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Standard Model contributions to B and Bs meson semileptonic decays

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We present our recent results on B to D, Bs to Ds, and Bs to K Standard Model tree level semileptonic decays. We have used MILC $N_f=2+1$ asqtad gauge configurations with two lattice spacings.

For the valence quarks, we used NRQCD bottom quarks and HISQ light and charm quarks.

The B to D and Bs to Ds semileptonic form factors can be used for better determination of the Bs to $[\mu^+ \mu^-]$ branching fraction.

Furthermore the ratio $R(D)$ of the B to $[D, \tau, \nu]$ and B to $[D, \mu, \nu]$ branching fractions is of considerable phenomenological interest since there currently exists some tension between experiment and Standard Model predictions for $R(D)$.

The Bs to K semileptonic decay is a new channel at LHCb and Belle II for alternate V_{ub} determinations.

Our form factor results for this decay are the first from lattice QCD.

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