The role of $|V_{cb}|$

Goal. Discuss the role of V_{cb} in the global quark flavor picture: impact of the V_{cb} puzzle on Unitary Triangle (UT) and New Physics (NP) searches

References. CKMfitter webpage; Summer 2023 update; "NP in B meson mixing: future sensitivity and limitations"

The role of $|V_{cb}|$

- $|V_{cb}|$ in the **Standard Model UT fit**; *CKM*fitter's Summer 2023 update, exclusive and inclusive $|V_{xb}|$ inputs; indirect value from a global fit analysis (relying on UT ϕ_1, ϕ_2, ϕ_3 angles, etc.)

- In presence of pollution from (heavy) NP: <u>execute the fit allowing for new parameters</u> (encompassing Wilson coefficients, etc.); example: **NP in B_d & B_s meson mixing**, which play an important role in the UT fit (since they are precision observables), and are suppressed in the SM due to GIM & CKM hierarchy

- (Near) <u>Future landscape</u>: LHC(b) & Belle II; **future bottlenecks**: non-perturbative and perturbative QCD inputs & $|V_{cb}|$ (i.e., normalization in meson mixing); impact on the extraction of NP bounds under an improved $|V_{cb}|$ extraction