

## Progress on stabilising relativistic lepton beams for future colliders

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We report progress on stabilising relativistic electron beams, in terms of their position and arrival time, for achieving high luminosity at future lepton colliders such as the International Linear Collider (ILC) and the Compact Linear Collider (CLIC). Hardware has been developed and deployed at the Accelerator Test Facility (ATF) at KEK for measuring and stabilising the beam position at the final focus to the nanometre level. We report latest closed-loop feedback tests in which the beam position was stabilised to c. 40 nm. In addition, a beam phase feed-forward system was deployed at the CLIC Test Facility (CTF3) at CERN. We report the results of recent beam tests in which the beam arrival time was stabilised to c. 50 femtoseconds, which meets the requirement for efficient power transfer between the CLIC drive and main beams in the two-beam accelerator complex.

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