$B^{\pm}$

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

I, J, P need confirmation. Quantum numbers shown are quark-model predictions.

Mass $m_{B^{\pm}} = 5279.0 \pm 0.5$ MeV
Mean life $\tau_{B^{\pm}} = (1.671 \pm 0.018) \times 10^{-12}$ s
$c\tau = 501\ \mu$m

CP violation

$A_{CP}(B^+ \rightarrow J/\psi(1S)K^+) = 0.016 \pm 0.016$ (S = 1.2)
$A_{CP}(B^+ \rightarrow J/\psi(1S)\pi^+) = 0.09 \pm 0.08$
$A_{CP}(B^+ \rightarrow \psi(2S)K^+) = -0.037 \pm 0.025$
$A_{CP}(B^+ \rightarrow \overline{D}{}^0 K^+) = 0.04 \pm 0.07$
$A_{CP}(B^+ \rightarrow D_{CP(+1)}K^+) = 0.07 \pm 0.13$
$A_{CP}(B^+ \rightarrow D_{CP(-1)}K^+) = -0.19 \pm 0.18$
$A_{CP}(B^+ \rightarrow \pi^+\pi^0) = -0.02 \pm 0.09$
$A_{CP}(B^+ \rightarrow K^+\pi^0) = -0.01 \pm 0.06$ (S = 1.2)
$A_{CP}(B^+ \rightarrow K^0_S\pi^+) = 0.02 \pm 0.06$
$A_{CP}(B^+ \rightarrow \pi^+\pi^-\pi^+) = -0.39 \pm 0.35$
$A_{CP}(B^+ \rightarrow \rho^0\pi^+) = -0.19 \pm 0.11$
$A_{CP}(B^+ \rightarrow \rho^+\pi^0) = 0.24 \pm 0.17$
$A_{CP}(B^+ \rightarrow \rho^+\rho^0) = -0.09 \pm 0.16$
$A_{CP}(B^+ \rightarrow K^+\pi^-\pi^+) = 0.01 \pm 0.08$
$A_{CP}(B^+ \rightarrow K^+K^-K^+) = 0.02 \pm 0.08$
$A_{CP}(B^+ \rightarrow K^+K^0_S K^0_S) = -0.04 \pm 0.11$
$A_{CP}(B^+ \rightarrow \eta\pi^+) = -0.44 \pm 0.18$
$A_{CP}(B^+ \rightarrow \eta K^+) = -0.52 \pm 0.24$
$A_{CP}(B^+ \rightarrow \eta K*(892)^+) = 0.13 \pm 0.14$
$A_{CP}(B^+ \rightarrow K^+\eta') = 0.009 \pm 0.035$
$A_{CP}(B^+ \rightarrow \omega\pi^+) = 0.10 \pm 0.22$ (S = 1.9)
$A_{CP}(B^+ \rightarrow \omega K^+) = -0.02 \pm 0.13$
$A_{CP}(B^+ \rightarrow \phi K^+) = 0.03 \pm 0.07$
$A_{CP}(B^+ \rightarrow \phi K^*(892)^+) = 0.09 \pm 0.15$
$A_{CP}(B^+ \rightarrow \rho^0 K^*(892)^+) = 0.20 \pm 0.31$
Electric dipole moment $d = (77 \pm 25)^\circ$
$A_{CP}(B^+ \rightarrow p\overline{p}\pi^+) = -0.16 \pm 0.22$
$A_{CP}(B^+ \rightarrow p\overline{p}K^+) = -0.05 \pm 0.11$

B^- modes are charge conjugates of the modes below. Modes which do not identify the charge state of the B are listed in the $B^{\pm}/B^0$ ADMIXTURE section.

The branching fractions listed below assume 50% $B^0\overline{B}{}^0$ and 50% B^+B^- production at the $\Upsilon(4S)$. We have attempted to bring older measurements up to date by rescaling their assumed $\Upsilon(4S)$ production ratio to 50:50 and their assumed D, D_s, D^*, and ψ branching ratios to current values whenever this would affect our averages and best limits significantly.

Indentation is used to indicate a subchannel of a previous reaction. All resonant subchannels have been corrected for resonance branching fractions to the final state so the sum of the subchannel branching fractions can exceed that of the final state.

For inclusive branching fractions, *e.g.*, $B \rightarrow D^{\pm}$ anything, the values usually are multiplicities, not branching fractions. They can be greater than one.

B^+ DECAY MODES	Fraction (Γ_i/Γ)	Scale factor/ Confidence level	p (MeV/c)

NODE=S041
NODE=S041M;DTYPE=M
NODE=S041T;DTYPE=T;OUR EVAL;
→ NOT CHECKED ←
NODE=S041CTA;DTYPE=C;OUR EVAL
CLUMP=E
NODE=S041AX1;DTYPE=e;CLUMP=E
NODE=S041AX9;DTYPE=e;CLUMP=E
NODE=S041AX2;DTYPE=e;CLUMP=E
NODE=S041AY2;DTYPE=e;CLUMP=E
NODE=S041AY3;DTYPE=e;CLUMP=E
NODE=S041AY4;DTYPE=e;CLUMP=E
NODE=S041AX0;DTYPE=e;CLUMP=E
NODE=S041AX3;DTYPE=e;CLUMP=E
NODE=S041AX4;DTYPE=e;CLUMP=E
NODE=S041AY5;DTYPE=e;CLUMP=E
NODE=S041CP4;DTYPE=e;CLUMP=E
NODE=S041CP5;DTYPE=e;CLUMP=E
NODE=S041AY9;DTYPE=e;CLUMP=E
NODE=S041AY6;DTYPE=e;CLUMP=E
NODE=S041AY7;DTYPE=e;CLUMP=E
NODE=S041AY8;DTYPE=e;CLUMP=E
NODE=S041CP2;DTYPE=e;CLUMP=E
NODE=S041CP3;DTYPE=e;CLUMP=E
NODE=S041CP1;DTYPE=e;CLUMP=E
NODE=S041AX5;DTYPE=e;CLUMP=E
NODE=S041AX6;DTYPE=e;CLUMP=E
NODE=S041AY1;DTYPE=e;CLUMP=E
NODE=S041AX7;DTYPE=e;CLUMP=E
NODE=S041AX8;DTYPE=e;CLUMP=E
NODE=S041AZ1;DTYPE=e;CLUMP=E
NODE=S041GAM;DTYPE=e;CLUMP=E
NODE=S041CP6;DTYPE=e;CLUMP=E
NODE=S041CP7;DTYPE=e;CLUMP=E
NODE=S041210;NODE=S041

Semileptonic and leptonic modes

NODE=S041;CLUMP=A

Mode		Fraction	Scale factor / CL	p	
$\ell^+ \nu_\ell$ anything	[a]	(10.2 ± 0.9) %		–	DESIG=220
$\overline{D}^0 \ell^+ \nu_\ell$	[a]	(2.15 ± 0.22) %		2310	DESIG=145
$\overline{D}^*(2007)^0 \ell^+ \nu_\ell$	[a]	(6.5 ± 0.5) %		2258	DESIG=146
$\overline{D}_1(2420)^0 \ell^+ \nu_\ell$		(5.6 ± 1.6) $\times 10^{-3}$		2084	DESIG=257
$\overline{D}^*_2(2460)^0 \ell^+ \nu_\ell$		< 8 $\times 10^{-3}$	CL=90%	2067	DESIG=258
$\pi^0 e^+ \nu_e$		(9.0 ± 2.8) $\times 10^{-5}$		2638	DESIG=138
$\eta \ell^+ \nu_\ell$		(8 ± 4) $\times 10^{-5}$		2611	DESIG=327
$\omega \ell^+ \nu_\ell$	[a]	(1.3 ± 0.6) $\times 10^{-4}$		2582	DESIG=173
$\rho^0 \ell^+ \nu_\ell$	[a]	($1.34^{+0.32}_{-0.35}$) $\times 10^{-4}$		2583	DESIG=174
$p \overline{p} e^+ \nu_e$		< 5.2 $\times 10^{-3}$	CL=90%	2467	DESIG=319
$e^+ \nu_e$		< 1.5 $\times 10^{-5}$	CL=90%	2640	DESIG=182
$\mu^+ \nu_\mu$		< 6.6 $\times 10^{-6}$	CL=90%	2638	DESIG=183
$\tau^+ \nu_\tau$		< 5.7 $\times 10^{-4}$	CL=90%	2340	DESIG=184
$e^+ \nu_e \gamma$		< 2.0 $\times 10^{-4}$	CL=90%	2640	DESIG=234
$\mu^+ \nu_\mu \gamma$		< 5.2 $\times 10^{-5}$	CL=90%	2638	DESIG=235

Inclusive modes

NODE=S041;CLUMP=J

Mode	Fraction	Scale factor / CL	p	
$D^0 X$	(9.8 ± 1.1) %		–	DESIG=380
$\overline{D}^0 X$	(79 ± 5) %		–	DESIG=381
$D^+ X$	(3.8 ± 1.0) %		–	DESIG=382
$D^- X$	(9.8 ± 1.8) %		–	DESIG=383
$D_s^+ X$	(14^{+5}_{-4}) %		–	DESIG=384
$D_s^- X$	< 2.2 %	CL=90%	–	DESIG=385
$\Lambda_c^+ X$	($2.9^{+1.4}_{-1.1}$) %		–	DESIG=386
$\overline{\Lambda}_c^- X$	($3.5^{+1.5}_{-1.2}$) %		–	DESIG=387
$\overline{c} X$	(98 ± 6) %		–	DESIG=388
$c X$	(33^{+6}_{-4}) %		–	DESIG=389
$\overline{c} c X$	(131^{+10}_{-8}) %		–	DESIG=390

D, D^*, or D_s modes

NODE=S041;CLUMP=B

Mode	Fraction	Scale factor / CL	p	
$\overline{D}^0 \pi^+$	(4.98 ± 0.29) $\times 10^{-3}$		2308	DESIG=1
$\overline{D}^0 \rho^+$	(1.34 ± 0.18) %		2236	DESIG=25
$\overline{D}^0 K^+$	(3.7 ± 0.6) $\times 10^{-4}$	S=1.1	2280	DESIG=256
$\overline{D}^0 K^*(892)^+$	(6.3 ± 0.8) $\times 10^{-4}$		2213	DESIG=279
$\overline{D}^0 K^+ \overline{K}^0$	(5.5 ± 1.6) $\times 10^{-4}$		2189	DESIG=286
$\overline{D}^0 K^+ \overline{K}^*(892)^0$	(7.5 ± 1.7) $\times 10^{-4}$		2071	DESIG=288
$\overline{D}^0 \pi^+ \pi^+ \pi^-$	(1.1 ± 0.4) %		2289	DESIG=165
$\overline{D}^0 \pi^+ \pi^+ \pi^-$ nonresonant	(5 ± 4) $\times 10^{-3}$		2289	DESIG=166
$\overline{D}^0 \pi^+ \rho^0$	(4.2 ± 3.0) $\times 10^{-3}$		2207	DESIG=167
$\overline{D}^0 a_1(1260)^+$	(5 ± 4) $\times 10^{-3}$		2123	DESIG=168
$\overline{D}^0 \omega \pi^+$	(4.1 ± 0.9) $\times 10^{-3}$		2206	DESIG=276
$D^*(2010)^- \pi^+ \pi^+$	(1.35 ± 0.22) $\times 10^{-3}$		2247	DESIG=2
$D^- \pi^+ \pi^+$	(1.02 ± 0.16) $\times 10^{-3}$		2299	DESIG=14
$\overline{D}^*_2(2462)^0 \pi^+ \times$ B($\overline{D}^*_2(2462)^0 \to D^- \pi^+$)	(3.4 ± 0.8) $\times 10^{-4}$		–	DESIG=348
$\overline{D}^*_2(2308)^0 \pi^+ \times$ B($\overline{D}^*_2(2308)^0 \to D^- \pi^+$)	(6.1 ± 1.9) $\times 10^{-4}$		–	DESIG=349
$\overline{D}_1(2421)^0 \pi^+ \times$ B($\overline{D}_1(2421)^0 \to D^{*-} \pi^+$)	(6.8 ± 1.5) $\times 10^{-4}$		–	DESIG=350
$\overline{D}^*_2(2462)^0 \pi^+ \times$ B($\overline{D}^*_2(2462)^0 \to D^{*-} \pi^+$)	(1.8 ± 0.5) $\times 10^{-4}$		–	DESIG=351
$\overline{D}'_1(2427)^0 \pi^+ \times$ B($\overline{D}'_1(2427)^0 \to D^{*-} \pi^+$)	(5.0 ± 1.2) $\times 10^{-4}$		–	DESIG=352
$\overline{D}^*(2007)^0 \pi^+$	(4.6 ± 0.4) $\times 10^{-3}$		2256	DESIG=15
$\overline{D}^*(2007)^0 \omega \pi^+$	(4.5 ± 1.2) $\times 10^{-3}$		2149	DESIG=275
$\overline{D}^*(2007)^0 \rho^+$	(9.8 ± 1.7) $\times 10^{-3}$		2181	DESIG=169

$\overline{D}^*(2007)^0 K^+$	$(3.6 \pm 1.0) \times 10^{-4}$		2227	DESIG=270
$\overline{D}^*(2007)^0 K^*(892)^+$	$(8.1 \pm 1.4) \times 10^{-4}$		2156	DESIG=280
$\overline{D}^*(2007)^0 K^+ \overline{K}^0$	$< 1.06 \times 10^{-3}$	CL=90%	2132	DESIG=287
$\overline{D}^*(2007)^0 K^+ K^*(892)^0$	$(1.5 \pm 0.4) \times 10^{-3}$		2008	DESIG=289
$\overline{D}^*(2007)^0 \pi^+ \pi^+ \pi^-$	(1.03 ± 0.12) %		2236	DESIG=211
$\quad \overline{D}^*(2007)^0 a_1(1260)^+$	(1.9 ± 0.5) %		2062	DESIG=221
$\overline{D}^*(2007)^0 \pi^- \pi^+ \pi^+ \pi^0$	(1.8 ± 0.4) %		2219	DESIG=274
$\overline{D}^{*0} 3\pi^+ 2\pi^-$	$(5.7 \pm 1.2) \times 10^{-3}$		2196	DESIG=379
$D^*(2010)^+ \pi^0$	$< 1.7 \times 10^{-4}$	CL=90%	2255	DESIG=240
$\overline{D}^*(2010)^+ K^0$	$< 9.5 \times 10^{-5}$	CL=90%	2225	DESIG=269
$D^*(2010)^- \pi^+ \pi^+ \pi^0$	(1.5 ± 0.7) %		2235	DESIG=12
$D^*(2010)^- \pi^+ \pi^+ \pi^+ \pi^-$	$(2.6 \pm 0.4) \times 10^{-3}$		2217	DESIG=141
$\overline{D}_1^*(2420)^0 \pi^+$	$(1.5 \pm 0.6) \times 10^{-3}$	S=1.3	2081	DESIG=214
$\overline{D}_1^*(2420)^0 \rho^+$	$< 1.4 \times 10^{-3}$	CL=90%	1995	DESIG=215
$\overline{D}_2^*(2460)^0 \pi^+$	$< 1.3 \times 10^{-3}$	CL=90%	2064	DESIG=212
$\overline{D}_2^*(2460)^0 \rho^+$	$< 4.7 \times 10^{-3}$	CL=90%	1977	DESIG=213
$\overline{D}^0 D_s^+$	(1.3 ± 0.4) %		1815	DESIG=72
$D_{sJ}(2317)^+ \overline{D}^0 \times$ B$(D_{sJ}(2317)^+ \to D_s^+ \pi^0)$	$(9.0 {}^{+3.0}_{-2.6}) \times 10^{-4}$		1605	DESIG=321
$D_{sJ}(2317)^+ \overline{D}^*(2010)^0 \times$ B$(D_{sJ}(2317)^+ \to D_s^+ \pi^0)$	$(9 \pm 7) \times 10^{-4}$		–	DESIG=26
$D_{sJ}(2457)^+ \overline{D}^0 \times$ B$(D_{sJ}(2457)^+ \to D_s^{*+} \pi^0)$	$(1.6 {}^{+0.7}_{-0.6}) \times 10^{-3}$	S=1.2	–	DESIG=322
$D_{sJ}(2457)^+ \overline{D}^0 \times$ B$(D_{sJ}(2457)^+ \to D_s^+ \gamma)$	$(5.8 {}^{+1.8}_{-1.6}) \times 10^{-4}$		–	DESIG=28
$D_{sJ}(2457)^+ \overline{D}^*(2010)^0 \times$ B$(D_{sJ}(2457)^+ \to D_s^{*+} \pi^0)$	$(7.6 {}^{+3.6}_{-2.9}) \times 10^{-3}$		–	DESIG=27
$D_{sJ}(2457)^+ \overline{D}^*(2010)^0 \times$ B$(D_{sJ}(2457)^+ \to D_s^+ \gamma)$	$(1.4 {}^{+0.7}_{-0.6}) \times 10^{-3}$		–	DESIG=29
$\overline{D}^0 D_{sJ}(2536)^+ \times$ B$(D_{sJ}(2536)^+ \to D^*(2007)^0 K^+)$	$< 2 \times 10^{-4}$	CL=90%	1447	DESIG=341
$\overline{D}^*(2007)^0 D_{sJ}(2536)^+ \times$ B$(D_{sJ}(2536)^+ \to D^*(2007)^0 K^+)$	$< 7 \times 10^{-4}$	CL=90%	1338	DESIG=342
$\overline{D}^0 D_{sJ}(2573)^+ \times$ B$(D_{sJ}(2573)^+ \to D^0 K^+)$	$< 2 \times 10^{-4}$	CL=90%	1417	DESIG=343
$\overline{D}^*(2007)^0 D_{sJ}(2573)^+ \times$ B$(D_{sJ}(2573)^+ \to D^0 K^+)$	$< 5 \times 10^{-4}$	CL=90%	1306	DESIG=344
$\overline{D}^0 D_s^{*+}$	$(9 \pm 4) \times 10^{-3}$		1734	DESIG=175
$\overline{D}^*(2007)^0 D_s^+$	(1.2 ± 0.5) %		1737	DESIG=176
$\overline{D}^*(2007)^0 D_s^{*+}$	(2.7 ± 1.0) %		1651	DESIG=177
$D_s^{(*)+} \overline{D}^{**0}$	(2.7 ± 1.2) %		–	DESIG=264
$\overline{D}^*(2007)^0 D^*(2010)^+$	< 1.1 %	CL=90%	1713	DESIG=259
$\overline{D}^0 D^*(2010)^+ + \overline{D}^*(2007)^0 D^+$	< 1.3 %	CL=90%	1792	DESIG=260
$\overline{D}^0 D^+$	$< 6.7 \times 10^{-3}$	CL=90%	1866	DESIG=261
$\overline{D}^0 D^+ K^0$	$< 2.8 \times 10^{-3}$	CL=90%	1571	DESIG=328
$\overline{D}^*(2007)^0 D^+ K^0$	$< 6.1 \times 10^{-3}$	CL=90%	1475	DESIG=329
$\overline{D}^0 \overline{D}^*(2010)^+ K^0$	$(5.2 \pm 1.2) \times 10^{-3}$		1476	DESIG=330
$\overline{D}^*(2007)^0 D^*(2010)^+ K^0$	$(7.8 \pm 2.6) \times 10^{-3}$		1362	DESIG=331
$\overline{D}^0 D^0 K^+$	$(1.37 \pm 0.32) \times 10^{-3}$	S=1.5	1577	DESIG=332
$\overline{D}^*(2010)^0 D^0 K^+$	$< 3.8 \times 10^{-3}$	CL=90%	–	DESIG=333
$\overline{D}^0 D^*(2007)^0 K^+$	$(4.7 \pm 1.0) \times 10^{-3}$		1481	DESIG=334

$\overline{D}^*(2007)^0 D^*(2007)^0 K^+$	$(5.3 \pm 1.6) \times 10^{-3}$		1368	DESIG=335
$D^- D^+ K^+$	$< 4 \times 10^{-4}$	CL=90%	1571	DESIG=336
$D^- D^*(2010)^+ K^+$	$< 7 \times 10^{-4}$	CL=90%	1475	DESIG=337
$D^*(2010)^- D^+ K^+$	$(1.5 \pm 0.4) \times 10^{-3}$		1475	DESIG=338
$D^*(2010)^- D^*(2010)^+ K^+$	$< 1.8 \times 10^{-3}$	CL=90%	1363	DESIG=339
$(\overline{D}+\overline{D}^*)(D+D^*)K$	(3.5 ± 0.6) %		–	DESIG=340
$D_s^+ \pi^0$	$< 2.0 \times 10^{-4}$	CL=90%	2270	DESIG=192
$D_s^{*+} \pi^0$	$< 3.3 \times 10^{-4}$	CL=90%	2215	DESIG=193
$D_s^+ \eta$	$< 5 \times 10^{-4}$	CL=90%	2235	DESIG=206
$D_s^{*+} \eta$	$< 8 \times 10^{-4}$	CL=90%	2178	DESIG=207
$D_s^+ \rho^0$	$< 4 \times 10^{-4}$	CL=90%	2197	DESIG=186
$D_s^{*+} \rho^0$	$< 5 \times 10^{-4}$	CL=90%	2138	DESIG=188
$D_s^+ \omega$	$< 5 \times 10^{-4}$	CL=90%	2195	DESIG=194
$D_s^{*+} \omega$	$< 7 \times 10^{-4}$	CL=90%	2136	DESIG=195
$D_s^+ a_1(1260)^0$	$< 2.2 \times 10^{-3}$	CL=90%	2079	DESIG=196
$D_s^{*+} a_1(1260)^0$	$< 1.6 \times 10^{-3}$	CL=90%	2014	DESIG=197
$D_s^+ \phi$	$< 3.2 \times 10^{-4}$	CL=90%	2141	DESIG=198
$D_s^{*+} \phi$	$< 4 \times 10^{-4}$	CL=90%	2079	DESIG=199
$D_s^+ \overline{K}^0$	$< 1.1 \times 10^{-3}$	CL=90%	2241	DESIG=200
$D_s^{*+} \overline{K}^0$	$< 1.1 \times 10^{-3}$	CL=90%	2184	DESIG=31
$D_s^+ \overline{K}^*(892)^0$	$< 5 \times 10^{-4}$	CL=90%	2172	DESIG=187
$D_s^{*+} \overline{K}^*(892)^0$	$< 4 \times 10^{-4}$	CL=90%	2112	DESIG=190
$D_s^- \pi^+ K^+$	$< 8 \times 10^{-4}$	CL=90%	2222	DESIG=32
$D_s^{*-} \pi^+ K^+$	$< 1.2 \times 10^{-3}$	CL=90%	2164	DESIG=33
$D_s^- \pi^+ K^*(892)^+$	$< 6 \times 10^{-3}$	CL=90%	2138	DESIG=34
$D_s^{*-} \pi^+ K^*(892)^+$	$< 8 \times 10^{-3}$	CL=90%	2076	DESIG=35
Charmonium modes				NODE=S041;CLUMP=C
$\eta_c K^+$	$(1.03 \pm 0.21) \times 10^{-3}$		1754	DESIG=265
$J/\psi(1S) K^+$	$(9.9 \pm 0.4) \times 10^{-4}$		1683	DESIG=3
$J/\psi(1S) K^+ \pi^+ \pi^-$	$(7.7 \pm 2.0) \times 10^{-4}$		1612	DESIG=19
$X(3872) K^+$	seen		1141	DESIG=320
$X(3872) K^+$	$< 6.0 \times 10^{-5}$	CL=90%	1141	DESIG=363
$\times$ B$(X(3872) \to D^0 \overline{D}^0)$				
$X(3872) K^+$	$< 4.0 \times 10^{-5}$	CL=90%	1141	DESIG=364
$\times$ B$(X(3872) \to D^+ D^-)$				
$X(3872) K^+$	$< 6.0 \times 10^{-5}$	CL=90%	1141	DESIG=365
$\times$ B$(X(3872) \to D^0 \overline{D}^0 \pi^0)$				
$X(3872) K^+$	$< 7.7 \times 10^{-6}$	CL=90%	1141	DESIG=355
$\times$ B$(X(3872) \to J/\psi(1S) \eta)$				
$J/\psi(1S) K^*(892)^+$	$(1.35 \pm 0.10) \times 10^{-3}$		1571	DESIG=142
$J/\psi(1S) K(1270)^+$	$(1.8 \pm 0.5) \times 10^{-3}$		1390	DESIG=271
$J/\psi(1S) K(1400)^+$	$< 5 \times 10^{-4}$	CL=90%	1308	DESIG=272
$J/\psi(1S) \eta K^+$	$(1.08 \pm 0.33) \times 10^{-4}$		1509	DESIG=354
$J/\psi(1S) \phi K^+$	$(5.2 \pm 1.7) \times 10^{-5}$	S=1.2	1227	DESIG=268
$J/\psi(1S) \pi^+$	$(4.8 \pm 0.6) \times 10^{-5}$	S=1.5	1727	DESIG=222
$J/\psi(1S) \rho^+$	$< 7.7 \times 10^{-4}$	CL=90%	1611	DESIG=226
$J/\psi(1S) a_1(1260)^+$	$< 1.2 \times 10^{-3}$	CL=90%	1414	DESIG=227
$J/\psi(1S) p \overline{\Lambda}$	$(1.2\ {}^{+0.9}_{-0.6}) \times 10^{-5}$		567	DESIG=318
$\psi(2S) K^+$	$(6.8 \pm 0.4) \times 10^{-4}$		1284	DESIG=20
$\psi(2S) K^*(892)^+$	$(9.2 \pm 2.2) \times 10^{-4}$		1115	DESIG=143
$\psi(2S) K^+ \pi^+ \pi^-$	$(1.9 \pm 1.2) \times 10^{-3}$		1178	DESIG=144
$\psi(3770) K^+$	$(4.8 \pm 1.3) \times 10^{-4}$		1220	DESIG=360
$\psi(3770) K^+$	$(3.4 \pm 0.9) \times 10^{-4}$		1220	DESIG=361
$\times$ B$(\psi(3770) \to D^0 \overline{D}^0)$				
$\psi(3770) K^+$	$(1.4 \pm 0.8) \times 10^{-4}$		1220	DESIG=362
$\times$ B$(\psi(3770) \to D^+ D^- K^+)$				
$\chi_{c0}(1P) K^+$	$(3.0 \pm 0.6) \times 10^{-4}$	S=1.1	1478	DESIG=266
$\chi_{c1}(1P) K^+$	$(6.8 \pm 1.2) \times 10^{-4}$		1411	DESIG=171
$\chi_{c1}(1P) K^*(892)^+$	$< 2.1 \times 10^{-3}$	CL=90%	1265	DESIG=216

K or K^* modes				NODE=S041;CLUMP=D
$K^0\pi^+$	$(2.18\pm 0.14)\times 10^{-5}$		2614	DESIG=5
$K^+\pi^0$	$(1.25\pm 0.10)\times 10^{-5}$		2615	DESIG=223
$\eta' K^+$	$(7.8\pm 0.5)\times 10^{-5}$		2528	DESIG=248
$\eta' K^*(892)^+$	$< 1.4\times 10^{-5}$	CL=90%	2472	DESIG=244
ηK^+	$(3.4\pm 0.8)\times 10^{-6}$		2588	DESIG=245
$\eta K^*(892)^+$	$(2.6\pm 0.4)\times 10^{-5}$		2534	DESIG=246
ωK^+	$(5.3\pm 0.8)\times 10^{-6}$	S=1.1	2557	DESIG=251
$\omega K^*(892)^+$	$< 8.7\times 10^{-5}$	CL=90%	2503	DESIG=252
$a_0^0 K^0$	$< 3.9\times 10^{-6}$	CL=90%	–	DESIG=378
$a_0^0 K^+$	$< 2.5\times 10^{-6}$	CL=90%	–	DESIG=377
$K^*(892)^0\pi^+$	$(1.60^{+0.22}_{-0.39})\times 10^{-5}$		2562	DESIG=6
$K^*(892)^+\pi^0$	$< 3.1\times 10^{-5}$	CL=90%	2562	DESIG=225
$K^+\pi^-\pi^+$	$(5.7\pm 0.4)\times 10^{-5}$		2609	DESIG=282
$K^+\pi^-\pi^+$ nonresonant	$< 1.7\times 10^{-5}$	CL=90%	2609	DESIG=59
$K^+ f_0(980)\times$ B($f_0\to\pi^+\pi^-$)	$(9.3\pm 2.1)\times 10^{-6}$		2524	DESIG=281
$K^+\rho^0$	$< 6.2\times 10^{-6}$	CL=90%	2558	DESIG=7
$K_2^*(1430)^0\pi^+$	$< 6.8\times 10^{-4}$	CL=90%	2445	DESIG=152
$K^-\pi^+\pi^+$	$< 1.8\times 10^{-6}$	CL=90%	2609	DESIG=283
$K^-\pi^+\pi^+$ nonresonant	$< 5.6\times 10^{-5}$	CL=90%	2609	DESIG=229
$K_1(1400)^0\pi^+$	$< 2.6\times 10^{-3}$	CL=90%	2451	DESIG=151
$K^0\pi^+\pi^0$	$< 6.6\times 10^{-5}$	CL=90%	2609	DESIG=305
$K^0\rho^+$	$< 4.8\times 10^{-5}$	CL=90%	2558	DESIG=224
$K^*(892)^+\pi^+\pi^-$	$< 1.1\times 10^{-3}$	CL=90%	2556	DESIG=163
$K^*(892)^+\rho^0$	$(1.1\pm 0.4)\times 10^{-5}$		2504	DESIG=153
$K^*(892)^+ K^*(892)^0$	$< 7.1\times 10^{-5}$	CL=90%	2484	DESIG=277
$K_1(1400)^+\rho^0$	$< 7.8\times 10^{-4}$	CL=90%	2387	DESIG=154
$K_2^*(1430)^+\rho^0$	$< 1.5\times 10^{-3}$	CL=90%	2381	DESIG=155
$K^+\overline{K}^0$	$< 3.3\times 10^{-6}$	CL=90%	2593	DESIG=241
$\overline{K}^0 K^+\pi^0$	$< 2.4\times 10^{-5}$	CL=90%	2578	DESIG=306
$K^+ K_S^0 K_S^0$	$(1.15\pm 0.13)\times 10^{-5}$		2521	DESIG=323
$K_S^0 K_S^0\pi^+$	$< 3.2\times 10^{-6}$	CL=90%	2577	DESIG=324
$K^+K^-\pi^+$	$< 6.3\times 10^{-6}$	CL=90%	2578	DESIG=284
$K^+K^-\pi^+$ nonresonant	$< 7.5\times 10^{-5}$	CL=90%	2578	DESIG=230
$K^+K^+\pi^-$	$< 1.3\times 10^{-6}$	CL=90%	2578	DESIG=285
$K^+K^+\pi^-$ nonresonant	$< 8.79\times 10^{-5}$	CL=90%	2578	DESIG=262
$K^+K^*(892)^0$	$< 5.3\times 10^{-6}$	CL=90%	2540	DESIG=263
$K^+K^-K^+$	$(3.08\pm 0.21)\times 10^{-5}$		2522	DESIG=160
$K^+\phi$	$(9.3\pm 1.0)\times 10^{-6}$	S=1.3	2516	DESIG=8
$K^+K^-K^+$ nonresonant	$< 3.8\times 10^{-5}$	CL=90%	2522	DESIG=231
$K^*(892)^+K^+K^-$	$< 1.6\times 10^{-3}$	CL=90%	2466	DESIG=164
$K^*(892)^+\phi$	$(9.6\pm 3.0)\times 10^{-6}$	S=1.9	2460	DESIG=156
$K_1(1400)^+\phi$	$< 1.1\times 10^{-3}$	CL=90%	2339	DESIG=157
$K_2^*(1430)^+\phi$	$< 3.4\times 10^{-3}$	CL=90%	2332	DESIG=158
$K^+\phi\phi$	$(2.6^{+1.1}_{-0.9})\times 10^{-6}$		2306	DESIG=325
$K^*(892)^+\gamma$	$(4.03\pm 0.26)\times 10^{-5}$		2564	DESIG=9
$K_1(1270)^+\gamma$	$< 9.9\times 10^{-5}$	CL=90%	2486	DESIG=53
$\phi K^+\gamma$	$(3.4\pm 1.0)\times 10^{-6}$		2516	DESIG=347
$K^+\pi^-\pi^+\gamma$	$(2.4^{+0.6}_{-0.5})\times 10^{-5}$		2609	DESIG=307
$K^*(892)^0\pi^+\gamma$	$(2.0^{+0.7}_{-0.6})\times 10^{-5}$		2562	DESIG=308
$K^+\rho^0\gamma$	$< 2.0\times 10^{-5}$	CL=90%	2558	DESIG=309
$K^+\pi^-\pi^+\gamma$ nonresonant	$< 9.2\times 10^{-6}$	CL=90%	2609	DESIG=310
$K_1(1400)^+\gamma$	$< 5.0\times 10^{-5}$	CL=90%	2453	DESIG=54
$K_2^*(1430)^+\gamma$	$(1.4\pm 0.4)\times 10^{-5}$		2447	DESIG=55
$K^*(1680)^+\gamma$	$< 1.9\times 10^{-3}$	CL=90%	2360	DESIG=56
$K_3^*(1780)^+\gamma$	$< 5.5\times 10^{-3}$	CL=90%	2341	DESIG=57
$K_4^*(2045)^+\gamma$	$< 9.9\times 10^{-3}$	CL=90%	2243	DESIG=58

Light unflavored meson modes					NODE=S041;CLUMP=E
$\rho^+ \gamma$	$<$ 1.8	$\times 10^{-6}$	CL=90%	2583	DESIG=267
$\pi^+ \pi^0$	$(5.1 \begin{smallmatrix}+0.8\\-0.9\end{smallmatrix})$	$\times 10^{-6}$		2636	DESIG=16
$\pi^+ \pi^+ \pi^-$	(1.1 ± 0.4)	$\times 10^{-5}$		2630	DESIG=63
$\rho^0 \pi^+$	(9.2 ± 1.1)	$\times 10^{-6}$		2581	DESIG=4
$\pi^+ f_0(980)$	$<$ 1.4	$\times 10^{-4}$	CL=90%	2547	DESIG=61
$\pi^+ f_2(1270)$	$<$ 2.4	$\times 10^{-4}$	CL=90%	2483	DESIG=62
$\pi^+ \pi^- \pi^+$ nonresonant	$<$ 4.1	$\times 10^{-5}$	CL=90%	2630	DESIG=228
$\pi^+ \pi^0 \pi^0$	$<$ 8.9	$\times 10^{-4}$	CL=90%	2631	DESIG=73
$\rho^+ \pi^0$	(1.09 ± 0.27)	$\times 10^{-5}$		2581	DESIG=74
$\pi^+ \pi^- \pi^+ \pi^0$	$<$ 4.0	$\times 10^{-3}$	CL=90%	2621	DESIG=75
$\rho^+ \rho^0$	(2.6 ± 0.6)	$\times 10^{-5}$		2523	DESIG=76
$a_1(1260)^+ \pi^0$	$<$ 1.7	$\times 10^{-3}$	CL=90%	2494	DESIG=77
$a_1(1260)^0 \pi^+$	$<$ 9.0	$\times 10^{-4}$	CL=90%	2494	DESIG=78
$\omega \pi^+$	(5.9 ± 1.0)	$\times 10^{-6}$	S=1.2	2580	DESIG=79
$\omega \rho^+$	$<$ 6.1	$\times 10^{-5}$	CL=90%	2522	DESIG=253
$\eta \pi^+$	(5.3 ± 1.0)	$\times 10^{-6}$		2609	DESIG=80
$\eta' \pi^+$	$<$ 4.5	$\times 10^{-6}$	CL=90%	2551	DESIG=242
$\eta' \rho^+$	$<$ 2.2	$\times 10^{-5}$	CL=90%	2492	DESIG=243
$\eta \rho^+$	$<$ 1.4	$\times 10^{-5}$	CL=90%	2553	DESIG=247
$\phi \pi^+$	$<$ 4.1	$\times 10^{-7}$	CL=90%	2539	DESIG=254
$\phi \rho^+$	$<$ 1.6	$\times 10^{-5}$		2480	DESIG=255
$a_0^0 \pi^+$	$<$ 5.8	$\times 10^{-6}$	CL=90%	–	DESIG=376
$\pi^+ \pi^+ \pi^+ \pi^- \pi^-$	$<$ 8.6	$\times 10^{-4}$	CL=90%	2608	DESIG=81
$\rho^0 a_1(1260)^+$	$<$ 6.2	$\times 10^{-4}$	CL=90%	2433	DESIG=17
$\rho^0 a_2(1320)^+$	$<$ 7.2	$\times 10^{-4}$	CL=90%	2410	DESIG=18
$\pi^+ \pi^+ \pi^+ \pi^- \pi^- \pi^0$	$<$ 6.3	$\times 10^{-3}$	CL=90%	2592	DESIG=83
$a_1(1260)^+ a_1(1260)^0$	$<$ 1.3	%	CL=90%	2335	DESIG=84
Charged particle ($h^\pm$) modes					NODE=S041;CLUMP=I
$h^\pm = K^\pm$ or $\pi^\pm$					NODE=S041
$h^+ \pi^0$	$(1.6 \begin{smallmatrix}+0.7\\-0.6\end{smallmatrix})$	$\times 10^{-5}$		2636	DESIG=249
ωh^+	$(1.38 \begin{smallmatrix}+0.27\\-0.24\end{smallmatrix})$	$\times 10^{-5}$		2580	DESIG=250
$h^+ X^0$(Familon)	$<$ 4.9	$\times 10^{-5}$	CL=90%	–	DESIG=278
Baryon modes					NODE=S041;CLUMP=F
$p \overline{p} \pi^+$	$(3.1 \begin{smallmatrix}+0.8\\-0.7\end{smallmatrix})$	$\times 10^{-6}$		2439	DESIG=21
$p \overline{p} \pi^+$ nonresonant	$<$ 5.3	$\times 10^{-5}$	CL=90%	2439	DESIG=232
$p \overline{p} \pi^+ \pi^+ \pi^-$	$<$ 5.2	$\times 10^{-4}$	CL=90%	2369	DESIG=22
$p \overline{p} K^+$	(5.7 ± 0.9)	$\times 10^{-6}$		2348	DESIG=313
$p \overline{p} K^+$ nonresonant	$<$ 8.9	$\times 10^{-5}$	CL=90%	2348	DESIG=233
$p \overline{p} K^*(892)^+$	$(1.03 \begin{smallmatrix}+0.38\\-0.33\end{smallmatrix})$	$\times 10^{-5}$		2215	DESIG=353
$p \overline{\Lambda}$	$<$ 1.5	$\times 10^{-6}$	CL=90%	2430	DESIG=23
$p \overline{\Lambda} \pi^+ \pi^-$	$<$ 2.0	$\times 10^{-4}$	CL=90%	2367	DESIG=24
$\Lambda \overline{\Lambda} \pi^+$	$(2.9 \begin{smallmatrix}+1.0\\-0.8\end{smallmatrix})$	$\times 10^{-6}$		2358	DESIG=356
$\Lambda \overline{\Lambda} K^+$	$<$ 2.8	$\times 10^{-6}$	CL=90%	2251	DESIG=357
$\overline{\Delta}^0 p$	$<$ 3.8	$\times 10^{-4}$	CL=90%	2402	DESIG=64
$\Delta^{++} \overline{p}$	$<$ 1.5	$\times 10^{-4}$	CL=90%	2402	DESIG=65
$D^+ p \overline{p}$	$<$ 1.5	$\times 10^{-5}$	CL=90%	1860	DESIG=303
$D^*(2010)^+ p \overline{p}$	$<$ 1.5	$\times 10^{-5}$	CL=90%	1786	DESIG=304
$\overline{\Lambda}_c^- p \pi^+$	(2.1 ± 0.7)	$\times 10^{-4}$		1981	DESIG=239
$\overline{\Lambda}_c^- p \pi^+ \pi^0$	(1.8 ± 0.6)	$\times 10^{-3}$		1936	DESIG=236
$\overline{\Lambda}_c^- p \pi^+ \pi^+ \pi^-$	(2.3 ± 0.7)	$\times 10^{-3}$		1881	DESIG=237
$\overline{\Lambda}_c^- p \pi^+ \pi^+ \pi^- \pi^0$	$<$ 1.34	%	CL=90%	1823	DESIG=238
$\overline{\Sigma}_c(2455)^0 p$	$<$ 8	$\times 10^{-5}$	CL=90%	1939	DESIG=311
$\overline{\Sigma}_c(2520)^0 p$	$<$ 4.6	$\times 10^{-5}$	CL=90%	1905	DESIG=312
$\overline{\Sigma}_c(2455)^0 p \pi^0$	(4.4 ± 1.8)	$\times 10^{-4}$		1897	DESIG=67
$\overline{\Sigma}_c(2455)^0 p \pi^- \pi^+$	(4.4 ± 1.7)	$\times 10^{-4}$		1845	DESIG=298
$\overline{\Sigma}_c(2455)^{--} p \pi^+ \pi^+$	(2.8 ± 1.2)	$\times 10^{-4}$		1845	DESIG=299
$\overline{\Lambda}_c(2593)^- / \overline{\Lambda}_c(2625)^- p \pi^+$	$<$ 1.9	$\times 10^{-4}$	CL=90%	–	DESIG=66

Lepton Family number (*LF*) or Lepton number (*L*) violating modes, or $\Delta B = 1$ weak neutral current (*B1*) modes

NODE=S041;CLUMP=G

$\pi^+ e^+ e^-$	*B1*		$<$ 3.9	$\times 10^{-3}$	CL=90%	2638	DESIG=85
$\pi^+ \mu^+ \mu^-$	*B1*		$<$ 9.1	$\times 10^{-3}$	CL=90%	2633	DESIG=88
$K^+ e^+ e^-$	*B1*		$(6.3 ^{+1.9}_{-1.7})$	$\times 10^{-7}$		2616	DESIG=11
$K^+ \mu^+ \mu^-$	*B1*		$(4.5 ^{+1.4}_{-1.2})$	$\times 10^{-7}$		2612	DESIG=10
$K^+ \ell^+ \ell^-$	*B1*	[a]	(5.3 ± 1.1)	$\times 10^{-7}$		2616	DESIG=345
$K^+ \overline{\nu} \nu$	*B1*		$<$ 2.4	$\times 10^{-4}$	CL=90%	2616	DESIG=273
$K^*(892)^+ e^+ e^-$	*B1*		$<$ 4.6	$\times 10^{-6}$	CL=90%	2564	DESIG=161
$K^*(892)^+ \mu^+ \mu^-$	*B1*		$<$ 2.2	$\times 10^{-6}$	CL=90%	2560	DESIG=162
$K^*(892)^+ \ell^+ \ell$	*B1*	[a]	$<$ 2.2	$\times 10^{-6}$	CL=90%	2564	DESIG=346
$\pi^+ e^+ \mu^-$	*LF*		$<$ 6.4	$\times 10^{-3}$	CL=90%	2637	DESIG=86
$\pi^+ e^- \mu^+$	*LF*		$<$ 6.4	$\times 10^{-3}$	CL=90%	2637	DESIG=87
$K^+ e^+ \mu^-$	*LF*		$<$ 8	$\times 10^{-7}$	CL=90%	2615	DESIG=89
$K^+ e^- \mu^+$	*LF*		$<$ 6.4	$\times 10^{-3}$	CL=90%	2615	DESIG=90
$K^*(892)^+ e^\pm \mu^\mp$	*LF*		$<$ 7.9	$\times 10^{-6}$	CL=90%	2563	DESIG=296
$\pi^- e^+ e^+$	*L*		$<$ 1.6	$\times 10^{-6}$	CL=90%	2638	DESIG=91
$\pi^- \mu^+ \mu^+$	*L*		$<$ 1.4	$\times 10^{-6}$	CL=90%	2633	DESIG=93
$\pi^- e^+ \mu^+$	*L*		$<$ 1.3	$\times 10^{-6}$	CL=90%	2637	DESIG=92
$\rho^- e^+ e^+$	*L*		$<$ 2.6	$\times 10^{-6}$	CL=90%	2583	DESIG=291
$\rho^- \mu^+ \mu^+$	*L*		$<$ 5.0	$\times 10^{-6}$	CL=90%	2578	DESIG=295
$\rho^- e^+ \mu^+$	*LF*		$<$ 3.3	$\times 10^{-6}$	CL=90%	2581	DESIG=294
$K^- e^+ e^+$	*L*		$<$ 1.0	$\times 10^{-6}$	CL=90%	2616	DESIG=94
$K^- \mu^+ \mu^+$	*L*		$<$ 1.8	$\times 10^{-6}$	CL=90%	2612	DESIG=96
$K^- e^+ \mu^+$	*L*		$<$ 2.0	$\times 10^{-6}$	CL=90%	2615	DESIG=95
$K^*(892)^- e^+ e^+$	*L*		$<$ 2.8	$\times 10^{-6}$	CL=90%	2564	DESIG=290
$K^*(892)^- \mu^+ \mu^+$	*L*		$<$ 8.3	$\times 10^{-6}$	CL=90%	2560	DESIG=292
$K^*(892)^- e^+ \mu^+$	*LF*		$<$ 4.4	$\times 10^{-6}$	CL=90%	2563	DESIG=293

NOTES

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

LINKAGE=DX