

Multibunch Emittance Preservation in CLIC,
G. GUIGNARD, CERN; J. HAGEL, Universidade Da Madeira - In high frequency linacs, where the wakefields are strong, the stability of a train of bunches is critical. The beam break-up due to long-range wakefields induces a decoherence of the bunch oscillations and a consequent blow-up of the effective betatron emittances of the whole train. Since the Compact Linear Collider (CLIC) study now includes several bunches per pulse it is important to analyse numerically and theoretically this emittance blow-up. Possibilities of controlling the beam break-up without upsetting the single bunch stability have been considered; first a multibunch generalization of the BNS damping principle, secondly an attenuation of the long-range fields implying modifications of the accelerating sections and thirdly an increase of the focusing in order to over constrain the beam and to reduce short-range as well as long-range wakefield effects. Simulation codes have been written for both checking the theoretical predictions and investigating the requirements associated with a possible application to the main linac. Animated graphics make it possible to get a didactic display of the multibunch instability.