



Contribution ID: 263

Type: Poster

Interaction-point stabilisation of beams to the nanometer level for future high-energy electron-positron colliders

Monday 15 July 2019 18:30 (1h 30m)

In order to achieve high luminosity, next-generation high-energy electron-positron colliders demand beam overlap at the interaction point to the nanometer level. The design of low-latency, high-bandwidth beam-collision feedback systems will be presented. The latest experimental results of prototype systems tested with beam at the KEK/ATF2 will be shown. The performances achieved with the prototype systems have been implemented in start-to-end simulations of beam transport and luminosity production at the proposed future linear colliders ILC and CLIC. Simulation results will be presented that demonstrate that the feedback systems enable the challenging design luminosity of these future colliders to be met.

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Session Classification: Wine & Cheese Poster Session

Track Classification: Accelerators for HEP