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液晶可变相位延迟器的相位延迟特性

王书朋¹,赵海丽^{1*},刘 鹏²,李志刚¹,曲国哲¹,孙 博³

(1. 长春理工大学 电子信息工程学院,吉林 长春 130022;

2. 长春理工大学 空间光电研究所,吉林 长春 130022;

3. 长春新产业光电技术有限公司,吉林 长春 130103)

摘要:为了快速准确地获取液晶可变相位延迟器(liquid crystal variable retarder,LCVR)在不同波长时的相位延迟特性,根据 LCVR 双折射效应、透射光光强的斯托克斯矢量与相位延迟关系,采用光强法测量 LCVR 相位延迟特性,即将 LCVR 相位延迟特性的测量转换为对透射光光强与 LCVR 驱动电压的测量。设计了基于托克斯矢量与穆勒矩阵的 LCVR 相位延迟特性测量系统,该系统能实时、准确地自动测量 LCVR 相位延迟特性。而且,利用 Labview 软件平台实现了系统控制、数据处理、界面显示和报表生成功能的一体化,采用最小二乘法对相位延迟特性曲线进行拟合。实验结果表明:该系统测量误差小于 1%,能够准确地测量 LCVR 的相位延迟特性,符合科研与工业领域的需求,因此具有广泛应用前景。

关键词:液晶相位可变延迟器;相位延迟特性;斯托克斯矢量;Labview

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Phase retardation characteristics of liquid crystal variable retarder

WANG Shu-peng¹, ZHAO Hai-li^{1*}, LIU Peng², LI Zhi-gang¹, QU Guo-zhe¹, SUN Bo³

(1. College of Electronic and Information Engineering, Changchun University of Science and Technology, Changchun 130022, China;

2. Space Optical Research Institute, Changchun University of Science and Technology, Changchun 130022, China;

3. Changchun Compang of New Industry Photoelectric Technology, Changchun 130103, China)

Abstract: In order to quickly and accurately obtain the phase retardation characteristics of LCVR at different wavelength, based on the birefringent effect of LCVR and the relationship between Stokes vector of transmission light intensity and phase retardation, light intensity method is used to measure the phase retardation characteristics of LCVR, that is the measurement of LCVR's phase retardation characteristics converted to the measurement of the transmitted light intensity and the LCVR's driving voltage. The LCVR's phase retardation characteristic measuring system based on the Stokes vector and Muller matrix is designed, which can automatically and accurately measure the phase retardation characteristics of LCVR in real time. Furthermore, Labview software platform is used to

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* 通信联系人,E-mail:zhjlcc@126.com