

# 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
$\eta$ 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 $\beta$ ( <i>D</i> -wave)	$-0.02 \pm 0.07$ ( $S = 1.3$ )	NODE=S014BET
$\Gamma(\eta \rightarrow \pi^0 \gamma)/\Gamma_{\text{total}}$	[a] $<9 \times 10^{-5}$ , 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
$\Gamma(\eta \rightarrow \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	[b] $<8 \times 10^{-6}$ , CL = 90%	PAR=S014;DESIG=5
$\Gamma(\eta \rightarrow \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	[b] $<5 \times 10^{-6}$ , 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
$\Gamma(\omega(782) \rightarrow 2\pi^0)/\Gamma_{\text{total}}$	$<2.2 \times 10^{-4}$ , 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
$\eta'(958) \rightarrow \pi^+ \pi^- \gamma$ decay asymmetry parameter	$-0.03 \pm 0.04$	NODE=M002A
$\Gamma(\eta'(958) \rightarrow \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	[b] $<1.4 \times 10^{-3}$ , CL = 90%	PAR=M002;DESIG=16
$\Gamma(\eta'(958) \rightarrow \pi^0 \rho^0)/\Gamma_{\text{total}}$	$<4 \times 10^{-2}$ , CL = 90%	PAR=M002;DESIG=18
$\Gamma(\eta'(958) \rightarrow \eta e^+ e^-)/\Gamma_{\text{total}}$	[b] $<2.4 \times 10^{-3}$ , 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
$\Gamma(\eta'(958) \rightarrow \mu^+ \mu^- \pi^0)/\Gamma_{\text{total}}$	[b] $<6.0 \times 10^{-5}$ , CL = 90%	PAR=M002;DESIG=22
$\Gamma(\eta'(958) \rightarrow \mu^+ \mu^- \eta)/\Gamma_{\text{total}}$	[b] $<1.5 \times 10^{-5}$ , CL = 90%	PAR=M002;DESIG=21
$\Gamma(J/\psi(1S) \rightarrow \gamma \gamma)/\Gamma_{\text{total}}$	$<2.7 \times 10^{-7}$ , CL = 90%	PAR=M070;DESIG=80
$\Gamma(J/\psi(1S) \rightarrow \gamma \phi)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-6}$ , CL = 90%	PAR=M070;DESIG=277

## PARITY (P) INVARIANCE

CONLAW=P

$e$ electric dipole moment	$<0.041 \times 10^{-28}$ e cm, CL = 90%	NODE=S003EDM
$\mu$ electric dipole moment $ d $	$<1.8 \times 10^{-19}$ e cm, CL = 95%	NODE=S004EDM
$\text{Re}(d_\tau = \tau \text{ electric dipole moment})$	$-0.185 \text{ to } 0.061 \times 10^{-16}$ e cm, CL = 95%	NODE=S035EDM
$\Gamma(\eta \rightarrow \pi^+ \pi^-)/\Gamma_{\text{total}}$	$<4.4 \times 10^{-6}$ , 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
$\Gamma(\eta'(958) \rightarrow \pi^+ \pi^-)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-5}$ , 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
$a_P(B^0 \rightarrow p \bar{p} K^+ \pi^-)$	$(1.5 \pm 0.9)\%$	NODE=S042A45
$\Gamma(\eta_C(1S) \rightarrow \pi^+ \pi^-)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-4}$ , CL = 90%	PAR=M026;DESIG=51
$\Gamma(\eta_C(1S) \rightarrow \pi^0 \pi^0)/\Gamma_{\text{total}}$	$<4 \times 10^{-5}$ , CL = 90%	PAR=M026;DESIG=52
$\Gamma(\eta_C(1S) \rightarrow K^+ K^-)/\Gamma_{\text{total}}$	$<7 \times 10^{-4}$ , CL = 90%	PAR=M026;DESIG=53
$\Gamma(\eta_C(1S) \rightarrow K_S^0 K_S^0)/\Gamma_{\text{total}}$	$<4 \times 10^{-4}$ , CL = 90%	PAR=M026;DESIG=54
$p$ electric dipole moment	$<0.021 \times 10^{-23}$ e cm	NODE=S016EDM
$n$ electric dipole moment	$<0.18 \times 10^{-25}$ e cm, CL = 90%	NODE=S017EDM
$\Lambda$ electric dipole moment	$<1.5 \times 10^{-16}$ e cm, CL = 95%	NODE=S018EDM
$a_P(\Lambda_b^0 \rightarrow p \pi^- \pi^+ \pi^-)$	$(-4.0 \pm 0.7)\%$	NODE=S040A06
$a_P(\Lambda_b^0 \rightarrow p K^- \pi^+ \pi^-)$	$(-0.6 \pm 0.9)\%$	NODE=S040A16
$a_P(\Lambda_b^0 \rightarrow p K^- K^+ \pi^-)$	$(4 \pm 5)\%$	NODE=S040A07
$a_P(\Lambda_b^0 \rightarrow p K^- K^+ K^-)$	$(-1.6 \pm 1.5)\%$	NODE=S040A17
$a_P(\Lambda_b^0 \rightarrow p K^- \mu^+ \mu^-)$	$(-5 \pm 5)\%$	NODE=S040A11

**TIME REVERSAL (T) INVARIANCE**

CONLAW=T

$e$ electric dipole moment	$<0.041 \times 10^{-28}$ e cm, CL = 90%	NODE=S003EDM
$\mu$ electric dipole moment $ d $	$<1.8 \times 10^{-19}$ e cm, CL = 95%	NODE=S004EDM
$\mu$ decay parameters		NODE=S004260
transverse $e^+$ polarization normal to plane of $\mu$ spin, $e^+$ momentum	$(-2 \pm 8) \times 10^{-3}$	NODE=S004PT2
$\alpha'/A$	$(-10 \pm 20) \times 10^{-3}$	NODE=S004ALP
$\beta'/A$	$(2 \pm 7) \times 10^{-3}$	NODE=S004BTP
$\text{Re}(d_\tau = \tau$ electric dipole moment)	$-0.185$ to $0.061 \times 10^{-16}$ e cm, 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 $\mu$ pol.)	$-0.006 \pm 0.008$	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 $\mu$ pol.)	$-0.007 \pm 0.026$	NODE=S013IXI
$A_T(D^\pm \rightarrow K_S^0 K^\pm \pi^+ \pi^-)$	[c] $(-3 \pm 8) \times 10^{-3}$ ( $S = 1.1$ )	NODE=S031TV0
$A_T(D^0 \rightarrow K^+ K^- \pi^+ \pi^-)$	[c] $(2.9 \pm 2.2) \times 10^{-3}$	NODE=S032TV0
$A_T(D_s^\pm \rightarrow K_S^0 K^\pm \pi^+ \pi^-)$	[c] $(-8 \pm 6) \times 10^{-3}$	NODE=S034TV0
$\Delta S_T^+ (S_{\ell^-, K_S^0}^- - S_{\ell^+, K_S^0}^+)$	$-1.37 \pm 0.15$	NODE=S042TVA
$\Delta S_T^- (S_{\ell^-, K_S^0}^+ - S_{\ell^+, K_S^0}^-)$	$1.17 \pm 0.21$	NODE=S042TVB
$\Delta C_T^+ (C_{\ell^-, K_S^0}^- - C_{\ell^+, K_S^0}^+)$	$0.10 \pm 0.16$	NODE=S042TVC
$\Delta C_T^- (C_{\ell^-, K_S^0}^+ - C_{\ell^+, K_S^0}^-)$	$0.04 \pm 0.16$	NODE=S042TVD
$p$ electric dipole moment	$<0.021 \times 10^{-23}$ e cm	NODE=S016EDM
$n$ electric dipole moment	$<0.18 \times 10^{-25}$ e cm, CL = 90%	NODE=S017EDM
$n \rightarrow p e^- \bar{\nu}_e$ decay parameters		NODE=S017255
$\phi_{AV}$ , phase of $g_A$ relative to $g_V$	[d] $(180.017 \pm 0.026)^\circ$	NODE=S017F
triple correlation coefficient $D$	[e] $(-1.2 \pm 2.0) \times 10^{-4}$	NODE=S017D1
triple correlation coefficient $R$	[e] $0.004 \pm 0.013$	NODE=S017TCC
$\Lambda$ electric dipole moment	$<1.5 \times 10^{-16}$ e cm, CL = 95%	NODE=S018EDM
triple correlation coefficient $D$ for $\Sigma^- \rightarrow n e^- \bar{\nu}_e$	$0.11 \pm 0.10$	NODE=S020TC

**CP INVARIANCE**

CONLAW=CP

$\text{Re}(d_\tau^W)$	$<0.50 \times 10^{-17}$ e cm, CL = 95%	NODE=S035WDM
$\text{Im}(d_\tau^W)$	$<1.1 \times 10^{-17}$ e cm, CL = 95%	NODE=S035WDI
$\delta$ ( $CP$ violating phase in neutrino mixing)	$1.21_{-0.22}^{+0.19} \pi$ rad ( $S = 1.2$ )	NODE=S067DEL
$\eta \rightarrow \pi^+ \pi^- e^+ e^-$ decay-plane asymmetry	$(-0.6 \pm 3.1) \times 10^{-2}$	NODE=S014AET
$\Gamma(\eta \rightarrow \pi^+ \pi^-) / \Gamma_{\text{total}}$	$<4.4 \times 10^{-6}$ , 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
$\Gamma(\eta'(958) \rightarrow \pi^+ \pi^-) / \Gamma_{\text{total}}$	$<1.8 \times 10^{-5}$ , 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
$K^\pm \rightarrow \pi^\pm e^+ e^-$ rate difference/sum	$(-2.2 \pm 1.6) \times 10^{-2}$	NODE=S010CPE
$K^\pm \rightarrow \pi^\pm \mu^+ \mu^-$ rate difference/sum	$0.010 \pm 0.023$	NODE=S010CP
$K^\pm \rightarrow \pi^\pm \pi^0 \gamma$ rate difference/sum	$(0.0 \pm 1.2) \times 10^{-3}$	NODE=S010CPG
$K^\pm \rightarrow \pi^\pm \pi^+ \pi^-$ rate difference/sum	$(0.04 \pm 0.06)\%$	NODE=S010D2
$K^\pm \rightarrow \pi^\pm \pi^0 \pi^0$ rate difference/sum	$(-0.02 \pm 0.28)\%$	NODE=S010D3
$K^\pm \rightarrow \pi^\pm \pi^+ \pi^- (g_+ - g_-) / (g_+ + g_-)$	$(-1.5 \pm 2.2) \times 10^{-4}$	NODE=S010DG
$K^\pm \rightarrow \pi^\pm \pi^0 \pi^0 (g_+ - g_-) / (g_+ + g_-)$	$(1.8 \pm 1.8) \times 10^{-4}$	NODE=S010DG0
$A_S = [ \Gamma(K_S^0 \rightarrow \pi^- e^+ \nu_e) - \Gamma(K_S^0 \rightarrow \pi^+ e^- \bar{\nu}_e) ] / \text{SUM}$	$(-4 \pm 6) \times 10^{-3}$	NODE=S012AS

$\text{Im}(\eta_{+-0}) = \text{Im}(A(K_S^0 \rightarrow \pi^+ \pi^- \pi^0, CP\text{-violating}) / A(K_L^0 \rightarrow \pi^+ \pi^- \pi^0))$	$-0.002 \pm 0.009$	NODE=S012E+
$\text{Im}(\eta_{000}) = \text{Im}(A(K_S^0 \rightarrow \pi^0 \pi^0 \pi^0) / A(K_L^0 \rightarrow \pi^0 \pi^0 \pi^0))$	$-0.001 \pm 0.016$	NODE=S012E0
$ \eta_{000}  =  A(K_S^0 \rightarrow 3\pi^0) / A(K_L^0 \rightarrow 3\pi^0) $	$<0.0088, \text{CL} = 90\%$	NODE=S012AE0
$CP \text{ asymmetry } A \text{ in } K_S^0 \rightarrow \pi^+ \pi^- e^+ e^-$	$(-0.4 \pm 0.8)\%$	NODE=S012DPA
$\Gamma(K_S^0 \rightarrow 3\pi^0) / \Gamma_{\text{total}}$	$<2.6 \times 10^{-8}, \text{CL} = 90\%$	PAR=S012;DESIG=7
linear coefficient $j$ for $K_L^0 \rightarrow \pi^+ \pi^- \pi^0$	$0.0012 \pm 0.0008$	NODE=S013JT0
quadratic coefficient $f$ for $K_L^0 \rightarrow \pi^+ \pi^- \pi^0$	$0.004 \pm 0.006$	NODE=S013FT0
$ \epsilon'_{+-\gamma}  / \epsilon$ for $K_L^0 \rightarrow \pi^+ \pi^- \gamma$	$<0.3, \text{CL} = 90\%$	NODE=S013EPG
$ g_{E1} $ for $K_L^0 \rightarrow \pi^+ \pi^- \gamma$	$<0.21, \text{CL} = 90\%$	NODE=S013GE1
$\Gamma(K_L^0 \rightarrow \pi^0 \mu^+ \mu^-) / \Gamma_{\text{total}}$	$[f] <3.8 \times 10^{-10}, \text{CL} = 90\%$	PAR=S013;DESIG=16
$\Gamma(K_L^0 \rightarrow \pi^0 e^+ e^-) / \Gamma_{\text{total}}$	$[f] <2.8 \times 10^{-10}, \text{CL} = 90\%$	PAR=S013;DESIG=20
$\Gamma(K_L^0 \rightarrow \pi^0 \nu \bar{\nu}) / \Gamma_{\text{total}}$	$[g] <3.0 \times 10^{-9}, \text{CL} = 90\%$	PAR=S013;DESIG=43
$ACP(D^\pm \rightarrow \mu^\pm \nu)$	$(8 \pm 8)\%$	NODE=S031A05
$ACP(D^\pm \rightarrow K_L^0 e^\pm \nu)$	$(-0.6 \pm 1.6)\%$	NODE=S031A16
$ACP(D^\pm \rightarrow K_S^0 \pi^\pm)$	$(-0.41 \pm 0.09)\%$	NODE=S031A5
$ACP(D^\pm \rightarrow K^\mp 2\pi^\pm)$	$(-0.18 \pm 0.16)\%$	NODE=S031A01
$ACP(D^\pm \rightarrow K^\mp \pi^\pm \pi^\pm \pi^0)$	$(-0.3 \pm 0.7)\%$	NODE=S031A02
$ACP(D^\pm \rightarrow K_S^0 \pi^\pm \pi^0)$	$(-0.1 \pm 0.7)\%$	NODE=S031A03
$ACP(D^\pm \rightarrow K_S^0 \pi^\pm \pi^+ \pi^-)$	$(0.0 \pm 1.2)\%$	NODE=S031A04
$ACP(D^\pm \rightarrow \pi^\pm \pi^0)$	$(0.4 \pm 1.3)\% (S = 1.7)$	NODE=S031A11
$ACP(D^\pm \rightarrow \pi^\pm \eta)$	$(0.3 \pm 0.5)\%$	NODE=S031A12
$ACP(D^\pm \rightarrow \pi^\pm \eta' (958))$	$(0.41 \pm 0.23)\% (S = 1.2)$	NODE=S031A13
$ACP(D^\pm \rightarrow \bar{K}^0 / K^0 K^\pm)$	$(0.11 \pm 0.17)\%$	NODE=S031A15
$ACP(D^\pm \rightarrow K_S^0 K^\pm)$	$(-0.01 \pm 0.07)\%$	NODE=S031A6
$ACP(D^\pm \rightarrow K^+ K^- \pi^\pm)$	$(0.37 \pm 0.29)\%$	NODE=S031A1
$ACP(D^\pm \rightarrow K^\pm K^{*0})$	$(-0.3 \pm 0.4)\%$	NODE=S031A2
$ACP(D^\pm \rightarrow \phi \pi^\pm)$	$(0.01 \pm 0.09)\% (S = 1.8)$	NODE=S031A3
$ACP(D^\pm \rightarrow K^\pm K_0^*(1430)^0)$	$(8_{-6}^{+7})\%$	NODE=S031A06
$ACP(D^\pm \rightarrow K^\pm K_2^*(1430)^0)$	$(43_{-26}^{+20})\%$	NODE=S031A07
$ACP(D^\pm \rightarrow K^\pm K_0^*(700))$	$(-12_{-13}^{+18})\%$	NODE=S031A08
$ACP(D^\pm \rightarrow a_0(1450)^0 \pi^\pm)$	$(-19_{-16}^{+14})\%$	NODE=S031A09
$ACP(D^\pm \rightarrow \phi(1680) \pi^\pm)$	$(-9 \pm 26)\%$	NODE=S031A10
$ACP(D^\pm \rightarrow \pi^+ \pi^- \pi^\pm)$	$(0.5 \pm 2.0)\%$	NODE=S031A4
$ACP(D^\pm \rightarrow K_S^0 K^\pm \pi^+ \pi^-)$	$(-4 \pm 7)\%$	NODE=S031CPK
$ACP(D^\pm \rightarrow K^\pm \pi^0)$	$(-3 \pm 5)\%$	NODE=S031A14
Local CPV in $D^\pm \rightarrow \pi^+ \pi^- \pi^\pm$	78.1%	NODE=S031L01
Local CPV in $D^\pm \rightarrow K^+ K^- \pi^\pm$	31%	NODE=S031L02; → UNCHECKED ←; OUR EVAL
Local CPV in $D^\pm \rightarrow K^+ K^- K^\pm$	31.6%	NODE=S031A28
$ q/p $ of $D^0-\bar{D}^0$ mixing	$0.995 \pm 0.016$	NODE=S032QP; → UNCHECKED ←; OUR EVAL
$A_\Gamma$ of $D^0-\bar{D}^0$ mixing	$(0.89 \pm 1.13) \times 10^{-4}$	NODE=S032AG; → UNCHECKED ←; OUR EVAL
CP-even fraction in $D^0 \rightarrow \pi^+ \pi^- \pi^0$ decays	$(97.3 \pm 1.7)\%$	NODE=S032EFP
CP-even fraction in $D^0 \rightarrow \pi^+ \pi^- \pi^+ \pi^-$ decays	$(74.6 \pm 0.8)\%$	NODE=S032EFL
CP-even fraction in $D^0 \rightarrow K^+ K^- \pi^0$ decays	$(73 \pm 6)\%$	NODE=S032EFK
		NODE=S032A1
Where there is ambiguity, the CP test is labelled by the $D^0$ decay mode.		
$ACP(D^0 \rightarrow K^+ K^-)$	$(4 \pm 5) \times 10^{-4}$	NODE=S032A1
$ACP(D^0 \rightarrow K_S^0 K_S^0)$	$(-1.1 \pm 1.9)\% (S = 2.0)$	NODE=S032A8
$ACP(D^0 \rightarrow \pi^+ \pi^-)$	$(0.13 \pm 0.14)\%$	NODE=S032A4
$ACP(D^0 \rightarrow \pi^0 \pi^0)$	$(0.0 \pm 0.6)\%$	NODE=S032A7
$ACP(D^0 \rightarrow \rho \gamma)$	$(6 \pm 15) \times 10^{-2}$	NODE=S032A00
$ACP(D^0 \rightarrow \phi \gamma)$	$(-9 \pm 7) \times 10^{-2}$	NODE=S032A83

$ACP(D^0 \rightarrow \bar{K}^*(892)^0 \gamma)$	$(-0.3 \pm 2.0) \times 10^{-2}$	NODE=S032A84
$ACP(D^0 \rightarrow \pi^+ \pi^- \pi^0)$	$(0.4 \pm 0.4)\%$	NODE=S032A12
$ACP(D^0 \rightarrow \rho(770)^+ \pi^- \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(1.2 \pm 0.9)\%$	NODE=S032A25
$ACP(D^0 \rightarrow \rho(770)^0 \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(-3.1 \pm 3.0)\%$	NODE=S032A26
$ACP(D^0 \rightarrow \rho(770)^- \pi^+ \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(-1.0 \pm 1.7)\%$	NODE=S032A27
$ACP(D^0 \rightarrow \rho(1450)^+ \pi^- \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(0 \pm 70)\%$	NODE=S032A28
$ACP(D^0 \rightarrow \rho(1450)^0 \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(-20 \pm 40)\%$	NODE=S032A29
$ACP(D^0 \rightarrow \rho(1450)^- \pi^+ \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(6 \pm 9)\%$	NODE=S032A30
$ACP(D^0 \rightarrow \rho(1700)^+ \pi^- \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(-5 \pm 14)\%$	NODE=S032A31
$ACP(D^0 \rightarrow \rho(1700)^0 \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(13 \pm 9)\%$	NODE=S032A32
$ACP(D^0 \rightarrow \rho(1700)^- \pi^+ \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(8 \pm 11)\%$	NODE=S032A33
$ACP(D^0 \rightarrow f_0(980) \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(0 \pm 35)\%$	NODE=S032A34
$ACP(D^0 \rightarrow f_0(1370) \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(25 \pm 18)\%$	NODE=S032A35
$ACP(D^0 \rightarrow f_0(1500) \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(0 \pm 18)\%$	NODE=S032A36
$ACP(D^0 \rightarrow f_0(1710) \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(0 \pm 24)\%$	NODE=S032A37
$ACP(D^0 \rightarrow f_2(1270) \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(-4 \pm 6)\%$	NODE=S032A38
$ACP(D^0 \rightarrow \sigma(400) \pi^0 \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(6 \pm 8)\%$	NODE=S032A39
$ACP(\text{nonresonant } D^0 \rightarrow \pi^+ \pi^- \pi^0)$	[h] $(-13 \pm 23)\%$	NODE=S032A40
$ACP(D^0, \bar{D}^0 \rightarrow 2\pi^+ 2\pi^-)$	$(0.5 \pm 1.2)\%$	NODE=S032A71
$ACP(D^0 \rightarrow a_1(1260)^+ \pi^- \rightarrow 2\pi^+ 2\pi^-)$	$(5 \pm 6)\%$	NODE=S032A85
$ACP(D^0 \rightarrow a_1(1260)^- \pi^+ \rightarrow 2\pi^+ 2\pi^-)$	$(14 \pm 18)\%$	NODE=S032A86
$ACP(D^0 \rightarrow \pi(1300)^+ \pi^- \rightarrow 2\pi^+ 2\pi^-)$	$(-2 \pm 15)\%$	NODE=S032A87
$ACP(D^0 \rightarrow \pi(1300)^- \pi^+ \rightarrow 2\pi^+ 2\pi^-)$	$(-6 \pm 30)\%$	NODE=S032A88
$ACP(D^0 \rightarrow a_1(1640)^+ \pi^- \rightarrow 2\pi^+ 2\pi^-)$	$(9 \pm 26)\%$	NODE=S032A89
$ACP(D^0 \rightarrow \pi_2(1670)^+ \pi^- \rightarrow 2\pi^+ 2\pi^-)$	$(7 \pm 18)\%$	NODE=S032A91
$ACP(D^0 \rightarrow \sigma f_0(1370) \rightarrow 2\pi^+ 2\pi^-)$	$(-15 \pm 19)\%$	NODE=S032A92
$ACP(D^0 \rightarrow \sigma \rho(770)^0 \rightarrow 2\pi^+ 2\pi^-)$	$(3 \pm 27)\%$	NODE=S032A93
$ACP(D^0 \rightarrow 2\rho(770)^0 \rightarrow 2\pi^+ 2\pi^-)$	$(-6 \pm 6)\%$	NODE=S032A94
$ACP(D^0 \rightarrow 2f_2(1270) \rightarrow 2\pi^+ 2\pi^-)$	$(-28 \pm 24)\%$	NODE=S032A95
$ACP(D^0 \rightarrow K^+ K^- \pi^0)$	$(-1.0 \pm 1.7)\%$	NODE=S032A41
$ACP(D^0 \rightarrow K^*(892)^+ K^- \rightarrow K^+ K^- \pi^0)$	[h] $(-0.9 \pm 1.3)\%$	NODE=S032A42
$ACP(D^0 \rightarrow K^*(1410)^+ K^- \rightarrow K^+ K^- \pi^0)$	[h] $(-21 \pm 24)\%$	NODE=S032A43
$ACP(D^0 \rightarrow (K^+ \pi^0)_S K^- \rightarrow K^+ K^- \pi^0)$	[h] $(7 \pm 15)\%$	NODE=S032A44
$ACP(D^0 \rightarrow \phi(1020) \pi^0 \rightarrow K^+ K^- \pi^0)$	[h] $(1.1 \pm 2.2)\%$	NODE=S032A45
$ACP(D^0 \rightarrow f_0(980) \pi^0 \rightarrow K^+ K^- \pi^0)$	[h] $(-3 \pm 19)\%$	NODE=S032A46
$ACP(D^0 \rightarrow a_0(980)^0 \pi^0 \rightarrow K^+ K^- \pi^0)$	[h] $(-5 \pm 16)\%$	NODE=S032A47
$ACP(D^0 \rightarrow f'_2(1525) \pi^0 \rightarrow K^+ K^- \pi^0)$	[h] $(0 \pm 160)\%$	NODE=S032A48
$ACP(D^0 \rightarrow K^*(892)^- K^+ \rightarrow K^+ K^- \pi^0)$	[h] $(-5 \pm 4)\%$	NODE=S032A49
$ACP(D^0 \rightarrow K^*(1410)^- K^+ \rightarrow K^+ K^- \pi^0)$	[h] $(-17 \pm 29)\%$	NODE=S032A50
$ACP(D^0 \rightarrow (K^- \pi^0)_{S-wave} K^+ \rightarrow K^+ K^- \pi^0)$	[h] $(-10 \pm 40)\%$	NODE=S032A51
$ACP(D^0 \rightarrow K_S^0 \pi^0)$	$(-0.20 \pm 0.17)\%$	NODE=S032A3
$ACP(D^0 \rightarrow K_S^0 \eta)$	$(0.5 \pm 0.5)\%$	NODE=S032A52
$ACP(D^0 \rightarrow K_S^0 \eta')$	$(1.0 \pm 0.7)\%$	NODE=S032A53
$ACP(D^0 \rightarrow K_S^0 \phi)$	$(-3 \pm 9)\%$	NODE=S032A2
$ACP(D^0 \rightarrow K^- \pi^+)$	$(0.2 \pm 0.5)\%$	NODE=S032A23
$ACP(D^0 \rightarrow K^+ \pi^-)$	$(-0.9 \pm 1.4)\%$	NODE=S032A5
$ACP(D_{CP(\pm 1)} \rightarrow K^\mp \pi^\pm)$	$(13.1 \pm 1.0)\%$	NODE=S032A72
$ACP(D^0 \rightarrow K^- \pi^+ \pi^0)$	$(0.1 \pm 0.5)\%$	NODE=S032A6
$ACP(D^0 \rightarrow K^+ \pi^- \pi^0)$	$(0 \pm 5)\%$	NODE=S032A9
$ACP(D^0 \rightarrow K_S^0 \pi^+ \pi^-)$	$(-0.1 \pm 0.8)\%$	NODE=S032A10

$ACP(D^0 \rightarrow K^*(892)^- \pi^+ \rightarrow K_S^0 \pi^+ \pi^-)$	$(0.4 \pm 0.5)\%$	NODE=S032A13
$ACP(D^0 \rightarrow K^*(892)^+ \pi^- \rightarrow K_S^0 \pi^+ \pi^-)$	$(1 \pm 6)\%$	NODE=S032A14
$ACP(D^0 \rightarrow K_S^0 \rho^0 \rightarrow K_S^0 \pi^+ \pi^-)$	$(-0.1 \pm 0.5)\%$	NODE=S032A15
$ACP(D^0 \rightarrow K_S^0 \omega \rightarrow K_S^0 \pi^+ \pi^-)$	$(-13 \pm 7)\%$	NODE=S032A16
$ACP(D^0 \rightarrow K_S^0 f_0(980) \rightarrow K_S^0 \pi^+ \pi^-)$	$(-0.4 \pm 2.7)\%$	NODE=S032A17
$ACP(D^0 \rightarrow K_S^0 f_2(1270) \rightarrow K_S^0 \pi^+ \pi^-)$	$(-4 \pm 5)\%$	NODE=S032A18
$ACP(D^0 \rightarrow K_S^0 f_0(1370) \rightarrow K_S^0 \pi^+ \pi^-)$	$(-1 \pm 9)\%$	NODE=S032A19
$ACP(D^0 \rightarrow \bar{K}^0 \rho^0(1450) \rightarrow K_S^0 \pi^+ \pi^-)$	$(-4 \pm 10)\%$	NODE=S032A55
$ACP(D^0 \rightarrow \bar{K}^0 f_0(600) \rightarrow K_S^0 \pi^+ \pi^-)$	$(-3 \pm 5)\%$	NODE=S032A56
$ACP(D^0 \rightarrow K^*(1410)^- \pi^+ \rightarrow K_S^0 \pi^+ \pi^-)$	$(-2 \pm 9)\%$	NODE=S032A54
$ACP(D^0 \rightarrow K_0^*(1430)^- \pi^+ \rightarrow K_S^0 \pi^+ \pi^-)$	$(4 \pm 4)\%$	NODE=S032A20
$ACP(D^0 \rightarrow K_0^*(1430)^- \pi^+ \rightarrow K_S^0 \pi^+ \pi^-)$	$(12 \pm 15)\%$	NODE=S032A58
$ACP(D^0 \rightarrow K_2^*(1430)^- \pi^+ \rightarrow K_S^0 \pi^+ \pi^-)$	$(3 \pm 6)\%$	NODE=S032A21
$ACP(D^0 \rightarrow K_2^*(1430)^+ \pi^- \rightarrow K_S^0 \pi^+ \pi^-)$	$(-10 \pm 32)\%$	NODE=S032A59
$ACP(D^0 \rightarrow K^- \pi^+ \pi^+ \pi^-)$	$(0.2 \pm 0.5)\%$	NODE=S032A24
$ACP(D^0 \rightarrow K^+ \pi^- \pi^+ \pi^-)$	$(-2 \pm 4)\%$	NODE=S032A11
$ACP(D^0 \rightarrow K^+ K^- \pi^+ \pi^-)$	$(1.3 \pm 1.7)\%$	NODE=S032CPK
$ACP(D^0 \rightarrow K_1^*(1270)^+ K^- \rightarrow K^+ K^- \pi^+ \pi^-)$	$(-2.3 \pm 1.7)\%$	NODE=S032A97
$ACP(D^0 \rightarrow K_1^*(1270)^+ K^- \rightarrow K^{*0} \pi^+ K^-)$	$(-1 \pm 10)\%$	NODE=S032A60
$ACP(D^0 \rightarrow K_1^*(1270)^- K^+ \rightarrow \bar{K}^{*0} \pi^- K^+)$	$(-10 \pm 32)\%$	NODE=S032A61
$ACP(D^0 \rightarrow K_1^*(1270)^- K^+ \rightarrow K^+ K^- \pi^+ \pi^-)$	$(1.7 \pm 3.5)\%$	NODE=S032A98
$ACP(D^0 \rightarrow K_1^*(1270)^+ K^- \rightarrow \rho^0 K^+ K^-)$	$(-7 \pm 17)\%$	NODE=S032A62
$ACP(D^0 \rightarrow K_1^*(1270)^- K^+ \rightarrow \rho^0 K^- K^+)$	$(10 \pm 13)\%$	NODE=S032A63
$ACP(D^0 \rightarrow K_1(1400)^+ K^- \rightarrow K^+ K^- \pi^+ \pi^-)$	$(-4.4 \pm 2.1)\%$	NODE=S032A99
$ACP(D^0 \rightarrow K^*(1410)^+ K^- \rightarrow K^{*0} \pi^+ K^-)$	$(-20 \pm 17)\%$	NODE=S032A64
$ACP(D^0 \rightarrow K^*(1410)^- K^+ \rightarrow \bar{K}^{*0} \pi^- K^+)$	$(-1 \pm 14)\%$	NODE=S032A65
$ACP(D^0 \rightarrow K^*(1680)^+ K^- \rightarrow K^+ K^- \pi^+ \pi^-)$	$(-17 \pm 29)\%$	NODE=S032C00
$ACP(K^{*0} \bar{K}^{*0})$ in $D^0, \bar{D}^0 \rightarrow K^{*0} \bar{K}^{*0}$	$(-5 \pm 14)\%$	NODE=S032C07
$ACP(D^0 \rightarrow K^{*0} \bar{K}^{*0} S\text{-wave})$	$(-3.9 \pm 2.2)\%$	NODE=S032A66
$ACP(\phi \rho^0)$ in $D^0, \bar{D}^0 \rightarrow \phi \rho^0$	$(1 \pm 9)\%$	NODE=S032C08
$ACP(D^0 \rightarrow \phi \rho^0 S\text{-wave})$	$(-3 \pm 5)\%$	NODE=S032A67
$ACP(D^0 \rightarrow \phi \rho^0 D\text{-wave})$	$(-37 \pm 19)\%$	NODE=S032A68
$ACP(D^0 \rightarrow \phi(\pi^+ \pi^-) S\text{-wave})$	$(6 \pm 6)\%$	NODE=S032A69
$ACP(D^0 \rightarrow K^*(892)^0(K^- \pi^+) S\text{-wave})$	$(-10 \pm 40)\%$	NODE=S032C09
$ACP(D^0 \rightarrow K^+ K^- \pi^+ \pi^- \text{ non-resonant})$	$(8 \pm 20)\%$	NODE=S032C75
$ACP((K^- \pi^+) P\text{-wave} (K^+ \pi^-) S\text{-wave})$	$(3 \pm 11)\%$	NODE=S032A70
Local CPV p-value in $D^0, \bar{D}^0 \rightarrow \pi^+ \pi^- \pi^0$	10.6%	NODE=S032L01; → UNCHECKED ←; OUR
Local CPV p-value in $D^0, \bar{D}^0 \rightarrow \pi^+ \pi^- \pi^+ \pi^-$	$(0.6 \pm 0.2)\%$	NODE=S032L02
Local CPV p-value in $D^0, \bar{D}^0 \rightarrow K_S^0 \pi^+ \pi^-$	96%	NODE=S032L03

Local CPV p-value in $D^0, \bar{D}^0 \rightarrow K^+ K^- \pi^0$	16.6%	NODE=S032L04
Local CPV p-value in $D^0, \bar{D}^0 \rightarrow K^+ K^- \pi^+ \pi^-$	9.1%	NODE=S032L05
$ACP(D_S^\pm \rightarrow \mu^\pm \nu)$	$(-0.2 \pm 2.5)\%$	NODE=S034A13
$ACP(D_S^\pm \rightarrow K^\pm K_S^0)$	$(0.07 \pm 0.24)\%$	NODE=S034A05
$ACP(D_S^\pm \rightarrow K^+ K^- \pi^\pm)$	$(0.35 \pm 0.34)\%$	NODE=S034A06
$ACP(D_S^\pm \rightarrow \phi \pi^\pm)$	$(-0.38 \pm 0.27)\%$	NODE=S034A20
$ACP(D_S^\pm \rightarrow K^\pm K_S^0 \pi^0)$	$(-0.9 \pm 1.9)\%$	NODE=S034A15
$ACP(D_S^\pm \rightarrow 2K_S^0 \pi^\pm)$	$(1.3 \pm 1.6)\%$	NODE=S034A16
$ACP(D_S^\pm \rightarrow K^+ K^- \pi^\pm \pi^0)$	$(-0.6 \pm 0.9)\%$	NODE=S034A07
$ACP(D_S^\pm \rightarrow K^\pm K_S^0 \pi^+ \pi^-)$	$(0.7 \pm 2.9)\%$ (S = 1.3)	NODE=S034A14
$ACP(D_S^\pm \rightarrow K_S^0 K^\mp 2\pi^\pm)$	$(0.7 \pm 1.8)\%$ (S = 1.3)	NODE=S034A08
$ACP(D_S^\pm \rightarrow \pi^+ \pi^- \pi^\pm)$	$(-0.9 \pm 1.1)\%$	NODE=S034A09
$ACP(D_S^\pm \rightarrow \pi^\pm \eta)$	$(0.24 \pm 0.29)\%$	NODE=S034A10
$ACP(D_S^\pm \rightarrow \pi^\pm \pi^+ \pi^- \eta)$	$(2.4 \pm 3.0)\%$	NODE=S034A48
$ACP(D_S^\pm \rightarrow \pi^\pm \eta')$	$(-0.08 \pm 0.17)\%$ (S = 1.2)	NODE=S034A11
$ACP(D_S^\pm \rightarrow \eta \pi^\pm \pi^0)$	$(0.9 \pm 1.5)\%$	NODE=S034A19
$ACP(D_S^\pm \rightarrow \eta' \pi^\pm \pi^0)$	$(-1.5 \pm 2.5)\%$	NODE=S034A17
$ACP(D_S^\pm \rightarrow K^\pm \pi^0)$	$(2 \pm 4)\%$ (S = 1.2)	NODE=S034A01
$ACP(D_S^\pm \rightarrow \bar{K}^0 / K^0 \pi^\pm)$	$(0.4 \pm 0.5)\%$	NODE=S034A21
$ACP(D_S^\pm \rightarrow K_S^0 \pi^\pm)$	$(0.20 \pm 0.18)\%$	NODE=S034A02
$ACP(D_S^\pm \rightarrow K^\pm \pi^+ \pi^-)$	$(2.2 \pm 1.9)\%$	NODE=S034A12
$ACP(D_S^\pm \rightarrow K^\pm \eta)$	$(1.8 \pm 1.9)\%$	NODE=S034A03
$ACP(D_S^\pm \rightarrow K^\pm \eta' (958))$	$(6 \pm 19)\%$	NODE=S034A04
$ACP(B^+ \rightarrow J/\psi(1S) K^+)$	$(1.8 \pm 3.0) \times 10^{-3}$ (S = 1.5)	NODE=S041AX1
$ACP(B^+ \rightarrow J/\psi(1S) \pi^+)$	$(1.8 \pm 1.2) \times 10^{-2}$ (S = 1.3)	NODE=S041AX9
$ACP(B^+ \rightarrow J/\psi \rho^+)$	$-0.05 \pm 0.05$	NODE=S041AC5
$ACP(B^+ \rightarrow J/\psi K^*(892)^+)$	$-0.048 \pm 0.033$	NODE=S041AW1
$ACP(B^+ \rightarrow \eta_c K^+)$	$0.01 \pm 0.07$ (S = 2.2)	NODE=S041ABE
$ACP(B^+ \rightarrow \psi(2S) \pi^+)$	$0.03 \pm 0.06$	NODE=S041AZ2
$ACP(B^+ \rightarrow \psi(2S) K^+)$	$0.012 \pm 0.020$ (S = 1.5)	NODE=S041AX2
$ACP(B^+ \rightarrow \psi(2S) K^*(892)^+)$	$0.08 \pm 0.21$	NODE=S041AW2
$ACP(B^+ \rightarrow \chi_{c1}(1P) \pi^+)$	$0.07 \pm 0.18$	NODE=S041AW5
$ACP(B^+ \rightarrow \chi_{c0} K^+)$	$-0.20 \pm 0.18$ (S = 1.5)	NODE=S041CQ9
$ACP(B^+ \rightarrow \chi_{c1} K^+)$	$-0.009 \pm 0.033$	NODE=S041AW3
$ACP(B^+ \rightarrow \chi_{c1} K^*(892)^+)$	$0.5 \pm 0.5$	NODE=S041AW4
$ACP(B^+ \rightarrow \bar{D}^0 \pi^+)$	$(-3.2 \pm 3.5) \times 10^{-3}$	NODE=S041AD2
$ACP(B^+ \rightarrow D_{CP(+1)} \pi^+)$	$-0.0088 \pm 0.0024$	NODE=S041AD3
$ACP(B^+ \rightarrow D_{CP(-1)} \pi^+)$	$-0.003 \pm 0.012$	NODE=S041AD4
$ACP([K^\mp \pi^\pm \pi^+ \pi^-]_D \pi^+)$	$0.070 \pm 0.020$	NODE=S041AYA
$ACP(B^+ \rightarrow [\pi^+ \pi^+ \pi^- \pi^-]_D K^+)$	$0.061 \pm 0.013$	NODE=S041A00
$ACP(B^+ \rightarrow [\pi^+ \pi^- \pi^+ \pi^-]_D K^*(892)^+)$	$0.02 \pm 0.11$	NODE=S041A08
$ACP(B^+ \rightarrow [K^+ K^- \pi^+ \pi^-]_D K^+)$	$0.095 \pm 0.023$	NODE=S041A69
$ACP(B^+ \rightarrow [K^+ K^- \pi^+ \pi^-]_D \pi^+)$	$-0.009 \pm 0.006$	NODE=S041A70
$ACP(B^+ \rightarrow \bar{D}^0 K^+)$	$-0.018 \pm 0.004$	NODE=S041AY2
$ACP([K^\mp \pi^\pm \pi^+ \pi^-]_D K^+)$	$-0.32 \pm 0.04$	NODE=S041AYB
$ACP(B^+ \rightarrow [\pi^+ \pi^+ \pi^- \pi^-]_D \pi^+)$	$(-8.2 \pm 3.2) \times 10^{-3}$	NODE=S041A01
$ACP(B^+ \rightarrow [K^- \pi^+]_D K^+)$	$-0.58 \pm 0.21$	NODE=S041AC0
$ACP(B^+ \rightarrow [K^- \pi^+ \pi^0]_D K^+)$	$-0.27 \pm 0.27$ (S = 2.4)	NODE=S041AK2
$ACP(B^+ \rightarrow [K^+ \pi^- \pi^0]_D K^+)$	$-0.024 \pm 0.013$	NODE=S041A65
$ACP(B^+ \rightarrow [K^+ K^- \pi^0]_D K^+)$	$0.07 \pm 0.07$	NODE=S041AG0
$ACP(B^+ \rightarrow [\pi^+ \pi^- \pi^0]_D K^+)$	$0.11 \pm 0.04$	NODE=S041AG1
$ACP(B^+ \rightarrow \bar{D}^0 K^*(892)^+)$	$-0.007 \pm 0.019$	NODE=S041A09
$ACP(B^+ \rightarrow [K^- \pi^+ \pi^- \pi^+]_D K^*(892)^+)$	$-0.45 \pm 0.25$	NODE=S041A07

$A_{CP}(B^+ \rightarrow [K^- \pi^+]_D \pi^+)$	$0.00 \pm 0.09$	NODE=S041AC1
$A_{CP}(B^+ \rightarrow [K^- \pi^+ \pi^0]_D \pi^+)$	$0.08 \pm 0.09$	NODE=S041AP2
$A_{CP}(B^+ \rightarrow [K^+ K^- \pi^0]_D \pi^+)$	$-0.001 \pm 0.019$	NODE=S041AG2
$A_{CP}(B^+ \rightarrow [\pi^+ \pi^- \pi^0]_D \pi^+)$	$0.001 \pm 0.010$	NODE=S041AG3
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_{(D\pi)} \pi^+)$	$-0.09 \pm 0.27$	NODE=S041AC6
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_{(D\gamma)} \pi^+)$	$-0.7 \pm 0.6$	NODE=S041AC7
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_{(D\pi)} K^+)$	$0.8 \pm 0.4$	NODE=S041AC8
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_{(D\gamma)} K^+)$	$0.4 \pm 1.0$	NODE=S041AC9
$A_{CP}(B^+ \rightarrow [\pi^+ \pi^- \pi^0]_D K^+)$	$-0.02 \pm 0.15$	NODE=S041AC2
$A_{CP}(B^+ \rightarrow [K_S^0 K^+ \pi^-]_D K^+)$	$0.00 \pm 0.09$ (S = 1.4)	NODE=S041AC3
$A_{CP}(B^+ \rightarrow [K_S^0 K^- \pi^+]_D K^+)$	$0.00 \pm 0.07$	NODE=S041ACA
$A_{CP}(B^+ \rightarrow [K_S^0 K^- \pi^+]_D \pi^+)$	$-0.003 \pm 0.014$	NODE=S041ACB
$A_{CP}(B^+ \rightarrow [K_S^0 K^+ \pi^-]_D \pi^+)$	$-0.016 \pm 0.025$ (S = 1.5)	NODE=S041ACC
$A_{CP}(B^+ \rightarrow [K^*(892)^- K^+]_D K^+)$	$0.08 \pm 0.05$	NODE=S041ACD
$A_{CP}(B^+ \rightarrow [K^*(892)^+ K^-]_D K^+)$	$0.07 \pm 0.09$	NODE=S041ACE
$A_{CP}(B^+ \rightarrow [K^*(892)^+ K^-]_D \pi^+)$	$0.007 \pm 0.016$	NODE=S041ACF
$A_{CP}(B^+ \rightarrow [K^*(892)^- K^+]_D \pi^+)$	$-0.013 \pm 0.020$ (S = 1.9)	NODE=S041ACG
$A_{ADS}(B^+ \rightarrow DK^+)$	$-0.451 \pm 0.026$	NODE=S041AA1
$A_{ADS}(B^+ \rightarrow D\pi^+)$	$0.129 \pm 0.014$	NODE=S041AA2
$A_{ADS}(B^+ \rightarrow [D\gamma]_{D^*} K^+)$	$-0.6 \pm 1.3$	NODE=S041A45
$A_{ADS}(B^+ \rightarrow [D\pi^0]_{D^*} K^+)$	$0.72 \pm 0.29$	NODE=S041A46
$A_{ADS}(B^+ \rightarrow [D\gamma]_{D^*} \pi^+)$	$0.08 \pm 0.13$	NODE=S041A47
$A_{ADS}(B^+ \rightarrow [D\pi^0]_{D^*} \pi^+)$	$-0.14 \pm 0.06$	NODE=S041A48
$A_{ADS}(B^+ \rightarrow [K^- \pi^+]_D K^+ \pi^- \pi^+)$	$-0.33 \pm 0.35$	NODE=S041AA3
$A_{ADS}(B^+ \rightarrow [K^- \pi^+]_D \pi^+ \pi^- \pi^+)$	$-0.01 \pm 0.09$	NODE=S041AA4
$A_{CP}(B^+ \rightarrow D_{CP(-1)} K^+)$	$-0.14 \pm 0.05$	NODE=S041AY4
$A_{CP}(B^+ \rightarrow [K^+ K^-]_D K^+ \pi^- \pi^+)$	$-0.04 \pm 0.06$	NODE=S041AA5
$A_{CP}(B^+ \rightarrow [\pi^+ \pi^-]_D K^+ \pi^- \pi^+)$	$-0.05 \pm 0.10$	NODE=S041AA6
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_D K^+ \pi^- \pi^+)$	$0.013 \pm 0.023$	NODE=S041AA7
$A_{CP}(B^+ \rightarrow [K^+ K^-]_D \pi^+ \pi^- \pi^+)$	$-0.019 \pm 0.015$	NODE=S041AA8
$A_{CP}(B^+ \rightarrow [\pi^+ \pi^-]_D \pi^+ \pi^- \pi^+)$	$-0.013 \pm 0.019$	NODE=S041AA9
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_D \pi^+ \pi^- \pi^+)$	$-0.002 \pm 0.011$	NODE=S041AA0
$A_{CP}(B^+ \rightarrow [\bar{D}^0 \pi^0]_{\bar{D}^*} \pi^+)$	$0.0007 \pm 0.0022$	NODE=S041AD5
$A_{CP}(B^+ \rightarrow [\bar{D}^0 \pi^0]_{D_{CP(+1)}^{*0}} \pi^+)$	$0.012 \pm 0.008$	NODE=S041AD6
$A_{CP}(B^+ \rightarrow [\bar{D}^0 \pi^0]_{D_{CP(-1)}^{*0}} \pi^+)$	$-0.09 \pm 0.05$	NODE=S041AD7
$A_{CP}(B^+ \rightarrow [\bar{D}^0 \pi^0]_{\bar{D}^{*0}} K^+)$	$0.017 \pm 0.007$	NODE=S041AD8
$A_{CP}(B^+ \rightarrow [D^0 \pi^0]_{D_{CP(+1)}^{*0}} K^+)$	$-0.115 \pm 0.020$	NODE=S041AC+
$A_{CP}(B^+ \rightarrow [D^0 \pi^0]_{D_{CP(-1)}^{*0}} K^+)$	$0.07 \pm 0.10$	NODE=S041AD1
$A_{CP}(B^+ \rightarrow D_{CP(+1)} K^*(892)^+)$	$0.08 \pm 0.06$	NODE=S041AD+
$A_{CP}(B^+ \rightarrow D_{CP(-1)} K^*(892)^+)$	$-0.23 \pm 0.22$	NODE=S041AD-
$A_{CP}(B^+ \rightarrow D_s^+ \phi)$	$0.0 \pm 0.4$	NODE=S041ADP
$A_{CP}(B^+ \rightarrow D_s^+ \bar{D}^0)$	$(0.5 \pm 0.6)\%$	NODE=S041A10
$A_{CP}(B^+ \rightarrow D_s^{*+} \bar{D}^0)$	$(-0.5 \pm 1.5) \times 10^{-2}$	NODE=S041D14
$A_{CP}(B^+ \rightarrow D_s^+ \bar{D}^{*0})$	$(1.1 \pm 1.1) \times 10^{-2}$	NODE=S041D15
$A_{CP}(B^+ \rightarrow D^{*+} \bar{D}^{*0})$	$(1.3 \pm 2.6) \times 10^{-2}$	NODE=S041AS1
$A_{CP}(B^+ \rightarrow D^{*+} \bar{D}^0)$	$(3.1 \pm 1.7) \times 10^{-2}$	NODE=S041AS2
$A_{CP}(B^+ \rightarrow D^+ \bar{D}^{*0})$	$(0.0 \pm 2.4) \times 10^{-2}$	NODE=S041AS3
$A_{CP}(B^+ \rightarrow D^+ \bar{D}^0)$	$(2.4 \pm 1.1) \times 10^{-2}$	NODE=S041AS4
$A_{CP}(B^+ \rightarrow K_S^0 \pi^+)$	$-0.003 \pm 0.015$ (S = 1.1)	NODE=S041AX4
$A_{CP}(B^+ \rightarrow K^+ \pi^0)$	$0.027 \pm 0.012$	NODE=S041AX3
$A_{CP}(B^+ \rightarrow \eta' K^+)$	$0.004 \pm 0.011$	NODE=S041AX5

$ACP(B^+ \rightarrow \eta' K^*(892)^+)$	$-0.26 \pm 0.27$	NODE=S041CR7
$ACP(B^+ \rightarrow \eta' K_0^*(1430)^+)$	$0.06 \pm 0.20$	NODE=S041CT7
$ACP(B^+ \rightarrow \eta' K_2^*(1430)^+)$	$0.15 \pm 0.13$	NODE=S041CT8
$ACP(B^+ \rightarrow \eta K^*(892)^+)$	$0.02 \pm 0.06$	NODE=S041CP1
$ACP(B^+ \rightarrow \eta K_0^*(1430)^+)$	$0.05 \pm 0.13$	NODE=S041CR5
$ACP(B^+ \rightarrow \eta K_2^*(1430)^+)$	$-0.45 \pm 0.30$	NODE=S041CR6
$ACP(B^+ \rightarrow \omega K^+)$	$-0.02 \pm 0.04$	NODE=S041AY1
$ACP(B^+ \rightarrow \omega K^{*+})$	$0.29 \pm 0.35$	NODE=S041CT0
$ACP(B^+ \rightarrow \omega(K\pi)_0^{*+})$	$-0.10 \pm 0.09$	NODE=S041CT2
$ACP(B^+ \rightarrow \omega K_2^*(1430)^+)$	$0.14 \pm 0.15$	NODE=S041CT3
$ACP(B^+ \rightarrow K^{*0} \pi^+)$	$-0.021 \pm 0.032$ (S = 1.5)	NODE=S041CQ4
$ACP(B^+ \rightarrow K^*(892)^+ \pi^0)$	$-0.39 \pm 0.21$ (S = 1.6)	NODE=S041CP8
$ACP(B^+ \rightarrow K^+ \pi^- \pi^+)$	$0.015 \pm 0.006$ (S = 1.4)	NODE=S041AY6
$ACP(B^+ \rightarrow K^+ K^- K^+ \text{ nonresonant})$	$0.06 \pm 0.05$	NODE=S041CU6
$ACP(B^+ \rightarrow f(980)^0 K^+)$	$-0.08 \pm 0.09$	NODE=S041CU7
$ACP(B^+ \rightarrow f_0(1500) K^+)$	$0.28 \pm 0.30$	NODE=S041CS5
$ACP(B^+ \rightarrow f_2'(1525)^0 K^+)$	$-0.08^{+0.05}_{-0.04}$	NODE=S041CQ5
$ACP(B^+ \rightarrow K^0 \pi^+ \pi^0)$	$0.07 \pm 0.06$	NODE=S041A06
$ACP(B^+ \rightarrow K_0^*(1430)^0 \pi^+)$	$0.061 \pm 0.032$	NODE=S041CQ7
$ACP(B^+ \rightarrow K_0^*(1430)^+ \pi^0)$	$0.26^{+0.18}_{-0.14}$	NODE=S041A05
$ACP(B^+ \rightarrow K_2^*(1430)^0 \pi^+)$	$0.05^{+0.29}_{-0.24}$	NODE=S041CS4
$ACP(B^+ \rightarrow K^+ \pi^0 \pi^0)$	$-0.06 \pm 0.07$	NODE=S041CU4
$ACP(B^+ \rightarrow K^0 \rho^+)$	$-0.03 \pm 0.15$	NODE=S041CR9
$ACP(B^+ \rightarrow K^{*+} \pi^+ \pi^-)$	$0.07 \pm 0.08$	NODE=S041AKP
$ACP(B^+ \rightarrow \rho^0 K^*(892)^+)$	$0.31 \pm 0.13$	NODE=S041AZ1
$ACP(B^+ \rightarrow K^*(892)^+ f_0(980))$	$-0.15 \pm 0.12$	NODE=S041CR3
$ACP(B^+ \rightarrow a_1^+ K^0)$	$0.12 \pm 0.11$	NODE=S041CS1
$ACP(B^+ \rightarrow b_1^+ K^0)$	$-0.03 \pm 0.15$	NODE=S041CS6
$ACP(B^+ \rightarrow K^*(892)^0 \rho^+)$	$-0.01 \pm 0.16$	NODE=S041CR4
$ACP(B^+ \rightarrow b_1^0 K^+)$	$-0.46 \pm 0.20$	NODE=S041CS2
$ACP(B^+ \rightarrow K^0 K^+)$	$0.04 \pm 0.14$	NODE=S041CQ8
$ACP(B^+ \rightarrow K_S^0 K^+)$	$-0.21 \pm 0.14$	NODE=S041CQA
$ACP(B^+ \rightarrow K^+ K_S^0 K_S^0)$	$0.025 \pm 0.031$	NODE=S041AY8
$ACP(B^+ \rightarrow K^+ K^- \pi^+ \text{ nonresonant})$	$-0.11 \pm 0.06$	NODE=S041A18
$ACP(B^+ \rightarrow \pi^+ K^+ K^-, m_{K^+ K^-} < 1.1 \text{ GeV})$	$-0.17 \pm 0.07$	NODE=S041A82
$ACP(B^+ \rightarrow K^+ \bar{K}^*(892)^0)$	$0.04 \pm 0.05$	NODE=S041A12
$ACP(B^+ \rightarrow K^+ \bar{K}_0^*(1430)^0)$	$0.10 \pm 0.17$	NODE=S041A13
$ACP(B^+ \rightarrow \phi \pi^+)$	$0.1 \pm 0.5$	NODE=S041A14
$ACP(B^+ \rightarrow \phi K^+)$	$0.017 \pm 0.017$ (S = 1.8)	NODE=S041AX7
$ACP(B^+ \rightarrow X_0(1550) K^+)$	$-0.04 \pm 0.07$	NODE=S041CXK
$ACP(B^+ \rightarrow K^{*+} K^+ K^-)$	$0.11 \pm 0.09$	NODE=S041AKK
$ACP(B^+ \rightarrow \phi K^*(892)^+)$	$-0.01 \pm 0.08$	NODE=S041AX8
$ACP(B^+ \rightarrow \phi(K\pi)_0^{*+})$	$0.04 \pm 0.16$	NODE=S041CT1
$ACP(B^+ \rightarrow \phi K_1(1270)^+)$	$0.15 \pm 0.20$	NODE=S041CS8
$ACP(B^+ \rightarrow \phi K_2^*(1430)^+)$	$-0.23 \pm 0.20$	NODE=S041CS9
$ACP(B^+ \rightarrow K^+ \phi \phi)$	$-0.08 \pm 0.07$	NODE=S041CT9
$ACP(B^+ \rightarrow K^+ [\phi \phi]_{\eta_c})$	$0.10 \pm 0.08$	NODE=S041CTB
$ACP(B^+ \rightarrow K^*(892)^+ \gamma)$	$0.014 \pm 0.018$	NODE=S041AKG
$ACP(B^+ \rightarrow X_S \gamma)$	$0.028 \pm 0.019$	NODE=S041A11
$ACP(B^+ \rightarrow \eta K^+ \gamma)$	$-0.12 \pm 0.07$	NODE=S041CQ3
$ACP(B^+ \rightarrow \phi K^+ \gamma)$	$-0.13 \pm 0.11$ (S = 1.1)	NODE=S041APK
$ACP(B^+ \rightarrow \rho^+ \gamma)$	$-0.11 \pm 0.33$	NODE=S041CS7
$ACP(B^+ \rightarrow \pi^+ \pi^0)$	$-0.01 \pm 0.04$ (S = 1.1)	NODE=S041AX0
$ACP(B^+ \rightarrow \pi^+ \pi^0 \pi^0)$	$(9 \pm 7) \times 10^{-2}$	NODE=S041A77



$A_{CP}(B^+ \rightarrow \rho^0 \pi^+)$	$0.003 \pm 0.014$	NODE=S041CP4
$A_{CP}(B^+ \rightarrow \rho^0(1450) \pi^+)$	$-0.11 \pm 0.05$	NODE=S041CT4
$A_{CP}(B^+ \rightarrow \rho_3(1690) \pi^+)$	$-0.80 \pm 0.28$	NODE=S041A16
$A_{CP}(B^+ \rightarrow f_0(1370) \pi^+)$	$0.72 \pm 0.22$	NODE=S041CT5
$A_{CP}(B^+ \rightarrow \pi^+ \pi^- \pi^+ \text{ nonresonant})$	$-0.14^{+0.23}_{-0.16}$	NODE=S041CT6
$A_{CP}(B^+ \rightarrow \rho^+ \pi^0)$	$0.03 \pm 0.10$	NODE=S041CP5
$A_{CP}(B^+ \rightarrow X \pi^+, X \rightarrow \pi^0 \pi^0)$	$0.18 \pm 0.12$	NODE=S041A85
$A_{CP}(B^+ \rightarrow \rho^+ \rho^0)$	$-0.05 \pm 0.05$	NODE=S041AY9
$A_{CP}(B^+ \rightarrow \omega \pi^+)$	$-0.04 \pm 0.05$	NODE=S041AX6
$A_{CP}(B^+ \rightarrow \omega \rho^+)$	$-0.20 \pm 0.09$	NODE=S041CP9
$A_{CP}(B^+ \rightarrow \eta \pi^+)$	$-0.14 \pm 0.07 (S = 1.4)$	NODE=S041CP2
$A_{CP}(B^+ \rightarrow \eta \rho^+)$	$0.11 \pm 0.11$	NODE=S041CQ2
$A_{CP}(B^+ \rightarrow \eta' \pi^+)$	$0.06 \pm 0.16$	NODE=S041CQ1
$A_{CP}(B^+ \rightarrow \eta' \rho^+)$	$0.26 \pm 0.17$	NODE=S041CR8
$A_{CP}(B^+ \rightarrow b_1^0 \pi^+)$	$0.05 \pm 0.16$	NODE=S041CS3
$A_{CP}(B^+ \rightarrow p \bar{p} \pi^+)$	$0.00 \pm 0.04$	NODE=S041CP6
$A_{CP}(B^+ \rightarrow p \bar{p} K^+)$	$0.00 \pm 0.04 (S = 2.2)$	NODE=S041CP7
$A_{CP}(B^+ \rightarrow p \bar{p} K^*(892)^+)$	$0.21 \pm 0.16 (S = 1.4)$	NODE=S041AW6
$A_{CP}(B^+ \rightarrow p \bar{\Lambda} \gamma)$	$0.17 \pm 0.17$	NODE=S041CLG
$A_{CP}(B^+ \rightarrow p \bar{\Lambda} \pi^0)$	$0.01 \pm 0.17$	NODE=S041CS0
$A_{CP}(B^+ \rightarrow K^+ \ell^+ \ell^-)$	$-0.02 \pm 0.08$	NODE=S041CR1
$A_{CP}(B^+ \rightarrow K^+ e^+ e^-)$	$0.14 \pm 0.14$	NODE=S041CU0
$A_{CP}(B^+ \rightarrow K^+ \mu^+ \mu^-)$	$0.011 \pm 0.017$	NODE=S041CU1
$A_{CP}(B^+ \rightarrow \pi^+ \mu^+ \mu^-)$	$-0.11 \pm 0.12$	NODE=S041CU8
$A_{CP}(B^+ \rightarrow K^{*+} \ell^+ \ell^-)$	$-0.09 \pm 0.14$	NODE=S041CR2
$A_{CP}(B^+ \rightarrow K^* e^+ e^-)$	$-0.14 \pm 0.23$	NODE=S041CU2
$A_{CP}(B^+ \rightarrow K^* \mu^+ \mu^-)$	$-0.12 \pm 0.24$	NODE=S041CU3
$\text{Re}(\epsilon_{B^0})/(1+ \epsilon_{B^0} ^2)$	$(-0.5 \pm 0.4) \times 10^{-3}$	NODE=S042EPS; → UNCHECKED ←; OUR EVAL
$A_{T/CP}(B^0 \leftrightarrow \bar{B}^0)$	$0.005 \pm 0.018$	NODE=S042Y3
$A_{CP}(B^0 \rightarrow D^*(2010)^+ D^-)$	$0.013 \pm 0.014$	NODE=S042AC4
$A_{CP}(B^0 \rightarrow \bar{D}^0 \pi^0)$	$(0.4 \pm 2.4) \times 10^{-2}$	NODE=S042A42
$A_{CP}(B^0 \rightarrow [K^+ K^-]_D K^*(892)^0)$	$-0.05 \pm 0.06$	NODE=S042AD3
$A_{CP}(B^0 \rightarrow [K^+ \pi^-]_D K^*(892)^0)$	$0.031 \pm 0.023$	NODE=S042AD4
$A_{CP}(B^0 \rightarrow [K^+ \pi^- \pi^+ \pi^-]_D K^*(892)^0)$	$-0.012 \pm 0.024$	NODE=S042A31
$A_{CP}(B^0 \rightarrow [K^- \pi^+]_D K^*(892)^0)$	$0.19 \pm 0.19$	NODE=S042A32
$A_{CP}(B^0 \rightarrow [K^- \pi^+ \pi^+ \pi^-]_D K^*(892)^0)$	$-0.01 \pm 0.24$	NODE=S042A33
$R_d^+(B^0 \rightarrow [\pi^\pm K^\mp]_D K^*0)$	$0.069 \pm 0.014$	NODE=S042AD6
$R_d^-(\bar{B}^0 \rightarrow [\pi^\mp K^\pm]_D K^*0)$	$0.093 \pm 0.014$	NODE=S042AD7
$A_{CP}(B^0 \rightarrow [\pi^+ \pi^-]_D K^*(892)^0)$	$-0.03 \pm 0.10$	NODE=S042AD5
$A_{CP}(B^0 \rightarrow [\pi^+ \pi^- \pi^+ \pi^-]_D K^*(892)^0)$	$0.02 \pm 0.09$	NODE=S042A28
$R_d^+(B^0 \rightarrow [\pi^\pm K^\mp \pi^\pm \pi^\mp]_D K^*0)$	$0.060 \pm 0.015$	NODE=S042A29
$R_d^-(\bar{B}^0 \rightarrow [\pi^\mp K^\pm \pi^\pm \pi^\mp]_D K^*0)$	$0.038 \pm 0.015$	NODE=S042A30
$A_{CP}(B^0 \rightarrow \eta' K^*(892)^0)$	$-0.07 \pm 0.18$	NODE=S042CP4
$A_{CP}(B^0 \rightarrow \eta' K_0^*(1430)^0)$	$-0.19 \pm 0.17$	NODE=S042CT2
$A_{CP}(B^0 \rightarrow \eta' K_2^*(1430)^0)$	$0.14 \pm 0.18$	NODE=S042CT3
$A_{CP}(B^0 \rightarrow \eta K_0^*(1430)^0)$	$0.06 \pm 0.13$	NODE=S042AD1
$A_{CP}(B^0 \rightarrow \eta K_2^*(1430)^0)$	$-0.07 \pm 0.19$	NODE=S042AD2
$A_{CP}(B^0 \rightarrow b_1 K^+)$	$-0.07 \pm 0.12$	NODE=S042CQ2
$A_{CP}(B^0 \rightarrow \omega K^*0)$	$0.45 \pm 0.25$	NODE=S042CQ8
$A_{CP}(B^0 \rightarrow \omega(K\pi)_0^*0)$	$-0.07 \pm 0.09$	NODE=S042CR0
$A_{CP}(B^0 \rightarrow \omega K_2^*(1430)^0)$	$-0.37 \pm 0.17$	NODE=S042CR1
$A_{CP}(B^0 \rightarrow K^+ \pi^- \pi^0)$	$(0 \pm 6) \times 10^{-2}$	NODE=S042AC7
$A_{CP}(B^0 \rightarrow \rho^- K^+)$	$0.20 \pm 0.11$	NODE=S042AC6
$A_{CP}(B^0 \rightarrow \rho(1450)^- K^+)$	$-0.10 \pm 0.33$	NODE=S042CT4
$A_{CP}(B^0 \rightarrow \rho(1700)^- K^+)$	$-0.4 \pm 0.6$	NODE=S042CT5

$A_{CP}(B^0 \rightarrow K^+ \pi^- \pi^0 \text{nonresonant})$	$0.10 \pm 0.18$	NODE=S042CQ5
$A_{CP}(B^0 \rightarrow K^0 \pi^+ \pi^-)$	$-0.01 \pm 0.05$	NODE=S042CQ9
$A_{CP}(B^0 \rightarrow (K\pi)_0^{*+} \pi^-)$	$0.02 \pm 0.04$	NODE=S042CQ6
$A_{CP}(B^0 \rightarrow K_2^*(1430)^+ \pi^-)$	$-0.29 \pm 0.24$	NODE=S042A09
$A_{CP}(B^0 \rightarrow K^*(1680)^+ \pi^-)$	$-0.07 \pm 0.14$	NODE=S042A10
$A_{CP}(B^0 \rightarrow f_0(980) K_S^0)$	$0.28 \pm 0.31$	NODE=S042A11
$A_{CP}(B^0 \rightarrow (K\pi)_0^{*0} \pi^0)$	$-0.15 \pm 0.11$	NODE=S042CQ7
$A_{CP}(B^0 \rightarrow K^{*0} \pi^0)$	$-0.15 \pm 0.13$	NODE=S042CQ4
$A_{CP}(B^0 \rightarrow K^*(892)^0 \pi^+ \pi^-)$	$0.07 \pm 0.05$	NODE=S042CP6
$A_{CP}(B^0 \rightarrow K^*(892)^0 \rho^0)$	$-0.06 \pm 0.09$	NODE=S042AC9
$A_{CP}(B^0 \rightarrow K^{*0} f_0(980))$	$0.07 \pm 0.10$	NODE=S042AD0
$A_{CP}(B^0 \rightarrow K^{*+} \rho^-)$	$0.21 \pm 0.15$	NODE=S042CT6
$A_{CP}(B^0 \rightarrow K^*(892)^0 K^+ K^-)$	$0.01 \pm 0.05$	NODE=S042CP7
$A_{CP}(B^0 \rightarrow a_1^- K^+)$	$-0.16 \pm 0.12$	NODE=S042CQ1
$A_{CP}(B^0 \rightarrow K^0 K^0)$	$-0.6 \pm 0.7$	NODE=S042CP5
$A_{CP}(B^0 \rightarrow K^*(892)^0 \phi)$	$0.00 \pm 0.04$	NODE=S042AC1
$A_{CP}(B^0 \rightarrow K^*(892)^0 K^- \pi^+)$	$0.2 \pm 0.4$	NODE=S042CP8
$A_{CP}(B^0 \rightarrow \phi (K\pi)_0^{*0})$	$0.12 \pm 0.08$	NODE=S042CP2
$A_{CP}(B^0 \rightarrow \phi K_2^*(1430)^0)$	$-0.11 \pm 0.10$	NODE=S042CP3
$A_{CP}(B^0 \rightarrow K^*(892)^0 \gamma)$	$-0.006 \pm 0.011$	NODE=S042AKG
$A_{CP}(B^0 \rightarrow K_2^*(1430)^0 \gamma)$	$-0.08 \pm 0.15$	NODE=S042AC8
$A_{CP}(B^0 \rightarrow X_S \gamma)$	$-0.009 \pm 0.018$	NODE=S042A12
$A_{CP}(B^0 \rightarrow \rho^+ \pi^-)$	$0.13 \pm 0.06 (S = 1.1)$	NODE=S042AC5
$A_{CP}(B^0 \rightarrow \rho^- \pi^+)$	$-0.08 \pm 0.08$	NODE=S042AC0
$A_{CP}(B^0 \rightarrow a_1(1260)^\pm \pi^\mp)$	$-0.07 \pm 0.06$	NODE=S042AAP
$A_{CP}(B^0 \rightarrow b_1^- \pi^+)$	$-0.05 \pm 0.10$	NODE=S042CQ3
$A_{CP}(B^0 \rightarrow \rho \bar{\rho} K^*(892)^0)$	$0.05 \pm 0.12$	NODE=S042CQ0
$A_{CP}(B^0 \rightarrow \rho \bar{\Lambda} \pi^-)$	$0.04 \pm 0.07$	NODE=S042CLP
$A_{CP}(B^0 \rightarrow K^{*0} \ell^+ \ell^-)$	$-0.05 \pm 0.10$	NODE=S042CT1
$A_{CP}(B^0 \rightarrow K^{*0} e^+ e^-)$	$-0.21 \pm 0.19$	NODE=S042CU0
$A_{CP}(B^0 \rightarrow K^{*0} \mu^+ \mu^-)$	$-0.034 \pm 0.024$	NODE=S042CU1
$C_{D^*(2010)^- D^+} (B^0 \rightarrow D^*(2010)^- D^+)$	$-0.02 \pm 0.08$	NODE=S042CPJ
$C_{D^*(2010)^+ D^-} (B^0 \rightarrow D^*(2010)^+ D^-)$	$-0.03 \pm 0.09 (S = 1.1)$	NODE=S042CPK
$C_{D^{*+} D^{*-}} (B^0 \rightarrow D^{*+} D^{*-})$	$0.01 \pm 0.09 (S = 1.6)$	NODE=S042LD1
$C_+ (B^0 \rightarrow D^{*+} D^{*-})$	$0.00 \pm 0.10 (S = 1.6)$	NODE=S042CD+
$C_- (B^0 \rightarrow D^{*+} D^{*-})$	$0.19 \pm 0.31$	NODE=S042CD-
$S_- (B^0 \rightarrow D^{*+} D^{*-})$	$-1.6 \pm 0.5$	NODE=S042SD-
$C (B^0 \rightarrow D^*(2010)^+ D^*(2010)^- K_S^0)$	$0.01 \pm 0.29$	NODE=S042CDS
$S (B^0 \rightarrow D^*(2010)^+ D^*(2010)^- K_S^0)$	$0.1 \pm 0.4$	NODE=S042SDS
$C_{D^+ D^-} (B^0 \rightarrow D^+ D^-)$	$-0.06 \pm 0.18 (S = 2.5)$	NODE=S042CPD
$C_{J/\psi(1S) \pi^0} (B^0 \rightarrow J/\psi(1S) \pi^0)$	$0.03 \pm 0.17 (S = 1.5)$	NODE=S042CPL
$C(B^0 \rightarrow J/\psi(1S) \rho^0)$	$-0.06 \pm 0.06$	NODE=S042CPR
$C_{D_{CP}^*} h^0 (B^0 \rightarrow D_{CP}^* h^0)$	$-0.02 \pm 0.08$	NODE=S042CDH
$S_{D_{CP}^*} h^0 (B^0 \rightarrow D_{CP}^* h^0)$	$-0.66 \pm 0.12$	NODE=S042SDH
$C_{K^0 \pi^0} (B^0 \rightarrow K^0 \pi^0)$	$0.00 \pm 0.08$	NODE=S042CKP
$C_{\eta'(958) K_S^0} (B^0 \rightarrow \eta'(958) K_S^0)$	$-0.04 \pm 0.20 (S = 2.5)$	NODE=S042Y1
$S_{\eta'(958) K_S^0} (B^0 \rightarrow \eta'(958) K_S^0)$	$0.43 \pm 0.17 (S = 1.5)$	NODE=S042Y2
$C_{\eta' K^0} (B^0 \rightarrow \eta' K^0)$	$-0.08 \pm 0.04 (S = 1.1)$	NODE=S042CEK
$C_{\omega K_S^0} (B^0 \rightarrow \omega K_S^0)$	$0.0 \pm 0.4 (S = 3.0)$	NODE=S042CW1
$S_{\omega K_S^0} (B^0 \rightarrow \omega K_S^0)$	$0.70 \pm 0.21$	NODE=S042SW1
$C (B^0 \rightarrow K_S^0 \pi^0 \pi^0)$	$-0.21 \pm 0.20$	NODE=S042CK2

$S(B^0 \rightarrow K_S^0 \pi^0 \pi^0)$	$0.89^{+0.27}_{-0.30}$	NODE=S042SK2
$C_{\rho^0 K_S^0}(B^0 \rightarrow \rho^0 K_S^0)$	$-0.04 \pm 0.20$	NODE=S042CX7
$S_{\rho^0 K_S^0}(B^0 \rightarrow \rho^0 K_S^0)$	$0.50^{+0.17}_{-0.21}$	NODE=S042SX7
$C_{f_0(980) K_S^0}(B^0 \rightarrow f_0(980) K_S^0)$	$0.29 \pm 0.20$	NODE=S042CF1
$S_{f_0(980) K_S^0}(B^0 \rightarrow f_0(980) K_S^0)$	$-0.50 \pm 0.16$	NODE=S042SF1
$S_{f_2(1270) K_S^0}(B^0 \rightarrow f_2(1270) K_S^0)$	$-0.5 \pm 0.5$	NODE=S042SF2
$C_{f_2(1270) K_S^0}(B^0 \rightarrow f_2(1270) K_S^0)$	$0.3 \pm 0.4$	NODE=S042CF2
$S_{f_x(1300) K_S^0}(B^0 \rightarrow f_x(1300) K_S^0)$	$-0.2 \pm 0.5$	NODE=S042SF3
$C_{f_x(1300) K_S^0}(B^0 \rightarrow f_x(1300) K_S^0)$	$0.13 \pm 0.35$	NODE=S042CF3
$S_{K^0 \pi^+ \pi^-}(B^0 \rightarrow K^0 \pi^+ \pi^- \text{ nonresonant})$	$-0.01 \pm 0.33$	NODE=S042SF4
$C_{K^0 \pi^+ \pi^-}(B^0 \rightarrow K^0 \pi^+ \pi^- \text{ nonresonant})$	$0.01 \pm 0.26$	NODE=S042CF4
$C_{K_S^0 K_S^0}(B^0 \rightarrow K_S^0 K_S^0)$	$0.0 \pm 0.4 (S = 1.4)$	NODE=S042CKS
$S_{K_S^0 K_S^0}(B^0 \rightarrow K_S^0 K_S^0)$	$-0.8 \pm 0.5$	NODE=S042SKS
$C_{K^+ K^- K_S^0}(B^0 \rightarrow K^+ K^- K_S^0 \text{ nonresonant})$	$0.06 \pm 0.08$	NODE=S042CX2
$C_{K^+ K^- K_S^0}(B^0 \rightarrow K^+ K^- K_S^0 \text{ inclusive})$	$0.01 \pm 0.09$	NODE=S042CKK
$C_{\phi K_S^0}(B^0 \rightarrow \phi K_S^0)$	$-0.09 \pm 0.12$	NODE=S042CX1
$S_{\phi K_S^0}(B^0 \rightarrow \phi K_S^0)$	$0.58 \pm 0.12$	NODE=S042SX1
$C_{K_S K_S K_S}(B^0 \rightarrow K_S K_S K_S)$	$-0.14 \pm 0.12$	NODE=S042CX5
$S_{K_S K_S K_S}(B^0 \rightarrow K_S K_S K_S)$	$-0.82 \pm 0.17$	NODE=S042SX5
$C_{K_S^0 \pi^0 \gamma}(B^0 \rightarrow K_S^0 \pi^0 \gamma)$	—	NODE=S042CKG
$S_{K_S^0 \pi^0 \gamma}(B^0 \rightarrow K_S^0 \pi^0 \gamma)$	—	NODE=S042SKG
$C_{K^*(892)^0 \gamma}(B^0 \rightarrow K^*(892)^0 \gamma)$	$0.03 \pm 0.10$	NODE=S042CX4
$S_{K^*(892)^0 \gamma}(B^0 \rightarrow K^*(892)^0 \gamma)$	$-0.08 \pm 0.17$	NODE=S042SX4
$C_{\eta K^0 \gamma}(B^0 \rightarrow \eta K^0 \gamma)$	$0.1 \pm 0.4 (S = 1.4)$	NODE=S042CEG
$S_{\eta K^0 \gamma}(B^0 \rightarrow \eta K^0 \gamma)$	$-0.5 \pm 0.5 (S = 1.2)$	NODE=S042SEG
$C_{K^0 \phi \gamma}(B^0 \rightarrow K^0 \phi \gamma)$	$-0.3 \pm 0.6$	NODE=S042CPG
$S_{K^0 \phi \gamma}(B^0 \rightarrow K^0 \phi \gamma)$	$0.7^{+0.7}_{-1.1}$	NODE=S042SPG
$C(B^0 \rightarrow K_S^0 \rho^0 \gamma)$	$-0.05 \pm 0.19$	NODE=S042CKR
$S(B^0 \rightarrow K_S^0 \rho^0 \gamma)$	$-0.04 \pm 0.23$	NODE=S042SKR
$C(B^0 \rightarrow \rho^0 \gamma)$	$0.4 \pm 0.5$	NODE=S042CX8
$S(B^0 \rightarrow \rho^0 \gamma)$	$-0.8 \pm 0.7$	NODE=S042SX8
$C_{\pi^0 \pi^0}(B^0 \rightarrow \pi^0 \pi^0)$	$-0.25 \pm 0.20$	NODE=S042CX6
$C_{\rho \pi}(B^0 \rightarrow \rho^+ \pi^-)$	$-0.03 \pm 0.07 (S = 1.2)$	NODE=S042CRP
$S_{\rho \pi}(B^0 \rightarrow \rho^+ \pi^-)$	$0.05 \pm 0.07$	NODE=S042SRP
$\Delta S_{\rho \pi}(B^0 \rightarrow \rho^+ \pi^-)$	$0.01 \pm 0.08$	NODE=S042SDT
$C_{\rho^0 \pi^0}(B^0 \rightarrow \rho^0 \pi^0)$	$0.27 \pm 0.24$	NODE=S042CRH
$S_{\rho^0 \pi^0}(B^0 \rightarrow \rho^0 \pi^0)$	$-0.23 \pm 0.34$	NODE=S042SRH
$C_{a_1 \pi}(B^0 \rightarrow a_1(1260)^+ \pi^-)$	$-0.05 \pm 0.11$	NODE=S042CAP
$S_{a_1 \pi}(B^0 \rightarrow a_1(1260)^+ \pi^-)$	$-0.2 \pm 0.4 (S = 3.2)$	NODE=S042SAP
$\Delta C_{a_1 \pi}(B^0 \rightarrow a_1(1260)^+ \pi^-)$	$0.43 \pm 0.14 (S = 1.3)$	NODE=S042CDA
$\Delta S_{a_1 \pi}(B^0 \rightarrow a_1(1260)^+ \pi^-)$	$-0.11 \pm 0.12$	NODE=S042SDA
$C(B^0 \rightarrow b_1^- K^+)$	$-0.22 \pm 0.24$	NODE=S042CAQ
$\Delta C(B^0 \rightarrow b_1^- \pi^+)$	$-1.04 \pm 0.24$	NODE=S042SDB
$C_{\rho^0 \rho^0}(B^0 \rightarrow \rho^0 \rho^0)$	$0.2 \pm 0.9$	NODE=S042CX9

$S_{\rho^0\rho^0} (B^0 \rightarrow \rho^0\rho^0)$	$0.3 \pm 0.7$	NODE=S042SX9
$C_{\rho\rho} (B^0 \rightarrow \rho^+\rho^-)$	$0.00 \pm 0.09$	NODE=S042CRR
$S_{\rho\rho} (B^0 \rightarrow \rho^+\rho^-)$	$-0.14 \pm 0.13$	NODE=S042SRR
$ \lambda  (B^0 \rightarrow J/\psi K^*(892)^0)$	$<0.25, \text{CL} = 95\%$	NODE=S042LD9
$\cos 2\beta (B^0 \rightarrow J/\psi K^*(892)^0)$	$1.7^{+0.7}_{-0.9} (S = 1.6)$	NODE=S042CJ1
$\cos 2\beta (B^0 \rightarrow [K_S^0\pi^+\pi^-]_{D^{(*)}} h^0)$	$0.91 \pm 0.25$	NODE=S042CJ2
$(S_+ + S_-)/2 (B^0 \rightarrow D^{*-}\pi^+)$	$-0.039 \pm 0.011$	NODE=S042LD3
$(S_- - S_+)/2 (B^0 \rightarrow D^{*-}\pi^+)$	$-0.009 \pm 0.015$	NODE=S042LD4
$(S_+ + S_-)/2 (B^0 \rightarrow D^-\pi^+)$	$-0.046 \pm 0.023$	NODE=S042LD5
$(S_- - S_+)/2 (B^0 \rightarrow D^-\pi^+)$	$-0.022 \pm 0.021$	NODE=S042LD6
$S_+ (B^0 \rightarrow D^-\pi^+)$	$0.058 \pm 0.023$	NODE=S042A06
$S_- (B^0 \rightarrow D^+\pi^-)$	$0.038 \pm 0.021$	NODE=S042A07
$(S_+ + S_-)/2 (B^0 \rightarrow D^-\rho^+)$	$-0.024 \pm 0.032$	NODE=S042DR+
$(S_- - S_+)/2 (B^0 \rightarrow D^-\rho^+)$	$-0.10 \pm 0.06$	NODE=S042DR-
$C_{\eta_c K_S^0} (B^0 \rightarrow \eta_c K_S^0)$	$0.08 \pm 0.13$	NODE=S042CEC
$C_{c\bar{c}K^{(*)0}} (B^0 \rightarrow c\bar{c}K^{(*)0})$	$(0.4 \pm 1.0) \times 10^{-2}$	NODE=S042CCC;→ UNCHECKED ←;OUR EVAL
$C_{J/\psi(nS)K^0} (B^0 \rightarrow J/\psi(nS)K^0)$	$(0.2 \pm 1.0) \times 10^{-2}$	NODE=S042CJK;→ UNCHECKED ←;OUR EVAL
$C_{J/\psi K^{*0}} (B^0 \rightarrow J/\psi K^{*0})$	$0.03 \pm 0.10$	NODE=S042CJS
$S_{J/\psi K^{*0}} (B^0 \rightarrow J/\psi K^{*0})$	$0.60 \pm 0.25$	NODE=S042SJS
$C_{\chi_{c0}K_S^0} (B^0 \rightarrow \chi_{c0}K_S^0)$	$-0.3^{+0.5}_{-0.4}$	NODE=S042CC2
$S_{\chi_{c0}K_S^0} (B^0 \rightarrow \chi_{c0}K_S^0)$	$-0.7 \pm 0.5$	NODE=S042SC2
$C_{\chi_{c1}K_S^0} (B^0 \rightarrow \chi_{c1}K_S^0)$	$0.06 \pm 0.07$	NODE=S042CC1
$\sin(2\beta_{\text{eff}})(B^0 \rightarrow \phi K^0)$	$0.22 \pm 0.30$	NODE=S042BTF
$\sin(2\beta_{\text{eff}})(B^0 \rightarrow \phi K_0^*(1430)^0)$	$0.97^{+0.03}_{-0.52}$	NODE=S042BFK
$\sin(2\beta_{\text{eff}})(B^0 \rightarrow [K_S^0\pi^+\pi^-]_{D^{(*)}} h^0)$	$0.80 \pm 0.16$	NODE=S042BTM
$ \lambda  (B^0 \rightarrow [K_S^0\pi^+\pi^-]_{D^{(*)}} h^0)$	$1.01 \pm 0.08$	NODE=S042LDH
$ \sin(2\beta + \gamma) $	$>0.40, \text{CL} = 90\%$	NODE=S042BGA
$2\beta + \gamma$	$(80 \pm 60)^\circ$	NODE=S042BG0
$x_+(B^0 \rightarrow DK^{*0})$	$0.07 \pm 0.08$	NODE=S042XP
$x_-(B^0 \rightarrow DK^{*0})$	$-0.18 \pm 0.08$	NODE=S042XM
$y_+(B^0 \rightarrow DK^{*0})$	$-0.35 \pm 0.10$	NODE=S042YP
$y_-(B^0 \rightarrow DK^{*0})$	$-0.03 \pm 0.13$	NODE=S042YM
$a_{CP}(B^0 \rightarrow p\bar{p}K^+\pi^-)$	$(0.5 \pm 0.9)\%$	NODE=S042A44
$A_{CP}(B \rightarrow K^*(892)\gamma)$	$-0.003 \pm 0.011$	NODE=S049CP1
$A_{CP}(B \rightarrow s\gamma)$	$0.015 \pm 0.011$	NODE=S049CP2
$A_{CP}(B \rightarrow (s+d)\gamma)$	$0.010 \pm 0.031$	NODE=S049CP4
$A_{CP}(B \rightarrow X_S \ell^+ \ell^-)$	$0.04 \pm 0.11$	NODE=S049CP3
$A_{CP}(B \rightarrow K^* e^+ e^-)$	$-0.18 \pm 0.15$	NODE=S049CP6
$A_{CP}(B \rightarrow K^* \mu^+ \mu^-)$	$-0.03 \pm 0.13$	NODE=S049CP7
$A_{CP}(B \rightarrow K^* \ell^+ \ell^-)$	$-0.04 \pm 0.07$	NODE=S049CP5
$A_{CP}(B \rightarrow \eta \text{anything})$	$-0.13^{+0.04}_{-0.05}$	NODE=S049CP8
$\Delta A_{CP}(X_S \gamma) = A_{CP}(B^\pm \rightarrow X_S \gamma) - A_{CP}(B^0 \rightarrow X_S \gamma)$	$0.041 \pm 0.023$	NODE=S049DA1
$\bar{A}_{CP}(B \rightarrow X_S \gamma) = (A_{CP}(B^+ \rightarrow X_S \gamma) + A_{CP}(B^0 \rightarrow X_S \gamma))/2$	$0.009 \pm 0.012$	NODE=S049A06
$\bar{A}_{CP}(B \rightarrow K^* \gamma) = (A_{CP}(B^+ \rightarrow K^{*+} \gamma) + A_{CP}(B^0 \rightarrow K^{*0} \gamma))/2$	$-0.001 \pm 0.014$	NODE=S049A03
$\text{Re}(\epsilon_{B_S^0}) / (1 +  \epsilon_{B_S^0} ^2)$	$(-0.15 \pm 0.70) \times 10^{-3}$	NODE=S086EPS;→ UNCHECKED ←;OUR EVAL
$S_{KK}(B_S^0 \rightarrow K^+K^-)$	$0.14 \pm 0.05 (S = 1.3)$	NODE=S086SK1
$\delta_B(B_S^0 \rightarrow D_S^\pm K^\mp \pi^\pm \pi^\mp)$	$(-6^{+10}_{-13})^\circ$	NODE=S086A29
$CP \text{ Violation phase } \beta_s (b \rightarrow c\bar{c}s)$	$(2.0 \pm 0.8) \times 10^{-2} \text{ rad}$	NODE=S086PHS;→ UNCHECKED ←;OUR EVAL

$A_{CP}^L(B_s \rightarrow J/\psi \bar{K}^*(892)^0)$	$-0.05 \pm 0.06$	NODE=S086PK4
$A_{CP}^{\parallel}(B_s \rightarrow J/\psi \bar{K}^*(892)^0)$	$0.17 \pm 0.15$	NODE=S086PK5
$A_{CP}^{\perp}(B_s \rightarrow J/\psi \bar{K}^*(892)^0)$	$-0.05 \pm 0.10$	NODE=S086PK6
$A_{CP}(B_s^0 \rightarrow [K^+ K^-]_D \bar{K}^*(892)^0)$	$0.06 \pm 0.04$	NODE=S086CP2
$A_{CP}(B_s^0 \rightarrow [\pi^+ K^-]_D K^*(892)^0)$	$-0.009 \pm 0.023$	NODE=S086CP3
$A_{CP}(B_s^0 \rightarrow [\pi^+ \pi^-]_D K^*(892)^0)$	$0.00 \pm 0.06$	NODE=S086CP4
$S(B_s^0 \rightarrow \phi \gamma)$	$0.43 \pm 0.32$	NODE=S086A23
$C(B_s^0 \rightarrow \phi \gamma)$	$0.11 \pm 0.31$	NODE=S086A24
$\Gamma(\eta_c(1S) \rightarrow \pi^+ \pi^-) / \Gamma_{\text{total}}$	$< 1.3 \times 10^{-4}$ , CL = 90%	PAR=M026;DESIG=51
$\Gamma(\eta_c(1S) \rightarrow \pi^0 \pi^0) / \Gamma_{\text{total}}$	$< 4 \times 10^{-5}$ , CL = 90%	PAR=M026;DESIG=52
$\Gamma(\eta_c(1S) \rightarrow K^+ K^-) / \Gamma_{\text{total}}$	$< 7 \times 10^{-4}$ , CL = 90%	PAR=M026;DESIG=53
$\Gamma(\eta_c(1S) \rightarrow K_S^0 K_S^0) / \Gamma_{\text{total}}$	$< 4 \times 10^{-4}$ , CL = 90%	PAR=M026;DESIG=54
$n$ electric dipole moment	$< 0.18 \times 10^{-25}$ ecm, CL = 90%	NODE=S017EDM
$(\alpha_- + \alpha_+) / (\alpha_- - \alpha_+)$ in $\Lambda \rightarrow p \pi^-, \bar{\Lambda} \rightarrow \bar{p} \pi^+$	$(-0.3 \pm 0.4) \times 10^{-2}$	NODE=S018AL
$\frac{[\alpha(\Xi^-) \alpha_-(\Lambda) - \bar{\alpha} \Xi^+ \alpha_+(\bar{\Lambda})]}{[\alpha(\Xi^-) \alpha_-(\Lambda) + \bar{\alpha} \Xi^+ \alpha_+(\bar{\Lambda})]}$	$(0 \pm 7) \times 10^{-4}$	NODE=S022ACP
$(\alpha + \bar{\alpha}) / (\alpha - \bar{\alpha})$ in $\Omega^- \rightarrow \Lambda K^-, \bar{\Omega}^+ \rightarrow \bar{\Lambda} K^+$	$-0.02 \pm 0.13$	NODE=S024ALD
$(\alpha + \bar{\alpha}) / (\alpha - \bar{\alpha})$ in $\Lambda_c^+ \rightarrow \Lambda \pi^+, \bar{\Lambda}_c^- \rightarrow \bar{\Lambda} \pi^-$	$0.020 \pm 0.016$	NODE=S033AC1
$(\alpha + \bar{\alpha}) / (\alpha - \bar{\alpha})$ in $\Lambda_c^+ \rightarrow \Lambda e^+ \nu_e, \bar{\Lambda}_c^- \rightarrow \bar{\Lambda} e^- \bar{\nu}_e$	$0.00 \pm 0.04$	NODE=S033ACP
$A_{CP}(\Lambda_b \rightarrow p \pi^-)$	$-0.025 \pm 0.029$ (S = 1.2)	NODE=S040CP1
$A_{CP}(\Lambda_b \rightarrow p K^-)$	$-0.025 \pm 0.022$	NODE=S040CP2
$A_{CP}(\Lambda_b \rightarrow D p K^-)$	$0.12 \pm 0.09$	NODE=S040A38
$\Delta A_{CP}(p K^- / \pi^-)$	$0.014 \pm 0.024$	NODE=S040A19
$A_{CP}(\Lambda_b \rightarrow p \bar{K}^0 \pi^-)$	$0.22 \pm 0.13$	NODE=S040CP3
$\Delta A_{CP}(J/\psi p \pi^- / K^-)$	$(5.7 \pm 2.7) \times 10^{-2}$	NODE=S040DCP
$A_{CP}(\Lambda_b \rightarrow \Lambda K^+ \pi^-)$	$-0.53 \pm 0.25$	NODE=S040A00
$A_{CP}(\Lambda_b \rightarrow \Lambda K^+ K^-)$	$-0.28 \pm 0.12$	NODE=S040A05
$\Delta A_{CP}(\Lambda_b^0 \rightarrow p K^- \mu^+ \mu^-)$	$(-4 \pm 5) \times 10^{-2}$	NODE=S040A10
$\Delta A_{CP}(\Lambda_b^0 \rightarrow p \pi^- \pi^+ \pi^-)$	$(1.1 \pm 2.6) \times 10^{-2}$	NODE=S040A22
$\Delta A_{CP}(\Lambda_b^0 \rightarrow (p \pi^- \pi^+ \pi^-)_{LBM})$	$(4 \pm 4) \times 10^{-2}$	NODE=S040A23
$\Delta A_{CP}(\Lambda_b^0 \rightarrow p a_1(1260)^-)$	$(-1 \pm 4) \times 10^{-2}$	NODE=S040A29
$\Delta A_{CP}(\Lambda_b^0 \rightarrow N(1520)^0 \rho(770)^0)$	$(2 \pm 5) \times 10^{-2}$	NODE=S040A30
$\Delta A_{CP}(\Lambda_b^0 \rightarrow \Delta(1232)^{++} \pi^- \pi^-)$	$(0.1 \pm 3.3) \times 10^{-2}$	NODE=S040A31
$\Delta A_{CP}(\Lambda_b^0 \rightarrow p K^- \pi^+ \pi^-)$	$(3.2 \pm 1.3) \times 10^{-2}$	NODE=S040A24
$\Delta A_{CP}(\Lambda_b^0 \rightarrow (p K^- \pi^+ \pi^-)_{LBM})$	$(3.5 \pm 1.6) \times 10^{-2}$	NODE=S040A25
$\Delta A_{CP}(\Lambda_b^0 \rightarrow N(1520)^0 K^*(892)^0)$	$(5.5 \pm 2.5) \times 10^{-2}$	NODE=S040A32
$\Delta A_{CP}(\Lambda_b^0 \rightarrow \Lambda(1520) \rho(770)^0)$	$(1 \pm 6) \times 10^{-2}$	NODE=S040A33
$\Delta A_{CP}(\Lambda_b^0 \rightarrow \Delta(1232)^{++} K^- \pi^-)$	$(4.4 \pm 2.7) \times 10^{-2}$	NODE=S040A34
$\Delta A_{CP}(\Lambda_b^0 \rightarrow p K_1(1410)^-)$	$(5 \pm 4) \times 10^{-2}$	NODE=S040A35
$\Delta A_{CP}(\Lambda_b^0 \rightarrow p K^- K^+ \pi^-)$	$(-7 \pm 5) \times 10^{-2}$	NODE=S040A26
$\Delta A_{CP}(\Lambda_b^0 \rightarrow p K^- K^+ K^-)$	$(0.2 \pm 1.9) \times 10^{-2}$	NODE=S040A27
$\Delta A_{CP}(\Lambda_b^0 \rightarrow \Lambda(1520) \phi(1020))$	$(4 \pm 6) \times 10^{-2}$	NODE=S040A36
$\Delta A_{CP}(\Lambda_b^0 \rightarrow (p K^-)_{\text{highmass}} \phi(1020))$	$(-0.7 \pm 3.4) \times 10^{-2}$	NODE=S040A37
$\Delta A_{CP}(\Lambda_b^0 \rightarrow (p K^- K^+ K^-)_{LBM})$	$(2.7 \pm 2.4) \times 10^{-2}$	NODE=S040A28
$A_c(\Lambda)$	$-0.22 \pm 0.13$	NODE=S040TCL
$A_s(\Lambda)$	$0.13 \pm 0.13$	NODE=S040TSL
$A_c(\phi)$	$-0.01 \pm 0.12$	NODE=S040TCP
$A_s(\phi)$	$-0.07 \pm 0.12$	NODE=S040TSP
$a_{CP}(\Lambda_b^0 \rightarrow p \pi^- \pi^+ \pi^-)$	$(-0.7 \pm 0.7)\%$	NODE=S040A08
$a_{CP}(\Lambda_b^0 \rightarrow p K^- \pi^+ \pi^-)$	$(-0.8 \pm 0.9)\%$	NODE=S040A14
$a_{CP}(\Lambda_b^0 \rightarrow p K^- K^+ \pi^-)$	$(-1 \pm 5)\%$	NODE=S040A09
$a_{CP}(\Lambda_b^0 \rightarrow p K^- K^+ K^-)$	$(1.1 \pm 1.5)\%$	NODE=S040A15
$a_{CP}(\Lambda_b^0 \rightarrow p K^- \mu^+ \mu^-)$	$(1 \pm 5)\%$	NODE=S040A12

**CP VIOLATION OBSERVED**

CONLAW=CPV

Re( $\epsilon$ )	$(1.596 \pm 0.013) \times 10^{-3}$	NODE=S011REP
charge asymmetry in $K_{L3}^0$ 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_{+-} $	[i] $0.9950 \pm 0.0007$ (S = 1.6)	NODE=S013ER
$\text{Re}(\epsilon'/\epsilon) = (1 -  \eta_{00}/\eta_{+-} )/3$	[i] $(1.66 \pm 0.23) \times 10^{-3}$ (S = 1.6)	NODE=S013EPS NODE=S013F+-

Assuming *CPT*

$\phi_{+-}$ , phase of $\eta_{+-}$	$(43.51 \pm 0.05)^\circ$ (S = 1.2)	NODE=S013F+-
$\phi_{00}$ , phase of $\eta_{00}$	$(43.52 \pm 0.05)^\circ$ (S = 1.2)	NODE=S013FOO
$\phi_\epsilon = (2\phi_{+-} + \phi_{00})/3$	$(43.52 \pm 0.04)^\circ$ (S = 1.2)	NODE=S013EPH NODE=S013F+2

Not assuming *CPT*

$\phi_{+-}$ , phase of $\eta_{+-}$	$(43.4 \pm 0.5)^\circ$ (S = 1.2)	NODE=S013F+2; → UNCHECKED ←; OUR EVAL
$\phi_{00}$ , phase of $\eta_{00}$	$(43.7 \pm 0.6)^\circ$ (S = 1.2)	NODE=S013FO2; → UNCHECKED ←; OUR EVAL
$\phi_\epsilon = (2\phi_{+-} + \phi_{00})/3$	$(43.5 \pm 0.5)^\circ$ (S = 1.3)	NODE=S013EP1; → UNCHECKED ←; OUR EVAL
CP asymmetry $A$ in $K_L^0 \rightarrow \pi^+ \pi^- e^+ e^-$	$(13.7 \pm 1.5)\%$	NODE=S013DPA
$\beta_{CP}$ from $K_L^0 \rightarrow e^+ e^- e^+ e^-$	$-0.19 \pm 0.07$	NODE=S013BCP
$\gamma_{CP}$ from $K_L^0 \rightarrow e^+ e^- e^+ e^-$	$0.01 \pm 0.11$ (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
$\Gamma(K_L^0 \rightarrow \pi^+ \pi^-) / \Gamma_{\text{total}}$	[j] $(1.967 \pm 0.010) \times 10^{-3}$ (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
$\Delta A_{CP}^{D^0} = A_{CP}(K^+ K^-) - A_{CP}(\pi^+ \pi^-)$	$(-0.154 \pm 0.029)\%$	NODE=S032DCP
$A_{CP}(B^+ \rightarrow [K^- \pi^+]_{\bar{D}} K^*(892)^+)$	$-0.75 \pm 0.16$	NODE=S041AC4
$A_{CP}(B^+ \rightarrow D_{CP(+1)} K^+)$	$0.132 \pm 0.015$ (S = 1.8)	NODE=S041AY3
$A_{ADS}(B^+ \rightarrow DK^+)$	$-0.451 \pm 0.026$	NODE=S041AA1
$A_{CP}(B^+ \rightarrow \eta K^+)$	$-0.37 \pm 0.08$	NODE=S041CP3
$A_{CP}(B^+ \rightarrow K^+ \pi^- \pi^+)$	$0.015 \pm 0.006$ (S = 1.4)	NODE=S041AY6
$A_{CP}(B^+ \rightarrow f_2(1270) K^+)$	$-0.68^{+0.19}_{-0.17}$	NODE=S041CR0
$A_{CP}(B^+ \rightarrow \rho^0 K^+)$	$0.160 \pm 0.021$	NODE=S041CQ6
$A_{CP}(B^+ \rightarrow K^+ K^- \pi^+)$	$-0.115 \pm 0.008$	NODE=S041CKK
$A_{CP}(B^+ \rightarrow \pi^+ (K^+ K^-)_{S\text{-wave}})$	$-0.66 \pm 0.04$	NODE=S041A17
$A_{CP}(B^+ \rightarrow K^+ K^- K^+)$	$-0.036 \pm 0.004$	NODE=S041AY7
$A_{CP}(B^+ \rightarrow \pi^+ \pi^- \pi^+)$	$0.076 \pm 0.008$ (S = 1.5)	NODE=S041AY5
$A_{CP}(B^+ \rightarrow f_2(1270) \pi^+)$	$0.40 \pm 0.06$	NODE=S041CQ0
$\gamma$	$(66.4^{+2.8}_{-3.0})^\circ$	NODE=S041GGM; → UNCHECKED ←; OUR EVAL
$r_B(B^+ \rightarrow D^0 K^+)$	$(9.88^{+0.22}_{-0.21}) \times 10^{-2}$	NODE=S041ARX; → UNCHECKED ←; OUR EVAL
$\delta_B(B^+ \rightarrow D^0 K^+)$	$(128.5^{+2.8}_{-3.0})^\circ$	NODE=S041DRX; → UNCHECKED ←; OUR EVAL
$r_B(B^+ \rightarrow D^0 K^{*+})$	$0.101^{+0.016}_{-0.036}$	NODE=S041ARZ; → UNCHECKED ←; OUR EVAL
$\delta_B(B^+ \rightarrow D^0 K^{*+})$	$(47^{+61}_{-16})^\circ$	NODE=S041DRZ; → UNCHECKED ←; OUR EVAL

$r_B(B^+ \rightarrow D^{*0} K^+)$	$0.103^{+0.010}_{-0.011}$	NODE=S041ARY;→ UNCHECKED ←;OUR EVAL
$\delta_B(B^+ \rightarrow D^{*0} K^+)$	$(312.2^{+6.3}_{-7.1})^\circ$	NODE=S041DRY;→ UNCHECKED ←;OUR EVAL
$A_{CP}(B^0 \rightarrow K^+ \pi^-)$	$-0.0831 \pm 0.0031$	NODE=S042ACP
$A_{CP}(B^0 \rightarrow \eta K^*(892)^0)$	$0.19 \pm 0.05$	NODE=S042CP1
$A_{CP}(B^0 \rightarrow K^*(892)^+ \pi^-)$	$-0.27 \pm 0.04$	NODE=S042AC3
$S_{D^*(2010)-D^+}(B^0 \rightarrow D^*(2010)^- D^+)$	$-0.83 \pm 0.09$	NODE=S042SPJ
$S_{D^*(2010)+D^-}(B^0 \rightarrow D^*(2010)^+ D^-)$	$-0.80 \pm 0.09$	NODE=S042SPK
$S_{D^{*+}D^{*-}}(B^0 \rightarrow D^{*+} D^{*-})$	$-0.59 \pm 0.14$ (S = 1.8)	NODE=S042LD2
$S_+(B^0 \rightarrow D^{*+} D^{*-})$	$-0.73 \pm 0.09$	NODE=S042SD+
$S_{D^+D^-}(B^0 \rightarrow D^+ D^-)$	$-0.64 \pm 0.09$ (S = 1.3)	NODE=S042SPD
$S_{J/\psi(1S)\pi^0}(B^0 \rightarrow J/\psi(1S)\pi^0)$	$-0.88 \pm 0.32$ (S = 2.2)	NODE=S042SPL
$S(B^0 \rightarrow J/\psi(1S)\rho^0)$	$-0.66^{+0.16}_{-0.12}$	NODE=S042SPR
$S_{K^0\pi^0}(B^0 \rightarrow K^0\pi^0)$	$0.64 \pm 0.13$	NODE=S042SKP
$S_{\eta'K^0}(B^0 \rightarrow \eta'K^0)$	$0.64 \pm 0.05$	NODE=S042SEK
$S_{K^+K^-K_S^0}(B^0 \rightarrow K^+K^-K_S^0)$ nonresonant)	$-0.66 \pm 0.11$	NODE=S042SX2
$S_{K^+K^-K_S^0}(B^0 \rightarrow K^+K^-K_S^0)$ inclusive)	$-0.65 \pm 0.12$	NODE=S042SKK
$C_{\pi\pi}(B^0 \rightarrow \pi^+\pi^-)$	$-0.314 \pm 0.030$	NODE=S042CPI
$S_{\pi\pi}(B^0 \rightarrow \pi^+\pi^-)$	$-0.670 \pm 0.030$	NODE=S042SPI
$\Delta C_{\rho\pi}(B^0 \rightarrow \rho^+\pi^-)$	$0.27 \pm 0.06$	NODE=S042CDT
$S_{\eta_c K_S^0}(B^0 \rightarrow \eta_c K_S^0)$	$0.93 \pm 0.17$	NODE=S042SEC
$\sin(2\beta)(B^0 \rightarrow J/\psi K_S^0)$	$0.710 \pm 0.011$	NODE=S042BET;→ UNCHECKED ←;OUR EVAL
$S_{J/\psi(nS)K^0}(B^0 \rightarrow J/\psi(nS)K^0)$	$0.711 \pm 0.011$	NODE=S042SJK;→ UNCHECKED ←;OUR EVAL
$S_{\chi_{c1}K_S^0}(B^0 \rightarrow \chi_{c1}K_S^0)$	$0.63 \pm 0.10$	NODE=S042SC1
$\sin(2\beta_{\text{eff}})(B^0 \rightarrow K^+K^-K_S^0)$	$0.77^{+0.13}_{-0.12}$	NODE=S042BTK
$\alpha$	$(84.1^{+4.5}_{-3.8})^\circ$	NODE=S042ALP;→ UNCHECKED ←;OUR EVAL
$r_{B^0}(B^0 \rightarrow DK^{*0})$	$0.250 \pm 0.022$	NODE=S042AR;→ UNCHECKED ←;OUR EVAL
$\delta_{B^0}(B^0 \rightarrow DK^{*0})$	$(202.8^{+10.3}_{-9.0})^\circ$	NODE=S042A00;→ UNCHECKED ←;OUR EVAL
$C_{KK}(B_s^0 \rightarrow K^+K^-)$	$0.162 \pm 0.035$	NODE=S086CK1
$r_B(B_s^0 \rightarrow D_s^\mp K^\pm)$	$0.37^{+0.10}_{-0.09}$	NODE=S086ARX
$r_B(B_s^0 \rightarrow D_s^\mp K^\pm \pi^\pm \pi^\mp)$	$0.47 \pm 0.08$	NODE=S086A28
$\delta_B(B_s^0 \rightarrow D_s^\pm K^\mp)$	$(358 \pm 14)^\circ$	NODE=S086DRX
$A_{CP}(B_s \rightarrow \pi^+K^-)$	$0.224 \pm 0.012$	NODE=S086CP1

**CPT INVARIANCE**

CONLAW=CPT

$(m_{W^+} - m_{W^-}) / m_{\text{average}}$	$(-3.7 \pm 3.5) \times 10^{-4}$	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
$\langle \Delta m_{21}^2 - \Delta \bar{m}_{21}^2 \rangle$ in neutrino mixing	$< 1.1 \times 10^{-4} \text{ eV}^2$ , CL = 99.7%	NODE=S067CPT
$\langle \Delta m_{32}^2 - \Delta \bar{m}_{32}^2 \rangle$ in neutrino mixing	$(-0.12 \pm 0.25) \times 10^{-3} \text{ eV}^2$	NODE=S067CP2
$m_t - m_{\bar{t}}$	$-0.15 \pm 0.20 \text{ GeV}$ (S = 1.1)	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/sum	$(-0.27 \pm 0.21)\%$	NODE=S010D1
$K^\pm \rightarrow \pi^\pm \pi^0$ rate difference/sum	[k] $(0.4 \pm 0.6)\%$	NODE=S010D4 NODE=S011DRE
$\delta$ in $K^0 - \bar{K}^0$ mixing		
real part of $\delta$	$(2.5 \pm 2.3) \times 10^{-4}$	NODE=S011DRE
imaginary part of $\delta$	$(-1.5 \pm 1.6) \times 10^{-5}$	NODE=S011DIM
Re(y), $K_{e3}$ parameter	$(0.4 \pm 2.5) \times 10^{-3}$	NODE=S011YRE
Re(x <sub>-</sub> ), $K_{e3}$ parameter	$(-2.9 \pm 2.0) \times 10^{-3}$	NODE=S011XRM
$ m_{K^0} - m_{\bar{K}^0}  / m_{\text{average}}$	[l] $< 6 \times 10^{-19}$ , CL = 90%	NODE=S011DMM
$(\Gamma_{K^0} - \Gamma_{\bar{K}^0}) / m_{\text{average}}$	$(8 \pm 8) \times 10^{-18}$	NODE=S011DGM
phase difference $\phi_{00} - \phi_{+-}$	$(0.34 \pm 0.32)^\circ$	NODE=S013DF1;→ UNCHECKED ←;OUR EVAL
$\text{Re}(\frac{2}{3}\eta_{+-} + \frac{1}{3}\eta_{00}) - \frac{A_L}{2}$	$(-3 \pm 35) \times 10^{-6}$	NODE=S013CPT
$ACPT(D^0 \rightarrow K^- \pi^+)$	—	NODE=S032CPT
$\Delta S_{CPT}^+ (S_{\ell^+, K_S^0}^- - S_{\ell^+, K_S^0}^+)$	$0.16 \pm 0.23$	NODE=S042TVI
$\Delta S_{CPT}^- (S_{\ell^+, K_S^0}^+ - S_{\ell^+, K_S^0}^-)$	$-0.03 \pm 0.14$	NODE=S042TVJ
$\Delta C_{CPT}^+ (C_{\ell^+, K_S^0}^- - C_{\ell^+, K_S^0}^+)$	$0.14 \pm 0.17$	NODE=S042TVK
$\Delta C_{CPT}^- (C_{\ell^+, K_S^0}^+ - C_{\ell^+, K_S^0}^-)$	$0.03 \pm 0.14$	NODE=S042TVL
$ m_p - m_{\bar{p}}  / m_p$	[n] $< 7 \times 10^{-10}$ , CL = 90%	NODE=S016DM
$( \frac{q_p}{m_p} - \frac{\bar{q}_p}{m_p} ) / \frac{q_p}{m_p}$	$(0.3 \pm 1.6) \times 10^{-11}$	NODE=S016DMM;→ UNCHECKED ←;OUR EVAL
$ q_p + \bar{q}_p /e$	[n] $< 7 \times 10^{-10}$ , CL = 90%	NODE=S016DQ2
$(\mu_p + \mu_{\bar{p}}) / \mu_p$	$(0.002 \pm 0.004) \times 10^{-6}$	NODE=S016MMD
$(m_n - m_{\bar{n}}) / m_n$	$(9 \pm 5) \times 10^{-5}$	NODE=S017DMM;→ UNCHECKED ←;OUR EVAL
$(m_\Lambda - m_{\bar{\Lambda}}) / m_\Lambda$	$(-0.1 \pm 1.1) \times 10^{-5}$ (S = 1.6)	NODE=S018DM
$(\tau_\Lambda - \tau_{\bar{\Lambda}}) / \tau_\Lambda$	$(0.9 \pm 3.2) \times 10^{-3}$	NODE=S018DT
$(\tau_{\Sigma^+} - \tau_{\bar{\Sigma}^-}) / \tau_{\Sigma^+}$	$-0.0006 \pm 0.0012$	NODE=S019DT
$(\mu_{\Sigma^+} + \mu_{\bar{\Sigma}^-}) / \mu_{\Sigma^+}$	$0.014 \pm 0.015$	NODE=S019MMD
$(m_{\Xi^-} - m_{\bar{\Xi}^+}) / m_{\Xi^-}$	$(-3 \pm 9) \times 10^{-5}$	NODE=S022DMM
$(\tau_{\Xi^-} - \tau_{\bar{\Xi}^+}) / \tau_{\Xi^-}$	$-0.01 \pm 0.07$	NODE=S022DT
$(\mu_{\Xi^-} + \mu_{\bar{\Xi}^+}) /  \mu_{\Xi^-} $	$+0.01 \pm 0.05$	NODE=S022MMD;→ UNCHECKED ←;OUR EVAL
$(m_{\Omega^-} - m_{\bar{\Omega}^+}) / m_{\Omega^-}$	$(-1 \pm 8) \times 10^{-5}$	NODE=S024DMM
$(\tau_{\Omega^-} - \tau_{\bar{\Omega}^+}) / \tau_{\Omega^-}$	$0.00 \pm 0.05$	NODE=S024TD;→ UNCHECKED ←;OUR EST



# TESTS OF NUMBER CONSERVATION LAWS

## LEPTON FAMILY NUMBER

CONLAW=LF

Lepton family number conservation means separate conservation of each of  $L_e$ ,  $L_\mu$ ,  $L_\tau$ .

$\Gamma(Z \rightarrow e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<2.62 \times 10^{-7}$ , CL = 95%	PAR=S044;DESIG=5
$\Gamma(Z \rightarrow e^\pm \tau^\mp)/\Gamma_{\text{total}}$	[o] $<5.0 \times 10^{-6}$ , CL = 95%	PAR=S044;DESIG=25
$\Gamma(Z \rightarrow \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	[o] $<6.5 \times 10^{-6}$ , CL = 95%	PAR=S044;DESIG=26
$\Gamma(H \rightarrow e\mu)/\Gamma_{\text{total}}$	$<4.4 \times 10^{-5}$ , CL = 95%	PAR=S126;DESIG=17
$\Gamma(H \rightarrow e\tau)/\Gamma_{\text{total}}$	$<2.0 \times 10^{-3}$ , CL = 95%	PAR=S126;DESIG=18
$\Gamma(H \rightarrow \mu\tau)/\Gamma_{\text{total}}$	$<1.5 \times 10^{-3}$ , CL = 95%	PAR=S126;DESIG=9
$\sigma(e^+ e^- \rightarrow e^\pm \tau^\mp) / \sigma(e^+ e^- \rightarrow \mu^+ \mu^-)$	$<8.9 \times 10^{-6}$ , 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
$\sigma(\mu^- \text{Au} \rightarrow e^- \text{Au}) / \sigma(\mu^- \text{Au} \rightarrow \text{capture})$	$<7 \times 10^{-13}$ , CL = 90%	NODE=S004RA
limit on muonium $\rightarrow$ antimuonium conversion $R_g = G_C / G_F$	$<0.0030$ , CL = 90%	NODE=S004MC
$\Gamma(\mu^- \rightarrow e^- \nu_e \bar{\nu}_\mu)/\Gamma_{\text{total}}$	[p] $<1.2 \times 10^{-2}$ , CL = 90%	PAR=S004;DESIG=3
$\Gamma(\mu^- \rightarrow e^- \gamma)/\Gamma_{\text{total}}$	$<3.1 \times 10^{-13}$ , 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
$\Gamma(\tau^- \rightarrow e^- \gamma \gamma)/\Gamma_{\text{total}}$	$<2.5 \times 10^{-4}$ , CL = 90%	PAR=S035;DESIG=355
$\Gamma(\tau^- \rightarrow \mu^- \gamma)/\Gamma_{\text{total}}$	$<4.2 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=31
$\Gamma(\tau^- \rightarrow \mu^- \gamma \gamma)/\Gamma_{\text{total}}$	$<5.8 \times 10^{-4}$ , CL = 90%	PAR=S035;DESIG=356
$\Gamma(\tau^- \rightarrow e^- \pi^0)/\Gamma_{\text{total}}$	$<8.0 \times 10^{-8}$ , 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
$\Gamma(\tau^- \rightarrow e^- \rho^0)/\Gamma_{\text{total}}$	$<2.2 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=44
$\Gamma(\tau^- \rightarrow \mu^- \rho^0)/\Gamma_{\text{total}}$	$<1.7 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=43
$\Gamma(\tau^- \rightarrow e^- \omega)/\Gamma_{\text{total}}$	$<2.4 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=305
$\Gamma(\tau^- \rightarrow \mu^- \omega)/\Gamma_{\text{total}}$	$<3.9 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=306
$\Gamma(\tau^- \rightarrow e^- K^*(892)^0)/\Gamma_{\text{total}}$	$<1.9 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=53
$\Gamma(\tau^- \rightarrow \mu^- K^*(892)^0)/\Gamma_{\text{total}}$	$<2.9 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=54
$\Gamma(\tau^- \rightarrow e^- \bar{K}^*(892)^0)/\Gamma_{\text{total}}$	$<1.7 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=131
$\Gamma(\tau^- \rightarrow \mu^- \bar{K}^*(892)^0)/\Gamma_{\text{total}}$	$<4.3 \times 10^{-8}$ , 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
$\Gamma(\tau^- \rightarrow e^- \phi)/\Gamma_{\text{total}}$	$<2.0 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=255
$\Gamma(\tau^- \rightarrow \mu^- \phi)/\Gamma_{\text{total}}$	$<2.3 \times 10^{-8}$ , 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
$\Gamma(\tau^- \rightarrow \mu^- \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<1.9 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=35
$\Gamma(\tau^- \rightarrow e^- \pi^+ \pi^-)/\Gamma_{\text{total}}$	$<2.3 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=45
$\Gamma(\tau^- \rightarrow \mu^- \pi^+ \pi^-)/\Gamma_{\text{total}}$	$<2.1 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=47
$\Gamma(\tau^- \rightarrow e^- \pi^+ K^-)/\Gamma_{\text{total}}$	$<3.7 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=49
$\Gamma(\tau^- \rightarrow e^- \pi^- K^+)/\Gamma_{\text{total}}$	$<3.1 \times 10^{-8}$ , 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
$\Gamma(\tau^- \rightarrow e^- K^+ K^-)/\Gamma_{\text{total}}$	$<3.4 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=251
$\Gamma(\tau^- \rightarrow \mu^- \pi^+ K^-)/\Gamma_{\text{total}}$	$<8.6 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=51
$\Gamma(\tau^- \rightarrow \mu^- \pi^- K^+)/\Gamma_{\text{total}}$	$<4.5 \times 10^{-8}$ , 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
$\Gamma(\tau^- \rightarrow \mu^- K^+ K^-)/\Gamma_{\text{total}}$	$<4.4 \times 10^{-8}$ , 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
$\Gamma(\tau^- \rightarrow e^- \text{light boson})/\Gamma_{\text{total}}$	$<9 \times 10^{-4}$ , CL = 95%	PAR=S035;DESIG=102
$\Gamma(\tau^- \rightarrow \mu^- \text{light boson})/\Gamma_{\text{total}}$	$<6 \times 10^{-4}$ , CL = 95%	PAR=S035;DESIG=103 NODE=S067P12

**LEPTON FAMILY NUMBER VIOLATION IN NEUTRINOS**

$\sin^2(\theta_{12})$	$0.307 \pm 0.012$	NODE=S067P12
$\Delta m_{21}^2$	$(7.50 \pm 0.19) \times 10^{-5} \text{ eV}^2$	NODE=S067DM3
$\sin^2(\theta_{23})$ (Inverted order)	$0.537 \pm 0.020$ (S = 1.2)	NODE=S067P23
$\sin^2(\theta_{23})$ (Normal order)	$0.534^{+0.015}_{-0.019}$	NODE=S067SM3; → UNCHECKED ←; OUR EVAL
$\Delta m_{32}^2$ (Inverted order)	$(-2.527 \pm 0.034) \times 10^{-3} \text{ eV}^2$ (S = 1.2)	NODE=S067DM1
$\Delta m_{32}^2$ (Normal order)	$(2.451 \pm 0.026) \times 10^{-3} \text{ eV}^2$	NODE=S067Q23; → UNCHECKED ←; OUR EVAL
$\sin^2(\theta_{13})$	$(2.16 \pm 0.06) \times 10^{-2}$ (S = 1.2)	NODE=S067P13
$\Gamma(t \rightarrow e^\pm \mu^\mp c)/\Gamma_{\text{total}}$	$<8.9 \times 10^{-7}$ , CL = 95%	PAR=Q007;DESIG=15
$\Gamma(t \rightarrow e^\pm \mu^\mp u)/\Gamma_{\text{total}}$	$<7 \times 10^{-8}$ , CL = 95%	PAR=Q007;DESIG=16
$\Gamma(t \rightarrow \mu^\pm \tau^\mp q)/\Gamma_{\text{total}}$	$<8.7 \times 10^{-7}$ , CL = 95%	PAR=Q007;DESIG=17
$\Gamma(\pi^+ \rightarrow \mu^+ \nu_e)/\Gamma_{\text{total}}$	$<8.0 \times 10^{-3}$ , 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
$\Gamma(\pi^0 \rightarrow \mu^- e^+)/\Gamma_{\text{total}}$	$<3.2 \times 10^{-10}$ , 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
$\Gamma(K^+ \rightarrow \mu^- \nu e^+ e^+)/\Gamma_{\text{total}}$	$<8.1 \times 10^{-11}$ , CL = 90%	PAR=S010;DESIG=31
$\Gamma(K^+ \rightarrow \mu^+ \nu_e)/\Gamma_{\text{total}}$	$<4 \times 10^{-3}$ , 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
$\Gamma(K^+ \rightarrow \pi^0 \pi^+ \mu^+ e^-)/\Gamma_{\text{total}}$	$<5.0 \times 10^{-10}$ , CL = 90%	PAR=S010;DESIG=127
$\Gamma(K^+ \rightarrow \pi^+ \mu^- e^+)/\Gamma_{\text{total}}$	$<6.6 \times 10^{-11}$ , CL = 90%	PAR=S010;DESIG=25
$\Gamma(K^+ \rightarrow \pi^0 \pi^+ \mu^- e^+)/\Gamma_{\text{total}}$	$<3.1 \times 10^{-10}$ , CL = 90%	PAR=S010;DESIG=126
$\Gamma(K_L^0 \rightarrow e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<4.7 \times 10^{-12}$ , CL = 90%	PAR=S013;DESIG=8
$\Gamma(K_L^0 \rightarrow e^\pm e^\pm \mu^\mp \mu^\mp)/\Gamma_{\text{total}}$	$<4.12 \times 10^{-11}$ , CL = 90%	PAR=S013;DESIG=24
$\Gamma(K_L^0 \rightarrow \pi^0 \mu^\pm e^\mp)/\Gamma_{\text{total}}$	$<7.6 \times 10^{-11}$ , 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
$\Gamma(D^+ \rightarrow \pi^+ e^+ \mu^-)/\Gamma_{\text{total}}$	$<2.1 \times 10^{-7}$ , CL = 90%	PAR=S031;DESIG=110

$\Gamma(D^+ \rightarrow \pi^+ e^- \mu^+)/\Gamma_{\text{total}}$	$<2.2 \times 10^{-7}$ , CL = 90%	PAR=S031;DESIG=111
$\Gamma(D^+ \rightarrow K^+ e^+ \mu^-)/\Gamma_{\text{total}}$	$<7.5 \times 10^{-8}$ , CL = 90%	PAR=S031;DESIG=115
$\Gamma(D^+ \rightarrow K^+ e^- \mu^+)/\Gamma_{\text{total}}$	$<1.0 \times 10^{-7}$ , CL = 90%	PAR=S031;DESIG=116
$\Gamma(D^0 \rightarrow \mu^\pm e^\mp)/\Gamma_{\text{total}}$	[o] $<1.3 \times 10^{-8}$ , CL = 90%	PAR=S032;DESIG=40
$\Gamma(D^0 \rightarrow \pi^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<8.0 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=234
$\Gamma(D^0 \rightarrow \eta e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<2.25 \times 10^{-6}$ , CL = 90%	PAR=S032;DESIG=235
$\Gamma(D^0 \rightarrow \pi^+ \pi^- e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<1.71 \times 10^{-6}$ , CL = 90%	PAR=S032;DESIG=268
$\Gamma(D^0 \rightarrow \rho^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<5.0 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=236
$\Gamma(D^0 \rightarrow \omega e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<1.71 \times 10^{-6}$ , CL = 90%	PAR=S032;DESIG=237
$\Gamma(D^0 \rightarrow K^- K^+ e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<1.00 \times 10^{-6}$ , CL = 90%	PAR=S032;DESIG=270
$\Gamma(D^0 \rightarrow \phi e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<5.1 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=238
$\Gamma(D^0 \rightarrow \bar{K}^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<1.74 \times 10^{-6}$ , CL = 90%	PAR=S032;DESIG=239
$\Gamma(D^0 \rightarrow K^- \pi^+ e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<1.90 \times 10^{-6}$ , CL = 90%	PAR=S032;DESIG=269
$\Gamma(D^0 \rightarrow \bar{K}^*(892)^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<1.25 \times 10^{-6}$ , CL = 90%	PAR=S032;DESIG=240
$\Gamma(D_s^+ \rightarrow \pi^+ e^+ \mu^-)/\Gamma_{\text{total}}$	$<1.1 \times 10^{-6}$ , CL = 90%	PAR=S034;DESIG=156
$\Gamma(D_s^+ \rightarrow \pi^+ e^- \mu^+)/\Gamma_{\text{total}}$	$<9.4 \times 10^{-7}$ , CL = 90%	PAR=S034;DESIG=157
$\Gamma(D_s^+ \rightarrow K^+ e^+ \mu^-)/\Gamma_{\text{total}}$	$<7.9 \times 10^{-7}$ , CL = 90%	PAR=S034;DESIG=158
$\Gamma(D_s^+ \rightarrow K^+ e^- \mu^+)/\Gamma_{\text{total}}$	$<5.6 \times 10^{-7}$ , 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
$\Gamma(B^+ \rightarrow \pi^+ e^+ \tau^-)/\Gamma_{\text{total}}$	$<7.4 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=586
$\Gamma(B^+ \rightarrow \pi^+ e^- \tau^+)/\Gamma_{\text{total}}$	$<2.0 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=587
$\Gamma(B^+ \rightarrow \pi^+ e^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<7.5 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=588
$\Gamma(B^+ \rightarrow \pi^+ \mu^+ \tau^-)/\Gamma_{\text{total}}$	$<6.2 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=589
$\Gamma(B^+ \rightarrow \pi^+ \mu^- \tau^+)/\Gamma_{\text{total}}$	$<4.5 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=590
$\Gamma(B^+ \rightarrow \pi^+ \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<7.2 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=591
$\Gamma(B^+ \rightarrow K^+ e^+ \mu^-)/\Gamma_{\text{total}}$	$<7.0 \times 10^{-9}$ , CL = 90%	PAR=S041;DESIG=89
$\Gamma(B^+ \rightarrow K^+ e^- \mu^+)/\Gamma_{\text{total}}$	$<6.4 \times 10^{-9}$ , 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
$\Gamma(B^+ \rightarrow K^+ e^+ \tau^-)/\Gamma_{\text{total}}$	$<1.53 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=592
$\Gamma(B^+ \rightarrow K^+ e^- \tau^+)/\Gamma_{\text{total}}$	$<1.5 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=593
$\Gamma(B^+ \rightarrow K^+ e^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<3.0 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=594
$\Gamma(B^+ \rightarrow K^+ \mu^+ \tau^-)/\Gamma_{\text{total}}$	$<2.45 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=595
$\Gamma(B^+ \rightarrow K^+ \mu^- \tau^+)/\Gamma_{\text{total}}$	$<5.9 \times 10^{-6}$ , CL = 90%	PAR=S041;DESIG=596
$\Gamma(B^+ \rightarrow K^+ \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<4.8 \times 10^{-5}$ , 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
$\Gamma(B^0 \rightarrow e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<1.0 \times 10^{-9}$ , 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
$\Gamma(B^0 \rightarrow K^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<3.8 \times 10^{-8}$ , CL = 90%	PAR=S042;DESIG=221
$\Gamma(B^0 \rightarrow K^*(892)^0 e^+ \mu^-)/\Gamma_{\text{total}}$	$<6.8 \times 10^{-9}$ , CL = 90%	PAR=S042;DESIG=334
$\Gamma(B^0 \rightarrow K^*(892)^0 e^- \mu^+)/\Gamma_{\text{total}}$	$<5.7 \times 10^{-9}$ , CL = 90%	PAR=S042;DESIG=335
$\Gamma(B^0 \rightarrow K^*(892)^0 e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<1.01 \times 10^{-8}$ , CL = 90%	PAR=S042;DESIG=222
$\Gamma(B^0 \rightarrow K^*(892)^0 \tau^+ \mu^-)/\Gamma_{\text{total}}$	$<1.0 \times 10^{-5}$ , CL = 90%	PAR=S042;DESIG=627
$\Gamma(B^0 \rightarrow K^*(892)^0 \tau^- \mu^+)/\Gamma_{\text{total}}$	$<8.2 \times 10^{-6}$ , CL = 90%	PAR=S042;DESIG=628
$\Gamma(B^0 \rightarrow e^\pm \tau^\mp)/\Gamma_{\text{total}}$	[o] $<1.6 \times 10^{-5}$ , CL = 90%	PAR=S042;DESIG=121
$\Gamma(B^0 \rightarrow \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	[o] $<1.4 \times 10^{-5}$ , CL = 95%	PAR=S042;DESIG=122
$\Gamma(B \rightarrow s e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<2.2 \times 10^{-5}$ , 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
$\Gamma(B_s^0 \rightarrow e^\pm \mu^\mp)/\Gamma_{\text{total}}$	[o] $<5.4 \times 10^{-9}$ , CL = 90%	PAR=S086;DESIG=23
$\Gamma(B_s^0 \rightarrow e^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-3}$ , CL = 90%	PAR=S086;DESIG=171

$\Gamma(B_s^0 \rightarrow \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<4.2 \times 10^{-5}$ , CL = 95%	PAR=S086;DESIG=149
$\Gamma(B_s^0 \rightarrow \phi \mu^\pm e^\mp)/\Gamma_{\text{total}}$	$<1.6 \times 10^{-8}$ , CL = 90%	PAR=S086;DESIG=176
$\Gamma(B_s^0 \rightarrow \phi \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<1.0 \times 10^{-5}$ , CL = 90%	PAR=S086;DESIG=196
$\Gamma(J/\psi(1S) \rightarrow e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<1.6 \times 10^{-7}$ , CL = 90%	PAR=M070;DESIG=177
$\Gamma(J/\psi(1S) \rightarrow e^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<7.5 \times 10^{-8}$ , 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
$\Gamma(\Upsilon(1S) \rightarrow e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<3.9 \times 10^{-7}$ , CL = 90%	PAR=M049;DESIG=196
$\Gamma(\Upsilon(1S) \rightarrow \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<2.7 \times 10^{-6}$ , CL = 90%	PAR=M049;DESIG=116
$\Gamma(\Upsilon(1S) \rightarrow e^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<2.7 \times 10^{-6}$ , CL = 90%	PAR=M049;DESIG=197
$\Gamma(\Upsilon(1S) \rightarrow \gamma e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<4.2 \times 10^{-7}$ , CL = 90%	PAR=M049;DESIG=198
$\Gamma(\Upsilon(1S) \rightarrow \gamma \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<6.1 \times 10^{-6}$ , CL = 90%	PAR=M049;DESIG=199
$\Gamma(\Upsilon(1S) \rightarrow \gamma e^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<6.5 \times 10^{-6}$ , CL = 90%	PAR=M049;DESIG=200
$\Gamma(\Upsilon(2S) \rightarrow e^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<1.12 \times 10^{-6}$ , CL = 90%	PAR=M052;DESIG=107
$\Gamma(\Upsilon(2S) \rightarrow \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<2.3 \times 10^{-7}$ , 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
$\Gamma(\Upsilon(3S) \rightarrow e^\pm \mu^\mp)/\Gamma_{\text{total}}$	$<3.6 \times 10^{-7}$ , CL = 90%	PAR=M048;DESIG=119
$\Gamma(\Upsilon(3S) \rightarrow \mu^\pm \tau^\mp)/\Gamma_{\text{total}}$	$<3.1 \times 10^{-6}$ , 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.

$\Gamma(Z \rightarrow p e)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-6}$ , 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
limit on $\mu^- \rightarrow e^+$ conversion		NODE=S004250
$\sigma(\mu^- 32S \rightarrow e^+ 32Si^*) /$ $\sigma(\mu^- 32S \rightarrow \nu_\mu 32P^*)$	$<9 \times 10^{-10}$ , CL = 90%	NODE=S004RP1
$\sigma(\mu^- 127I \rightarrow e^+ 127Sb^*) /$ $\sigma(\mu^- 127I \rightarrow \text{anything})$	$<3 \times 10^{-10}$ , CL = 90%	NODE=S004RP2
$\sigma(\mu^- Ti \rightarrow e^+ Ca) /$ $\sigma(\mu^- Ti \rightarrow \text{capture})$	$<3.6 \times 10^{-11}$ , CL = 90%	NODE=S004RP4
$\Gamma(\tau^- \rightarrow e^+ \pi^- \pi^-)/\Gamma_{\text{total}}$	$<2.0 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=46
$\Gamma(\tau^- \rightarrow \mu^+ \pi^- \pi^-)/\Gamma_{\text{total}}$	$<3.9 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=48
$\Gamma(\tau^- \rightarrow e^+ \pi^- K^-)/\Gamma_{\text{total}}$	$<3.2 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=50
$\Gamma(\tau^- \rightarrow e^+ K^- K^-)/\Gamma_{\text{total}}$	$<3.3 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=252
$\Gamma(\tau^- \rightarrow \mu^+ \pi^- K^-)/\Gamma_{\text{total}}$	$<4.8 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=52
$\Gamma(\tau^- \rightarrow \mu^+ K^- K^-)/\Gamma_{\text{total}}$	$<4.7 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=254
$\Gamma(\tau^- \rightarrow p e^- e^-)/\Gamma_{\text{total}}$	$<3.0 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=351
$\Gamma(\tau^- \rightarrow \bar{p} e^+ e^-)/\Gamma_{\text{total}}$	$<3.0 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=352
$\Gamma(\tau^- \rightarrow \bar{p} e^+ \mu^-)/\Gamma_{\text{total}}$	$<2.0 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=353
$\Gamma(\tau^- \rightarrow \bar{p} e^- \mu^+)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=354
$\Gamma(\tau^- \rightarrow p \mu^- \mu^-)/\Gamma_{\text{total}}$	$<4.0 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=334
$\Gamma(\tau^- \rightarrow \bar{p} \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=335
$\Gamma(\tau^- \rightarrow \bar{p} \gamma)/\Gamma_{\text{total}}$	$<3.5 \times 10^{-6}$ , 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
$\Gamma(\tau^- \rightarrow \Lambda \pi^-)/\Gamma_{\text{total}}$	$<4.7 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=297
$\Gamma(\tau^- \rightarrow \bar{\Lambda} \pi^-)/\Gamma_{\text{total}}$	$<4.3 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=298
$t_{1/2}(^{76}\text{Ge} \rightarrow ^{76}\text{Se} + 2 e^-)$	$>9.0 \times 10^{25}$ yr, CL = 90%	NODE=S0760N1; $\rightarrow$ UNCHECKED $\leftarrow$ ; OUR EVAL
$t_{1/2}(^{136}\text{Xe} \rightarrow ^{136}\text{Ba} + 2 e^-)$	$>10.7 \times 10^{25}$ yr, CL = 90%	NODE=S0760N2; $\rightarrow$ UNCHECKED $\leftarrow$ ; OUR EVAL
$t_{1/2}(^{130}\text{Te} \rightarrow ^{130}\text{Xe} + 2 e^-)$	$>1.5 \times 10^{25}$ yr, CL = 90%	NODE=S0760N3; $\rightarrow$ UNCHECKED $\leftarrow$ ; OUR EVAL

$\Gamma(\pi^+ \rightarrow \mu^+ \bar{\nu}_e)/\Gamma_{\text{total}}$	[q] $<1.5 \times 10^{-3}$ , CL = 90%	PAR=S008;DESIG=7
$\Gamma(K^+ \rightarrow \pi^- \mu^+ e^+)/\Gamma_{\text{total}}$	$<4.2 \times 10^{-11}$ , CL = 90%	PAR=S010;DESIG=45
$\Gamma(K^+ \rightarrow \pi^0 \pi^- \mu^+ e^+)/\Gamma_{\text{total}}$	$<2.9 \times 10^{-10}$ , CL = 90%	PAR=S010;DESIG=125
$\Gamma(K^+ \rightarrow \pi^- e^+ e^+)/\Gamma_{\text{total}}$	$<5.3 \times 10^{-11}$ , CL = 90%	PAR=S010;DESIG=19
$\Gamma(K^+ \rightarrow \pi^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<4.2 \times 10^{-11}$ , CL = 90%	PAR=S010;DESIG=46
$\Gamma(K^+ \rightarrow \pi^- \pi^0 e^+ e^+)/\Gamma_{\text{total}}$	$<8.5 \times 10^{-10}$ , CL = 90%	PAR=S010;DESIG=121
$\Gamma(K^+ \rightarrow \mu^+ \bar{\nu}_e)/\Gamma_{\text{total}}$	[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
$\Gamma(D^+ \rightarrow \pi^- 2e^+)/\Gamma_{\text{total}}$	$<5.3 \times 10^{-7}$ , CL = 90%	PAR=S031;DESIG=117
$\Gamma(D^+ \rightarrow \pi^- 2\mu^+)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-8}$ , CL = 90%	PAR=S031;DESIG=118
$\Gamma(D^+ \rightarrow \pi^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-7}$ , 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
$\Gamma(D^+ \rightarrow K_S^0 \pi^- 2e^+)/\Gamma_{\text{total}}$	$<3.3 \times 10^{-6}$ , CL = 90%	PAR=S031;DESIG=293
$\Gamma(D^+ \rightarrow K^- \pi^0 2e^+)/\Gamma_{\text{total}}$	$<8.5 \times 10^{-6}$ , CL = 90%	PAR=S031;DESIG=294
$\Gamma(D^+ \rightarrow K^- 2\mu^+)/\Gamma_{\text{total}}$	$<1.0 \times 10^{-5}$ , 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
$\Gamma(D^+ \rightarrow \Lambda e^+)/\Gamma_{\text{total}}$	$<1.1 \times 10^{-6}$ , CL = 90%	PAR=S031;DESIG=318
$\Gamma(D^+ \rightarrow \bar{\Lambda} e^+)/\Gamma_{\text{total}}$	$<6.5 \times 10^{-7}$ , CL = 90%	PAR=S031;DESIG=319
$\Gamma(D^+ \rightarrow \Sigma^0 e^+)/\Gamma_{\text{total}}$	$<1.7 \times 10^{-6}$ , CL = 90%	PAR=S031;DESIG=320
$\Gamma(D^+ \rightarrow \bar{\Sigma}^0 e^+)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-6}$ , CL = 90%	PAR=S031;DESIG=321
$\Gamma(D^0 \rightarrow 2\pi^- 2e^+)/\Gamma_{\text{total}}$	$<9.1 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=253
$\Gamma(D^0 \rightarrow 2\pi^- 2\mu^+)/\Gamma_{\text{total}}$	$<1.52 \times 10^{-6}$ , CL = 90%	PAR=S032;DESIG=254
$\Gamma(D^0 \rightarrow K^- \pi^- 2e^+)/\Gamma_{\text{total}}$	$<5.0 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=255
$\Gamma(D^0 \rightarrow K^- \pi^- 2\mu^+)/\Gamma_{\text{total}}$	$<5.3 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=256
$\Gamma(D^0 \rightarrow 2K^- 2e^+)/\Gamma_{\text{total}}$	$<3.4 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=257
$\Gamma(D^0 \rightarrow 2K^- 2\mu^+)/\Gamma_{\text{total}}$	$<1.0 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=258
$\Gamma(D^0 \rightarrow \pi^- \pi^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<3.06 \times 10^{-6}$ , CL = 90%	PAR=S032;DESIG=259
$\Gamma(D^0 \rightarrow K^- \pi^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<2.10 \times 10^{-6}$ , CL = 90%	PAR=S032;DESIG=260
$\Gamma(D^0 \rightarrow 2K^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<5.8 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=261
$\Gamma(D^0 \rightarrow p e^-)/\Gamma_{\text{total}}$	$<5.5 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=387
$\Gamma(D^0 \rightarrow \bar{p} e^+)/\Gamma_{\text{total}}$	$<6.9 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=388
$\Gamma(D^0 \rightarrow p \mu^-)/\Gamma_{\text{total}}$	$<5.1 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=591
$\Gamma(D^0 \rightarrow \bar{p} \mu^+)/\Gamma_{\text{total}}$	$<6.3 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=592
$\Gamma(D_s^+ \rightarrow \pi^- 2e^+)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-6}$ , CL = 90%	PAR=S034;DESIG=97
$\Gamma(D_s^+ \rightarrow \pi^- 2\mu^+)/\Gamma_{\text{total}}$	$<8.6 \times 10^{-8}$ , CL = 90%	PAR=S034;DESIG=76
$\Gamma(D_s^+ \rightarrow \pi^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<6.3 \times 10^{-7}$ , CL = 90%	PAR=S034;DESIG=98
$\Gamma(D_s^+ \rightarrow K^- 2e^+)/\Gamma_{\text{total}}$	$<7.7 \times 10^{-7}$ , CL = 90%	PAR=S034;DESIG=99
$\Gamma(D_s^+ \rightarrow K^- 2\mu^+)/\Gamma_{\text{total}}$	$<2.6 \times 10^{-8}$ , CL = 90%	PAR=S034;DESIG=77
$\Gamma(D_s^+ \rightarrow K^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<2.6 \times 10^{-7}$ , 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
$\Gamma(B^+ \rightarrow \pi^- e^+ e^+)/\Gamma_{\text{total}}$	$<2.3 \times 10^{-8}$ , CL = 90%	PAR=S041;DESIG=91
$\Gamma(B^+ \rightarrow \pi^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<4.0 \times 10^{-9}$ , CL = 95%	PAR=S041;DESIG=93
$\Gamma(B^+ \rightarrow \pi^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<1.5 \times 10^{-7}$ , CL = 90%	PAR=S041;DESIG=92
$\Gamma(B^+ \rightarrow \rho^- e^+ e^+)/\Gamma_{\text{total}}$	$<1.7 \times 10^{-7}$ , CL = 90%	PAR=S041;DESIG=291
$\Gamma(B^+ \rightarrow \rho^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<4.2 \times 10^{-7}$ , CL = 90%	PAR=S041;DESIG=295
$\Gamma(B^+ \rightarrow \rho^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<4.7 \times 10^{-7}$ , CL = 90%	PAR=S041;DESIG=294
$\Gamma(B^+ \rightarrow K^- e^+ e^+)/\Gamma_{\text{total}}$	$<3.0 \times 10^{-8}$ , 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
$\Gamma(B^+ \rightarrow K^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<1.6 \times 10^{-7}$ , CL = 90%	PAR=S041;DESIG=95
$\Gamma(B^+ \rightarrow K^*(892)^- e^+ e^+)/\Gamma_{\text{total}}$	$<4.0 \times 10^{-7}$ , CL = 90%	PAR=S041;DESIG=290
$\Gamma(B^+ \rightarrow K^*(892)^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<5.9 \times 10^{-7}$ , CL = 90%	PAR=S041;DESIG=292
$\Gamma(B^+ \rightarrow K^*(892)^- e^+ \mu^+)/\Gamma_{\text{total}}$	$<3.0 \times 10^{-7}$ , 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

$\Gamma(B^+ \rightarrow D^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<6.9 \times 10^{-7}$ , CL = 95%	PAR=S041;DESIG=574
$\Gamma(B^+ \rightarrow D^{*-} \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<2.4 \times 10^{-6}$ , CL = 95%	PAR=S041;DESIG=604
$\Gamma(B^+ \rightarrow D_s^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<5.8 \times 10^{-7}$ , CL = 95%	PAR=S041;DESIG=605
$\Gamma(B^+ \rightarrow \bar{D}^0 \pi^- \mu^+ \mu^+)/\Gamma_{\text{total}}$	$<1.5 \times 10^{-6}$ , CL = 95%	PAR=S041;DESIG=606
$\Gamma(B^+ \rightarrow \Lambda^0 \mu^+)/\Gamma_{\text{total}}$	$<6 \times 10^{-8}$ , 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
$\Gamma(B^0 \rightarrow \rho \mu^-)/\Gamma_{\text{total}}$	$<2.6 \times 10^{-9}$ , CL = 90%	PAR=S042;DESIG=624
$\Gamma(B^0 \rightarrow \Lambda_c^+ \mu^-)/\Gamma_{\text{total}}$	$<1.4 \times 10^{-6}$ , CL = 90%	PAR=S042;DESIG=491
$\Gamma(B^0 \rightarrow \Lambda_c^+ e^-)/\Gamma_{\text{total}}$	$<4 \times 10^{-6}$ , CL = 90%	PAR=S042;DESIG=492
$\Gamma(B_s^0 \rightarrow \rho \mu^-)/\Gamma_{\text{total}}$	$<1.21 \times 10^{-8}$ , CL = 90%	PAR=S086;DESIG=179
$\Gamma(\Lambda \rightarrow \pi^+ e^-)/\Gamma_{\text{total}}$	$<6 \times 10^{-7}$ , CL = 90%	PAR=S018;DESIG=7
$\Gamma(\Lambda \rightarrow \pi^+ \mu^-)/\Gamma_{\text{total}}$	$<6 \times 10^{-7}$ , CL = 90%	PAR=S018;DESIG=8
$\Gamma(\Lambda \rightarrow \pi^- e^+)/\Gamma_{\text{total}}$	$<4 \times 10^{-7}$ , CL = 90%	PAR=S018;DESIG=9
$\Gamma(\Lambda \rightarrow \pi^- \mu^+)/\Gamma_{\text{total}}$	$<6 \times 10^{-7}$ , CL = 90%	PAR=S018;DESIG=10
$\Gamma(\Lambda \rightarrow K^+ e^-)/\Gamma_{\text{total}}$	$<2 \times 10^{-6}$ , CL = 90%	PAR=S018;DESIG=11
$\Gamma(\Lambda \rightarrow K^+ \mu^-)/\Gamma_{\text{total}}$	$<3 \times 10^{-6}$ , CL = 90%	PAR=S018;DESIG=12
$\Gamma(\Lambda \rightarrow K^- e^+)/\Gamma_{\text{total}}$	$<2 \times 10^{-6}$ , CL = 90%	PAR=S018;DESIG=13
$\Gamma(\Lambda \rightarrow K^- \mu^+)/\Gamma_{\text{total}}$	$<3 \times 10^{-6}$ , CL = 90%	PAR=S018;DESIG=14
$\Gamma(\Lambda \rightarrow K_S^0 \nu)/\Gamma_{\text{total}}$	$<2 \times 10^{-5}$ , CL = 90%	PAR=S018;DESIG=15
$\Gamma(\Sigma^- \rightarrow \rho e^- e^-)/\Gamma_{\text{total}}$	$<6.7 \times 10^{-5}$ , CL = 90%	PAR=S020;DESIG=192
$\Gamma(\Xi^- \rightarrow \rho \mu^- \mu^-)/\Gamma_{\text{total}}$	$<4 \times 10^{-8}$ , 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

$\Gamma(Z \rightarrow \rho e)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-6}$ , CL = 95%	PAR=S044;DESIG=71
$\Gamma(Z \rightarrow \rho \mu)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-6}$ , CL = 95%	PAR=S044;DESIG=72
$\Gamma(\tau^- \rightarrow \rho e^- e^-)/\Gamma_{\text{total}}$	$<3.0 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=351
$\Gamma(\tau^- \rightarrow \bar{p} e^+ e^-)/\Gamma_{\text{total}}$	$<3.0 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=352
$\Gamma(\tau^- \rightarrow \bar{p} e^+ \mu^-)/\Gamma_{\text{total}}$	$<2.0 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=353
$\Gamma(\tau^- \rightarrow \bar{p} e^- \mu^+)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=354
$\Gamma(\tau^- \rightarrow \rho \mu^- \mu^-)/\Gamma_{\text{total}}$	$<4.0 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=334
$\Gamma(\tau^- \rightarrow \bar{p} \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=335
$\Gamma(\tau^- \rightarrow \bar{p} \gamma)/\Gamma_{\text{total}}$	$<3.5 \times 10^{-6}$ , 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
$\Gamma(\tau^- \rightarrow \Lambda \pi^-)/\Gamma_{\text{total}}$	$<4.7 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=297
$\Gamma(\tau^- \rightarrow \bar{\Lambda} \pi^-)/\Gamma_{\text{total}}$	$<4.3 \times 10^{-8}$ , CL = 90%	PAR=S035;DESIG=298
$\Gamma(D^+ \rightarrow \Lambda e^+)/\Gamma_{\text{total}}$	$<1.1 \times 10^{-6}$ , CL = 90%	PAR=S031;DESIG=318
$\Gamma(D^+ \rightarrow \bar{\Lambda} e^+)/\Gamma_{\text{total}}$	$<6.5 \times 10^{-7}$ , CL = 90%	PAR=S031;DESIG=319
$\Gamma(D^+ \rightarrow \Sigma^0 e^+)/\Gamma_{\text{total}}$	$<1.7 \times 10^{-6}$ , CL = 90%	PAR=S031;DESIG=320
$\Gamma(D^+ \rightarrow \bar{\Sigma}^0 e^+)/\Gamma_{\text{total}}$	$<1.3 \times 10^{-6}$ , CL = 90%	PAR=S031;DESIG=321
$\Gamma(D^0 \rightarrow \rho e^-)/\Gamma_{\text{total}}$	$<5.5 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=387
$\Gamma(D^0 \rightarrow \bar{p} e^+)/\Gamma_{\text{total}}$	$<6.9 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=388
$\Gamma(D^0 \rightarrow \rho \mu^-)/\Gamma_{\text{total}}$	$<5.1 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=591
$\Gamma(D^0 \rightarrow \bar{p} \mu^+)/\Gamma_{\text{total}}$	$<6.3 \times 10^{-7}$ , CL = 90%	PAR=S032;DESIG=592
$\Gamma(B^+ \rightarrow \Lambda^0 \mu^+)/\Gamma_{\text{total}}$	$<6 \times 10^{-8}$ , 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
$\Gamma(B^0 \rightarrow p \mu^-)/\Gamma_{\text{total}}$	$< 2.6 \times 10^{-9}$ , CL = 90%	PAR=S042;DESIG=624
$\Gamma(B^0 \rightarrow \Lambda_c^+ \mu^-)/\Gamma_{\text{total}}$	$< 1.4 \times 10^{-6}$ , CL = 90%	PAR=S042;DESIG=491
$\Gamma(B^0 \rightarrow \Lambda_c^+ e^-)/\Gamma_{\text{total}}$	$< 4 \times 10^{-6}$ , CL = 90%	PAR=S042;DESIG=492
$\Gamma(B_s^0 \rightarrow p \mu^-)/\Gamma_{\text{total}}$	$< 1.21 \times 10^{-8}$ , CL = 90%	PAR=S086;DESIG=179
$p$ mean life	$> 9 \times 10^{29}$ 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.		
$\tau(N \rightarrow e^+ \pi)$	$> 5300$ ( $n$ ), $> 24000$ ( $p$ ) $\times 10^{30}$ years, CL = 90%	PAR=S016;DESIG=6;→ UNCHECKED ←; OUR LIM
$\tau(N \rightarrow \mu^+ \pi)$	$> 3500$ ( $n$ ), $> 16000$ ( $p$ ) $\times 10^{30}$ years, CL = 90%	PAR=S016;DESIG=7;→ UNCHECKED ←; OUR LIM
$\tau(N \rightarrow e^+ K)$	$> 17$ ( $n$ ), $> 1000$ ( $p$ ) $\times 10^{30}$ years, CL = 90%	PAR=S016;DESIG=8;→ UNCHECKED ←; OUR LIM
$\tau(N \rightarrow \mu^+ K)$	$> 26$ ( $n$ ), $> 4500$ ( $p$ ) $\times 10^{30}$ years, CL = 90%	PAR=S016;DESIG=9;→ UNCHECKED ←; OUR LIM
Mean $n\bar{n}$ -oscillation time (free $n$ )	$> 8.6 \times 10^7$ s, CL = 90%	NODE=S017NAN
Mean $n\bar{n}$ -oscillation time (bound $n$ )	[ $r$ ] $> 4.7 \times 10^8$ s, CL = 90%	NODE=S017NAX;→ UNCHECKED ←;OUR LIM
$\Gamma(\Lambda \rightarrow \pi^+ e^-)/\Gamma_{\text{total}}$	$< 6 \times 10^{-7}$ , CL = 90%	PAR=S018;DESIG=7
$\Gamma(\Lambda \rightarrow \pi^+ \mu^-)/\Gamma_{\text{total}}$	$< 6 \times 10^{-7}$ , CL = 90%	PAR=S018;DESIG=8
$\Gamma(\Lambda \rightarrow \pi^- e^+)/\Gamma_{\text{total}}$	$< 4 \times 10^{-7}$ , CL = 90%	PAR=S018;DESIG=9
$\Gamma(\Lambda \rightarrow \pi^- \mu^+)/\Gamma_{\text{total}}$	$< 6 \times 10^{-7}$ , CL = 90%	PAR=S018;DESIG=10
$\Gamma(\Lambda \rightarrow K^+ e^-)/\Gamma_{\text{total}}$	$< 2 \times 10^{-6}$ , CL = 90%	PAR=S018;DESIG=11
$\Gamma(\Lambda \rightarrow K^+ \mu^-)/\Gamma_{\text{total}}$	$< 3 \times 10^{-6}$ , CL = 90%	PAR=S018;DESIG=12
$\Gamma(\Lambda \rightarrow K^- e^+)/\Gamma_{\text{total}}$	$< 2 \times 10^{-6}$ , CL = 90%	PAR=S018;DESIG=13
$\Gamma(\Lambda \rightarrow K^- \mu^+)/\Gamma_{\text{total}}$	$< 3 \times 10^{-6}$ , CL = 90%	PAR=S018;DESIG=14
$\Gamma(\Lambda \rightarrow K_S^0 \nu)/\Gamma_{\text{total}}$	$< 2 \times 10^{-5}$ , CL = 90%	PAR=S018;DESIG=15
$\Gamma(\Lambda \rightarrow \bar{p} \pi^+)/\Gamma_{\text{total}}$	$< 9 \times 10^{-7}$ , CL = 90%	PAR=S018;DESIG=16
$\Gamma(\Lambda_c^+ \rightarrow \bar{p} 2e^+)/\Gamma_{\text{total}}$	$< 2.7 \times 10^{-6}$ , 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)

$\gamma$ charge (mixed)	$< 1 \times 10^{-46} e$	NODE=S000Q
$\gamma$ charge (single)	$< 1 \times 10^{-35} e$	NODE=S000QM;→ UNCHECKED ←;OUR LIM
$e \rightarrow \nu_e \gamma$ and astrophysical limits	[s] $> 6.6 \times 10^{28}$ yr, CL = 90%	NODE=S003T
$\nu$ charge	$< 4 \times 10^{-35} e$ , CL = 95%	NODE=S066CHR
$ q_p + q_e /e$	[t] $< 1 \times 10^{-21}$	NODE=S016DQ
$n$ charge	$(-0.2 \pm 0.8) \times 10^{-21} e$	NODE=S017Q
$\Gamma(n \rightarrow p \nu_e \bar{\nu}_e)/\Gamma_{\text{total}}$	$< 8 \times 10^{-27}$ , CL = 68%	PAR=S017;DESIG=2

## $\Delta S = \Delta Q$ RULE

CONLAW=SQ

Violations allowed in second-order weak interactions.

$\Gamma(K^+ \rightarrow \pi^+ \pi^+ e^- \bar{\nu}_e)/\Gamma_{\text{total}}$	$< 1.3 \times 10^{-8}$ , 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 $x$	$-0.002 \pm 0.006$	NODE=S013REX
imaginary part of $x$	$0.0012 \pm 0.0021$	NODE=S013IMX
$\Gamma(\Sigma^+ \rightarrow n \ell^+ \nu)/\Gamma(\Sigma^- \rightarrow n \ell^- \bar{\nu}_\ell)$	$< 0.043$	NODE=S019R7;→ UNCHECKED ←;OUR LIM
$\Gamma(\Sigma^+ \rightarrow n e^+ \nu_e)/\Gamma_{\text{total}}$	$< 5 \times 10^{-6}$ , CL = 90%	PAR=S019;DESIG=7;→ UNCHECKED ←;OUR LIM
$\Gamma(\Sigma^+ \rightarrow n \mu^+ \nu_\mu)/\Gamma_{\text{total}}$	$< 3.0 \times 10^{-5}$ , CL = 90%	PAR=S019;DESIG=6;→ UNCHECKED ←;OUR LIM
$\Gamma(\Xi^0 \rightarrow \Sigma^- e^+ \nu_e)/\Gamma_{\text{total}}$	$< 1.6 \times 10^{-4}$ , 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$	$(0.997 \pm 0.116) \times 10^{10} \hbar s^{-1}$	NODE=S032D;→ UNCHECKED ←;OUR EVAL
$(\Gamma_{D_1^0} - \Gamma_{D_2^0})/\Gamma = 2y$	$(1.394 \pm 0.056) \times 10^{-2}$	NODE=S032DT;→ UNCHECKED ←;OUR EVAL

 **$\Delta B = 2$  VIA MIXING**

CONLAW=B2M

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

$\chi_d$ ( $B^0\text{-}\bar{B}^0$ mixing probability)	$0.1860 \pm 0.0011$	NODE=S042CHD;→ UNCHECKED ←;OUR EVAL
$\Delta m_{B^0} = m_{B_H^0} - m_{B_L^0}$	$(0.5069 \pm 0.0019) \times 10^{12} \hbar s^{-1}$	NODE=S042D;→ UNCHECKED ←;OUR EVAL
$x_d = \Delta m_{B^0}/\Gamma_{B^0}$	$0.7697 \pm 0.0035$	NODE=S042DG;→ UNCHECKED ←;OUR EVAL
$\Delta m_{B_s^0} = m_{B_{sH}^0} - m_{B_{sL}^0}$	$(17.765 \pm 0.006) \times 10^{12} \hbar s^{-1}$	NODE=S086D;→ UNCHECKED ←;OUR EVAL
$x_s = \Delta m_{B_s^0}/\Gamma_{B_s^0}$	$26.93 \pm 0.10$	NODE=S086DG;→ UNCHECKED ←;OUR EVAL
$\chi_s$ ( $B_s^0\text{-}\bar{B}_s^0$ mixing parameter)	$0.499314 \pm 0.000005$	NODE=S086CHS;→ UNCHECKED ←;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
$\Gamma(K^+ \rightarrow \pi^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(9.17 \pm 0.14) \times 10^{-8}$ (S = 1.8)	PAR=S010;DESIG=16
$\Gamma(K^+ \rightarrow \pi^+ e^+ e^- e^+ e^-)/\Gamma_{\text{total}}$	$< 1.4 \times 10^{-8}$ , CL = 90%	PAR=S010;DESIG=123
$\Gamma(K^+ \rightarrow \pi^+ \nu \bar{\nu})/\Gamma_{\text{total}}$	$(1.14^{+0.40}_{-0.33}) \times 10^{-10}$	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
$\Gamma(K_S^0 \rightarrow \mu^+ \mu^-)/\Gamma_{\text{total}}$	$< 2.1 \times 10^{-10}$ , 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
$\Gamma(K_S^0 \rightarrow \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	[u] $(3.0^{+1.5}_{-1.2}) \times 10^{-9}$	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
$\Gamma(K_L^0 \rightarrow \pi^+ \pi^- e^+ e^-)/\Gamma_{\text{total}}$	[v] $(3.11 \pm 0.19) \times 10^{-7}$	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
$\Gamma(K_L^0 \rightarrow \pi^0 \nu \bar{\nu})/\Gamma_{\text{total}}$	$< 3.0 \times 10^{-9}$ , 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
$\Gamma(\Sigma^+ \rightarrow \rho e^+ e^-)/\Gamma_{\text{total}}$	$< 7 \times 10^{-6}$	PAR=S019;DESIG=8
$\Gamma(\Sigma^+ \rightarrow \rho \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(2.4^{+1.7}_{-1.3}) \times 10^{-8}$	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
$\Gamma(D^+ \rightarrow \pi^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$< 6.7 \times 10^{-8}$ , 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
$\Gamma(D^0 \rightarrow \gamma\gamma)/\Gamma_{\text{total}}$	$< 8.5 \times 10^{-7}$ , 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
$\Gamma(D^0 \rightarrow \mu^+ \mu^-)/\Gamma_{\text{total}}$	$< 3.1 \times 10^{-9}$ , CL = 90%	PAR=S032;DESIG=28
$\Gamma(D^0 \rightarrow \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	$< 4 \times 10^{-6}$ , 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
$\Gamma(D^0 \rightarrow \eta e^+ e^-)/\Gamma_{\text{total}}$	$< 3 \times 10^{-6}$ , 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
$\Gamma(D^0 \rightarrow \pi^+ \pi^- e^+ e^-)/\Gamma_{\text{total}}$	$< 7 \times 10^{-6}$ , 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
$\Gamma(D^0 \rightarrow \pi^+ \pi^- \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(9.6 \pm 1.2) \times 10^{-7}$	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
$\Gamma(D^0 \rightarrow \omega e^+ e^-)/\Gamma_{\text{total}}$	$< 6 \times 10^{-6}$ , 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
$\Gamma(D^0 \rightarrow K^- K^+ e^+ e^-)/\Gamma_{\text{total}}$	$< 1.1 \times 10^{-5}$ , 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
$\Gamma(D^0 \rightarrow K^- K^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(1.54 \pm 0.32) \times 10^{-7}$	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
$\Gamma(D^0 \rightarrow K^- \pi^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$< 3.59 \times 10^{-4}$ , 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
$\Gamma(D_s^+ \rightarrow K^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$< 1.4 \times 10^{-7}$ , 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
$\Gamma(\Lambda_c^+ \rightarrow p \mu^+ \mu^- \text{ non-resonant})/\Gamma_{\text{total}}$	$<2.9 \times 10^{-8}$ , CL = 90%	PAR=S033;DESIG=60

 **$\Delta B = 1$  WEAK NEUTRAL CURRENT FORBIDDEN**

CONLAW=B1

Allowed by higher-order electroweak interactions.

$\Gamma(B^+ \rightarrow \pi^+ \ell^+ \ell^-)/\Gamma_{\text{total}}$	[x] $<4.9 \times 10^{-8}$ , CL = 90%	PAR=S041;DESIG=475
$\Gamma(B^+ \rightarrow \pi^+ e^+ e^-)/\Gamma_{\text{total}}$	$<5.4 \times 10^{-8}$ , CL = 90%	PAR=S041;DESIG=85
$\Gamma(B^+ \rightarrow \pi^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(1.78 \pm 0.23) \times 10^{-8}$	PAR=S041;DESIG=88
$\Gamma(B^+ \rightarrow \rho(770)^+ e^+ e^-)/\Gamma_{\text{total}}$	$<4.67 \times 10^{-7}$ , CL = 90%	PAR=S041;DESIG=818
$\Gamma(B^+ \rightarrow \rho(770)^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<3.81 \times 10^{-7}$ , CL = 90%	PAR=S041;DESIG=819
$\Gamma(B^+ \rightarrow \rho(770)^+ \ell^+ \ell^-)/\Gamma_{\text{total}}$	$<1.89 \times 10^{-7}$ , CL = 90%	PAR=S041;DESIG=820
$\Gamma(B^+ \rightarrow \pi^+ \nu \bar{\nu})/\Gamma_{\text{total}}$	$<1.4 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=404
$\Gamma(B^+ \rightarrow K^+ \ell^+ \ell^-)/\Gamma_{\text{total}}$	[x] $(4.7 \pm 0.5) \times 10^{-7}$ (S = 2.3)	PAR=S041;DESIG=345
$\Gamma(B^+ \rightarrow K^+ e^+ e^-)/\Gamma_{\text{total}}$	$(5.6 \pm 0.6) \times 10^{-7}$	PAR=S041;DESIG=11
$\Gamma(B^+ \rightarrow K^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(4.53 \pm 0.35) \times 10^{-7}$ (S = 1.8)	PAR=S041;DESIG=10
$\Gamma(B^+ \rightarrow K^+ \mu^+ \mu^- \text{ nonresonant})/\Gamma_{\text{total}}$	$(4.37 \pm 0.27) \times 10^{-7}$	PAR=S041;DESIG=704
$\Gamma(B^+ \rightarrow K^+ \tau^+ \tau^-)/\Gamma_{\text{total}}$	$<2.25 \times 10^{-3}$ , CL = 90%	PAR=S041;DESIG=690
$\Gamma(B^+ \rightarrow K^+ \bar{\nu} \nu)/\Gamma_{\text{total}}$	$(2.3 \pm 0.7) \times 10^{-5}$	PAR=S041;DESIG=273
$\Gamma(B^+ \rightarrow \rho^+ \nu \bar{\nu})/\Gamma_{\text{total}}$	$<3.0 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=489
$\Gamma(B^+ \rightarrow K^*(892)^+ \ell^+ \ell^-)/\Gamma_{\text{total}}$	[x] $(1.01 \pm 0.11) \times 10^{-6}$ (S = 1.1)	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
$\Gamma(B^+ \rightarrow K^*(892)^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(9.6 \pm 1.0) \times 10^{-7}$	PAR=S041;DESIG=162
$\Gamma(B^+ \rightarrow K^*(892)^+ \nu \bar{\nu})/\Gamma_{\text{total}}$	$<4.0 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=490
$\Gamma(B^+ \rightarrow K^+ \pi^+ \pi^- \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(4.3 \pm 0.4) \times 10^{-7}$	PAR=S041;DESIG=632
$\Gamma(B^+ \rightarrow D_s^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<2.4 \times 10^{-8}$ , CL = 90%	PAR=S041;DESIG=816
$\Gamma(B^+ \rightarrow \phi K^+ \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(7.9^{+2.1}_{-1.7}) \times 10^{-8}$	PAR=S041;DESIG=633
$\Gamma(B^+ \rightarrow \bar{\Lambda} p \nu \bar{\nu})/\Gamma_{\text{total}}$	$<3.0 \times 10^{-5}$ , CL = 90%	PAR=S041;DESIG=736
$\Gamma(B^0 \rightarrow \gamma \gamma)/\Gamma_{\text{total}}$	$<6.4 \times 10^{-8}$ , CL = 90%	PAR=S042;DESIG=141
$\Gamma(B^0 \rightarrow e^+ e^-)/\Gamma_{\text{total}}$	$<2.5 \times 10^{-9}$ , 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
$\Gamma(B^0 \rightarrow \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<1.5 \times 10^{-10}$ , CL = 90%	PAR=S042;DESIG=7
$\Gamma(B^0 \rightarrow \mu^+ \mu^- \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<1.8 \times 10^{-10}$ , CL = 95%	PAR=S042;DESIG=521
$\Gamma(B^0 \rightarrow SP, S \rightarrow \mu^+ \mu^-, P \rightarrow \mu^+ \mu^-)/\Gamma_{\text{total}}$	[y] $<6.0 \times 10^{-10}$ , CL = 95%	PAR=S042;DESIG=522
$\Gamma(B^0 \rightarrow a a, a \rightarrow \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<2.3 \times 10^{-10}$ , CL = 95%	PAR=S042;DESIG=618
$\Gamma(B^0 \rightarrow \tau^+ \tau^-)/\Gamma_{\text{total}}$	$<2.1 \times 10^{-3}$ , CL = 95%	PAR=S042;DESIG=336
$\Gamma(B^0 \rightarrow \pi^0 \ell^+ \ell^-)/\Gamma_{\text{total}}$	[x] $<3.8 \times 10^{-8}$ , CL = 90%	PAR=S042;DESIG=382
$\Gamma(B^0 \rightarrow \pi^0 e^+ e^-)/\Gamma_{\text{total}}$	$<7.9 \times 10^{-8}$ , CL = 90%	PAR=S042;DESIG=380
$\Gamma(B^0 \rightarrow \pi^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<5.9 \times 10^{-8}$ , CL = 90%	PAR=S042;DESIG=381
$\Gamma(B^0 \rightarrow \eta \ell^+ \ell^-)/\Gamma_{\text{total}}$	[x] $<4.8 \times 10^{-8}$ , CL = 90%	PAR=S042;DESIG=518
$\Gamma(B^0 \rightarrow \eta e^+ e^-)/\Gamma_{\text{total}}$	$<1.05 \times 10^{-7}$ , CL = 90%	PAR=S042;DESIG=519
$\Gamma(B^0 \rightarrow \eta \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<9.4 \times 10^{-8}$ , CL = 90%	PAR=S042;DESIG=520
$\Gamma(B^0 \rightarrow \rho(770)^0 e^+ e^-)/\Gamma_{\text{total}}$	$<4.55 \times 10^{-7}$ , CL = 90%	PAR=S042;DESIG=648
$\Gamma(B^0 \rightarrow \omega e^+ e^-)/\Gamma_{\text{total}}$	$<3.07 \times 10^{-7}$ , CL = 90%	PAR=S042;DESIG=649
$\Gamma(B^0 \rightarrow \omega \mu^+ \mu^-)/\Gamma_{\text{total}}$	$<2.49 \times 10^{-7}$ , CL = 90%	PAR=S042;DESIG=650
$\Gamma(B^0 \rightarrow \omega \ell^+ \ell^-)/\Gamma_{\text{total}}$	$<2.20 \times 10^{-7}$ , CL = 90%	PAR=S042;DESIG=651
$\Gamma(B^0 \rightarrow \pi^0 \nu \bar{\nu})/\Gamma_{\text{total}}$	$<9 \times 10^{-6}$ , CL = 90%	PAR=S042;DESIG=406
$\Gamma(B^0 \rightarrow K^0 \ell^+ \ell^-)/\Gamma_{\text{total}}$	[x] $(3.3 \pm 0.6) \times 10^{-7}$	PAR=S042;DESIG=275
$\Gamma(B^0 \rightarrow K^0 e^+ e^-)/\Gamma_{\text{total}}$	$(2.5^{+1.1}_{-0.9}) \times 10^{-7}$ (S = 1.3)	PAR=S042;DESIG=18
$\Gamma(B^0 \rightarrow K^0 \mu^+ \mu^-)/\Gamma_{\text{total}}$	$(3.39 \pm 0.35) \times 10^{-7}$ (S = 1.1)	PAR=S042;DESIG=17
$\Gamma(B^0 \rightarrow K^0 \nu \bar{\nu})/\Gamma_{\text{total}}$	$<2.6 \times 10^{-5}$ , CL = 90%	PAR=S042;DESIG=407
$\Gamma(B^0 \rightarrow \rho^0 \nu \bar{\nu})/\Gamma_{\text{total}}$	$<4.0 \times 10^{-5}$ , CL = 90%	PAR=S042;DESIG=408

$\Gamma(B^0 \rightarrow K^*(892)^0 \ell^+ \ell^-) / \Gamma_{\text{total}}$	[x] $(9.9^{+1.2}_{-1.1}) \times 10^{-7}$	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
$\Gamma(B^0 \rightarrow K^*(892)^0 \mu^+ \mu^-) / \Gamma_{\text{total}}$	$(9.4 \pm 0.5) \times 10^{-7}$	PAR=S042;DESIG=71
$\Gamma(B^0 \rightarrow K^*(892)^0 \tau^+ \tau^-) / \Gamma_{\text{total}}$	$< 3.1 \times 10^{-3}$ , CL = 90%	PAR=S042;DESIG=629
$\Gamma(B^0 \rightarrow \bar{D}^0 \mu^+ \mu^-) / \Gamma_{\text{total}}$	$< 4.0 \times 10^{-8}$ , CL = 90%	PAR=S042;DESIG=647
$\Gamma(B^0 \rightarrow \pi^+ \pi^- \mu^+ \mu^-) / \Gamma_{\text{total}}$	$(2.1 \pm 0.5) \times 10^{-8}$	PAR=S042;DESIG=550
$\Gamma(B^0 \rightarrow K^*(892)^0 \nu \bar{\nu}) / \Gamma_{\text{total}}$	$< 1.8 \times 10^{-5}$ , CL = 90%	PAR=S042;DESIG=152
$\Gamma(B^0 \rightarrow \text{invisible}) / \Gamma_{\text{total}}$	$< 2.4 \times 10^{-5}$ , CL = 90%	PAR=S042;DESIG=284
$\Gamma(B^0 \rightarrow \nu \bar{\nu} \gamma) / \Gamma_{\text{total}}$	$< 1.6 \times 10^{-5}$ , CL = 90%	PAR=S042;DESIG=285
$\Gamma(B^0 \rightarrow \phi \mu^+ \mu^-) / \Gamma_{\text{total}}$	$< 3.2 \times 10^{-9}$ , CL = 90%	PAR=S042;DESIG=614
$\Gamma(B^0 \rightarrow \phi \nu \bar{\nu}) / \Gamma_{\text{total}}$	$< 1.27 \times 10^{-4}$ , CL = 90%	PAR=S042;DESIG=409
$\Gamma(B \rightarrow s e^+ e^-) / \Gamma_{\text{total}}$	$(6.7 \pm 1.7) \times 10^{-6}$ (S = 2.0)	PAR=S049;DESIG=103
$\Gamma(B \rightarrow s \mu^+ \mu^-) / \Gamma_{\text{total}}$	$(4.3 \pm 1.0) \times 10^{-6}$	PAR=S049;DESIG=104
$\Gamma(B \rightarrow s \ell^+ \ell^-) / \Gamma_{\text{total}}$	[x] $(5.8 \pm 1.3) \times 10^{-6}$ (S = 1.8)	PAR=S049;DESIG=59
$\Gamma(B \rightarrow \pi \ell^+ \ell^-) / \Gamma_{\text{total}}$	$< 5.9 \times 10^{-8}$ , CL = 90%	PAR=S049;DESIG=266
$\Gamma(B \rightarrow \pi e^+ e^-) / \Gamma_{\text{total}}$	$< 1.10 \times 10^{-7}$ , CL = 90%	PAR=S049;DESIG=283
$\Gamma(B \rightarrow \pi \mu^+ \mu^-) / \Gamma_{\text{total}}$	$< 5.0 \times 10^{-8}$ , CL = 90%	PAR=S049;DESIG=284
$\Gamma(B \rightarrow K e^+ e^-) / \Gamma_{\text{total}}$	$(4.4 \pm 0.6) \times 10^{-7}$	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
$\Gamma(B \rightarrow K \ell^+ \ell^-) / \Gamma_{\text{total}}$	$(4.8 \pm 0.4) \times 10^{-7}$	PAR=S049;DESIG=238
$\Gamma(B \rightarrow K^*(892) \ell^+ \ell^-) / \Gamma_{\text{total}}$	$(1.05 \pm 0.10) \times 10^{-6}$	PAR=S049;DESIG=239
$\Gamma(B \rightarrow K \nu \bar{\nu}) / \Gamma_{\text{total}}$	$< 1.6 \times 10^{-5}$ , CL = 90%	PAR=S049;DESIG=275
$\Gamma(B \rightarrow K^* \nu \bar{\nu}) / \Gamma_{\text{total}}$	$< 2.7 \times 10^{-5}$ , CL = 90%	PAR=S049;DESIG=269
$\Gamma(B \rightarrow \pi \nu \bar{\nu}) / \Gamma_{\text{total}}$	$< 8 \times 10^{-6}$ , CL = 90%	PAR=S049;DESIG=287
$\Gamma(B \rightarrow \rho \nu \bar{\nu}) / \Gamma_{\text{total}}$	$< 2.8 \times 10^{-5}$ , CL = 90%	PAR=S049;DESIG=288
$\Gamma(\bar{b} \rightarrow \bar{s} \nu \nu) / \Gamma_{\text{total}}$	$< 6.4 \times 10^{-4}$ , CL = 90%	PAR=S051;DESIG=65
$\Gamma(\bar{b} \rightarrow \mu^+ \mu^- \text{ anything}) / \Gamma_{\text{total}}$	$< 3.2 \times 10^{-4}$ , CL = 90%	PAR=S051;DESIG=104
$\Gamma(B_s^0 \rightarrow \gamma \gamma) / \Gamma_{\text{total}}$	$< 3.1 \times 10^{-6}$ , CL = 90%	PAR=S086;DESIG=11
$\Gamma(B_s^0 \rightarrow \phi \gamma) / \Gamma_{\text{total}}$	$(3.4 \pm 0.4) \times 10^{-5}$	PAR=S086;DESIG=18
$\Gamma(B_s^0 \rightarrow f_2(1270) \gamma) / \Gamma_{\text{total}}$	$(9^{+4}_{-5}) \times 10^{-6}$	PAR=S086;DESIG=191
$\Gamma(B_s^0 \rightarrow f_2'(1525) \gamma) / \Gamma_{\text{total}}$	$(6.6^{+0.9}_{-0.8}) \times 10^{-6}$	PAR=S086;DESIG=192
$\Gamma(B_s^0 \rightarrow \phi(1680) \gamma, \phi \rightarrow K^+ K^-) / \Gamma_{\text{total}}$	$(9.2 \pm 2.4) \times 10^{-7}$	PAR=S086;DESIG=193
$\Gamma(B_s^0 \rightarrow \phi_3(1850) \gamma, \phi_3 \rightarrow K^+ K^-) / \Gamma_{\text{total}}$	$(7^{+6}_{-5}) \times 10^{-8}$	PAR=S086;DESIG=194
$\Gamma(B_s^0 \rightarrow f_2(2010) \gamma, f_2 \rightarrow K^+ K^-) / \Gamma_{\text{total}}$	$(1.0^{+0.7}_{-0.5}) \times 10^{-7}$	PAR=S086;DESIG=195
$\Gamma(B_s^0 \rightarrow \mu^+ \mu^-) / \Gamma_{\text{total}}$	$(3.34 \pm 0.27) \times 10^{-9}$	PAR=S086;DESIG=15
$\Gamma(B_s^0 \rightarrow e^+ e^-) / \Gamma_{\text{total}}$	$< 9.4 \times 10^{-9}$ , CL = 90%	PAR=S086;DESIG=20
$\Gamma(B_s^0 \rightarrow \tau^+ \tau^-) / \Gamma_{\text{total}}$	$< 6.8 \times 10^{-3}$ , CL = 95%	PAR=S086;DESIG=130
$\Gamma(B_s^0 \rightarrow \mu^+ \mu^- \gamma) / \Gamma_{\text{total}}$	$< 4.2 \times 10^{-8}$ , CL = 95%	PAR=S086;DESIG=170
$\Gamma(B_s^0 \rightarrow \mu^+ \mu^- \mu^+ \mu^-) / \Gamma_{\text{total}}$	$< 8.6 \times 10^{-10}$ , CL = 95%	PAR=S086;DESIG=59
$\Gamma(B_s^0 \rightarrow SP, S \rightarrow \mu^+ \mu^-, P \rightarrow \mu^+ \mu^-) / \Gamma_{\text{total}}$	[y] $< 2.2 \times 10^{-9}$ , CL = 95%	PAR=S086;DESIG=64
$\Gamma(B_s^0 \rightarrow aa, a \rightarrow \mu^+ \mu^-) / \Gamma_{\text{total}}$	$< 5.8 \times 10^{-10}$ , CL = 95%	PAR=S086;DESIG=167
$\Gamma(B_s^0 \rightarrow \phi(1020) \mu^+ \mu^-) / \Gamma_{\text{total}}$	$(8.3 \pm 0.4) \times 10^{-7}$	PAR=S086;DESIG=31
$\Gamma(B_s^0 \rightarrow f_2'(1525) \mu^+ \mu^-) / \Gamma_{\text{total}}$	$(1.60 \pm 0.22) \times 10^{-7}$	PAR=S086;DESIG=164
$\Gamma(B_s^0 \rightarrow \bar{K}^*(892)^0 \mu^+ \mu^-) / \Gamma_{\text{total}}$	$(2.9 \pm 1.1) \times 10^{-8}$	PAR=S086;DESIG=137
$\Gamma(B_s^0 \rightarrow \pi^+ \pi^- \mu^+ \mu^-) / \Gamma_{\text{total}}$	$(8.4 \pm 1.7) \times 10^{-8}$	PAR=S086;DESIG=117
$\Gamma(B_s^0 \rightarrow \bar{D}^0 \mu^+ \mu^-) / \Gamma_{\text{total}}$	$< 1.2 \times 10^{-7}$ , CL = 90%	PAR=S086;DESIG=182
$\Gamma(B_s^0 \rightarrow \phi \nu \bar{\nu}) / \Gamma_{\text{total}}$	$< 5.4 \times 10^{-3}$ , 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] $<1.2 \times 10^{-4}$ , CL = 95%	PAR=Q007;DESIG=2
$\Gamma(t \rightarrow H u)/\Gamma_{\text{total}}$	$<1.9 \times 10^{-4}$ , CL = 95%	PAR=Q007;DESIG=12
$\Gamma(t \rightarrow H c)/\Gamma_{\text{total}}$	$<3.4 \times 10^{-4}$ , CL = 95%	PAR=Q007;DESIG=13
$\Gamma(t \rightarrow \ell^+ \bar{q} q' (q=d,s,b; q'=u,c))/\Gamma_{\text{total}}$	$<1.6 \times 10^{-3}$ , CL = 95%	PAR=Q007;DESIG=8

## NOTES

[a] Forbidden by angular momentum conservation.	LINKAGE=JV
[b] C parity forbids this to occur as a single-photon process.	LINKAGE=CS
[c] See the Particle Listings for the (complicated) definition of this quantity.	LINKAGE=DEF
[d] Time-reversal invariance requires this to be $0^\circ$ or $180^\circ$ .	LINKAGE=CR
[e] This coefficient is zero if time invariance is not violated.	LINKAGE=TVC
[f] Allowed by higher-order electroweak interactions.	LINKAGE=CE
[g] 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
[h] In the 2010 <i>Review</i> , the values for these quantities were given using a measure of the asymmetry that was inconsistent with the usual definition.	LINKAGE=MVL
[i] $\text{Re}(\epsilon'/\epsilon) = \epsilon'/\epsilon$ to a very good approximation provided the phases satisfy $CPT$ invariance.	LINKAGE=SAA
[j] This mode includes gammas from inner bremsstrahlung but not the direct emission mode $K_L^0 \rightarrow \pi^+ \pi^- \gamma$ (DE).	LINKAGE=IBR
[k] Neglecting photon channels. See, e.g., A. Pais and S.B. Treiman, Phys. Rev. <b>D12</b> , 2744 (1975).	LINKAGE=CH
[l] Derived from measured values of $\phi_{+-}$ , $\phi_{00}$ , $ \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
[n] 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
[o] The value is for the sum of the charge states or particle/antiparticle states indicated.	LINKAGE=SG
[p] A test of additive vs. multiplicative lepton family number conservation.	LINKAGE=CK
[q] Derived from an analysis of neutrino-oscillation experiments.	LINKAGE=CL
[r] 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
[s] This is the best limit for the mode $e^- \rightarrow \nu \gamma$ .	LINKAGE=EML
[t] The limit is from neutrality-of-matter experiments; it assumes $q_n = q_p + q_e$ . See also the charge of the neutron.	LINKAGE=SS
[u] See the $K_S^0$ Particle Listings for the energy limits used in this measurement.	LINKAGE=KDS
[v] See the $K_L^0$ Particle Listings for the energy limits used in this measurement.	LINKAGE=KDL
[x] An $\ell$ indicates an $e$ or a $\mu$ mode, not a sum over these modes.	LINKAGE=DX
[y] Here $S$ and $P$ are the hypothetical scalar and pseudoscalar particles with masses of $2.5 \text{ GeV}/c^2$ and $214.3 \text{ MeV}/c^2$ , respectively.	LINKAGE=BSP
[z] This limit is for $\Gamma(t \rightarrow Z q)/\Gamma(t \rightarrow W b)$ .	LINKAGE=TD2