原子能科学技术 1999 33 (5): ISSN: 1000-6931 CN: 11-2044/TL

研究报告

周期性聚焦系统中束晕形成的模拟研究

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收稿日期 1998-8-21 修回日期 网络版发布日期:

摘要 运用PIC（Particle－In－Cell）多粒子模拟方法，讨论了周期性聚焦系统中束晕形成的机制。为了真实、自洽地描述束晕的形成，假定相空间的初始粒子分布分别满足水袋型、抛物线型以及高斯型等相空间分布。通过数值模拟计算，得到了束晕强度、发射度增长随失配因子及调谐衰减变化等一系列结果。

关键词 相空间分布 束晕强度 发射度增长

分类号 TL501.2

HALO FORMATION IN BREATHING ROUND BEAMS IN A PERIODIC FOCUSING CHANNEL

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Abstract Halo formation in high-intensity axisymmetric beams in a periodic focusing channel is analyzed using particle-in-cell simulations. In order to explore self-consistently the fundamental properties of breathing round beams propagating in a periodic focusing channel, the initial phasespace distribution of a beam injected into a linac is adopted to be some sufficiently realistic distributions such as Gaussian, waterbag and parabolic. Numerical results such as halo intensity and emittance growth are obtained by means of multiparicle simulations.

Key words Phase-space distribution Halo intensity Emittance growth

DOI

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