

# eeFACT 2025 - 70th ICFA Advanced Beam Dynamics Workshop on High Luminosity Circular e+e-Colliders



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## Charm physics studies at BESIII, Belle (II) and STCF

Electron-positron collider experiments, such as BESIII and Belle (II), along with future facilities like the Super Tau-Charm Factory (STCF), will serve as important laboratories for studying charm physics. BESIII operates near the threshold energy region, where it collects substantial data samples of charmed and anti-charmed hadron pairs. The proposed STCF aims to be a third-generation circular electron-positron collider with a luminosity approximately 100 times greater than that of BESIII. Meanwhile, Belle II, the upgrade of Belle, is anticipated to produce enormous number of charmed hadrons. In this presentation, a brief overview of the theoretical aspects related to charm mixing, CP violation, and rare charm decays will be given. The current status and future prospects on these topics at BESIII, Belle (II) and STCF will be discussed. Recent progress and future prospects of the precise determination of the CKM matrix elements  $|V_{cd}|$  and  $|V_{cs}|$  will also be presented. We will show that the synergy between experiments operating in near-threshold regions (such as BESIII and STCF) and at higher energies (like Belle and Belle II) is crucial for precision measurements of charm mixing and for probing charm CP violation.

### Footnotes

### Funding Agency

### I have read and accept the Privacy Policy Statement

Yes

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