

Exclusive V_{ub} determination from QCD - solution to V_{ub} puzzle?

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We revisit light-cone sum rule predictions for the full set of local $B \rightarrow \pi$ form factors, with focus on the systematic uncertainties that affect this method and carry out a combined fit with the precise lattice QCD results for all form factors simultaneously, in order to provide the most up-to-date exclusive determination of $|V_{ub}|$. From the world average of the semileptonic $B^0 \rightarrow \pi^+ l^- \nu$ decay we obtain $|V_{ub}| = (3.77 \pm 0.15) \cdot 10^{-3}$, which is in agreement with the most recent inclusive determination at the 1σ level.

We provide numerical results for the form factor parameters –including their covariance –based on simultaneous fit of all three form factors to both the sum rule and lattice QCD result and give up-to-date predictions for $B \rightarrow \pi^+ l^- \nu$ observables that probe lepton-flavour universality and non-standard weak effective couplings.

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