

光学计量与测试

天空光辐射亮度测量系统设计

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摘要:

天空光辐射亮度是大气光学特性的重要参数之一, 在空间目标探测与识别中有着重要作用。为了获取天空光辐射亮度, 评价光电系统探测跟踪空间目标的能力, 设计实现了一套天空光辐射亮度测量系统, 详细介绍了光信号收集和信号探测部分的工作原理, 及系统所应用弱辐射信号探测、辐射计量等关键技术。通过该套测量系统的初步应用及对测量结果分析表明: 利用该套测量系统能够准确获取天空光连续光谱(光谱范围从380nm~1100nm)数据, 为应用研究提供了更多的光谱信息。

关键词: 天空光 辐射亮度 连续光谱 光电系统

Design of sky-light radiation luminance measurement system

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Abstract:

Since sky-light radiation luminance is a critical parameter of atmospheric optics, it is very important for space target detection and identification. In order to acquire sky-light radiation luminance and evaluate the detection and tracking capability of optoelectronic systems for space target, a measurement system of sky-light luminance was designed and implemented. The work principles of optical signal collection and signal detection, and key techniques such as low-radiation signal detection and metrology of optical radiation used by the system were introduced. The system was applied to measure sky-light radiation luminance and the test result was analyzed. The result indicated that sky-light spectra(380nm~1100nm) could be acquired by the measurement system and more information was provided.

Keywords: sky-light radiation luminance continuous spectrum optoelectronic system

收稿日期 修回日期 网络版发布日期

DOI:

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