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Investigation of new collimator head material candidates for SuperKEKB and future collider

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Currently, SuperKEKB faces the challenge of sudden beam loss (SBL), which occurs with almost no prior sign. The causes of SBL are not fully understood. A damaged collimator reduces its ability to suppress beam background noise compared to an undamaged one. In cases that the beam background noise reduction decrease, it is necessary to stop the operation and replace the collimator jaw. Therefore, a robust collimator head material is required. In this conference, we report the results of our investigation of copper-carbide graphite (CuGr), which is a candidate as a new collimator head material for SuperKEKB. Measurements of electrical conductivity in the high-frequency region, secondary electron yield, outgassing rate due to photon stimulated desorption, and the amount of dust generated by ultrasonic cleaning of CuGr, along with simulation results of beam background with CuGr, are presented.

Footnotes

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