

# Heavy Flavor Averaging Group

$B^+$  Branching Fractions (decays with kaons) ( $\times 10^6$ ) - Sept. 2008. (UL 90% CL)  
 In PDG2008    New since PDG2008 (preliminary)    New since PDG2008 (published)

RPP#	Mode	PDG2008 Avg.	BABAR	Belle	CLEO	CDF	New avg.
207	$K^0\pi^+$	$23.1 \pm 1.0$	$23.9 \pm 1.1 \pm 1.0$	$22.8^{+0.8}_{-0.7} \pm 1.3$	$18.8^{+3.7+2.1}_{-3.3-1.8}$		$23.1 \pm 1.0$
208	$K^+\pi^0$	$12.9 \pm 0.6$	$13.6 \pm 0.6 \pm 0.7$	$12.4 \pm 0.5 \pm 0.6$	$12.9^{+2.4+1.2}_{-2.2-1.1}$		$12.9 \pm 0.6$
209	$\eta'K^+$	$70.2 \pm 2.5$	$70.0 \pm 1.5 \pm 2.8$	$69.2 \pm 2.2 \pm 3.7$	$80^{+10}_{-9} \pm 7$		$70.2 \pm 2.5$
210	$\eta'K^{*+}$	$4.9 \pm 2.0$	$4.9^{+1.9}_{-1.7} \pm 0.8$	$< 2.9$	$11.1^{+12.7}_{-8.0}$		$4.9^{+2.1}_{-1.9}$
211	$\eta K^+$	$2.7 \pm 0.9$	$3.7 \pm 0.4 \pm 0.1$	$1.9 \pm 0.3^{+0.2}_{-0.1}$	$2.2^{+2.8}_{-2.2}$		$2.7 \pm 0.3$
212	$\eta K^*(892)^+$	$19.3 \pm 1.6$	$18.9 \pm 1.8 \pm 1.3$	$19.3^{+2.0}_{-1.9} \pm 1.5$	$26.4^{+9.6}_{-8.2} \pm 3.3$		$19.3 \pm 1.6$
213	$\eta K_0^*(1430)^+$	$18 \pm 4$	$15.8 \pm 2.2 \pm 2.2$				$15.8 \pm 3.1$
214	$\eta K_2^*(1430)^+$	$9.1 \pm 3.0$	$9.1 \pm 2.7 \pm 1.4$				$9.1 \pm 3.0$
215	$\omega K^+$	$6.7 \pm 0.8$	$6.3 \pm 0.5 \pm 0.3$	$8.1 \pm 0.6 \pm 0.6$	$3.2^{+2.4}_{-1.9} \pm 0.8$		$6.7 \pm 0.5$
216	$\omega K^*(892)^+$	$< 3.4$	$< 3.4$		$< 87$		$< 3.4$
217	$a_0(980)^+K^0 \dagger$	$< 3.9$	$< 3.9$				$< 3.9$
218	$a_0(980)^0K^+ \dagger$	$< 2.5$	$< 2.5$				$< 2.5$
219	$K^*(892)^0\pi^+$	$10.9 \pm 1.8$	$10.8 \pm 0.6^{+1.1}_{-1.3}$	$9.7 \pm 0.6^{+0.8}_{-0.9}$	$7.6^{+3.5}_{-3.0} \pm 1.6$		$10.0 \pm 0.8$
220	$K^*(892)^+\pi^0$	$6.9 \pm 2.4$	$6.9 \pm 2.0 \pm 1.3$		$7.1^{+11.4}_{-7.1} \pm 1.0$		$6.9 \pm 2.3$
221	$K^+\pi^+\pi^-$	$55 \pm 7$	$54.4 \pm 1.1 \pm 4.6$	$48.8 \pm 1.1 \pm 3.6$			$51.0 \pm 3.0$
222	$K^+\pi^+\pi^-(NR)$	$6^{+6}_{-4}$	$9.3 \pm 1.0^{+6.8}_{-1.2}$	$16.9 \pm 1.3^{+1.7}_{-1.6}$	$< 28$		$16.3 \pm 2.0$
223	$f_0(980)K^+ \dagger$	$9.2^{+0.8}_{-1.1}$	$10.3 \pm 0.5^{+2.0}_{-1.3}$	$8.8 \pm 0.8^{+0.9}_{-1.8}$			$9.5 \pm 0.9$
224	$f_2(1270)^0K^+$	$1.3^{+0.4}_{-0.5}$	$0.88 \pm 0.26^{+0.26}_{-0.21}$	$1.33 \pm 0.30^{+0.23}_{-0.34}$			$1.06^{+0.28}_{-0.29}$
225	$f_0(1370)^0K^+ \dagger$	$< 10.7$	$< 10.7$				$< 10.7$
226	$\rho^0(1450)K^+$	$< 11.7$	$< 11.7$				$< 11.7$
227	$f_0(1500)K^+ \dagger$	$< 4.4$	$0.73 \pm 0.21 \pm 0.47$				$0.73 \pm 0.52$
228	$f_2'(1525)K^+ \dagger$	$< 3.4$	$< 3.4$	$< 4.9$			$< 3.4$
229	$K^+\rho^0$	$4.2 \pm 0.5$	$3.56 \pm 0.45^{+0.57}_{-0.46}$	$3.89 \pm 0.47^{+0.43}_{-0.41}$	$8.4^{+4.0}_{-3.4} \pm 1.8$		$3.81^{+0.48}_{-0.46}$
230	$K_0^*(1430)^0\pi^+$	$47 \pm 5$	$32.0 \pm 1.2^{+10.8}_{-6.0}$	$51.6 \pm 1.7^{+7.0}_{-7.4}$			$45.2^{+6.2}_{-6.3}$
231	$K_2^*(1430)^0\pi^+$	$< 6.9$	$5.6 \pm 1.2^{+1.8}_{-0.8}$	$< 6.9$			$5.6^{+2.2}_{-1.4}$
232	$K^*(1410)^0\pi^+$	$< 45$		$< 45$			$< 45$
233	$K^*(1680)^0\pi^+$	$< 12$	$< 15$	$< 12$			$< 12$
234	$K^-\pi^+\pi^+$	$< 1.8$	$< 0.95$	$< 4.5$			$< 0.95$
237	$K^0\pi^+\pi^0$	$< 66$			$< 66$		$< 66$
238	$K^0\rho^+$	$8.0 \pm 1.5$	$8.0^{+1.4}_{-1.3} \pm 0.6$		$< 48$		$8.0^{+1.5}_{-1.4}$
239	$K^*(892)^+\pi^+\pi^-$	$75 \pm 10$	$75.3 \pm 6.0 \pm 8.1$				$75.3 \pm 10.1$
240	$K^*(892)^+\rho^0$	$< 6.1$	$< 6.1$		$< 74$		$< 6.1$
241	$K^*(892)^+f_0(980) \dagger$	$5.2 \pm 1.3$	$5.2 \pm 1.2 \pm 0.5$				$5.2 \pm 1.3$
242	$a_1^+K^0$	$35 \pm 7$	$34.9 \pm 5.0 \pm 4.4$				$34.9 \pm 6.7$
243	$K^*(892)^0\rho^+$	$9.2 \pm 1.5$	$9.6 \pm 1.7 \pm 1.5$	$8.9 \pm 1.7 \pm 1.2$			$9.2 \pm 1.5$
244	$K^*(892)^+\bar{K}^*(892)^0$	$< 71$			$< 71$		$< 71$
247	$K^+\bar{K}^0$	$1.36 \pm 0.27$	$1.61 \pm 0.44 \pm 0.09$	$1.22^{+0.33+0.13}_{-0.28-0.16}$	$< 3.3$		$1.36^{+0.29}_{-0.27}$
248	$\bar{K}^0K^+\pi^0$	$< 24$			$< 24$		$< 24$
249	$K^+K_S K_S$	$11.5 \pm 1.3$	$10.7 \pm 1.2 \pm 1.0$	$13.4 \pm 1.9 \pm 1.5$			$11.5 \pm 1.3$
250	$K_S K_S \pi^+$	$< 3.2$		$< 3.2$			$< 3.2$
251	$K^+K^-\pi^+$	$5.0 \pm 0.7$	$5.0 \pm 0.5 \pm 0.5$	$< 13$			$5.0 \pm 0.7$
253	$K^+\bar{K}^*(892)^0$	$< 1.1$	$< 1.1$	$0.68 \pm 0.16 \pm 0.10$	$< 5.3$		$0.68 \pm 0.19$
254	$K^+\bar{K}_0^*(1430)^0$	$< 2.2$	$< 2.2$				$< 2.2$
-	$K^+\bar{K}_2^*(1430)^0$	New		$< 1.1$			$< 1.1$
255	$K^+K^+\pi^-$	$< 1.3$	$< 0.16$	$< 2.4$			$< 0.16$
257	$b_1^0K^+ \dagger$	$9.1 \pm 2.0$	$9.1 \pm 1.7 \pm 1.0$				$9.1 \pm 2.0$
-	$b_1^+K^0$	New	$9.6 \pm 1.7 \pm 0.9$				$9.6 \pm 1.9$
259	$K^*(892)^+\pi^+K^-$	$< 11.8$	$< 11.8$				$< 11.8$
260	$K^*(892)^+K^+\pi^-$	$< 6.1$	$< 6.1$				$< 6.1$
261	$K^+K^-K^+$	$33.7 \pm 2.2$	$33.5 \pm 0.9 \pm 1.6$	$30.6 \pm 1.2 \pm 2.3$			$32.5 \pm 1.5$
262	$K^+\phi$	$8.3 \pm 0.7$	$8.4 \pm 0.7 \pm 0.7$	$9.60 \pm 0.92^{+1.05}_{-0.84}$	$5.5^{+2.1}_{-1.8} \pm 0.6$	$7.6 \pm 1.3 \pm 0.6$	$8.30 \pm 0.65$
264	$a_2(1320)K^+ \dagger$	$< 1.1$		$< 1.1$			$< 1.1$
267	$\phi(1680)K^+ \dagger$	$< 0.8$		$< 0.8$			$< 0.8$
270	$K^*(892)^+K^+K^-$	$36 \pm 5$	$36.2 \pm 3.3 \pm 3.6$				$36.2 \pm 4.9$
271	$K^*(892)^+\phi$	$10.5 \pm 1.5$	$11.2 \pm 1.0 \pm 0.9$	$6.7^{+2.1+0.7}_{-1.9-1.0}$	$10.6^{+6.4+1.8}_{-4.9-1.6}$		$10.0 \pm 1.1$
-	$K_1(1270)^+\phi$	New	$6.1 \pm 1.6 \pm 1.1$				$6.1 \pm 1.9$
272	$K_1(1400)^+\phi$	$< 1100$	$< 3.2$				$< 3.2$
-	$K_0^*(1430)^+\phi$	New	$7.0 \pm 1.3 \pm 0.9$				$7.0 \pm 1.6$
273	$K_2^*(1430)^+\phi$	$< 3400$	$8.4 \pm 1.8 \pm 0.9$				$8.4 \pm 2.0$
-	$K^*(1410)^+\phi$	New	$< 4.3$				$< 4.3$
-	$K_2(1770)^+\phi$	New	$< 15$				$< 15$
-	$K_2(1820)^+\phi$	New	$< 16$				$< 16$
-	$\eta(1405)K^+ \dagger$	New	$< 1.2$				$< 1.2$
-	$\eta(1475)K^+ \dagger$	New	$13.8^{+1.8+1.0}_{-1.7-0.6}$				$13.8^{+2.1}_{-1.8}$
-	$\phi(1680)K^+ \dagger$	New	$< 3.4$				$< 3.4$
-	$f_1(1285)K^+$	New	$< 2.0$				$< 2.0$
-	$\eta(1295)K^+ \dagger$	New	$< 4.0$				$< 4.0$
-	$f_1(1420)K^+ \dagger$	New	$< 2.9$				$< 2.9$
-	$a_1^+K^*(892)^0$	New	$< 3.3$				$< 3.3$
274	$K^+\phi\phi \S$	$4.9^{+2.4}_{-2.2}$	$7.5 \pm 1.0 \pm 0.7$	$3.2^{+0.6}_{-0.5} \pm 0.3$			$4.2 \pm 0.6$
275	$\eta'\eta'K^+$	$< 25$	$< 25$				$< 25$

$\dagger$ Product BF - daughter BF taken to be 100%;  $\S M_{\phi\phi} < 2.85 \text{ GeV}/c^2$

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$B^+$  Branching Fractions (decays without kaons) ( $\times 10^6$ ) - Sept. 2008. (UL 90% CL)

In PDG2008    New since PDG2008 (preliminary)    New since PDG2008 (published)

RPP#	Mode	PDG2008 Avg.	BABAR	Belle	CLEO	CDF	New avg.
292	$\pi^+\pi^0$	$5.7 \pm 0.5$	$5.02 \pm 0.46 \pm 0.29$	$6.5 \pm 0.4^{+0.4}_{-0.5}$	$4.6^{+1.8+0.6}_{-1.6-0.7}$		$5.59^{+0.41}_{-0.40}$
293	$\pi^+\pi^+\pi^-$	$16.2 \pm 1.5$	$16.2 \pm 1.2 \pm 0.9$				$16.2 \pm 1.5$
294	$\rho^0\pi^+$	$8.7 \pm 1.1$	$8.8 \pm 1.0^{+0.6}_{-0.9}$	$8.0^{+2.3}_{-2.0} \pm 0.7$	$10.4^{+3.3}_{-3.4} \pm 2.1$		$8.7^{+1.0}_{-1.1}$
295	$\pi^+f_0(980) \dagger$	$< 3.0$	$< 3.0$				$< 3.0$
296	$\pi^+f_2(1270)$	$8.2 \pm 2.5$	$8.2 \pm 2.1 \pm 1.4$				$8.2 \pm 2.5$
297	$\rho(1450)^0\pi^+$	$< 2.3$	$< 2.3$				$< 2.3$
298	$f_0(1370)\pi^+ \dagger$	$< 3.0$	$< 3.0$				$< 3.0$
299	$f_0(600)\pi^+ \dagger$	$< 4.1$	$< 4.1$				$< 4.1$
300	$\pi^+\pi^-\pi^+(NR)$	$< 4.6$	$< 4.6$				$< 4.6$
302	$\rho^+\pi^0$	$10.9 \pm 1.4$	$10.2 \pm 1.4 \pm 0.9$	$13.2 \pm 2.3^{+1.4}_{-1.9}$	$< 43$		$10.9^{+1.4}_{-1.5}$
304	$\rho^+\rho^0$	$18 \pm 4$	$16.8 \pm 2.2 \pm 2.3$	$31.7 \pm 7.1^{+3.8}_{-6.7}$			$18.2 \pm 3.0$
305	$\rho^+f_0(980) \dagger$	$< 1.9$	$< 1.9$				$< 1.9$
306	$a_1(1260)^+\pi^0$	$26 \pm 7$	$26.4 \pm 5.4 \pm 4.1$				$26.4 \pm 6.8$
307	$a_1(1260)^0\pi^+$	$20 \pm 6$	$20.4 \pm 4.7 \pm 3.4$				$20.4 \pm 5.8$
308	$b_1^0\pi^+ \dagger$	$6.7 \pm 2.0$	$6.7 \pm 1.7 \pm 1.0$				$6.7 \pm 2.0$
–	$b_1^+\pi^0$	New	<span style="color: red;"><math>&lt; 3.3</math></span>				$< 3.3$
309	$\omega\pi^+$	$6.9 \pm 0.5$	$6.7 \pm 0.5 \pm 0.4$	$6.9 \pm 0.6 \pm 0.5$	$11.3^{+3.3}_{-2.9} \pm 1.4$		$6.9 \pm 0.5$
310	$\omega\rho^+$	$10.6^{+2.6}_{-2.3}$	$10.6 \pm 2.1^{+1.6}_{-1.0}$		$< 61$		$10.6^{+2.6}_{-2.3}$
311	$\eta\pi^+$	$4.4 \pm 0.4$	$5.0 \pm 0.5 \pm 0.3$	$4.2 \pm 0.4 \pm 0.2$	$1.2^{+2.8}_{-1.2}$		$4.4 \pm 0.4$
312	$\eta'\pi^+$	$2.7 \pm 1.0$	$3.9 \pm 0.7 \pm 0.3$	$1.8^{+0.7}_{-0.6} \pm 0.1$	$1.0^{+5.8}_{-1.0}$		$2.7^{+0.6}_{-0.5}$
313	$\eta'\rho^+$	$8.7^{+3.9}_{-3.1}$	$8.7^{+3.1+2.3}_{-2.8-1.3}$	$< 5.8$	$11.2^{+11.9}_{-7.0}$		$9.1^{+3.7}_{-2.8}$
314	$\eta\rho^+$	$5.4 \pm 1.9$	<span style="color: red;"><math>9.9 \pm 1.2 \pm 0.8</math></span>	$4.1^{+1.4}_{-1.3} \pm 0.4$	$4.8^{+5.2}_{-3.8}$		$6.9 \pm 1.0$
315	$\phi\pi^+$	$< 0.24$	$< 0.24$		$< 5$		$< 0.24$
316	$\phi\rho^+$	$< 16$	<span style="color: blue;"><math>&lt; 3.0</math></span>		$< 16$		$< 3.0$
317	$a_0(980)^0\pi^+ \dagger$	$< 5.8$	$< 5.8$				$< 5.8$
318	$a_0(980)^+\pi^0 \dagger$	$< 1.4$	$< 1.4$				$< 1.4$

$\dagger$ Product BF - daughter BF taken to be 100%;

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$B^0$  Branching Fractions (decays with kaons) ( $\times 10^6$ ) - Sept. 2008. (UL 90% CL)  
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RPP#	Mode	PDG2008 Avg.	BABAR	Belle	CLEO	CDF	New avg.
198	$K^+\pi^-$	$19.5 \pm 0.6$	$19.1 \pm 0.6 \pm 0.6$	$19.9 \pm 0.4 \pm 0.8$	$18.0_{-2.1-0.9}^{+2.3+1.2}$		$19.4 \pm 0.6$
199	$K^0\pi^0$	$9.8 \pm 0.6$	<b><math>10.1 \pm 0.6 \pm 0.4</math></b>	$9.2 \pm 0.7_{-0.7}^{+0.6}$	$12.8_{-3.3-1.4}^{+4.0+1.7}$		$9.8 \pm 0.6$
200	$\eta'K^0$	$65 \pm 4$	$66.6 \pm 2.6 \pm 2.8$	$58.9_{-3.5}^{+3.6} \pm 4.3$	$89_{-16}^{+18} \pm 9$		$64.9 \pm 3.1$
201	$\eta'K^*(892)^0$	$3.8 \pm 1.2$	$3.8 \pm 1.1 \pm 0.5$	$< 2.6$	$7.8_{-5.7}^{+7.7}$		$3.8 \pm 1.2$
202	$\eta K^0$	$< 1.9$	<b><math>0.9_{-0.4}^{+0.5} \pm 0.1</math></b>	$1.1 \pm 0.4 \pm 0.1$	$0.0_{-0.0}^{+3.0}$		$1.0 \pm 0.3$
203	$\eta K^*(892)^0$	$15.9 \pm 1.0$	$16.5 \pm 1.1 \pm 0.8$	$15.2 \pm 1.2 \pm 1.0$	$13.8_{-4.6}^{+5.5} \pm 1.6$		$15.9 \pm 1.0$
204	$\eta K_0^*(1430)^0$	$11.0 \pm 2.2$	$9.6 \pm 1.4 \pm 1.3$				$9.6 \pm 1.9$
205	$\eta K_2^*(1430)^0$	$9.6 \pm 2.1$	$9.6 \pm 1.8 \pm 1.1$				$9.6 \pm 2.1$
206	$\omega K^0$	$5.0 \pm 0.6$	$5.4 \pm 0.8 \pm 0.3$	$4.4_{-0.7}^{+0.8} \pm 0.4$	$10.0_{-4.2}^{+5.4} \pm 1.4$		$5.0 \pm 0.6$
207	$a_0(980)^0 K^0 \dagger$	$< 7.8$	$< 7.8$				$< 7.8$
208	$a_0(980)^- K^+ \dagger$	$< 1.9$	$< 1.9$				$< 1.9$
209	$a_0(1450)^- K^+ \dagger$	$< 3.1$	$< 3.1$				$< 3.1$
-	$\omega K^+\pi^- (NR)^3$	New		<b><math>5.1 \pm 0.7 \pm 0.7</math></b>			$5.1 \pm 1.0$
211	$\omega K^*(892)^0$	$< 4.2$	$2.4 \pm 1.1 \pm 0.7$	<b><math>1.8 \pm 0.7_{-0.2}^{+0.3}</math></b>	$< 23$		$1.9_{-0.6}^{+0.7}$
212	$K^+K^-$	$< 0.41$	$0.04 \pm 0.15 \pm 0.08$	$0.09_{-0.13}^{+0.18} \pm 0.01$	$< 0.8$	<b><math>0.39 \pm 0.16 \pm 0.12 \ddagger</math></b>	$0.15_{-0.10}^{+0.11}$
213	$K^0\bar{K}^0$	$0.96_{-0.18}^{+0.20}$	$1.08 \pm 0.28 \pm 0.11$	$0.87_{-0.20}^{+0.25} \pm 0.09$	$< 3.3$		$0.96_{-0.19}^{+0.21}$
214	$K_S K_S K_S$	$6.2_{-1.1}^{+1.2}$	$6.9_{-0.8}^{+0.9} \pm 0.6$	$4.2_{-1.3}^{+1.6} \pm 0.8$			$6.2 \pm 0.9$
215	$K_S K_S K_L$	$< 16$	$< 16^1$				$< 16^1$
216	$K^+\pi^-\pi^0$	$37 \pm 5$	<b><math>35.7_{-1.5}^{+2.6} \pm 2.2</math></b>	$36.6_{-4.3}^{+4.2} \pm 3.0$	$< 40$		$35.9_{-2.4}^{+2.9}$
217	$K^+\rho^-$	$8.5 \pm 2.8$	<b><math>8.0_{-1.3}^{+0.8} \pm 0.6</math></b>	$15.1_{-3.3-2.6}^{+3.4+2.4}$	$16_{-6}^{+8} \pm 3$		$8.6_{-1.1}^{+0.9}$
218	$K^+\pi^-\pi^0 (NR)$	$< 9.4$	<b><math>4.4 \pm 0.9 \pm 0.5</math></b>	$< 9.4$			$4.4 \pm 1.0$
-	$\rho(1450)^- K^+$	New	$< 2.1$				$< 2.1$
-	$\rho(1700)^- K^+$	New	$< 1.1$				$< 1.1$
-	$K_0^*(1430)^0 \pi^0$	New	<b><math>11.7_{-1.3-3.6}^{+1.4+4.0} \pm 2</math></b>				$11.7_{-3.8}^{+4.2}$
-	$K_2^*(1430)^0 \pi^0$	New	$< 4.0$				$< 4.0$
-	$K^*(1680)^0 \pi^0$	New	$< 7.5$				$< 7.5$
220	$K^0 \pi^+ \pi^-$	$44.8 \pm 2.6$	$43.0 \pm 2.3 \pm 2.3$	$47.5 \pm 2.4 \pm 3.7$	$50_{-9}^{+10} \pm 7$		$44.8_{-2.5}^{+2.6}$
222	$K^0 \rho^0$	$5.9 \pm 0.9$	$4.9 \pm 0.8 \pm 0.9$	$6.1 \pm 1.0_{-1.2}^{+1.1}$	$< 39$		$5.4_{-1.0}^{+0.9}$
224	$K^*(892)^+ \pi^-$	$9.8 \pm 1.3$	<b><math>12.6_{-1.6}^{+2.7} \pm 0.9</math></b>	$8.4 \pm 1.1_{-0.9}^{+1.0}$	$16_{-5}^{+6} \pm 2$		$10.3 \pm 1.1$
225	$K_0^*(1430)^+ \pi^-$	$50_{-9}^{+8}$	<b><math>25.4_{-3.7-5.6}^{+3.0+6.1} \pm 2</math></b>	$49.7 \pm 3.8_{-8.2}^{+6.8}$			$34.2 \pm 5.4$
227	$K^*(1410)^+ \pi^- \dagger$	$< 86$		$< 86$			$< 86$
228	$K^*(1680)^+ \pi^-$	$< 10.1$	$< 25$	$< 10.1$			$< 10.1$
230	$f_0(980)K^0 \dagger$	$7.6_{-2.1}^{+1.9}$	$5.5 \pm 0.7 \pm 0.6$	$7.6 \pm 1.7_{-1.3}^{+0.9}$			$5.8_{-0.9}^{+0.8}$
231	$f_2(1270)K^0 \dagger$	$< 2.5$		$< 2.5$			$< 2.5$
232	$K^*(892)^0 \pi^0$	$< 3.5$	<b><math>3.6 \pm 0.7 \pm 0.4</math></b>	$0.4_{-1.7}^{+1.9} \pm 0.1$	$0.0_{-0.0-0.0}^{+1.3+0.5}$		$2.4 \pm 0.7$
233	$K_2^*(1430)^+ \pi^-$	$< 6.3$	$< 16.2$	$< 6.3$			$< 6.3$
-	$K_1(1270)^+ \pi^-$	New	$< 25.2$				$< 25.2$
-	$K_1(1400)^+ \pi^-$	New	$< 21.8$				$< 21.8$
234	$K^0 K^- \pi^+$	$< 18$		$< 18$	$< 21$		$< 18$
235	$K^{*0} \bar{K}^0$	$< 1.9$	$< 1.9$				$< 1.9$
236	$K^+ K^- \pi^0$	$< 19$			$< 19$		$< 19$
237	$K^+ K^- K^0$	$24.7 \pm 2.3$	$23.8 \pm 2.0 \pm 1.6$	$28.3 \pm 3.3 \pm 4.0$			$24.7 \pm 2.3$
238	$\phi K^0$	$8.6_{-1.1}^{+1.3}$	$8.4_{-1.3}^{+1.5} \pm 0.5$	$9.0_{-1.8}^{+2.2} \pm 0.7$	$5.4_{-2.7}^{+3.7} \pm 0.7$		$8.3_{-1.0}^{+1.2}$
240	$K^{*0} \pi^+ \pi^-$	$54 \pm 5$	$54.5 \pm 2.9 \pm 4.3$				$54.5 \pm 5.2$
241	$K^{*0} \rho^0$	$5.6 \pm 1.6$	$5.6 \pm 0.9 \pm 1.3$		$< 34$		$5.6 \pm 1.6$
242	$f_0(980)K^{*0} \dagger$	$< 4.3$	$< 4.3$				$< 4.3$
244	$a_1^- K^+$	$16 \pm 4$	$16.3 \pm 2.9 \pm 2.3$				$16.3 \pm 3.7$
245	$b_1^- K^+$	$7.4 \pm 1.4$	$7.4 \pm 1.0 \pm 1.0$				$7.4 \pm 1.4$
-	$b_1^0 K^0$	New	$< 7.8$				$< 7.8$
246	$K^{*0} K^+ K^-$	$27.5 \pm 2.6$	$27.5 \pm 1.3 \pm 2.2$				$27.5 \pm 2.6$
247	$\phi K^{*0}$	$9.5 \pm 0.8$	<b><math>9.7 \pm 0.5 \pm 0.5</math></b>	$10.0_{-1.5-0.8}^{+1.6+0.7}$	$11.5_{-3.7-1.7}^{+4.5+1.8}$		$9.8_{-0.6}^{+0.7}$
248	$K^{*0} \pi^+ K^-$	$4.6 \pm 1.4$	$4.6 \pm 1.1 \pm 0.8$				$4.6 \pm 1.4$
249	$K^{*0} \bar{K}^{*0}$	$1.28_{-0.32}^{+0.37}$	$1.28_{-0.30}^{+0.35} \pm 0.11$		$< 22$		$1.28_{-0.32}^{+0.37}$
250	$K^{*0} K^+ \pi^-$	$< 2.2$	$< 2.2$				$< 2.2$
251	$K^{*0} K^{*0}$	$< 0.41$	$< 0.41$		$< 37$		$< 0.41$
252	$K^{*+} \rho^-$	$< 12$	$< 12$				$< 12$
253	$K^{*+} K^{*-}$	$< 141$	$< 2.0$		$< 141$		$< 2.0$
258	$\phi K_0^*(1430)^0$	$4.6 \pm 0.9$	<b><math>3.9 \pm 0.5 \pm 0.5</math></b>				$3.9 \pm 0.7$
259	$\phi K^*(1680)^0$	$< 3.5$	$< 3.5$				$< 3.5$
260	$\phi K_3^*(1780)^0$	$< 2.7$	$< 2.7$				$< 2.7$
261	$\phi K_4^*(2045)^0$	$< 15.3$	$< 15.3$				$< 15.3$
263	$\phi K_2^*(1430)^0$	$7.8 \pm 1.3$	<b><math>7.5 \pm 0.9 \pm 0.4</math></b>				$7.5 \pm 1.0$
264	$\phi \phi K^0 \S$	$4.1_{-1.4}^{+1.7} \pm 0.4$	$4.1_{-1.4}^{+1.7} \pm 0.4$	<b><math>2.3_{-0.7}^{+1.0} \pm 0.2</math></b>			$2.8_{-0.7}^{+0.9}$
266	$\eta' \eta' K^0$	$< 31$	$< 31$				$< 31$

$\dagger$ Product BF - daughter BF taken to be 100%,  $\ddagger$ Relative BF converted to absolute BF  $\S M_{\phi\phi} < 2.85$  GeV/c<sup>2</sup> <sup>1</sup>Excludes  $M(K_S K_S)$  regions [3.400,3.429] and [3.540,3.585] and  $M(K_S K_L) < 1.049$  GeV/c<sup>2</sup> <sup>2</sup>Includes  $K\pi$  S-wave contribution and uncorrected for  $K^*(1430)$  BF. <sup>3</sup> $0.755 < M(K\pi) < 1.250$  GeV/c<sup>2</sup>.

## Heavy Flavor Averaging Group

$B^0$  Branching Fractions (decays without kaons) ( $\times 10^6$ ) - Sept. 2008. (UL 90% CL)  
 In PDG2008    New since PDG2008 (preliminary)    New since PDG2008 (published)

RPP#	Mode	PDG2008 Avg.	BABAR	Belle	CLEO	CDF	New avg.
284	$\pi^+\pi^-$	$5.13 \pm 0.24$	$5.5 \pm 0.4 \pm 0.3$	$5.1 \pm 0.2 \pm 0.2$	$4.5^{+1.4+0.5}_{-1.2-0.4}$	$5.10 \pm 0.33 \pm 0.36$ ‡	$5.16 \pm 0.22$
285	$\pi^0\pi^0$	$1.62 \pm 0.31$	<span style="color: blue;"><math>1.83 \pm 0.21 \pm 0.13</math></span>	<span style="color: blue;"><math>1.1 \pm 0.3 \pm 0.1</math></span>	$< 4.4$		$1.55 \pm 0.19$
286	$\eta\pi^0$	$< 1.3$	<span style="color: red;"><math>&lt; 1.5</math></span>	$< 2.5$	$< 2.9$		$< 1.5$
287	$\eta\eta$	$< 1.8$	<span style="color: blue;"><math>&lt; 1.4</math></span>	$< 2.0$	$< 18$		$< 1.4$
288	$\eta'\pi^0$	$1.5^{+1.0}_{-0.8}$	<span style="color: red;"><math>0.9 \pm 0.4 \pm 0.1</math></span>	$2.8 \pm 1.0 \pm 0.3$	$0.0^{+1.8}_{-0.0}$		$1.2 \pm 0.4$
289	$\eta'\eta'$	$< 2.4$	<span style="color: red;"><math>&lt; 2.1</math></span>	$< 6.5$	$< 47$		$< 2.1$
290	$\eta'\eta$	$< 1.7$	<span style="color: red;"><math>&lt; 1.2</math></span>	$< 4.5$	$< 27$		$< 1.2$
291	$\eta'\rho^0$	$< 1.3$	$< 3.7$	$< 1.3$	$< 12$		$< 1.3$
292	$f_0(980)\eta' \dagger$	$< 1.5$	$< 1.5$				$< 1.5$
293	$\eta\rho^0$	$< 1.5$	$< 1.5$	$< 1.9$	$< 10$		$< 1.5$
294	$f_0(980)\eta \dagger$	$< 1.6$	$< 0.4$				$< 0.4$
295	$\omega\eta$	$< 1.9$	<span style="color: blue;"><math>&lt; 1.6</math></span>		$< 12$		$< 1.6$
296	$\omega\eta'$	$< 2.8$	<span style="color: blue;"><math>&lt; 1.7</math></span>	$< 2.2$	$< 60$		$< 1.7$
297	$\omega\rho^0$	$< 1.5$	$< 1.5$		$< 11$		$< 1.5$
298	$f_0(980)\omega \dagger$	$< 1.5$	$< 1.5$				$< 1.5$
299	$\omega\omega$	$< 4.0$	$< 4.0$		$< 19$		$< 4.0$
300	$\phi\pi^0$	$< 0.28$	$< 0.28$		$< 5$		$< 0.28$
301	$\phi\eta$	$< 0.6$	<span style="color: blue;"><math>&lt; 0.52</math></span>		$< 9$		$< 0.52$
302	$\phi\eta'$	$< 0.5$	<span style="color: blue;"><math>&lt; 1.2</math></span>	$< 0.5$	$< 31$		$< 0.5$
303	$\phi\rho^0$	$< 13$	<span style="color: blue;"><math>&lt; 0.33</math></span>		$< 13$		$< 0.33$
—	$f_0(980)\phi \dagger$	New	<span style="color: blue;"><math>&lt; 0.38</math></span>				$< 0.38$
304	$\omega\phi$	$< 1.2$	$< 1.2$		$< 21$		$< 1.2$
305	$\phi\phi$	$< 1.5$	<span style="color: blue;"><math>&lt; 0.2</math></span>		$< 12$		$< 0.2$
306	$a_0^\mp(980)\pi^\pm \dagger$	$< 3.1$	$< 3.1$				$< 3.1$
307	$a_0^\mp(1450)\pi^\pm \dagger$	2.3	$< 2.3$				$< 2.3$
309	$\rho^0\pi^0$	$1.8 \pm 0.5$	$1.4 \pm 0.6 \pm 0.3$	<span style="color: red;"><math>3.0 \pm 0.5 \pm 0.7</math></span>	$1.6^{+2.0}_{-1.4} \pm 0.8$		$2.0 \pm 0.5$
310	$\rho^\mp\pi^\pm$	$22.8 \pm 2.5$	$22.6 \pm 1.8 \pm 2.2$	<span style="color: red;"><math>22.6 \pm 1.1 \pm 4.4</math></span>	$27.6^{+8.4}_{-7.4} \pm 4.2$		$23.0 \pm 2.3$
311	$\pi^+\pi^-\pi^+\pi^-$	$< 230$	<span style="color: blue;"><math>&lt; 21.1</math></span>	<span style="color: blue;"><math>&lt; 19.3</math></span>			$< 19.3$
312	$\rho^0\rho^0$	$1.1 \pm 0.4$	<span style="color: blue;"><math>0.92 \pm 0.32 \pm 0.14</math></span>	<span style="color: blue;"><math>0.4^{+0.4}_{-0.2} \pm 0.3</math></span>	$< 18$		$0.74^{+0.30}_{-0.27}$
—	$\rho^0\pi^+\pi^-(NR)$	New	<span style="color: blue;"><math>&lt; 8.7</math></span>	$< 12$			$< 8.7$
—	$f_0(980)\pi^+\pi^-(NR)$	New		$< 3.8$			$< 3.8$
313	$f_0(980)\rho^0 \dagger$	$< 0.53$	<span style="color: blue;"><math>&lt; 0.34</math></span>	<span style="color: blue;"><math>&lt; 0.3</math></span>			$< 0.3$
314	$f_0(980)f_0(980) \dagger$	$< 0.16$	<span style="color: blue;"><math>&lt; 0.16</math></span>	<span style="color: blue;"><math>&lt; 0.1</math></span>			$< 0.1$
315	$a_1^\mp\pi^\pm$	$33 \pm 5$	$33.2 \pm 3.8 \pm 3.0$	<span style="color: blue;"><math>29.8 \pm 3.2 \pm 4.6</math></span>			$31.7 \pm 3.7$
316	$b_1^\mp\pi^\pm$	$10.9 \pm 1.5$	$10.9 \pm 1.2 \pm 0.9$				$10.9 \pm 1.5$
—	$b_1^0\pi^0$	New	<span style="color: red;"><math>&lt; 1.9</math></span>				$< 1.9$
319	$\rho^+\rho^-$	$24.2 \pm 3.1$	$25.5 \pm 2.1^{+3.6}_{-3.9}$	$22.8 \pm 3.8^{+2.3}_{-2.6}$			$24.2^{+3.1}_{-3.2}$
321	$\omega\pi^0$	$< 1.2$	<span style="color: red;"><math>&lt; 0.5</math></span>	$< 2.0$	$< 5.5$		$< 0.5$
323	$a_1^\pm\rho^\mp$	$< 61$	$< 61$				$< 61$

†Product BF - daughter BF taken to be 100%, ‡Relative BF converted to absolute BF

Heavy Flavor Averaging Group  
 Sept. 2008

Compilation of  $B^0$  Relative Branching Fractions (UL 90% CL)

In PDG2008    **New since PDG2008 (preliminary)**    **New since PDG2008 (published)**

RPP#	Mode	PDG2008 Avg.	CDF	DØ	New avg.
179	$\mathcal{B}(B^0 \rightarrow K^+K^-)/\mathcal{B}(B^0 \rightarrow K^+\pi^-)$		$0.020 \pm 0.008 \pm 0.006$		$0.020 \pm 0.010$
229	$\mathcal{B}(B^0 \rightarrow \pi^+\pi^-)/\mathcal{B}(B^0 \rightarrow K^+\pi^-)$		$0.259 \pm 0.017 \pm 0.016$		$0.259 \pm 0.023$

# Charmless Mesonic Decays:

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