

Contribution ID: 817

Type: Parallel session talk

Status and perspectives of the SuperKEKB project

Tuesday 27 July 2021 10:30 (20 minutes)

The SuperKEKB electron-positron collider is being commissioned at KEK to study a new physics in the Bmeson decays. In order to accomplish the target, the luminosity of 8 x 10^{35} cm⁻²s⁻¹ is necessary. We have applied a novel "nano-beam scheme" to squeeze the beta function at the interaction point (IP) down to 1 mm in the vertical, 60 mm in the HER and 80 mm in the LER in the horizontal direction, respectively. The beta function at the IP is the smallest value for the existing circular colliders in the world. However, the final design value is 0.3 mm which is about 1/3 of the achievement. Recently, we also applied a "crab waist collision scheme" to improve the luminosity in the nano-beam scheme. The status of the commissioning at 2020 run and 2021 run is presented and the performance of nano-beam scheme as well as the crab waist are discussed.

Collaboration / Activity

SuperKEKB

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Session Classification: T13 - Accelerator for HEP

Track Classification: Accelerators for HEP