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Semileptonic Charm Meson Decays

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Using the entire CLEO-c psi(3770) −> DDbar event sample, corresponding to an integrated luminosity of 818 pb-1 and approximately 5.2 million DDbar events, we present a study of the decays D0 −> pi- e+ nu, D0 −> K- e+ nu, D+ −> pi0 e+ nu, and D+ −> K0bar e+ nu. Using a tagged analysis technique, in which one D is fully reconstructed in a hadronic mode, absolute partial rates for semileptonic decays by the other D are measured in several qˆ2 bins. We fit these rates using several form factor parameterizations and report the results, including form factor shape parameters and branching fractions. We compare the form factor results to recent Lattice Quantum Chromodynamics (LQCD) calculations. Taking input from LQCD, we make the most precise measurement of |Vcs| and a precision measurement of |Vcd|. We also present studies of other D+ and D0 semileptonic decays and semileptonic decays of Ds mesons obtained from a run above the Ds meson pair production threshold.

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