

Note on a Possible Correlation of CP Asymmetries in LHCb Data

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September 9, 2025

Consider the relation between CP asymmetries in baryon and meson decays:

$$A_{CP}(\Lambda_b \rightarrow pK\pi) - A_{CP}(B^0 \rightarrow K^+\pi^-) \approx \kappa \cdot a_{\text{dir}}^{(c)},$$

where $a_{\text{dir}}^{(c)}$ is the averaged direct CP asymmetry in the charm sector and κ is an $\mathcal{O}(1)$ constant.

How it can be tested: LHCb has world-leading precision in both baryonic b decays and charm CP asymmetries. By analyzing correlations between measured A_{CP} values across sectors, one can search for a linear link.

Why it may be important: Discovery of such a cross-sector correlation would point to a deeper symmetry or mechanism behind CP violation.