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论文

光纤耦合数码系统传像特性

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摘要：

建立了光纤传像元件与光电阵列器件的匹配耦合模型，引入变动因子反映像素光纤排列的不确定性，进行了光纤耦合传像特性的仿真研究.针对9×9 μm2光敏元的阵列器件，分析了光纤传像元件结构参数变化对系统分辨率的影响，在光纤直径约为光敏元尺寸1/3时获得了相对经济合理的匹配结构，表明光纤耦合数码系统设计时必须考虑优化匹配问题.仿真结果还解释了系统的图像输出存在条纹和局部结构背景的原因，给出了相应的数值分析方法.

关键词： CCD 耦合 优化设计 CCD 耦合 优化设计

Coupling Characteristic of Fiber Imaging System

MA guo-xin

Abstract:

A coupling model of imaging fiber and photo-detector array devices was established, and its coupling characteristic was studied via simulating method, which introduces different variable factors to represent the irregular arrange of imaging fiber. Based on 9×9 μm photosensitive cell, the influence to resolution was analyzed as fiber's structure factors changing. A reasonable economic matching structure was obtained when fiber diameter was about one third size of the cell, that showed the optimal designing problem must be considered in the system design. Results of the computer emulation also explained the existence of the stripe and the formed reason of partial background structure in imaging fiber digital system, and the relevant method of numerical analysis was given.

Keywords: CCD Coupling Optimum design CCD Coupling Optimum design

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