

# GFA & SwissFEL Accelerator Seminar

## Development of nanosecond-timescale beam-based feedback systems for single-pass beamlines

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Future electron-positron colliders such as ILC or CLIC require control of the beam trajectories at the interaction point to the (sub-) nanometer level. This level of orbit stabilisation will likely require beam-based feedbacks that operate in single-pass mode with a latency of the

same order as the bunch spacing. I will discuss the Feedback on Nanosecond Timescales (FONT) project that has developed prototype analogue and digital orbit feedbacks that operate on timescales between 10 and 100 nanoseconds, respectively. These have been tested with CLIC- and ILC-like bunch trains at the NLCTA at SLAC and the ATF at KEK. I will describe the hardware developments, including micron-resolution stripline BPMs, fast digital feedbacks, and high-power RF amplifiers, and present the closed-loop beam test results of these systems.

