

Type	Observable	Current precision	LHCb 2018	Upgrade (50 fb <sup>-1</sup> )	Theory uncertainty
$B_s^0$ mixing	$2\beta_s (B_s^0 \rightarrow J/\psi \phi)$	0.10 [?]	0.025	0.008	$\sim 0.003$
	$2\beta_s (B_s^0 \rightarrow J/\psi f_0(980))$	0.17 [?]	0.045	0.014	$\sim 0.01$
	$a_{sl}^s$	$6.4 \times 10^{-3}$ [?]	$0.6 \times 10^{-3}$	$0.2 \times 10^{-3}$	$0.03 \times 10^{-3}$
Gluonic penguins	$2\beta_s^{\text{eff}}(B_s^0 \rightarrow \phi\phi)$	–	0.17	0.03	0.02
	$2\beta_s^{\text{eff}}(B_s^0 \rightarrow K^{*0}\bar{K}^{*0})$	–	0.13	0.02	$< 0.02$
	$2\beta_s^{\text{eff}}(B^0 \rightarrow \phi K_S^0)$	0.17 [?]	0.30	0.05	0.02
Right-handed currents	$2\beta_s^{\text{eff}}(B_s^0 \rightarrow \phi\gamma)$	–	0.09	0.02	$< 0.01$
	$\tau^{\text{eff}}(B_s^0 \rightarrow \phi\gamma)/\tau_{B_s^0}$	–	5 %	1 %	0.2 %
Electroweak penguins	$S_3(B^0 \rightarrow K^{*0}\mu^+\mu^-; 1 < q^2 < 6 \text{ GeV}^2/c^4)$	0.08 [?]	0.025	0.008	0.02
	$s_0 A_{\text{FB}}(B^0 \rightarrow K^{*0}\mu^+\mu^-)$	25 % [?]	6 %	2 %	7 %
	$A_{\text{I}}(K\mu^+\mu^-; 1 < q^2 < 6 \text{ GeV}^2/c^4)$	0.25 [?]	0.08	0.025	$\sim 0.02$
	$\mathcal{B}(B^+ \rightarrow \pi^+\mu^+\mu^-)/\mathcal{B}(B^+ \rightarrow K^+\mu^+\mu^-)$	25 % [?]	8 %	2.5 %	$\sim 10\%$
Higgs penguins	$\mathcal{B}(B_s^0 \rightarrow \mu^+\mu^-)$	$1.5 \times 10^{-9}$ [?]	$0.5 \times 10^{-9}$	$0.15 \times 10^{-9}$	$0.3 \times 10^{-9}$
	$\mathcal{B}(B^0 \rightarrow \mu^+\mu^-)/\mathcal{B}(B_s^0 \rightarrow \mu^+\mu^-)$	–	$\sim 100\%$	$\sim 35\%$	$\sim 5\%$
Unitarity triangle angles	$\gamma (B \rightarrow D^{(*)}K^{(*)})$	$\sim 10\text{--}12^\circ$ [?, ?]	$4^\circ$	$0.9^\circ$	negligible
	$\gamma (B_s^0 \rightarrow D_s K)$	–	$11^\circ$	$2.0^\circ$	negligible
	$\beta (B^0 \rightarrow J/\psi K_S^0)$	$0.8^\circ$ [?]	$0.6^\circ$	$0.2^\circ$	negligible
Charm $CP$ violation	$A_\Gamma$	$2.3 \times 10^{-3}$ [?]	$0.40 \times 10^{-3}$	$0.07 \times 10^{-3}$	–
	$\Delta\mathcal{A}_{CP}$	$2.1 \times 10^{-3}$ [?]	$0.65 \times 10^{-3}$	$0.12 \times 10^{-3}$	–