

技术及应用

中国散裂中子源快循环同步加速器环斜切型束流位置探测器设计

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摘要 束流位置探测器(BPM)是加速器束流测量系统的重要组成部分。本文通过在斜切型BPM的差和比计算式中引入相对电极间的耦合电容及电容差,解释实测灵敏度偏小、存在零点偏移量的原因。结合模拟软件CST的仿真结果及推得的计算式,得到BPM几何结构与电子学参数的关系。最后,基于CSNS-RCS环上参数及电子学要求,得到优化的BPM几何结构及其电子学参数值。

关键词 [束流位置测量](#) [斜切型束流位置探测器](#) [灵敏度](#)

分类号

Design of Linear-Cut Beam Position Monitor in Rapid Cycling Synchrotron of China Spallation Neutron Source

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Abstract Beam position monitor (BPM) is an important part of the beam measurement system. In this article, by introducing the coupling capacitance (plate-to-plate cross-talk) and the difference capacitance of two electrodes into the formula of the linear-cut BPM by difference over sum method, the reasons of the low sensitivity and the offset of the electrical center of the BPM were got. The relationship between geometry and electronics parameters by combining the formulas and the calculated results of the CST program were obtained. Finally, by considering the requirements of the CSNS-RCS and electronics, the optimized geometry and the electronics parameters of the BPM were got.

Key words [beam position measurement](#) [linear-cut beam position monitor](#) [sensitivity](#)

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