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## Semileptonic and leptonic charm decays at BESIII

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BESIII has collected data samples corresponding to luminosities of  $2.93 \text{ fb}^{-1}$  and  $3.19 \text{ fb}^{-1}$  at center-of-mass energies of 3.773 and 4.178, respectively. We report the measurements of the decays  $D(s)^+ \rightarrow l^+ \nu$  ( $l = \mu, \tau$ ),  $D0^+ \rightarrow K\text{-bar}(\pi)l^+ \nu$  ( $l = e, \mu$ ),  $D0^+ \rightarrow K\text{-bar}(\pi)\pi^+ \nu$ ,  $D0^+ \rightarrow a_0(980)e^+ \nu$ ,  $Ds^+ \rightarrow \eta^{(\prime)}e^+ \nu$  and  $Ds^+ \rightarrow K^{(*)0}e^+ \nu$ . From these analyses, the decay constants  $f_{D(s)^+}$ , the semileptonic form factors  $f^+_{P_{\nu}(0)}$  [ $P = K, \pi, \eta^{(\prime)}$ ], the CKM matrix elements  $|V_{cs}(d)|$  are determined precisely. These results can verify the LQCD calculations of  $f_{D(s)^+}$ ,  $f^+_{P_{\nu}(0)}$  and the CKM matrix unitarity. Precision tests of lepton flavor universality are also made via  $D(s)^+ \rightarrow l^+ \nu$  and  $D0^+ \rightarrow K\text{-bar}(\pi)l^+ \nu$ , decays.

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