

Bs → K form factors and their impact on CKM elements

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The probabilities for flavour transitions between quarks via the weak interaction are parametrised by the different elements of the Cabibbo-Kobayashi-Maskawa (CKM) matrix. There is a long standing puzzle related to these, in which the elements that describe the up-bottom (V_{ub}) and charm-bottom (V_{cb}) transitions show a tension when determined in exclusive decays (when the final state is completely known) or inclusive decays (generic final states). Recently, the LHCb collaboration measured the $B_s \rightarrow K \mu \nu$ decay and determined the ratio $|V_{ub}/V_{cb}|$ using theoretical inputs. In order to determine these CKM elements from the experimental analysis, the form factors for the transition $B_s \rightarrow K$ are required. In this talk, I will discuss this new form factor determination and focus on how to improve it. Specifically, I will discuss an ongoing new light-cone sum rule (LCSR) approach to the calculation of these form factors such that they can be extrapolated and fitted to lattice QCD results to get the most precise theoretical prediction for these form factors.

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