

激光技术

激光光斑漂移的检测

王春阳,李金石

国防科技大学光电科学与工程学院光电工程系, 长沙 410073

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摘要 针对激光光斑漂移设计了一套光斑漂移检测系统。利用该系统实现了对He-Ne激光器出射光束漂移的检测。它采用CCD摄像头和图像采集卡采集激光器输出光斑,通过专门软件对数字图像进行处理,得出光斑漂移的大小;另外,利用几何光学方法得到了激光光束在X方向、Y方向以及空间立体角上的漂移大小。分析了引起光束漂移的原因。结果表明:He-Ne激光器出射光束的指向主要受温度、环境振动、空气扰动和激光器自身结构的影响。该系统能准确地测量出激光器出射光束的漂移大小,实现光束漂移的控制。

关键词 [He-Ne激光器](#) [CCD摄像机](#) [光斑漂移](#) [图像处理](#)

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Detection of laser spot drift

WANG Chun-yang,Li Jin-shi

College of Photoelectric Science and Engineering, National University of Defense Technology, Changsha 410073, China

Abstract A system for measuring the drift of laser spot is designed and the drift of a He-Ne laser beam is measured. With a CCD camera and a frame grabber to capture the laser spot, the digital image is transferred to special software for further processing, the amount of the laser spot drift can be achieved. The amount of the drift in X direction, Y direction and in spatial angle can be obtained through geometrical optics. The reason that causes the beam drift is analyzed. The result shows that the direction of the emergent beam from He-Ne laser is influenced mainly by temperature, vibration, air disturbance and laser structure. The system can accurately measure the laser beam drift and the control of the beam drift is implemented.

Key words [He-Ne Laser](#) [CCD camera](#) [laser spot drift](#) [image processing](#)

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通讯作者 王春阳 Xingyun627@163.com

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