Multi-Bunch Energy Compensation in the NLC Bunch Compressor[*], F. ZIMMERMANN, K.A. THOMPSON, T.O. RAUBENHEIMER, SLAC - The task of the NLC bunch compressor is to reduce the length of each bunch in a train of 90 bunches from 4 mm to about 100 μm, suitable for injection into the X-band main linac. This task is complicated by longitudinal long-range wake fields and the multi-bunch beam loading in the various accelerating sections of the compressor. One possible approach to compensate the multi-bunch beam loading is to add two RF systems with slightly different frequencies ('Δf' scheme) to each accelerating section, as first proposed by Kikuchi. This paper summarizes the choice of parameters for three such compensating sections, and presents simulation results of combined single- and multi-bunch dynamics for four different NLC versions. The multi-bunch energy compensation is shown to be straightforward and its performance to be satisfactory.

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