

Improved Measurement of $B^+ \rightarrow \rho^+ \rho^0$ and Determination of the CKM Angle α

We present improved measurements of the branching fraction \mathcal{B} , the longitudinal polarization fraction f_L , and the direct CP asymmetry \mathcal{A}_{CP} in the B meson decay channel $B^+ \rightarrow \rho^+ \rho^0$. The data sample was collected with the *BABAR* detector at SLAC. The results are $\mathcal{B}(B^+ \rightarrow \rho^+ \rho^0) = (23.7 \pm 1.4 \pm 1.4) \times 10^{-6}$, $f_L = 0.950 \pm 0.015 \pm 0.006$, and $\mathcal{A}_{CP} = -0.054 \pm 0.055 \pm 0.010$, where the uncertainties are statistical and systematic, respectively. Based on these results, we perform an isospin analysis and determine the CKM phase angle $\alpha = \arg(-V_{td}V_{tb}^*/V_{ud}V_{ub}^*)$ to be $(92.4_{-6.5}^{+6.0})^\circ$.

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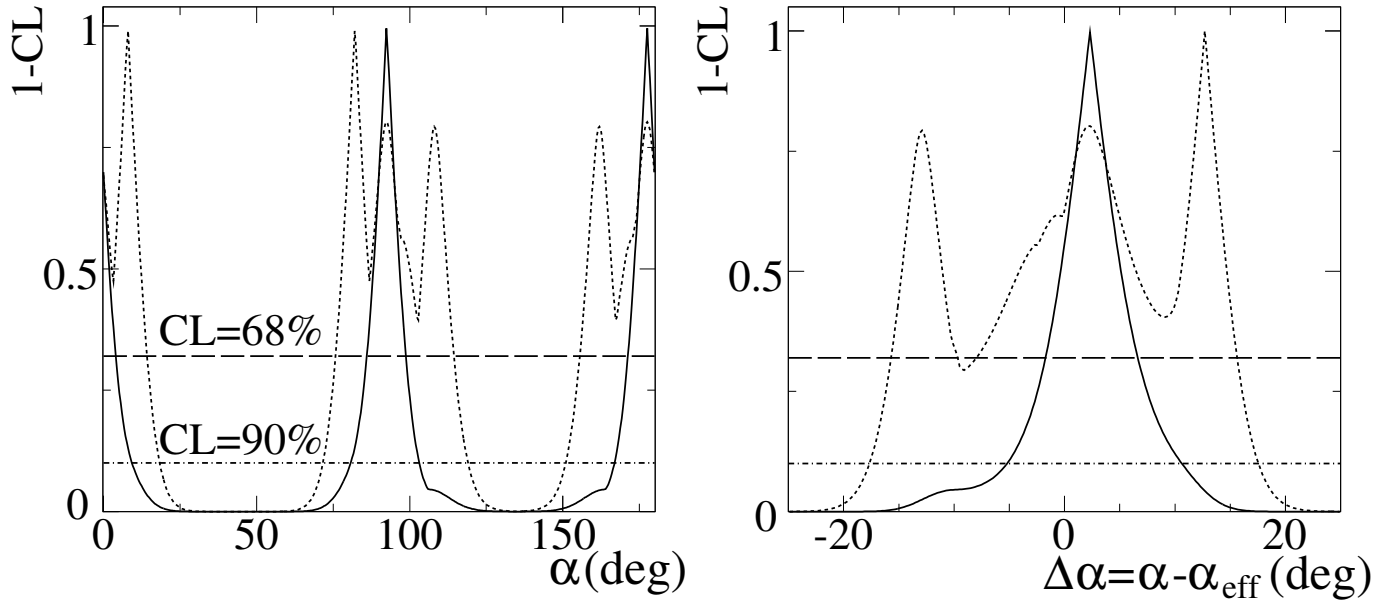


FIG. 1: Determination of α and $\Delta\alpha$ from the isospin analysis. The solid (dotted) curves show the results using the $B^+ \rightarrow \rho^+\rho^0$ measurements presented here (prior to this analysis).