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## **(G\*) Spin Rotator Design for the SuperKEKB High Energy Ring in a Proposed Polarization Upgrade**

*Monday, 7 June 2021 17:05 (10 minutes)*

The SuperKEKB is a high luminosity e+e- collider with a circumference of 3km located in Japan, which collides 7GeV electrons with 4GeV positrons for precision flavour studies, CP violation, and searches for new physics. We are aiming at upgrading the SuperKEKB with a polarized electron beam, which would provide high precision neutral current electroweak and other measurements. To polarize the electron beam at the interaction point(IP) in the longitudinal direction, a spin rotator must be designed and installed in the SuperKEKB High Energy Ring. The right-side rotator rotates the vertical spin to longitudinal at the IP; the left-side rotator rotates the spin back to vertical. We present the status of work on a spin rotator conceptual design based on replacing existing dipole magnets with rotator magnets on both sides of the IP. Each rotator magnet in this concept is made of a solenoid-dipole combined function magnet with 6 quadrupoles on the top of each section to compensate for the x-y plane coupling caused by the solenoid. This presentation will include the physics motivation, the conceptual design, and results of the BMAD accelerator simulation of this design, including spin-tracking results.

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