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Feasibility study of measuring b->s γ photon polarization in D^0 -> K_1(1270)^- e^+ nu_e at STCF

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We report a sensitive study of measuring b→sγ photon polarisation in D0→K1(1270)−e+νe with an integrated luminosity of L= 1 ab−1 at a center-of-mass energy of 3.773 GeV at future Super Tau Charm Facility. More than 61,000 signals of D0→K1(1270)−e+νe are expected. Based on a fast simulation software package, the statistical sensitivity for the ratio of up-down asymmetry is estimated to be 1.5×10−2 by performing a two-dimensional angular analysis in D0→K1(1270)−e+νe. Combining with measurements of up-down asymmetry in B→K1γ, the photon polarisation in b→sγ can be determined model-independently.

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