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现代应用光学

EUV成像仪极间串扰和伪信号触发计数修正

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摘要： 为了提高极紫外(EUV)光子计数成像仪的分辨率,分析了EUV成像仪系统WSZ阳极(Wedge Strip Zigzag anode)不同条带间的极间串扰以及非目标能量区间内信号触发产生的伪信号对图像质量的影响。讨论了串扰产生的原因,通过测量极间电容,找到了串扰系数所在的范围,并最终确定最优值;使用该系数对不同能量范围内的光子进行处理,确定了合适的能量区间(上下限)。在设定的能量区间重新成像并与原图像进行对比,结果显示图像质量有了明显提高。通过消除极间串扰和剔除混杂在图像数据中的伪数据,使图像的边缘特性更强,提高了图像分辨率。

关键词： 极紫外成像仪 光子计数成像仪 极间串扰 伪信号触发 能量上下限 边缘特性

Correction of crosstalk and fake signal trigger of EUV imager

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Abstract: In order to improve the resolution of an Extreme Ultraviolet (EUV) photon counting imager, this paper analyzed the influence of the crosstalk between Wedge Strip Zigzag (WSZ) anodes and the false trigger resulted from out-range signals on image quality. First, the reasons which caused the crosstalk were analyzed, and the range of crosstalk coefficient and its optimum value were determined by measuring interelectrode capacitance. Then, the crosstalk coefficient was used to process photons and determine a proper energy interval (upper and lower limit). Finally, the image obtained in the setting energy interval was compared with an original image. The comparison shows that the image quality has been improved obviously. The results demonstrate that the image edge becomes stronger further and image resolution is improved by eliminating the crosstalk between WSZ anodes and removing fake data from real data.

Keywords: Extreme Ultraviolet(EUV) imager photon counting imager crosstalk fake signal trigger range of energy edge feature

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