

# Design and Study of DIRC-like forward time of flight detector for STCF endcap PID system

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The Super Tau-Charm Facility (STCF) in China is a future electron-positron collider, which has a very broad important physics programs and provides a unique platform to study the  $\tau$  and charm physics. Excellent particle identification (PID) ability is one of the most important parts for the high energy particles experiment in the physics research of STCF. The effective PID over the full kinetic space is required within the detector acceptance for charged hadrons ( $\pi^\pm$ ,  $K^\pm$ , and  $p/\bar{p}$ ), with a statistical separation power better than  $3\sigma$  up to 2 GeV/c. A DIRC-like forward time-of-flight (FTOF) detector is proposed to realize the PID aim at the endcap. In this talk, the conceptual design of FTOF is presented. Its geometry optimization and performance is studied by a Geant4 simulation, and a  $\pi/K$  separation power of FTOF of  $\sim 4\sigma$  or better at the momentum of 2 GeV/c is achieved over the full FTOF sensitive area.

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