

电子直线加速器注入器的二维空间电荷环模型

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收稿日期 1987-4-29 修回日期 网络版发布日期:

摘要 <正> 一、引言 电子在直线加速器中运动不仅受到高频场、聚焦磁场等外场的作用,还始终受到自身的空间电荷场的作用。随着电子直线加速器向强流发展,空间电荷效应对电子运动的影响就愈为严重,它已经成为限制束流流强提高的主要原因之一。

关键词 [二维空间电荷环模型](#) [电荷中心粒子](#) [横向发散度](#) [输出相宽](#) [输出能散](#)

分类号

TWO DIMENSION MODEL OF SPACE CHARGE RING IN ELECTRON LINAC INJECTOR

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Abstract In the paper, a 2D ring model is developed to simulate the actions of spacecharge field in an electron linac injector. The average field E_z and E_r , generated by a ring with the width Δr and thickness Δz on another ring, are derived. The particle motion equations with the space charge, field can be solved and some physical parameters can be given such as beam emittance, output phase width and output energy spread and others. The computer program for beam dynamics calculation of the injector is introduced and some computations are given.

Key words [Two dimensional model of space charge ring](#) [Central particle of charge](#) [Transverse emittance](#) [Output phase width](#) [Output energy spread](#)

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