原子能科学技术 2010 44 (5): 595-599 ISSN: 1000-6931 CN: 11-2044/TL

技术及应用

PIN探测器贯穿辐射与非贯穿辐射线性特性

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收稿日期 修回日期 网络版发布日期:

摘要 采用脉冲X射线源和脉冲氙灯光源实验研究了PIN探测器对贯穿辐射和非贯穿辐射响应的最大线性电流输出特性，并与理论计算结果进行了比较。PIN探测器输出的最大线性电流随外加反向偏置电压线性变化，对贯穿辐射响应的最大线性电流输出比对非贯穿辐射响应的最大线性电流输出约大20%，理论计算的最大线性电流值比实验值小。在脉冲辐射探测中，采用可见脉冲光源获得的PIN探测器最大线性电流不会超出探测器对贯穿辐射的线性响应。

关键词 PIN探测器 线性电流 贯穿辐射 脉冲辐射测量

分类号

Linear Current of PIN Detector by Penetrating Radiation and Non-penetrating Radiation

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Abstract The investigation on the linear characteristics of the PIN detector with calculation and experiments was presented. The maximum linear current of the PIN detector was measured with a fast pulse X-ray generator and a pulse xenon optical source. The maximum linear current is directly proportional to the magnitude of the applied bias voltage to the PIN detector. The maximum linear current measured by penetrating radiation is larger about 20% than that by non-penetrating radiation. It is useful that the maximum linear current of the PIN detector is measured by pulse xenon optical source.

Key words PIN detector linear current penetrating radiation pulse radiation measurement

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