L^0} \quad (0.507 \pm 0.004) \times 10^{12} \hbar s^{-1}$$

$$x_d = \Delta m_{B^0}/\Gamma_{B^0} \quad 0.770 \pm 0.008$$

$$\Delta m_{B_s^0} = m_{B_{sH}^0} - m_{B_{sL}^0} \quad (17.69 \pm 0.08) \times 10^{12} \hbar s^{-1}$$

$$x_s = \Delta m_{B_s^0}/\Gamma_{B_s^0} \quad 26.45 \pm 0.30$$

$$\chi_s \quad 0.499290 \pm 0.000016$$

NODE=S042CHD;→ NOT CHECKED ←;
OUR EVAL

NODE=S042D;→ NOT CHECKED ←;OUR
EVAL

NODE=S042DG;→ NOT CHECKED ←;OUR
EVAL

NODE=S086D;→ NOT CHECKED ←;OUR
EVAL

NODE=S086DG;→ NOT CHECKED ←;OUR
EVAL

NODE=S086CHS;→ NOT CHECKED ←;
OUR EVAL

 $\Delta S = 1$ WEAK NEUTRAL CURRENT FORBIDDEN

CONLAW=S1

Allowed by higher-order electroweak interactions.

$\Gamma(K^+ \rightarrow \pi^+ e^+ e^-)/\Gamma_{\text{total}}$	$(3.00 \pm 0.09) \times 10^{-7}$	PAR=S010;DESIG=15
$\Gamma(K^+ \rightarrow \pi^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(9.4 \pm 0.6) \times 10^{-8}$ (S = 2.6)	PAR=S010;DESIG=16
$\Gamma(K^+ \rightarrow \pi^+ \nu \bar{\nu})/\Gamma_{\text{total}}$	$(1.7 \pm 1.1) \times 10^{-10}$	PAR=S010;DESIG=20
$\Gamma(K^+ \rightarrow \pi^+ \pi^0 \nu \bar{\nu})/\Gamma_{\text{total}}$	$< 4.3 \times 10^{-5}$, CL = 90%	PAR=S010;DESIG=50
$\Gamma(K_S^0 \rightarrow \mu^+ \mu^-)/\Gamma_{\text{total}}$	$< 3.2 \times 10^{-7}$, CL = 90%	PAR=S012;DESIG=3
$\Gamma(K_S^0 \rightarrow e^+ e^-)/\Gamma_{\text{total}}$	$< 9 \times 10^{-9}$, CL = 90%	PAR=S012;DESIG=4
$\Gamma(K_S^0 \rightarrow \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	[w] $(3.0^{+1.5}_{-1.2}) \times 10^{-9}$	PAR=S012;DESIG=10
$\Gamma(K_S^0 \rightarrow \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(2.9^{+1.5}_{-1.2}) \times 10^{-9}$	PAR=S012;DESIG=15
$\Gamma(K_L^0 \rightarrow \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(6.84 \pm 0.11) \times 10^{-9}$	PAR=S013;DESIG=6
$\Gamma(K_L^0 \rightarrow e^+ e^-)/\Gamma_{\text{total}}$	$(9^{+6}_{-4}) \times 10^{-12}$	PAR=S013;DESIG=7
$\Gamma(K_L^0 \rightarrow \pi^+ \pi^- e^+ e^-)/\Gamma_{\text{total}}$	[x] $(3.11 \pm 0.19) \times 10^{-7}$	PAR=S013;DESIG=17
$\Gamma(K_L^0 \rightarrow \pi^0 \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	$< 6.6 \times 10^{-9}$, CL = 90%	PAR=S013;DESIG=48
$\Gamma(K_L^0 \rightarrow \pi^0 \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$< 9.2 \times 10^{-11}$, CL = 90%	PAR=S013;DESIG=54
$\Gamma(K_L^0 \rightarrow \mu^+ \mu^- e^+ e^-)/\Gamma_{\text{total}}$	$(2.69 \pm 0.27) \times 10^{-9}$	PAR=S013;DESIG=21
$\Gamma(K_L^0 \rightarrow e^+ e^- e^+ e^-)/\Gamma_{\text{total}}$	$(3.56 \pm 0.21) \times 10^{-8}$	PAR=S013;DESIG=22
$\Gamma(K_L^0 \rightarrow \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$< 3.8 \times 10^{-10}$, CL = 90%	PAR=S013;DESIG=16
$\Gamma(K_L^0 \rightarrow \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	$< 2.8 \times 10^{-10}$, CL = 90%	PAR=S013;DESIG=20
$\Gamma(K_L^0 \rightarrow \pi^0 \nu \bar{\nu})/\Gamma_{\text{total}}$	$< 2.6 \times 10^{-8}$, CL = 90%	PAR=S013;DESIG=43
$\Gamma(K_L^0 \rightarrow \pi^0 \pi^0 \nu \bar{\nu})/\Gamma_{\text{total}}$	$< 8.1 \times 10^{-7}$, CL = 90%	PAR=S013;DESIG=52
$\Gamma(\Sigma^+ \rightarrow p e^+ e^-)/\Gamma_{\text{total}}$	$< 7 \times 10^{-6}$	PAR=S019;DESIG=8
$\Gamma(\Sigma^+ \rightarrow p \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(9^{+9}_{-8}) \times 10^{-8}$	PAR=S019;DESIG=9

$\Delta C = 1$ WEAK NEUTRAL CURRENT FORBIDDEN

CONLAW=C1

Allowed by higher-order electroweak interactions.

$\Gamma(D^+ \rightarrow \pi^+ e^+ e^-)/\Gamma_{\text{total}}$	$<1.1 \times 10^{-6}$, CL = 90%	PAR=S031;DESIG=41
$\Gamma(D^+ \rightarrow \pi^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<3.9 \times 10^{-6}$, CL = 90%	PAR=S031;DESIG=42
$\Gamma(D^+ \rightarrow \rho^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<5.6 \times 10^{-4}$, CL = 90%	PAR=S031;DESIG=198
$\Gamma(D^0 \rightarrow \gamma\gamma)/\Gamma_{\text{total}}$	$<2.6 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=45
$\Gamma(D^0 \rightarrow e^+ e^-)/\Gamma_{\text{total}}$	$<7.9 \times 10^{-8}$, CL = 90%	PAR=S032;DESIG=39
$\Gamma(D^0 \rightarrow \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-7}$, CL = 90%	PAR=S032;DESIG=28
$\Gamma(D^0 \rightarrow \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	$<4.5 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=225
$\Gamma(D^0 \rightarrow \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=216
$\Gamma(D^0 \rightarrow \eta e^+ e^-)/\Gamma_{\text{total}}$	$<1.1 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=226
$\Gamma(D^0 \rightarrow \eta \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<5.3 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=227
$\Gamma(D^0 \rightarrow \pi^+ \pi^- e^+ e^-)/\Gamma_{\text{total}}$	$<3.73 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=262
$\Gamma(D^0 \rightarrow \rho^0 e^+ e^-)/\Gamma_{\text{total}}$	$<1.0 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=52
$\Gamma(D^0 \rightarrow \pi^+ \pi^- \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<3.0 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=263
$\Gamma(D^0 \rightarrow \rho^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<2.2 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=53
$\Gamma(D^0 \rightarrow \omega e^+ e^-)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=228
$\Gamma(D^0 \rightarrow \omega \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<8.3 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=229
$\Gamma(D^0 \rightarrow K^- K^+ e^+ e^-)/\Gamma_{\text{total}}$	$<3.15 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=266
$\Gamma(D^0 \rightarrow \phi e^+ e^-)/\Gamma_{\text{total}}$	$<5.2 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=230
$\Gamma(D^0 \rightarrow K^- K^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<3.3 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=267
$\Gamma(D^0 \rightarrow \phi \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<3.1 \times 10^{-5}$, CL = 90%	PAR=S032;DESIG=231
$\Gamma(D^0 \rightarrow K^- \pi^+ e^+ e^-)/\Gamma_{\text{total}}$	$<3.85 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=264
$\Gamma(D^0 \rightarrow K^- \pi^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<3.59 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=265
$\Gamma(D^0 \rightarrow \pi^+ \pi^- \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<8.1 \times 10^{-4}$, CL = 90%	PAR=S032;DESIG=218
$\Gamma(D_s^+ \rightarrow K^+ e^+ e^-)/\Gamma_{\text{total}}$	$<3.7 \times 10^{-6}$, CL = 90%	PAR=S034;DESIG=94
$\Gamma(D_s^+ \rightarrow K^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<2.1 \times 10^{-5}$, CL = 90%	PAR=S034;DESIG=74
$\Gamma(D_s^+ \rightarrow K^*(892)^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-3}$, CL = 90%	PAR=S034;DESIG=75
$\Gamma(\Lambda_c^+ \rightarrow p e^+ e^-)/\Gamma_{\text{total}}$	$<5.5 \times 10^{-6}$, CL = 90%	PAR=S033;DESIG=108
$\Gamma(\Lambda_c^+ \rightarrow p \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<4.4 \times 10^{-5}$, CL = 90%	PAR=S033;DESIG=60

 $\Delta B = 1$ WEAK NEUTRAL CURRENT FORBIDDEN

CONLAW=B1

Allowed by higher-order electroweak interactions.

$\Gamma(B^+ \rightarrow \pi^+ \ell^+ \ell^-)/\Gamma_{\text{total}}$	$<4.9 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=475
$\Gamma(B^+ \rightarrow \pi^+ e^+ e^-)/\Gamma_{\text{total}}$	$<8.0 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=85
$\Gamma(B^+ \rightarrow \pi^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<6.9 \times 10^{-8}$, CL = 90%	PAR=S041;DESIG=88
$\Gamma(B^+ \rightarrow \pi^+ \nu \bar{\nu})/\Gamma_{\text{total}}$	$<1.0 \times 10^{-4}$, CL = 90%	PAR=S041;DESIG=404
$\Gamma(B^+ \rightarrow K^+ \ell^+ \ell^-)/\Gamma_{\text{total}}$	[y] $(5.1 \pm 0.5) \times 10^{-7}$	PAR=S041;DESIG=345
$\Gamma(B^+ \rightarrow K^+ e^+ e^-)/\Gamma_{\text{total}}$	$(5.5 \pm 0.7) \times 10^{-7}$	PAR=S041;DESIG=11
$\Gamma(B^+ \rightarrow K^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(4.8 \pm 0.4) \times 10^{-7}$	PAR=S041;DESIG=10
$\Gamma(B^+ \rightarrow K^+ \bar{\nu} \nu)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-5}$, CL = 90%	PAR=S041;DESIG=273
$\Gamma(B^+ \rightarrow \rho^+ \nu \bar{\nu})/\Gamma_{\text{total}}$	$<1.5 \times 10^{-4}$, CL = 90%	PAR=S041;DESIG=489
$\Gamma(B^+ \rightarrow K^*(892)^+ \ell^+ \ell^-)/\Gamma_{\text{total}}$	[y] $(1.29 \pm 0.21) \times 10^{-6}$	PAR=S041;DESIG=346
$\Gamma(B^+ \rightarrow K^*(892)^+ e^+ e^-)/\Gamma_{\text{total}}$	$(1.55^{+0.40}_{-0.31}) \times 10^{-6}$	PAR=S041;DESIG=161
$\Gamma(B^+ \rightarrow K^*(892)^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(1.07 \pm 0.22) \times 10^{-6}$	PAR=S041;DESIG=162
$\Gamma(B^+ \rightarrow K^*(892)^+ \nu \bar{\nu})/\Gamma_{\text{total}}$	$<8 \times 10^{-5}$, CL = 90%	PAR=S041;DESIG=490
$\Gamma(B^0 \rightarrow \gamma\gamma)/\Gamma_{\text{total}}$	$<3.2 \times 10^{-7}$, CL = 90%	PAR=S042;DESIG=141
$\Gamma(B^0 \rightarrow e^+ e^-)/\Gamma_{\text{total}}$	$<8.3 \times 10^{-8}$, CL = 90%	PAR=S042;DESIG=6
$\Gamma(B^0 \rightarrow e^+ e^- \gamma)/\Gamma_{\text{total}}$	$<1.2 \times 10^{-7}$, CL = 90%	PAR=S042;DESIG=404
$\Gamma(B^0 \rightarrow \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-9}$, CL = 90%	PAR=S042;DESIG=7
$\Gamma(B^0 \rightarrow \mu^+ \mu^- \gamma)/\Gamma_{\text{total}}$	$<1.6 \times 10^{-7}$, CL = 90%	PAR=S042;DESIG=405
$\Gamma(B^0 \rightarrow \tau^+ \tau^-)/\Gamma_{\text{total}}$	$<4.1 \times 10^{-3}$, CL = 90%	PAR=S042;DESIG=336
$\Gamma(B^0 \rightarrow \pi^0 \ell^+ \ell^-)/\Gamma_{\text{total}}$	$<1.2 \times 10^{-7}$, CL = 90%	PAR=S042;DESIG=382

$\Gamma(B^0 \rightarrow \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-7}$, CL = 90%	PAR=S042;DESIG=380
$\Gamma(B^0 \rightarrow \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-7}$, CL = 90%	PAR=S042;DESIG=381
$\Gamma(B^0 \rightarrow \pi^0 \nu \bar{\nu})/\Gamma_{\text{total}}$	$<2.2 \times 10^{-4}$, CL = 90%	PAR=S042;DESIG=406
$\Gamma(B^0 \rightarrow K^0 \ell^+ \ell^-)/\Gamma_{\text{total}}$	[y] $(3.1^{+0.8}_{-0.7}) \times 10^{-7}$	PAR=S042;DESIG=275
$\Gamma(B^0 \rightarrow K^0 e^+ e^-)/\Gamma_{\text{total}}$	$(1.6^{+1.0}_{-0.8}) \times 10^{-7}$	PAR=S042;DESIG=18
$\Gamma(B^0 \rightarrow K^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(3.8 \pm 0.8) \times 10^{-7}$	PAR=S042;DESIG=17
$\Gamma(B^0 \rightarrow K^0 \nu \bar{\nu})/\Gamma_{\text{total}}$	$<5.6 \times 10^{-5}$, CL = 90%	PAR=S042;DESIG=407
$\Gamma(B^0 \rightarrow \rho^0 \nu \bar{\nu})/\Gamma_{\text{total}}$	$<4.4 \times 10^{-4}$, CL = 90%	PAR=S042;DESIG=408
$\Gamma(B^0 \rightarrow K^*(892)^0 \ell^+ \ell^-)/\Gamma_{\text{total}}$	[y] $(9.9^{+1.2}_{-1.1}) \times 10^{-7}$	PAR=S042;DESIG=276
$\Gamma(B^0 \rightarrow K^*(892)^0 e^+ e^-)/\Gamma_{\text{total}}$	$(1.03^{+0.19}_{-0.17}) \times 10^{-6}$	PAR=S042;DESIG=82
$\Gamma(B^0 \rightarrow K^*(892)^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(1.06 \pm 0.10) \times 10^{-6}$	PAR=S042;DESIG=71
$\Gamma(B^0 \rightarrow K^*(892)^0 \nu \bar{\nu})/\Gamma_{\text{total}}$	$<1.2 \times 10^{-4}$, CL = 90%	PAR=S042;DESIG=152
$\Gamma(B^0 \rightarrow \phi \nu \bar{\nu})/\Gamma_{\text{total}}$	$<5.8 \times 10^{-5}$, CL = 90%	PAR=S042;DESIG=409
$\Gamma(B^0 \rightarrow \text{invisible})/\Gamma_{\text{total}}$	$<2.2 \times 10^{-4}$, CL = 90%	PAR=S042;DESIG=284
$\Gamma(B^0 \rightarrow \nu \bar{\nu} \gamma)/\Gamma_{\text{total}}$	$<4.7 \times 10^{-5}$, CL = 90%	PAR=S042;DESIG=285
$\Gamma(B \rightarrow s e^+ e^-)/\Gamma_{\text{total}}$	$(4.7 \pm 1.3) \times 10^{-6}$	PAR=S049;DESIG=103
$\Gamma(B \rightarrow s \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(4.3 \pm 1.2) \times 10^{-6}$	PAR=S049;DESIG=104
$\Gamma(B \rightarrow s \ell^+ \ell^-)/\Gamma_{\text{total}}$	[y] $(4.5 \pm 1.0) \times 10^{-6}$	PAR=S049;DESIG=59
$\Gamma(B \rightarrow \pi \ell^+ \ell^-)/\Gamma_{\text{total}}$	$<6.2 \times 10^{-8}$, CL = 90%	PAR=S049;DESIG=266
$\Gamma(B \rightarrow K e^+ e^-)/\Gamma_{\text{total}}$	$(4.4 \pm 0.6) \times 10^{-7}$	PAR=S049;DESIG=234
$\Gamma(B \rightarrow K^*(892) e^+ e^-)/\Gamma_{\text{total}}$	$(1.19 \pm 0.20) \times 10^{-6}$ (S = 1.2)	PAR=S049;DESIG=235
$\Gamma(B \rightarrow K \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(4.4 \pm 0.4) \times 10^{-7}$	PAR=S049;DESIG=236
$\Gamma(B \rightarrow K^*(892) \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(1.06 \pm 0.09) \times 10^{-6}$	PAR=S049;DESIG=237
$\Gamma(B \rightarrow K \ell^+ \ell^-)/\Gamma_{\text{total}}$	$(4.5 \pm 0.4) \times 10^{-7}$	PAR=S049;DESIG=238
$\Gamma(B \rightarrow K^*(892) \ell^+ \ell^-)/\Gamma_{\text{total}}$	$(1.08 \pm 0.11) \times 10^{-6}$	PAR=S049;DESIG=239
$\Gamma(B \rightarrow K \nu \bar{\nu})/\Gamma_{\text{total}}$	$<1.4 \times 10^{-5}$, CL = 90%	PAR=S049;DESIG=275
$\Gamma(B \rightarrow K^* \nu \bar{\nu})/\Gamma_{\text{total}}$	$<8 \times 10^{-5}$, CL = 90%	PAR=S049;DESIG=269
$\Gamma(\bar{b} \rightarrow e^+ e^- \text{ anything})/\Gamma_{\text{total}}$	—	PAR=S051;DESIG=103
$\Gamma(\bar{b} \rightarrow \mu^+ \mu^- \text{ anything})/\Gamma_{\text{total}}$	$<3.2 \times 10^{-4}$, CL = 90%	PAR=S051;DESIG=104
$\Gamma(\bar{b} \rightarrow \nu \bar{\nu} \text{ anything})/\Gamma_{\text{total}}$	—	PAR=S051;DESIG=20
$\Gamma(B_s^0 \rightarrow \gamma \gamma)/\Gamma_{\text{total}}$	$<8.7 \times 10^{-6}$, CL = 90%	PAR=S086;DESIG=11
$\Gamma(B_s^0 \rightarrow \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<6.4 \times 10^{-9}$, CL = 90%	PAR=S086;DESIG=15
$\Gamma(B_s^0 \rightarrow e^+ e^-)/\Gamma_{\text{total}}$	$<2.8 \times 10^{-7}$, CL = 90%	PAR=S086;DESIG=20
$\Gamma(B_s^0 \rightarrow \phi(1020) \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(1.23^{+0.40}_{-0.34}) \times 10^{-6}$	PAR=S086;DESIG=31
$\Gamma(B_s^0 \rightarrow \phi \nu \bar{\nu})/\Gamma_{\text{total}}$	$<5.4 \times 10^{-3}$, CL = 90%	PAR=S086;DESIG=19

$\Delta T = 1$ WEAK NEUTRAL CURRENT FORBIDDEN

CONLAW=T1

Allowed by higher-order electroweak interactions.

$\Gamma(t \rightarrow Z q (q=u,c))/\Gamma_{\text{total}}$	[z] $<3.2 \times 10^{-2}$, CL = 95%	PAR=Q007;DESIG=2
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NOTES

- [a] C parity forbids this to occur as a single-photon process. LINKAGE=CS
- [b] See the Particle Listings for the (complicated) definition of this quantity. LINKAGE=DEF
- [c] Time-reversal invariance requires this to be 0° or 180° . LINKAGE=CR
- [d] This coefficient is zero if time invariance is not violated. LINKAGE=TVC
- [e] Allowed by higher-order electroweak interactions. LINKAGE=CE
- [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. LINKAGE=CD
- [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. LINKAGE=MVL
- [h] $\text{Re}(\epsilon'/\epsilon) = \epsilon'/\epsilon$ to a very good approximation provided the phases satisfy CPT invariance. LINKAGE=SAA
- [i] This mode includes gammas from inner bremsstrahlung but not the direct emission mode $K_L^0 \rightarrow \pi^+ \pi^- \gamma(\text{DE})$. LINKAGE=IBR
- [j] Neglecting photon channels. See, e.g., A. Pais and S.B. Treiman, *Phys. Rev.* **D12**, 2744 (1975). LINKAGE=CH
- [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." LINKAGE=CG
- [l] The $|m_p - m_{\bar{p}}|/m_p$ and $|q_p + q_{\bar{p}}|/e$ are not independent, and both use the more precise measurement of $|q_{\bar{p}}/m_{\bar{p}}|/(q_p/m_p)$. LINKAGE=MQ
- [m] The value is for the sum of the charge states or particle/antiparticle states indicated. LINKAGE=SG
- [n] A test of additive vs. multiplicative lepton family number conservation. LINKAGE=CK
- [o] The limit quoted corresponds to the projection onto the $\sin^2(2\theta_{23})$ axis of the 90% CL contour in the $\sin^2(2\theta_{23}) - \Delta m_{32}^2$ plane. LINKAGE=S2T
- [p] The sign of Δm_{32}^2 is not known at this time. The range quoted is for the absolute value. LINKAGE=ABV
- [q] Derived from an analysis of neutrino-oscillation experiments. LINKAGE=CL
- [r] This limit is for either D^0 or \bar{D}^0 to $p e^-$. LINKAGE=DPE
- [s] This limit is for either D^0 or \bar{D}^0 to $\bar{p} e^+$. LINKAGE=PEP
- [t] The first limit is for $p \rightarrow$ 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 \bar{p} 's is $\tau_{\bar{p}} > 10^7$ yr, the cosmic-ray storage time, but this limit depends on a number of assumptions. The best direct observation of stored antiprotons gives $\tau_{\bar{p}}/B(\bar{p} \rightarrow e^- \gamma) > 7 \times 10^5$ yr. LINKAGE=SR
- [u] 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. LINKAGE=SNN
- [v] This is the best limit for the mode $e^- \rightarrow \nu \gamma$. The best limit for "electron disappearance" is 6.4×10^{24} yr. LINKAGE=EML
- [w] See the K_S^0 Particle Listings for the energy limits used in this measurement. LINKAGE=KDS
- [x] See the K_L^0 Particle Listings for the energy limits used in this measurement. LINKAGE=KDL
- [y] An ℓ indicates an e or a μ mode, not a sum over these modes. LINKAGE=DX
- [z] This limit is for $\Gamma(t \rightarrow Z q)/\Gamma(t \rightarrow W b)$. LINKAGE=TD2