

Heavy to strange semileptonic decays

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“ $D \rightarrow Kl\nu$ and $B \rightarrow Kl + l^-$ are important heavy to strange semileptonic decay processes, giving us direct comparison with experiment, and access to CKM matrix elements and potential new physics. We can calculate form factors for both of these processes in lattice QCD and connect them together by determining heavy to strange form factors for heavy quark masses ranging from c to b . We can also explore the connection to form factors with different light quark masses. Using the HISQ action on $N_f = 2 + 1 + 1$, we demonstrate how $D \rightarrow K$ calculations can be extended up towards the b by a study of heavy-strange to η_s form factors, including tests of the dependence on heavy quark mass, comparing to HQET expectations. We also give preliminary $D \rightarrow K$ and $B \rightarrow K$ results, for the latter including results for the tensor form factor with an accurately renormalised tensor current.”

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