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Experimental Program for Super Tau-Charm Facility

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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 0.5×10ˆ35 cm−2s−1 The energy region of STCF covers the pair production thresholds for tau-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, Jpsi , D+, D+s and Lambdac 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 tau−lepton sectors with unprecedented sensitivity; make precise independent mea- surements of the Cabibbo angle (theta)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.

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