强流脉冲电子加速器充电调整

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摘要　　本文对强流脉冲电子加速器的充电过程进行了分析,并推导出电压传输系数的解析表达式。该表达式是用充电回路方程经拉氏变换后所得特征方程的特征根形式来表达的。对特征根的物理含义给予了合理的解释,并给出了近似表达式。文中还给出了从实测电压波形中求得特征根值的方法和公式,因而可以从实测电压波形中求出加速器的某些动态参数。

关键词　　强流脉冲电子加速器　特征根

分类号

ADJUSTMENT FOR CHARGING PROCESS OF PULSED INTENSE-ELECTRON-BEAM ACCELERATORS

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Abstract　The detailed analysis of charging process in the pulsed intense-electron-beamaccelerator is presented. And the expression of voltage-transition coefficient isdeduced as well. This expression is expressed in terms of characteristic rootsof the characteristic equation which is transfered from the differential equation ofcharging circuit of Blumlein line by means of Laplace transform. Proximate expressions and reasonable explanation to the physical connotationof characteristic roots in our solution are given. Formulas and methods with which one can easily calculate some of dynamicparameters of accelerator directly from voltage waveforms measured duringadjusting are acquired, therefore, they have great significance not only foradjustment but also for design and improvement of this kind of machine.

Key words　Pulsed intense-electron-beam accelerator　Characteristic root

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