

Summary table of the 19 measured  $CP$  observables, defined in terms of  $B$  meson decay widths. Where indicated,  $CP$  represents an average of the  $D \rightarrow K^+K^-$  and  $D \rightarrow \pi^+\pi^-$  modes. The  $R$  observables represent partial width ratios and double ratios, where  $R_{K/\pi}^{K\pi,\pi^0/\gamma}$  is an average over the  $D^* \rightarrow D\pi^0$  and  $D^* \rightarrow D\gamma$  modes. The  $A$  observables represent  $CP$  asymmetries.

Observable	Definition
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$R_{K/\pi}^{K\pi}$	$\frac{\Gamma(B^- \rightarrow [K^- \pi^+]_D K^-) + \Gamma(B^+ \rightarrow [K^+ \pi^-]_D K^+)}{\Gamma(B^- \rightarrow [K^- \pi^+]_D \pi^-) + \Gamma(B^+ \rightarrow [K^+ \pi^-]_D \pi^+)}$
$R^{KK}$	$\frac{\Gamma(B^- \rightarrow [K^- K^+]_D K^-) + \Gamma(B^+ \rightarrow [K^+ K^-]_D K^+)}{\Gamma(B^- \rightarrow [K^- K^+]_D \pi^-) + \Gamma(B^+ \rightarrow [K^+ K^-]_D \pi^+)} \times \frac{1}{R_{K/\pi}^{K\pi}}$
$R^{\pi\pi}$	$\frac{\Gamma(B^- \rightarrow [\pi^- \pi^+]_D K^-) + \Gamma(B^+ \rightarrow [\pi^+ \pi^-]_D K^+)}{\Gamma(B^- \rightarrow [\pi^- \pi^+]_D \pi^-) + \Gamma(B^+ \rightarrow [\pi^+ \pi^-]_D \pi^+)} \times \frac{1}{R_{K/\pi}^{K\pi}}$
$A_K^{K\pi}$	$\frac{\Gamma(B^- \rightarrow [K^- \pi^+]_D K^-) - \Gamma(B^+ \rightarrow [K^+ \pi^-]_D K^+)}{\Gamma(B^- \rightarrow [K^- \pi^+]_D K^-) + \Gamma(B^+ \rightarrow [K^+ \pi^-]_D K^+)}$
$A_K^{KK}$	$\frac{\Gamma(B^- \rightarrow [K^- K^+]_D K^-) - \Gamma(B^+ \rightarrow [K^+ K^-]_D K^+)}{\Gamma(B^- \rightarrow [K^- K^+]_D K^-) + \Gamma(B^+ \rightarrow [K^+ K^-]_D K^+)}$
$A_K^{\pi\pi}$	$\frac{\Gamma(B^- \rightarrow [\pi^- \pi^+]_D K^-) - \Gamma(B^+ \rightarrow [\pi^+ \pi^-]_D K^+)}{\Gamma(B^- \rightarrow [\pi^- \pi^+]_D K^-) + \Gamma(B^+ \rightarrow [\pi^+ \pi^-]_D K^+)}$
$A_\pi^{K\pi}$	$\frac{\Gamma(B^- \rightarrow [K^- K^+]_D \pi^-) - \Gamma(B^+ \rightarrow [K^+ K^-]_D \pi^+)}{\Gamma(B^- \rightarrow [K^- K^+]_D \pi^-) + \Gamma(B^+ \rightarrow [K^+ K^-]_D \pi^+)}$
$A_\pi^{\pi\pi}$	$\frac{\Gamma(B^- \rightarrow [\pi^- \pi^+]_D \pi^-) - \Gamma(B^+ \rightarrow [\pi^+ \pi^-]_D \pi^+)}{\Gamma(B^- \rightarrow [\pi^- \pi^+]_D \pi^-) + \Gamma(B^+ \rightarrow [\pi^+ \pi^-]_D \pi^+)}$
$R_{K/\pi}^{K\pi, \pi^0/\gamma}$	$\frac{\Gamma(B^- \rightarrow ([K^- \pi^+]_D \pi^0/\gamma)_{D^*} K^-) + \Gamma(B^+ \rightarrow ([K^+ \pi^-]_D \pi^0/\gamma)_{D^*} K^+)}{\Gamma(B^- \rightarrow ([K^- \pi^+]_D \pi^0/\gamma)_{D^*} \pi^-) + \Gamma(B^+ \rightarrow ([K^+ \pi^-]_D \pi^0/\gamma)_{D^*} \pi^+)}$
$R^{CP, \pi^0}$	$\frac{\Gamma(B^- \rightarrow ([CP]_D \pi^0)_{D^*} K^-) + \Gamma(B^+ \rightarrow ([CP]_D \pi^0)_{D^*} K^+)}{\Gamma(B^- \rightarrow ([CP]_D \pi^0)_{D^*} \pi^-) + \Gamma(B^+ \rightarrow ([CP]_D \pi^0)_{D^*} \pi^+)} \times \frac{1}{R_{K/\pi}^{K\pi, \pi^0/\gamma}}$
$R^{CP, \gamma}$	$\frac{\Gamma(B^- \rightarrow ([CP]_D \gamma)_{D^*} K^-) + \Gamma(B^+ \rightarrow ([CP]_D \gamma)_{D^*} K^+)}{\Gamma(B^- \rightarrow ([CP]_D \gamma)_{D^*} \pi^-) + \Gamma(B^+ \rightarrow ([CP]_D \gamma)_{D^*} \pi^+)} \times \frac{1}{R_{K/\pi}^{K\pi, \pi^0/\gamma}}$
$A_K^{K\pi, \pi^0}$	$\frac{\Gamma(B^- \rightarrow ([K^- \pi^+]_D \pi^0)_{D^*} K^-) - \Gamma(B^+ \rightarrow ([K^+ \pi^-]_D \pi^0)_{D^*} K^+)}{\Gamma(B^- \rightarrow ([K^- \pi^+]_D \pi^0)_{D^*} K^-) + \Gamma(B^+ \rightarrow ([K^+ \pi^-]_D \pi^0)_{D^*} K^+)}$
$A_\pi^{K\pi, \pi^0}$	$\frac{\Gamma(B^- \rightarrow ([K^- \pi^+]_D \pi^0)_{D^*} \pi^-) - \Gamma(B^+ \rightarrow ([K^+ \pi^-]_D \pi^0)_{D^*} \pi^+)}{\Gamma(B^- \rightarrow ([K^- \pi^+]_D \pi^0)_{D^*} \pi^-) + \Gamma(B^+ \rightarrow ([K^+ \pi^-]_D \pi^0)_{D^*} \pi^+)}$
$A_K^{K\pi, \gamma}$	$\frac{\Gamma(B^- \rightarrow ([K^- \pi^+]_D \gamma)_{D^*} K^-) - \Gamma(B^+ \rightarrow ([K^+ \pi^-]_D \gamma)_{D^*} K^+)}{\Gamma(B^- \rightarrow ([K^- \pi^+]_D \gamma)_{D^*} K^-) + \Gamma(B^+ \rightarrow ([K^+ \pi^-]_D \gamma)_{D^*} K^+)}$
$A_\pi^{K\pi, \gamma}$	$\frac{\Gamma(B^- \rightarrow ([K^- \pi^+]_D \gamma)_{D^*} \pi^-) - \Gamma(B^+ \rightarrow ([K^+ \pi^-]_D \gamma)_{D^*} \pi^+)}{\Gamma(B^- \rightarrow ([K^- \pi^+]_D \gamma)_{D^*} \pi^-) + \Gamma(B^+ \rightarrow ([K^+ \pi^-]_D \gamma)_{D^*} \pi^+)}$
$A_K^{CP, \pi^0}$	$\frac{\Gamma(B^- \rightarrow ([CP]_D \pi^0)_{D^*} K^-) - \Gamma(B^+ \rightarrow ([CP]_D \pi^0)_{D^*} K^+)}{\Gamma(B^- \rightarrow ([CP]_D \pi^0)_{D^*} K^-) + \Gamma(B^+ \rightarrow ([CP]_D \pi^0)_{D^*} K^+)}$
$A_\pi^{CP, \pi^0}$	$\frac{\Gamma(B^- \rightarrow ([CP]_D \pi^0)_{D^*} \pi^-) - \Gamma(B^+ \rightarrow ([CP]_D \pi^0)_{D^*} \pi^+)}{\Gamma(B^- \rightarrow ([CP]_D \pi^0)_{D^*} \pi^-) + \Gamma(B^+ \rightarrow ([CP]_D \pi^0)_{D^*} \pi^+)}$
$A_K^{CP, \gamma}$	$\frac{\Gamma(B^- \rightarrow ([CP]_D \gamma)_{D^*} K^-) - \Gamma(B^+ \rightarrow ([CP]_D \gamma)_{D^*} K^+)}{\Gamma(B^- \rightarrow ([CP]_D \gamma)_{D^*} K^-) + \Gamma(B^+ \rightarrow ([CP]_D \gamma)_{D^*} K^+)}$
$A_\pi^{CP, \gamma}$	$\frac{\Gamma(B^- \rightarrow ([CP]_D \gamma)_{D^*} \pi^-) - \Gamma(B^+ \rightarrow ([CP]_D \gamma)_{D^*} \pi^+)}{\Gamma(B^- \rightarrow ([CP]_D \gamma)_{D^*} \pi^-) + \Gamma(B^+ \rightarrow ([CP]_D \gamma)_{D^*} \pi^+)}$

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