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Experimental Program for Super Tau-Charm Facility

Monday, 15 August 2022 20:00 (30 minutes)

The proposed STCF is a symmetric electron-positron beam collider designed to provide e^+e^- interactions at a centerof-mass energy from 2.0 to 7.0 GeV. The peaking luminosity is expected to be $0.5\times10^{35}cm^{-2}s^{-1}$. The energy region of STCF covers the pair production thresholds for τ-leptons, charmed meson & baryons, and all of the strange hyperons. STCF is expected to deliver more than 1 ab^{-1} of integrated luminosity per year. Huge samples of XYZ, J/ψ , $D^{+(0)}$, D_s^+ and Λ_c decays could be used to make precision measurements of the properties of XYZ particles, search for new ones, and study their rare decays; map out the spectroscopies of QCD hybrids and glueballs; search for new sources of CP violation in the strange-hyperon and τ–lepton sectors with unprecedented sensitivity; make precise independent measurements of the Cabibbo angle (θ_c) to test the unitarity of the CKM flavor-mixing matrix and address the Cabibbo Angle Anomaly; search for anomalous decays with sensitivities extending down to the level of SM-model expectations; qualify Lattice QCD calculations; and provide precise inputs that are essential for the interpretation of results from other experiments.

Category

talk

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