

## 电子直线加速器注入器中束流横向发散度的计算

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**摘要** 在联立电子直线加速器中粒子运动方程的基础上,建立了一种计算束流横向发散度的方法,将束流划分为若干个等电荷的同心环,追踪它们的代表粒子在注入器中的运动,依照所有粒子的 $\gamma$ 、 $P_r$ 和方位角 $\theta$ 值,计算出束流的均方根发散度。在实例计算中给出了粒子的运动轨迹和相位会聚图象以及注入器出口处粒子的相图,计算了束流的均方根发散度,并对阴极磁场和轴向聚焦磁场对横向发散度的影响作了讨论。

**关键词** [横向发散度](#) [均方根发散度](#) [阴极磁场](#) [轴向聚焦磁场](#)

分类号

## CALCULATION OF BEAM TRANSVERSE EMI TTANCE IN INJE CTOR OF ELECTRON LINAC

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**Abstract** A method is developed to calculate the beam transverse emittance of the electron linac. By means of deviding the beam into several concentric rings with equal amount of charges, their representative particle are traced in the injector. And with the obtained values of  $\gamma$ ,  $P_r$  and  $\theta$ , some beam properties, such as the particle motion traces, the phase convergence figures, the beam phase space, as well as the beam RMS emittance at the exit of the injector can be calculated directly. The discussion about the effects of the cathod magnetic field and axial field on the beam transverse emittance is also given in the paper.

**Key words** [Transverse emittance](#) [RMS emittance](#) [Cathod magnetic field](#) [Axial focused magnetic field](#)

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