Heavy Flavor Averaging Group
August 2012

Compilation of CP Asymmetries for B^+ modes

In PDG2012 New since PDG2012 (preliminary) New since PDG2012 (published)

RPP#	Mode	PDG2012 Avg.	BABAR	Belle	CDF	LHCb	New Avg.
239	$K^0\pi^+$	0.009 ± 0.029	$-0.029 \pm 0.039 \pm 0.010$	$-0.014 \pm 0.012 \pm 0.006$			-0.015 ± 0.012
240	$K^+\pi^0$	0.051 ± 0.025	$0.030 \pm 0.039 \pm 0.010$	$0.043 \pm 0.024 \pm 0.002$			0.040 ± 0.021
241	$\eta' K^+$	0.013 ± 0.017	$0.008^{+0.017}_{-0.018} \pm 0.009$	$0.028 \pm 0.028 \pm 0.021$			0.013 ± 0.017
242	$\eta' K^{*+}$	-0.26 ± 0.27	$-0.26 \pm 0.27 \pm 0.02$				-0.26 ± 0.27
243	$\eta' K_0^*(1430)^+$	0.06 ± 0.20	$0.06 \pm 0.20 \pm 0.02$				0.06 ± 0.20
244	$\eta' K_2^*(1430)^+$	0.15 ± 0.13	$0.15 \pm 0.13 \pm 0.02$				0.15 ± 0.13
245	ηK^+	-0.37 ± 0.08	$-0.36 \pm 0.11 \pm 0.03$	$-0.38 \pm 0.11 \pm 0.01$			-0.37 ± 0.08
246	ηK^{*+}	0.02 ± 0.06	$0.01 \pm 0.08 \pm 0.02$	$0.03 \pm 0.10 \pm 0.01$			0.02 ± 0.06
247	$\eta K_0^*(1430)^+$	$0.05 \pm 0.13 \pm 0.02$	$0.05 \pm 0.13 \pm 0.02$				0.05 ± 0.13
248	$\eta K_2^*(1430)^+$	$-0.45 \pm 0.30 \pm 0.02$	$-0.45 \pm 0.30 \pm 0.02$				-0.45 ± 0.30
257	ωK^+	0.02 ± 0.05	$-0.01 \pm 0.07 \pm 0.01$	$0.05^{+0.08}_{-0.07} \pm 0.01$			0.02 ± 0.05
258	ωK^{*+}	0.29 ± 0.35	$0.29 \pm 0.35 \pm 0.02$				0.29 ± 0.35
260	$\omega K_0^*(1430)^+$	-0.10 ± 0.09	$-0.10 \pm 0.09 \pm 0.02$				-0.10 ± 0.09
261	$\omega K_2^*(1430)^+$	0.14 ± 0.15	$0.14 \pm 0.15 \pm 0.02$				0.14 ± 0.15
264	$K^{*0}\pi^+$	-0.04 ± 0.09	$0.032 \pm 0.052^{+0.016}_{-0.013}$	$-0.149 \pm 0.064 \pm 0.022$			-0.038 ± 0.042
265	$K^{*+}\pi^0$	-0.06 ± 0.24	$-0.06 \pm 0.24 \pm 0.04$				-0.06 ± 0.24
266	$K^+\pi^+\pi^-$	0.038 ± 0.022	$0.028 \pm 0.020 \pm 0.023$	$0.049 \pm 0.026 \pm 0.020$		$0.034 \pm 0.009 \pm 0.008$	0.035 ± 0.011
269	$f_0(980)K^+$	$-0.09^{+0.05}_{-0.04}$	$-0.106 \pm 0.050^{+0.036}_{-0.015}$	$-0.077 \pm 0.065^{+0.046}_{-0.026}$			$-0.095^{+0.049}_{-0.042}$
270	$f_2(1270)K^+$	$-0.68^{+0.19}_{-0.017}$	$-0.85 \pm 0.22^{+0.26}_{-0.13}$	$-0.59 \pm 0.22 \pm 0.04$			$-0.68^{+0.20}_{-0.18}$
273	$f_0(1500)K^+$ †	$0.28^{+0.30}_{-0.29}$	$0.28 \pm 0.26^{+0.15}_{-0.14}$				$0.28^{+0.30}_{-0.29}$
274	$f_2'(1525)K^+$	New	$0.14 \pm 0.10 \pm 0.04$				0.14 ± 0.11
275	$\rho^0 K^+$	0.37 ± 0.10	$0.44 \pm 0.10^{+0.06}_{-0.14}$	$0.30 \pm 0.11^{+0.11}_{-0.05}$			0.37 ± 0.11
276	$K_0^*(1430)^0\pi^+$	0.55 ± 0.33	$0.032 \pm 0.035^{+0.034}_{-0.028}$	$0.076 \pm 0.038^{+0.028}_{-0.022}$			$0.055^{+0.034}_{-0.032}$
277	$K_2^*(1430)^0\pi^+$	$0.05^{+0.29}_{-0.24}$	$0.05 \pm 0.23^{+0.18}_{-0.08}$				$0.05^{+0.29}_{-0.24}$
280	$K^+\pi^0\pi^0$	-0.06 ± 0.07	$-0.06 \pm 0.06 \pm 0.04$				-0.06 ± 0.07
287	$\rho^+ K^0$	-0.12 ± 0.17	$-0.12 \pm 0.17 \pm 0.02$				-0.12 ± 0.17
288	$K^{*+}\pi^+\pi^-$	0.07 ± 0.08	$0.07 \pm 0.07 \pm 0.04$				0.07 ± 0.08
289	$K^{*+}\rho^0$	0.31 ± 0.13	$0.31 \pm 0.13 \pm 0.03$				0.31 ± 0.13
290	$f_0(980)K^{*+}$	-0.15 ± 0.12	$-0.15 \pm 0.12 \pm 0.03$				-0.15 ± 0.12
291	$a_1^+ K^0$	0.12 ± 0.11	$0.12 \pm 0.11 \pm 0.02$				0.12 ± 0.11
292	$b_1^+ K^0$	-0.03 ± 0.15	$-0.03 \pm 0.15 \pm 0.02$				-0.03 ± 0.15
293	$K^{*0}\rho^+$	-0.01 ± 0.16	$-0.01 \pm 0.16 \pm 0.02$				-0.01 ± 0.16
296	$b_1^0 K^+$	-0.46 ± 0.20	$-0.46 \pm 0.20 \pm 0.02$				-0.46 ± 0.20
299	$K^+\overline{K}^0$	0.12 ± 0.18	$0.10 \pm 0.26 \pm 0.03$	$0.017 \pm 0.168 \pm 0.002$			0.041 ± 0.141
301	$K^+K_SK_S$	-0.04 ± 0.11	$0.04 \pm 0.05 \pm 0.02$				0.04 ± 0.05
303	$K^+K^-\pi^+$	0.00 ± 0.10	$0.00 \pm 0.10 \pm 0.03$				0.00 ± 0.10
313	$K^+K^-K^+$	$-0.017 \pm 0.026 \pm 0.015$	$-0.017^{+0.019}_{-0.014} \pm 0.014$			$-0.046 \pm 0.009 \pm 0.009$	-0.037 ± 0.011
314	ϕK^+	-0.01 ± 0.06	$0.128 \pm 0.044 \pm 0.013$	$0.01 \pm 0.12 \pm 0.05$	$-0.07 \pm 0.17^{+0.03}_{-0.02}$		0.104 ± 0.042
322	$K^{*+}K^+K^-$	0.11 ± 0.09	$0.11 \pm 0.08 \pm 0.03$				0.11 ± 0.09
323	ϕK^{*+}	-0.01 ± 0.08	$0.00 \pm 0.09 \pm 0.04$	$-0.02 \pm 0.14 \pm 0.03$			-0.01 ± 0.08
325	$\phi K_1(1270)^+$	0.15 ± 0.20	$0.15 \pm 0.19 \pm 0.05$				0.15 ± 0.20
328	$\phi K_0^*(1430)^+$	0.04 ± 0.15	$0.04 \pm 0.15 \pm 0.04$				0.04 ± 0.15
329	$\phi K_2^*(1430)^+$	-0.23 ± 0.20	$-0.23 \pm 0.19 \pm 0.06$				-0.23 ± 0.20
333	$\phi\phi K^+$	-0.10 ± 0.08	-0.10 ± 0.08	$0.01^{+0.19}_{-0.16} \pm 0.02$			-0.08 ± 0.07
337	$K^{*+}\gamma$	0.18 ± 0.29	$0.18 \pm 0.28 \pm 0.07$				0.18 ± 0.29
339	$K^+\eta\gamma$	-0.12 ± 0.07	$-0.09 \pm 0.10 \pm 0.01$	$-0.16 \pm 0.09 \pm 0.06$			-0.12 ± 0.07
341	$K^+\phi\gamma$	-0.13 ± 0.11 ‘	$-0.26 \pm 0.14 \pm 0.05$	$-0.03 \pm 0.11 \pm 0.08$			-0.13 ± 0.10
352	$\rho^+\gamma$	-0.11 ± 0.33		$-0.11 \pm 0.32 \pm 0.09$			-0.11 ± 0.33
353	$\pi^+\pi^0$	0.06 ± 0.05	$0.03 \pm 0.08 \pm 0.01$	$0.025 \pm 0.043 \pm 0.007$			0.026 ± 0.039
354	$\pi^+\pi^-\pi^+$	$0.032^{+0.059}_{-0.057}$	$0.032 \pm 0.044^{+0.040}_{-0.037}$				$0.032^{+0.059}_{-0.057}$
355	$\rho^0\pi^+$	$0.18^{+0.09}_{-0.17}$	$0.18 \pm 0.07^{+0.05}_{-0.15}$				$0.18^{+0.09}_{-0.17}$
357	$f_2(1270)\pi^+$	$0.41^{+0.31}_{-0.29}$	$0.41 \pm 0.25^{+0.18}_{-0.15}$				$0.41^{+0.31}_{-0.29}$
358	$\rho(1450)^0\pi^+$	$-0.06^{+0.36}_{-0.42}$	$-0.06 \pm 0.28^{+0.23}_{-0.32}$				$-0.06^{+0.36}_{-0.42}$
359	$f_0(1370)\pi^+$	0.72 ± 0.22	$0.72 \pm 0.15 \pm 0.16$				0.72 ± 0.22
361	$\pi^+\pi^-\pi^+(NR)$	$-0.14^{+0.23}_{-0.16}$	$-0.14 \pm 0.14^{+0.18}_{-0.08}$				$-0.14^{+0.23}_{-0.16}$
363	$\rho^+\pi^0$	0.02 ± 0.11	$-0.01 \pm 0.13 \pm 0.02$	$0.06 \pm 0.17^{+0.04}_{-0.05}$			0.02 ± 0.11
365	$\rho^+\rho^0$	-0.05 ± 0.05	$-0.054 \pm 0.055 \pm 0.010$	$0.00 \pm 0.22 \pm 0.03$			-0.051 ± 0.054
369	$\omega\pi^+$	-0.04 ± 0.06	$-0.02 \pm 0.08 \pm 0.01$	$-0.02 \pm 0.09 \pm 0.01$			-0.02 ± 0.06
370	$\omega\rho^+$	-0.20 ± 0.09	$-0.20 \pm 0.09 \pm 0.02$				-0.20 ± 0.09
371	$\eta\pi^+$	-0.14 ± 0.07	$-0.03 \pm 0.09 \pm 0.03$	$-0.19 \pm 0.06 \pm 0.01$			-0.14 ± 0.05
372	$\eta\rho^+$	0.11 ± 0.11	$0.13 \pm 0.11 \pm 0.02$	$-0.04^{+0.34}_{-0.32} \pm 0.01$			0.11 ± 0.11
373	$\eta'\pi^+$	0.06 ± 0.16	$0.03 \pm 0.17 \pm 0.02$	$0.20^{+0.37}_{-0.36} \pm 0.04$			0.06 ± 0.15
374	$\eta'\rho^+$	0.26 ± 0.17	$0.26 \pm 0.17 \pm 0.02$				0.26 ± 0.17
382	$b_1^0\pi^+$	0.05 ± 0.16	$0.05 \pm 0.16 \pm 0.02$				0.05 ± 0.16
391	$p\overline{p}\pi^+$	0.00 ± 0.04	$0.04 \pm 0.07 \pm 0.04$	$-0.17 \pm 0.10 \pm 0.02$			-0.04 ± 0.06
394	$p\overline{p}K^+$	-0.16 ± 0.07	$-0.16 \pm 0.08 \pm 0.04$	$-0.02 \pm 0.05 \pm 0.02$			-0.06 ± 0.05
399	$p\overline{p}K^{*+}$	0.21 ± 0.16	$0.32 \pm 0.13 \pm 0.05$	$-0.01 \pm 0.19 \pm 0.02$			0.21 ± 0.11
402	$p\overline{\Lambda}\gamma$	0.17 ± 0.17		$0.17 \pm 0.16 \pm 0.05$			0.17 ± 0.17
403	$p\overline{\Lambda}\pi^0$	0.01 ± 0.17		$0.01 \pm 0.17 \pm 0.04$			0.01 ± 0.17
441	$K^+\ell\ell$	-0.01 ± 0.09	$-0.03 \pm 0.14 \pm 0.01$	$0.04 \pm 0.10 \pm 0.02$			0.02 ± 0.08
442	$K^+e^+e^-$	0.14 ± 0.14		$0.14 \pm 0.14 \pm 0.03$			0.14 ± 0.14
443	$K^+\mu^+\mu^-$	-0.05 ± 0.13		$-0.05 \pm 0.13 \pm 0.03$			-0.05 ± 0.13
446	$K^{*+}\ell\ell$	-0.09 ± 0.14	$0.01^{+0.26}_{-0.24} \pm 0.02$	$-0.13^{+0.17}_{-0.16} \pm 0.01$			$-0.09^{+0.14}_{-0.13}$
447	$K^{*+}e^+e^-$	$-0.14^{+0.23}_{-0.22}$		$-0.14^{+0.23}_{-0.22} \pm 0.02$			$-0.14^{+0.23}_{-0.22}$
448	$K^{*+}\mu^+\mu^-$	-0.12 ± 0.24		$-0.12 \pm 0.24 \pm 0.02$			-0.12 ± 0.24

Heavy Flavor Averaging Group
August 2012

Compilation of CP Asymmetries for B^0 modes

In PDG2012 New since PDG2012 (preliminary) New since PDG2012 (published)

RPP#	Mode	PDG2012 Avg.	BABAR	Belle	CDF	LHCb	New Avg.
214	$K^+\pi^-$	-0.097 ± 0.012	$-0.107 \pm 0.016^{+0.006}_{-0.004}$	$-0.069 \pm 0.014 \pm 0.007$	$-0.083 \pm 0.013 \pm 0.003$	$-0.088 \pm 0.011 \pm 0.008$	-0.086 ± 0.007
217	$\eta' K^{*0}$	0.02 ± 0.23	$0.02 \pm 0.23 \pm 0.02$				0.02 ± 0.23
218	$\eta' K_0^*(1430)^0$	-0.19 ± 0.17	$-0.19 \pm 0.17 \pm 0.02$				-0.19 ± 0.17
219	$\eta' K_2^*(1430)^0$	0.14 ± 0.18	$0.14 \pm 0.18 \pm 0.02$				0.14 ± 0.18
221	ηK^{*0}	0.19 ± 0.05	$0.21 \pm 0.06 \pm 0.02$	$0.17 \pm 0.08 \pm 0.01$			0.19 ± 0.05
222	$\eta K_0^*(1430)^0$	0.06 ± 0.13	$0.06 \pm 0.13 \pm 0.02$				0.06 ± 0.13
223	$\eta K_2^*(1430)^0$	-0.07 ± 0.19	$-0.07 \pm 0.19 \pm 0.02$				-0.07 ± 0.19
228	$b_1^- K^+$	-0.07 ± 0.12	$0.07 \pm 0.12 \pm 0.02$				0.07 ± 0.12
233	ωK^{*0}	0.45 ± 0.25	$0.45 \pm 0.25 \pm 0.02$				0.45 ± 0.25
235	$\omega K_0^*(1430)^0$	-0.07 ± 0.09	$-0.07 \pm 0.09 \pm 0.02$				-0.07 ± 0.09
236	$\omega K_2^*(1430)^0$	0.37 ± 0.17	$0.37 \pm 0.17 \pm 0.02$				0.37 ± 0.17
238	$K^+\pi^-\pi^0$	0.00 ± 0.06	$-0.030^{+0.045}_{-0.051} \pm 0.055$	$0.07 \pm 0.11 \pm 0.01$			$0.000^{+0.059}_{-0.061}$
239	$\rho^- K^+$	0.20 ± 0.11	$0.20 \pm 0.09 \pm 0.08$	$0.22^{+0.22+0.06}_{-0.23-0.02}$			0.20 ± 0.11
240	$\rho(1450)^- K^+$	-0.10 ± 0.33	$-0.10 \pm 0.32 \pm 0.09$				-0.10 ± 0.33
241	$\rho(1700)^- K^+$	-0.36 ± 0.61	$-0.36 \pm 0.57 \pm 0.23$				-0.36 ± 0.61
242	$K^+\pi^-\pi^0(NR)$	0.10 ± 0.18	$0.10 \pm 0.16 \pm 0.08$				0.10 ± 0.18
244	$K_0^*(1430)^0\pi^0$	-0.15 ± 0.11	$-0.15 \pm 0.10 \pm 0.04$				-0.15 ± 0.11
248	$K^0\pi^+\pi^-$	-0.01 ± 0.05	$-0.01 \pm 0.05 \pm 0.01$				-0.01 ± 0.05
251	$K^{*+}\pi^-$	-0.22 ± 0.06	$-0.24 \pm 0.07 \pm 0.02$	$-0.21 \pm 0.11 \pm 0.07$			-0.23 ± 0.06
252	$K_0^*(1430)^+\pi^-$	0.09 ± 0.07	$0.09 \pm 0.07 \pm 0.03$				0.09 ± 0.08
258	$K^{*0}\pi^0$	-0.15 ± 0.13	$-0.15 \pm 0.12 \pm 0.04$				-0.15 ± 0.13
265	$K^{*0}\pi^+\pi^-$	0.07 ± 0.05	$0.07 \pm 0.04 \pm 0.03$				0.07 ± 0.05
266	$K^{*0}\rho^0$	0.09 ± 0.19	$-0.06 \pm 0.09 \pm 0.02$				-0.06 ± 0.09
267	$f_0(980)K^{*0}$	-0.17 ± 0.28	$0.07 \pm 0.10 \pm 0.02$				0.07 ± 0.10
270	$a_1^- K^+$	-0.16 ± 0.12	$-0.16 \pm 0.12 \pm 0.01$				-0.16 ± 0.12
271	$K^{*+}\rho^-$	New	$0.21 \pm 0.15 \pm 0.02$				0.21 ± 0.15
285	$K^{*0}K^+K^-$	0.01 ± 0.05	$0.01 \pm 0.05 \pm 0.02$				0.01 ± 0.05
286	ϕK^{*0}	0.01 ± 0.05	$0.01 \pm 0.06 \pm 0.03$	$0.02 \pm 0.09 \pm 0.02$			0.01 ± 0.05
288	$K^{*0}\pi^+K^-$	0.22 ± 0.39	$0.22 \pm 0.33 \pm 0.20$				0.22 ± 0.39
300	$\phi K_0^*(1430)^0$	0.20 ± 0.15	$0.20 \pm 0.14 \pm 0.06$				0.20 ± 0.15
307	$\phi K_2^*(1430)^0$	-0.08 ± 0.13	$-0.08 \pm 0.12 \pm 0.05$				-0.08 ± 0.13
314	$K^{*0}\gamma$	-0.16 ± 0.23	$-0.16 \pm 0.22 \pm 0.07$				-0.16 ± 0.23
331	$\pi^0\pi^0$		$0.43 \pm 0.26 \pm 0.05$	$0.44^{+0.53}_{-0.52} \pm 0.17$			0.43 ± 0.24
374	$b_1^\mp \pi^\pm$	-0.05 ± 0.10	$-0.05 \pm 0.10 \pm 0.02$				-0.05 ± 0.10
386	$p\bar{p}K^{*0}$	0.05 ± 0.12	$0.11 \pm 0.13 \pm 0.06$	$-0.08 \pm 0.20 \pm 0.02$			0.05 ± 0.12
388	$p\bar{\Lambda}\pi^-$	0.04 ± 0.07	$-0.10 \pm 0.10 \pm 0.02$	$-0.02 \pm 0.10 \pm 0.03$			-0.06 ± 0.07
444	$K^{*0}\ell\ell$	-0.05 ± 0.10	$0.02 \pm 0.20 \pm 0.02$	$-0.08 \pm 0.12 \pm 0.02$			-0.05 ± 0.10
445	$K^{*0}e^+e^-$	-0.21 ± 0.19		$-0.21 \pm 0.19 \pm 0.02$			-0.21 ± 0.19
446	$K^{*0}\mu^+\mu^-$	0.00 ± 0.15		$0.00 \pm 0.15 \pm 0.03$			0.00 ± 0.15

† Measurements of time-dependent CP asymmetries are listed on the Unitarity Triangle home page. (http://www.slac.stanford.edu/xorg/hfag/triangle/index.html)

Heavy Flavor Averaging Group
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Compilation of CP Asymmetries for $B^{\pm}/B^0$ Admixture

In PDG2012 New since PDG2012 (preliminary) New since PDG2012 (published)

RPP#	Mode	PDG2012 Avg.	BABAR	Belle	LHCb	New Avg.
64	$K^*\gamma$	-0.003 ± 0.017	$-0.003 \pm 0.017 \pm 0.007$	$-0.015 \pm 0.044 \pm 0.012$	$0.008 \pm 0.017 \pm 0.009$	0.001 ± 0.013
76	$s\gamma$	-0.008 ± 0.029	$-0.011 \pm 0.030 \pm 0.014$	$0.002 \pm 0.050 \pm 0.030$		-0.008 ± 0.029
–	$(s+d)\gamma$	-0.09 ± 0.07	$-0.11 \pm 0.12 \pm 0.02$			-0.11 ± 0.12
79	$s\eta$	$0.13^{+0.04}_{-0.05}$		$0.13 \pm 0.04^{+0.02}_{-0.03}$§		$0.13^{+0.04}_{-0.05}$
93	π^+X	0.10 ± 0.17	$0.10 \pm 0.16 \pm 0.05$†			0.10 ± 0.17
118	$s\ell\ell$	-0.22 ± 0.26	$-0.22 \pm 0.26 \pm 0.02$			-0.22 ± 0.26
121	$K^*e^+e^-$	-0.18 ± 0.15		$-0.18 \pm 0.15 \pm 0.01$		-0.18 ± 0.15
123	$K^*\mu^+\mu^-$	-0.03 ± 0.13		$-0.03 \pm 0.13 \pm 0.02$		-0.03 ± 0.13
125	$K^*\ell\ell$	-0.07 ± 0.08	$0.03 \pm 0.13 \pm 0.01$	$-0.10 \pm 0.10 \pm 0.01$		-0.05 ± 0.08

† $p^* > 2.34$ GeV; § $0.4 < M_{X_s} < 2.6$ GeV;

Heavy Flavor Averaging Group
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Compilation of CP Asymmetries for B_s mesons

In PDG2012 New since PDG2012 (preliminary) New since PDG2012 (published)

RPP#	Mode	PDG2012 Avg.	Belle	CDF	LHCb	New Avg.
22	$K^+\pi^-$	0.39 ± 0.17		$0.22 \pm 0.07 \pm 0.02$	$0.27 \pm 0.08 \pm 0.02$	0.24 ± 0.05

Heavy Flavor Averaging Group
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Compilation of CP Asymmetries for Λ_b baryons

In PDG2012 New since PDG2012 (preliminary) New since PDG2012 (published)

RPP#	Mode	PDG2012 Avg.	CDF	LHCb	New Avg.
19	$p\pi^-$	0.03 ± 0.18	$0.07 \pm 0.07 \pm 0.03$		0.07 ± 0.08
20	pK^-	0.37 ± 0.17	$-0.09 \pm 0.08 \pm 0.04$		-0.09 ± 0.09

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