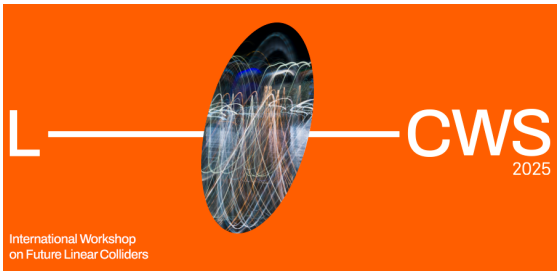

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KEK ATF STATUS AND UPGRADES

Thursday 23 October 2025 09:20 (20 minutes)

The KEK ATF (Accelerator Test Facility) serves as a dedicated testbed for developing beam instrumentation technologies in support of the International Linear Collider (ILC) project. As such, it incorporates a variety of diagnostic tools based on laser systems and photodetection technologies. At the ATF, nanometer-scale beam (nanobeam) technology development is underway using the Final Focus System Test Beamline, with the aim of replicating the beam conditions expected at the ILC. This involves achieving an ultra-compact beam size of 37 nm, corresponding to the 7 nm vertical beam size required for collisions at the ILC, and advancing beam position control at the nanometer scale. To date, a vertical beam size of 41 nm has been attained, alongside the successful implementation of a fast position feedback system capable of stabilizing the beam at nanometer precision. The ATF2 (1.28 GeV) stands out as a unique facility for this research, featuring a cavity-type beam position monitor (BPM) system with 20 nm resolution and a laser interference fringe beam size monitor (IPBSM) for nanobeam measurement. This report outlines the current status of the KEK ATF facility and highlights recent upgrades and experimental studies carried out within the ATF3 collaboration framework.

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