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

Wednesday 11 June 2025 15:00 (30 minutes)

The Chiral Belle upgrade aims to introduce polarized electron beams to the SuperKEKB e^+e^- collider to enable a vast set of unique precision measurements using the Belle II detector. This includes the ability for Belle II to perform multiple high precision measurements of $\sin^2 \theta_W$ with left-right asymmetry measurements of pairs of electrons, muons, taus, charm and b-quarks produced via e^+e^- annihilation. Additionally, unparalleled precision measurements of neutral current universality ratios, and tau lepton properties, including the tau $g-2$, will be possible. The primary accelerator components required for this upgrade include a new polarized electron source, a compact spin rotator to rotate the electron spin from transverse to longitudinal at the interaction point, and a high precision electron beam Compton polarimetry system. This talk will discuss the unique physics measurements enabled by Chiral Belle and present the status of the ongoing R&D activities for realizing this upgrade.

Keyword-1

Belle II

Keyword-2

ChiralBelle

Keyword-3

Author: LONGO, Savino (University of Manitoba)

Presenter: LONGO, Savino (University of Manitoba)

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