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Longitudinal Beam characterization on CTF3

The CLIC Test Facility 3 (CTF3) is being built and commissioned by an international collaboration in order to test the feasibility of the proposed Compact Linear Collider (CLIC) two-beam acceleration scheme. The monitoring and control of the bunch length throughout the CTF3 complex is important since this affects the efficiency and the stability of the final RF power production process. Bunch length diagnostics therefore form an essential component of the beam instrumentation at CTF3, and several monitors are already in operation in the Delay Loop and the Combiner ring measuring at the bunch frequency multiplication. Recently a new streak camera optical line and a new RF pick-up have been installed in the CLEX area where the beam is finally decelerated producing 12GHz RF power. This paper presents longitudinal profile measurements along the CTF3 complex with an emphasis on bunch length and bunch spacing dependence on RF power production.

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