

论文

微光像增强器近贴距离在线测试方法研究

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摘要:

鉴于近贴距离尤其第一近贴距离是影响分辨力最重要的因素, 提出一种新的微光像增强器近贴距离在线测试方法。应用平行平板电容器原理, 通过测量阴极面和微通道板输入面之间的电容值来测量第一近贴距离。利用多组电容值和第一近贴距拟合出二者的函数关系式, 通过精度分析, 对函数关系式进行了修订及验证, 测量最大偏差11.9%, 满足精度要求。借助在线监控测试第一近贴距离, 使压封过程处于受控状态, 以便实现近贴距离的精密调控, 达到提高微光像增强器分辨力的目的。该方法可推广到其他小间距的在线监控测试。

关键词: 微光像增强器;近贴距离;在线测试

On-line testing method of proximity distance for LLL image intensifier

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Abstract:

Since the proximity distance, especially the 1st proximity distance (d_1) is the most important factor to influence the resolution, a new on-line testing method of proximity distance for the image intensifier is put forward. According to the principle of the parallel plate capacitor, the 1st proximity distance can be obtained by measuring the capacitance value C_1 between the cathode surface and the input side of microchannel plate. The functional relation between C_1 and d_1 was fitted by the tested data. The function formula was modified and verified by the accuracy analysis. It is shown that the maximum error is 11.9% and the tested results meet the precision requirement. The process of press seal and the proximity distance of an image intensifier can be controlled precisely by this method. Therefore, the resolution is increased. The method is simple and could be used in other on line testing of short distance.

Keywords: low-light-level image intensifier; proximity distance; on-line testing

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