

The Main Linac of CLIC, D. SCHULTE, CERN -

The luminosity that can be achieved in a linear collider strongly depends on the vertical emittance of the beams at the interaction point. One of the most important sources of emittance growth is the accelerating part of the main linac especially in the case of the compact linear collider, CLIC, where the wakefields are strong due to the high frequency of the accelerating structures (30 GHz). A possible lattice for the main linac for a centre-of-mass energy of 1 TeV is presented which allows the use of BNS-damping for emittance preservation. The possibility of using reliable beam-based alignment techniques to keep the emittance growth below the required limit is investigated, and one such method based on a ballistic beam is presented. The influence of different prealignment and field errors on the correction efficiency is investigated. The sensitivity of the main linac to ground motion, quadrupole jitter, quadrupole roll, beam jitter and initial energy spread is considered as well as multibunch effects.