

Semileptonic $B \rightarrow D$ and $B_s \rightarrow D_s$ decays in the AdS/QCD Softwall model

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We present a holographic calculation of the semileptonic decays $B \rightarrow D$ and $B_s \rightarrow D_s$ within the AdS/QCD Softwall Model. Heavy-light mesons are described by normalizable bulk modes, while the flavor-changing current $J_{EW}^\mu = \bar{c}\gamma^\mu b$ is associated with a *massless* bulk vector field, motivated by the UV scaling dimension $\Delta = 3$ of the QCD current. An effective bulk interaction yields the *overlap integral* from which we extract the holographic Isgur-Wise function $\xi(\omega)$, and the vector $f_+(q^2)$ and scalar $f_0(q^2)$ form factors. We also evaluate the Lepton Flavor Universality Ratios $R(D)$ and $R(D_s)$, comparing our predictions with lattice QCD and available experimental data. Finally, we discuss the limitations of the leading-order holographic description.

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