Unitarity triangle angles

Heavy Flavor Averaging Group

January 2023

1 HFLAV Unitarity Triangle measurements

This document presents the HFLAV averages of the Unitarity angle measurements. Results can be seen in Table 1 and Fig. 1.

Table 1: Results and averages for $S_{b\to c\bar{c}s}$. The averages are given from a combination of the most precise results only.

Experiment		Sample size	$-\eta S_{b\to c\bar{c}s}$
BaBar $b \to c\bar{c}s$	[**?**]	$N(B\bar{B}) = 465$M	$0.657 \pm 0.036 \pm 0.012$
Belle $b \to c\bar{c}s$	[**?**]	$N(B\bar{B}) = 772$M	$0.670 \pm 0.029 \pm 0.013$
LHCb $J/\psi K^0_S$, $J/\psi \to \mu^+\mu^-$	[**?**]	$\int \mathcal{L}\, dt = 3$ fb^{-1}	$0.731 \pm 0.035 \pm 0.020$
LHCb $J/\psi K^0_S$, $J/\psi \to e^+e^-$	[**?**]	$\int \mathcal{L}\, dt = 3$ fb^{-1}	$0.83 \pm 0.08 \pm 0.01$
Average			0.695 ± 0.019
Confidence level			0.09 (1.7σ)

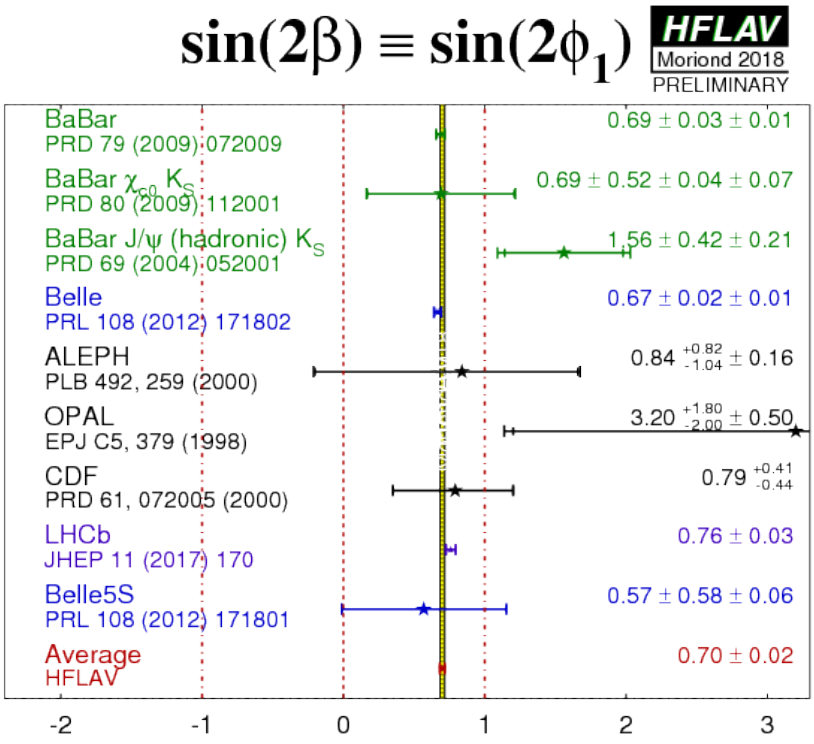

Figure 1: Caption