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Charm meson physics at BESIII

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The BESIII Experiment at the Beijing Electron Positron Collider (BEPCII) accumulated the world's largest e^+e^- collision samples at $E_{cm} = 3.773, 4.009, 4.18$ GeV. Based on analyses of $D(s)^+$ to $l^+\nu$ ($l = \mu, \tau$), $D \rightarrow K(\pi)l^+\nu$ ($l = e$ or μ), $D^+ \rightarrow K^-\pi^+e^+\nu$, $D^0(+) \rightarrow f_0(980)e^+\nu$, $Ds^+ \rightarrow \eta(\prime)e^+\nu$, we report the determinations of CKM matrix elements $|V_{cs}(d)|$, the $D(s)^+$ decay constants, the form factors of D semi-leptonic decays. These are important to calibrate the LQCD calculations of decay constant and form factors and to test the CKM unitarity. Using the quantum correlation property of $D^0\bar{D}^0$ -bar production, we determine the parameters of the strong phase difference and $D^0\bar{D}^0$ -bar mixing. We will also report some preliminary results for Ds^+ decays to $\omega\pi^+, \omega K^+$ and $p\pi$.

Experimental Collaboration

BESIII

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