

Nonperturbative calculations of form factors for exclusive semileptonic B(s) decays

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A key ingredient to searches for new physics in the flavor sector are precise theoretical predictions derived from the Standard Model. Due to its large mass and long lifetime processes involving b quarks are of particular interest. Focusing at the nonperturbative QCD contributions, we carry out lattice QCD simulations with the focus on semileptonic $B_{(s)}$ decays. We present results on our determinations of $B_s \rightarrow D_s \ell \nu$ and $B_s \rightarrow K \ell \nu$ semileptonic form factors with full q^2 dependence, discuss the extraction of CKM matrix elements $|V_{cb}|$ and $|V_{ub}|$, as well the determination of R -ratios testing the universality of lepton flavors.

Our calculations are based on the set of 2+1 flavor domain wall Iwasaki gauge field configurations generated by the RBC-UKQCD collaboration featuring three lattice spacings of $1/a = 1.78, 2.38, \text{ and } 2.78$. Heavy b -quarks are simulated using the relativistic heavy quark action.

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