

## 直线感应加速器间隙中的径向聚焦

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**摘要** 在直线感应加速器间隙中的电场的聚焦特性与在双圆筒静电透镜中的电场的聚焦特性相同。在非相对论情况下,对双圆筒静电透镜的聚焦性质已有系统的研究。本文提出相对论情况下双圆筒静电透镜的聚焦性质,得出在薄透镜近似下的解析公式,并给出计算实例及与数值积分计算相比较。结果表明,在实际应用的范围内,解析公式具有足够的精确度。

**关键词** [直线感应加速器](#) [径向聚焦](#) [双圆筒静电透镜](#)

分类号

## RADIAL FOCUSING IN A LINEAR INDUCTION ACCELERATOR GAP

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**Abstract** The focusing properties of the electric field distribution in a linear induction accelerator gap are identical to those of a bipotential electrostatic lens if the particle gap-transit time is small compared with the time variation of the induced electric field. Bipotential lenses are studied systematically only in the nonrelativistic case. In this paper we present the results of a theoretical study of the focusing properties of a symmetrical two-cylinder lens with identical radii and negligible separation for relativistic electron beams. Analytical formulas derived by using the thin-lens approximation are compared with the results of numerical integration of the relativistic paraxial ray equation and found to be sufficiently accurate for practical applications.

**Key words** [Linear induction accelerators](#) [Radial focusing](#) [Bipotential lens](#)

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