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## Towards determination of the weak and strong phases in neutral D-meson decays into $K^{*+}K^-$

*Tuesday 18 July 2023 15:20 (20 minutes)*

We study the effects of  $D^0$ - $\bar{D}^0$  mixing and CP violation in  $D^0 \rightarrow K^{*\pm}K^\mp$  decays and their CP-conjugated processes. We find that both the  $D^0$ - $\bar{D}^0$  mixing parameters and the strong-interaction phase difference between  $\bar{D}^0 \rightarrow K^{*\pm}K^\mp$  and  $D^0 \rightarrow K^{*\pm}K^\mp$  transitions can be determined from the time-dependent measurements of these decay modes. In particular, it is possible to determine these physical quantities from the time-independent measurements of coherent  $(D^0\bar{D}^0) \rightarrow (K^{*\pm}K^\mp)(K^{*\pm}K^\mp)$  decays on the  $\psi(3770)$  and  $\psi(4140)$  resonances at a super- $\tau$ -charm factory. Provided the CP-violating phase of  $D^0$ - $\bar{D}^0$  mixing is significant in an underlying scenario beyond the standard model, it can also be extracted from the  $K^{*\pm}K^\mp$  events.

### Consent

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**Primary author:** XING, Zhi-zhong (Institute of High Energy Physics, and University of Chinese Academy of Sciences)

**Presenter:** XING, Zhi-zhong (Institute of High Energy Physics, and University of Chinese Academy of Sciences)

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