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The Chiral Belle Project: Polarized Beams at SuperKEKB/Belle II

Tuesday, June 20, 2023 4:45 PM (30 minutes)

An update of the R&D associated with upgrading the SuperKEKB e+e– collider with polarized electron beams is presented. The Chiral Belle physics program enables a set of unique precision measurements using the Belle II detector. It includes a set of measurements of $\sin^2\theta_W$ via separate left-right asymmetry (A_{LR}) measurements in e^+e^- annihilations to pairs of electrons, muons, taus, charm and b-quarks at 10GeV that yield a precision matching that of the LEP/SLC world average that uniquely probes the running of $\sin^2\theta_W$ with high precision. It will also provide the highest precision measurements of neutral current universality ratios, and precision measurements of tau lepton properties, including the tau g-2, as probes for new physics. After reviewing developments on the physics potential, this presentation will report on developments related to provision of the polarized source, the new components of the accelerator lattice that rotate the electron spin from transverse to longitudinal at the interaction point, and polarimetry of the electron beam.

Keyword-1

Precision Electroweak & g-2

Keyword-2

Accelerator physics

Keyword-3

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