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## **Vertical bump orbit study on emittance of injection beam in transport line for the SuperKEKB main ring**

*Monday, 8 May 2023 16:30 (2 hours)*

The SuperKEKB accelerator, a 7 GeV electron and a 4 GeV positron double-ring collider, is in progress in order to explore the new physics beyond the standard model.

The next milestone is to obtain integrated luminosity of 15 /ab data in the next decade, so that the luminosity should exceed  $2 \times 10^{35} /\text{cm}^2/\text{s}$  in several years.

One of the essential issues is the injection performances for both rings to be capable of storing beams of a few amperes due to overcoming their short lifetimes.

To preserve the emittance of the injection beam passing through the transport line is very important for the injection performances.

However, the large emittance growths have been observed in the both of electron and positron beam transport lines.

After many efforts on the research this issue from both sides of the simulations and measurements, finally the coherent synchrotron radiation (CSR) wakefields has gotten to be suspected as the cause of the emittance growths.

According to the parallel conducting plates model, CSR wakefields are reduced when the beam passes through the offset position from the median plane surface of the plates.

In this study, it will be reported that the measured emittance variation of the injection beam with the bump orbit at the arc section of transport line for the SuperKEKB 7 GeV electron ring.

### **Funding Agency**

### **Footnotes**

### **I have read and accept the Privacy Policy Statement**

Yes

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