

Non-Intercepting Bunch Length Monitor for Picosecond Electron Bunches, H. BRAUN, C. MARTINEZ, CERN - A millimeter-wave bunch length monitor for very short electron bunches, FWHM < 6 ps, has been implemented in the CLIC Test Facility (CTF) at CERN. It consists of a long waveguide connected at one end to the beam pipe and a detection system at the other. Information on the bunch length is obtained by a frequency-domain analysis of the signal excited by the beam in the waveguide. The signal can be detected either by a fast power detector or by an RF mixer in combination with an RF sweep oscillator. With the power detector, single-shot measurements can be performed, while the mixer set-up allows the measurement of a train of bunches and gives high frequency resolution. The design and installation of two monitors and detection systems operating in two different frequency bands, Ka (27-40 GHz) and E (60-90 GHz), is described. Results for both detection techniques are presented and compared with bunch length measurements that were performed simultaneously with a streak camera recording Cerenkov radiation.