21 January 2002

PHYSICS LETTERS A

ELSEVIER

Physics Letters A 293 (2002) 17–22

www.elsevier.com/locate/pla

Decelerating field on a bunch moving in a periodic symmetric structure

L. Schächter *, D. Schieber

Department of Electrical Engineering, Technion—Israel Institute of Technology, Haifa 32000, Israel

Received 20 August 2001; accepted 12 December 2001

Communicated by P.R. Holland

Abstract

We develop an analytic expression for the upper limit of the decelerating field acting on a bunch moving in an azimuthally symmetric structure with periodic loading of *arbitrary* geometry. This field is a result of the electromagnetic field scattered by the confining periodic wall. The latter is electromagnetically characterized by a reflection matrix and the extremum determined here is subject to the assumption that the absolute value of each diagonal term of this matrix is smaller than unity.