

Preliminary design consideration for CEPC fast luminosity feedback system

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Future large high-luminosity electron-positron colliders such as Circular Electron Positron Collider (CEPC), and Future Circular Collider (FCC-ee) require nanometre-sized beams at the interaction point (IP). The luminosity is very sensitive to the beam orbit drifts at the IP. It is essential to have a fast luminosity feedback system at the IP to maintain optimum beam collision conditions and prevent a luminosity degradation due to orbit drifts in the presence of mechanical vibrations and dynamical imperfections. We considered two possible methods for this purpose for CEPC: one based on measurements of the luminosity and the other based on measurements of the beam orbits around the IP. In this paper, we present the preliminary design consideration for a fast luminosity feedback system at the IP of CEPC.

Primary authors: WANG, Dou (IHEP); 李萌, UNKNOWN; SHI, Haoyu (IHEP); GAO, Jie (IHEP); Prof. BAMBADE, Philip (IJCLab); BAI, Sha (高能所)

Presenter: WANG, Dou (IHEP)

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