

BUNCH COMPRESSION FOR A SHORT-PULSE MODE IN CORNELL'S ERL

J.R. Thompson, G.H. Hoffstaetter, CLASSE, Ithaca, New York

Abstract

The production of ultra-short x-rays in Cornell's Energy Recovery Linac (ERL) requires electron bunch lengths of less than 100fs with minimal transverse emittance growth and energy spread. Because the linac consists of two sections separated by an arc, CSR forces limit the bunch length in the linac, and bunch compression has to be installed after acceleration. Creation of such short bunches requires a second order bunch compression scheme with correction of the third order dispersion. In this paper, we discuss possible bunch compression systems and explore the benefits of each using the tracking program TAO including CSR forces. Overall, we find that a FODO compressor utilizing dipole, quadrupole and sextupole magnets can achieve the design goals of the short pulse mode.

**CONTRIBUTION NOT
RECEIVED**