

Measurements of $|V_{cd}(s)|$, decay constants, and form factors in (semi)-leptonic D decays at BESIII

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The BESIII experiment has collected $20.3 fb^{-1}$ and $7.33 fb^{-1}$ of e+e- collision data at center-of-mass energies of 3.773 GeV and 4.128-4.226 GeV, respectively.

This presentation will provide an overview of recent studies using (semi)-leptonic D decays at BESIII. We will present the first experimental investigation of $D_s^{*+} \rightarrow l^+ \nu$ decays, along with improved measurements of the CKM matrix elements $|V_{cd}|$ and $|V_{cs}|$, and the decay constants $f_{D_s^+}$ and f_{D^+} via $D_s^+ / D^+ \rightarrow \mu^+ \nu$ and $\tau^+ \nu$ decays. Furthermore, we will summarize the most precise results for the transition form factors in $D_{(s)} \rightarrow K, D \rightarrow \pi$, and $D_{(s)} \rightarrow \eta^{(\prime)}$ decays. Complementing these leptonic studies, we will discuss progress in semileptonic analyses, including amplitude analyses and branching fraction measurements of $D_{(s)} \rightarrow hhl^+ \nu$ and $hhhl^+ \nu$ processes. These studies explore the hadron spectrum through scalar (a_0, f_0, σ), vector (K^*, ϕ), and axial-vector (K_1, b_1) mesons, and will present experimental results for form factors in decays such as $D \rightarrow a_0(980), D \rightarrow \sigma, D \rightarrow K^*, D_s \rightarrow f_0(980)$, and $D_s \rightarrow \phi$.

Collaboration

BESIII

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