

April 2008

Heavy Flavor Averaging Group

Compilation of CP Asymmetries for B^+ modes

In PDG2006

New since PDG2006 (preliminary)

New since PDG2006 (published)

| RPP# | Mode | PDG2006 Avg. | BABAR | Belle | CLEO | CDF | New Avg. |
|------|------------------------|----------------------------|--------------------------------------|--------------------------------------|---------------------------|----------------------------------|----------------------------|
| 182 | $K^0\pi^+$ | -0.02 ± 0.07 | $-0.029 \pm 0.039 \pm 0.010$ | $0.03 \pm 0.03 \pm 0.01$ | $0.18 \pm 0.24 \pm 0.02$ | | 0.009 ± 0.025 |
| 183 | $K^+\pi^0$ | 0.04 ± 0.04 | $0.030 \pm 0.039 \pm 0.010$ | $0.07 \pm 0.03 \pm 0.01$ | $-0.29 \pm 0.23 \pm 0.02$ | | 0.050 ± 0.025 |
| 184 | $\eta'K^+$ | 0.020 ± 0.025 | $0.010 \pm 0.022 \pm 0.006$ | $0.028 \pm 0.028 \pm 0.021$ | $0.03 \pm 0.12 \pm 0.02$ | | 0.016 ± 0.019 |
| 185 | $\eta'K^{*+}$ | New | $0.30^{+0.33}_{-0.37} \pm 0.02$ | | | | $0.30^{+0.33}_{-0.37}$ |
| 186 | ηK^+ | -0.25 ± 0.14 | $-0.22 \pm 0.11 \pm 0.01$ | $-0.39 \pm 0.16 \pm 0.03$ | | | -0.27 ± 0.09 |
| 187 | ηK^{*+} | 0.13 ± 0.14 | $0.01 \pm 0.08 \pm 0.02$ | $0.03 \pm 0.10 \pm 0.01$ | | | 0.02 ± 0.06 |
| – | $\eta K_0^{*+}(1430)$ | New | $0.05 \pm 0.13 \pm 0.02$ | | | | 0.05 ± 0.13 |
| – | $\eta K_2^{*+}(1430)$ | New | $-0.45 \pm 0.30 \pm 0.02$ | | | | -0.45 ± 0.30 |
| 188 | ωK^+ | -0.02 ± 0.13 | $-0.01 \pm 0.07 \pm 0.01$ | $0.05^{+0.08}_{-0.07} \pm 0.01$ | | | 0.02 ± 0.05 |
| 192 | $K^{*0}\pi^+$ | 0.07 ± 0.11 | $0.032 \pm 0.052^{+0.16}_{-0.13}$ | $-0.149 \pm 0.064 \pm 0.022$ | | | -0.114 ± 0.061 |
| 193 | $K^{*+}\pi^0$ | New | $0.04 \pm 0.29 \pm 0.05$ | | | | 0.04 ± 0.29 |
| 194 | $K^+\pi^+\pi^-$ | -0.013 ± 0.039 | $0.028 \pm 0.020 \pm 0.023$ | $0.049 \pm 0.026 \pm 0.020$ | | | 0.038 ± 0.022 |
| 196 | $f_0(980)K^+$ | $0.09^{+0.14}_{-0.12}$ | $-0.106 \pm 0.050^{+0.036}_{-0.015}$ | $-0.077 \pm 0.065^{+0.046}_{-0.026}$ | | | $-0.095^{+0.049}_{-0.042}$ |
| 197 | $f_2(1270)K^+$ | New | $-0.85 \pm 0.22^{+0.26}_{-0.13}$ | $-0.59 \pm 0.22 \pm 0.04$ | | | $-0.68^{+0.20}_{-0.18}$ |
| 200 | $f_0(1500)K^+ \dagger$ | New | $0.28 \pm 0.26^{+0.15}_{-0.14}$ | | | | $0.28^{+0.30}_{-0.29}$ |
| 202 | $K^+\rho^0$ | $0.32^{+0.16}_{-0.15}$ | $0.44 \pm 0.10^{+0.06}_{-0.14}$ | $0.30 \pm 0.11^{+0.11}_{-0.05}$ | | | 0.37 ± 0.11 |
| 203 | $K_0^{*0}(1430)\pi^+$ | $-0.064^{+0.039}_{-0.041}$ | $0.032 \pm 0.035^{+0.034}_{-0.028}$ | $0.076 \pm 0.038^{+0.028}_{-0.022}$ | | | $0.055^{+0.034}_{-0.032}$ |
| 204 | $K_2^{*0}(1430)\pi^+$ | New | $0.05 \pm 0.23^{+0.18}_{-0.08}$ | | | | $0.05^{+0.29}_{-0.24}$ |
| 211 | $K^0\rho^+$ | New | $-0.12 \pm 0.17 \pm 0.02$ | | | | -0.12 ± 0.17 |
| 213 | $K^{*+}\rho^0$ | $0.20^{+0.32}_{-0.29}$ | $0.20^{+0.32}_{-0.29} \pm 0.04$ | | | | $0.20^{+0.32}_{-0.29}$ |
| 214 | $K^{*0}\rho^+$ | New | $-0.01 \pm 0.16 \pm 0.02$ | | | | -0.01 ± 0.16 |
| – | f_0K^{*+} | New | $-0.34 \pm 0.21 \pm 0.03$ | | | | -0.34 ± 0.21 |
| 218 | K^+K^0 | 0.15 ± 0.33 | $0.10 \pm 0.26 \pm 0.03$ | $0.13^{+0.23}_{-0.24} \pm 0.02$ | | | $0.12^{+0.17}_{-0.18}$ |
| 220 | $K^+K_S K_S$ | -0.04 ± 0.11 | $-0.04 \pm 0.11 \pm 0.02$ | | | | -0.04 ± 0.11 |
| 222 | $K^+K^-\pi^+$ | New | $0.00 \pm 0.10 \pm 0.03$ | | | | 0.00 ± 0.10 |
| 228 | $K^+K^-K^+$ | -0.02 ± 0.08 | $-0.02 \pm 0.03 \pm 0.02$ | | | | -0.02 ± 0.04 |
| 229 | ϕK^+ | 0.01 ± 0.07 | $0.046 \pm 0.046 \pm 0.017$ | $0.01 \pm 0.12 \pm 0.05$ | | $-0.07 \pm 0.17^{+0.03}_{-0.02}$ | 0.034 ± 0.044 |
| – | $a_1^+ K^0$ | New | $0.12 \pm 0.11 \pm 0.02$ | | | | 0.12 ± 0.11 |
| – | $b_1^0 K^+$ | New | $-0.46 \pm 0.20 \pm 0.02$ | | | | -0.46 ± 0.20 |
| – | $K^{*+}\pi^+\pi^-$ | New | $0.07 \pm 0.07 \pm 0.04$ | | | | 0.07 ± 0.08 |
| 235 | $K^{*+}K^+K^-$ | New | $0.11 \pm 0.08 \pm 0.03$ | | | | 0.11 ± 0.09 |
| 236 | ϕK^{*+} | 0.05 ± 0.11 | $0.00 \pm 0.09 \pm 0.04$ | $-0.02 \pm 0.14 \pm 0.03$ | | | -0.01 ± 0.08 |
| 239 | $\phi\phi K^+$ | New | | $0.01^{+0.19}_{-0.16} \pm 0.02$ | | | $0.01^{+0.19}_{-0.16}$ |
| 242 | $K^+\eta\gamma$ | -0.16 ± 0.10 | $-0.09 \pm 0.12 \pm 0.01$ | $-0.16 \pm 0.09 \pm 0.06$ | | | -0.13 ± 0.08 |
| 243 | $K^+\phi\gamma$ | New | $-0.26 \pm 0.14 \pm 0.05$ | | | | -0.26 ± 0.15 |
| 254 | $\pi^+\pi^0$ | -0.02 ± 0.07 | $0.03 \pm 0.08 \pm 0.01$ | $0.07 \pm 0.06 \pm 0.01$ | | | 0.06 ± 0.05 |
| 255 | $\pi^+\pi^-\pi^+$ | -0.01 ± 0.09 | $-0.01 \pm 0.08 \pm 0.03$ | | | | -0.01 ± 0.09 |
| 256 | $\rho^0\pi^+$ | -0.07 ± 0.13 | $-0.07 \pm 0.12^{+0.03}_{-0.06}$ | | | | $-0.07^{+0.12}_{-0.13}$ |
| 257 | $f_0(980)\pi^+$ | New | $-0.50 \pm 0.54 \pm 0.06$ | | | | -0.50 ± 0.54 |
| 258 | $f_2(1270)\pi^+$ | New | $-0.01 \pm 0.25^{+0.28}_{-0.32}$ | | | | $-0.01^{+0.38}_{-0.41}$ |
| 264 | $\rho^+\pi^0$ | 0.15 ± 0.12 | $-0.01 \pm 0.13 \pm 0.02$ | $0.06 \pm 0.17^{+0.04}_{-0.05}$ | | | 0.02 ± 0.11 |
| 266 | $\rho^+\rho^0$ | -0.09 ± 0.16 | $-0.12 \pm 0.13 \pm 0.10$ | $0.00 \pm 0.22 \pm 0.03$ | | | -0.08 ± 0.13 |
| – | $b_1^0\pi^+$ | New | $0.05 \pm 0.16 \pm 0.02$ | | | | 0.05 ± 0.16 |
| 269 | $\omega\pi^+$ | 0.10 ± 0.22 | $-0.02 \pm 0.08 \pm 0.01$ | $-0.02 \pm 0.09 \pm 0.01$ | $-0.34 \pm 0.25 \pm 0.02$ | | -0.04 ± 0.06 |
| 270 | $\omega\rho^+$ | 0.05 ± 0.26 | $0.04 \pm 0.18 \pm 0.02$ | | | | 0.04 ± 0.18 |
| 271 | $\eta\pi^+$ | -0.05 ± 0.10 | $-0.08 \pm 0.10 \pm 0.01$ | $-0.23 \pm 0.09 \pm 0.02$ | | | -0.16 ± 0.07 |
| 272 | $\eta'\pi^+$ | 0.14 ± 0.16 | $0.21 \pm 0.17 \pm 0.01$ | $0.20^{+0.37}_{-0.36} \pm 0.04$ | | | 0.21 ± 0.15 |
| 273 | $\eta'\rho^+$ | New | $-0.04 \pm 0.28 \pm 0.02$ | | | | -0.04 ± 0.28 |
| 274 | $\eta\rho^+$ | New | $0.02 \pm 0.18 \pm 0.02$ | $-0.04^{+0.34}_{-0.32} \pm 0.01$ | | | 0.01 ± 0.16 |
| 286 | $p\bar{p}\pi^+$ | -0.16 ± 0.22 | $0.04 \pm 0.07 \pm 0.04$ | $-0.17 \pm 0.10 \pm 0.02$ | | | -0.04 ± 0.06 |
| 289 | $p\bar{p}K^+$ | -0.05 ± 0.11 | $-0.16 \pm 0.08 \pm 0.04$ | $-0.02 \pm 0.05 \pm 0.02$ | | | -0.06 ± 0.05 |
| 294 | $p\bar{p}K^{*+}$ | New | $0.32 \pm 0.13 \pm 0.05$ | $-0.01 \pm 0.19 \pm 0.02$ | | | 0.21 ± 0.11 |
| 296 | $p\bar{\Lambda}\gamma$ | New | | $0.17 \pm 0.16 \pm 0.05$ | | | 0.17 ± 0.17 |
| – | $p\bar{\Lambda}\pi^0$ | New | | $0.01 \pm 0.17 \pm 0.04$ | | | 0.01 ± 0.17 |
| 320 | $K^+\ell\ell$ | New | $-0.07 \pm 0.22 \pm 0.02$ | | | | -0.07 ± 0.22 |

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Compilation of *CP* Asymmetries for B^0 modes

In PDG2006 New since PDG2006 (preliminary) New since PDG2006 (published)

| RPP# | Mode | PDG2006 Avg. | BABAR | Belle | CLEO | CDF | New Avg. |
|------|-----------------------|--------------------|--------------------------------------|----------------------------------|----------------------------------|------------------------------|---------------------------|
| 168 | $K^+\pi^-$ | -0.113 ± 0.020 | $-0.107 \pm 0.018^{+0.007}_{-0.004}$ | $-0.094 \pm 0.018 \pm 0.008$ | $-0.04 \pm 0.16 \pm 0.02$ | $-0.086 \pm 0.023 \pm 0.009$ | -0.097 ± 0.012 |
| 171 | $\eta' K^{*0}$ | New | $-0.08 \pm 0.25 \pm 0.02$ | | | | -0.08 ± 0.25 |
| 172 | ηK^{*0} | 0.02 ± 0.11 | $0.21 \pm 0.06 \pm 0.02$ | $0.17 \pm 0.08 \pm 0.01$ | | | 0.19 ± 0.05 |
| – | $\eta K_0^{*0}(1430)$ | New | $0.06 \pm 0.13 \pm 0.02$ | | | | 0.06 ± 0.13 |
| – | $\eta K_2^{*0}(1430)$ | New | $-0.07 \pm 0.19 \pm 0.02$ | | | | -0.07 ± 0.19 |
| 180 | $K^0\bar{K}^0$ | New | | $-0.58^{+0.73}_{-0.66} \pm 0.04$ | | | $-0.58^{+0.73}_{-0.66}$ |
| 182 | $K^+\pi^-\pi^0$ | 0.07 ± 0.11 | $0.030^{+0.045}_{-0.051} \pm 0.055$ | $0.07 \pm 0.11 \pm 0.01$ | | | $0.042^{+0.059}_{-0.061}$ |
| 183 | $K^+\rho^-$ | 0.26 ± 0.15 | $0.11^{+0.14}_{-0.15} \pm 0.07$ | $0.22^{+0.22+0.06}_{-0.23-0.02}$ | | | 0.15 ± 0.13 |
| – | $K^+\pi^-\pi^0(NR)$ | New | $0.23^{+0.19+0.11}_{-0.27-0.10}$ | | | | $0.23^{+0.22}_{-0.29}$ |
| 189 | $K^{*+}\pi^-$ | -0.05 ± 0.14 | -0.14 ± 0.12 | | $0.26^{+0.33+0.10}_{-0.34-0.08}$ | | -0.10 ± 0.11 |
| 191 | $K^{*0}\pi^0$ | New | $-0.09 \pm 0.21^{+0.24}_{-0.09}$ | | | | $-0.09^{+0.32}_{-0.23}$ |
| – | $K_0^{*+}(1430)\pi^-$ | New | $0.17^{+0.11}_{-0.16} \pm 0.22$ | | | | $0.17^{+0.25}_{-0.27}$ |
| – | $K_0^{*0}(1430)\pi^0$ | New | $-0.22 \pm 0.12^{+0.30}_{-0.29}$ | | | | $-0.22^{+0.32}_{-0.31}$ |
| 198 | $K^{*0}\pi^+\pi^-$ | New | $0.07 \pm 0.04 \pm 0.03$ | | | | 0.07 ± 0.05 |
| 199 | $K^{*0}\rho^0$ | New | $0.09 \pm 0.19 \pm 0.02$ | | | | 0.09 ± 0.19 |
| 200 | $f_0(980)K^{*0}$ | New | $-0.17 \pm 0.28 \pm 0.02$ | | | | -0.17 ± 0.28 |
| 202 | $a_1^+ K^-$ | New | $-0.16 \pm 0.12 \pm 0.01$ | | | | -0.16 ± 0.12 |
| – | $b_1^- K^+$ | New | $0.07 \pm 0.12 \pm 0.02$ | | | | 0.07 ± 0.12 |
| 204 | ϕK^{*0} | 0.01 ± 0.07 | $-0.03 \pm 0.07 \pm 0.03$ | $0.02 \pm 0.09 \pm 0.02$ | | | -0.01 ± 0.06 |
| – | $\phi K_0^{*0}(1430)$ | New | $0.17 \pm 0.15 \pm 0.03$ | | | | 0.17 ± 0.15 |
| – | $\phi K_2^{*0}(1430)$ | New | $-0.12 \pm 0.14 \pm 0.04$ | | | | -0.12 ± 0.15 |
| 203 | $K^{*0}K^+K^-$ | New | $0.01 \pm 0.05 \pm 0.02$ | | | | 0.01 ± 0.05 |
| – | $K^{*0}\pi^+K^-$ | New | $0.22 \pm 0.33 \pm 0.20$ | | | | 0.22 ± 0.39 |
| 230 | $\pi^0\pi^0$ | 0.3 ± 0.4 | $0.49 \pm 0.35 \pm 0.05$ | $0.44^{+0.73+0.04}_{-0.62-0.06}$ | | | $0.48^{+0.32}_{-0.31}$ |
| – | $b_1^\mp \pi^\pm$ | New | $-0.05 \pm 0.10 \pm 0.02$ | | | | -0.05 ± 0.10 |
| 270 | $p\bar{p}K^{*0}$ | New | $0.11 \pm 0.13 \pm 0.06$ | $-0.08 \pm 0.20 \pm 0.02$ | | | 0.05 ± 0.12 |
| 271 | $p\bar{\Lambda}\pi^-$ | New | | $-0.02 \pm 0.10 \pm 0.03$ | | | -0.02 ± 0.10 |

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

Compilation of *CP* Asymmetries for B^\pm/B^0 Admixture

| RPP# | Mode | PDG2006 Avg. | BABAR | Belle | CLEO | CDF | New Avg. |
|------|---------------|------------------|------------------------------|------------------------------|------------------------------|-----|--------------------|
| 58 | $K^*\gamma$ | -0.01 ± 0.07 | $-0.013 \pm 0.036 \pm 0.010$ | $-0.015 \pm 0.044 \pm 0.012$ | $0.08 \pm 0.13 \pm 0.03$ | | -0.010 ± 0.028 |
| 70 | $s\gamma$ | 0.00 ± 0.04 | $0.025 \pm 0.050 \pm 0.015$ | $0.002 \pm 0.050 \pm 0.030$ | $-0.079 \pm 0.108 \pm 0.022$ | | 0.004 ± 0.037 |
| – | $(s+d)\gamma$ | New | $-0.11 \pm 0.12 \pm 0.02$ | | | | -0.11 ± 0.12 |
| 107 | $s\ell\ell$ | -0.22 ± 0.26 | $-0.22 \pm 0.26 \pm 0.02$ | | | | -0.22 ± 0.26 |
| 113 | $K^*\ell\ell$ | New | $0.03 \pm 0.23 \pm 0.03$ | | | | 0.03 ± 0.23 |

Compilation of *CP* Asymmetries for B_s modes

| RPP# | Mode | PDG2006 Avg. | BABAR | Belle | CLEO | CDF | New Avg. |
|------|------------|--------------|-------|-------|------|--------------------------|-----------------|
| 16 | $K^+\pi^-$ | New | | | | $0.39 \pm 0.15 \pm 0.08$ | 0.39 ± 0.17 |

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