

激光技术

激光显示中散斑噪声的抑制

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摘要:

为了消弱散斑噪声, 提出了最优化的斑纹减弱方法。给出采用最少数量的位相分布模式产生最大的斑纹减弱效果的位相型光学元件应满足的条件, 证明了此位相分布格式可以由阿达姆矩阵的行或者列得到, 并以绿光为例验证了所设计位相型衍射元件的斑纹减弱效果显著, 采用衍射元件调制前后散斑对比度由8.4%减弱到2.7%。

关键词: 激光显示 散斑噪声 散斑对比度

Speckle contrast reduction in laser display

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Abstract:

In laser display system, speckle noise produced by laser coherence has a serious effect on image. The condition for a diffuser to produce the maximum speckle reduction with the minimum number of distinct phase patterns is derived. A binary realization of this optimum diffuser is obtained by mapping the rows or columns of a Hadamard matrix to the phase patterns. The method is experimentally verified by an example of green light. After using the diffuser, speckle contrast is reduced from 8.4% to 2.7%.

Keywords: laser display speckle contrast

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