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微纳技术与精密机械

激光角度欺骗干扰内场仿真系统精度分析

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摘要: 针对激光角度欺骗干扰设备的外场试验条件要求高, 费用耗费大等问题, 讨论了激光角度欺骗干扰内场仿真试验的实现技术。通过对外场试验环境进行等效模拟, 在内场构造了一个对激光角度欺骗干扰装置进行检测的仿真试验系统。介绍了系统的组成原理, 推导了弹目角与摆镜转角、设备距离以及设备基线与漫反射屏距离关系, 并在此基础上对弹目角的精度进行了分析。最后, 用莱卡经纬仪实际测量得到弹目角, 从而得到弹目角误差。测量结果与理论分析显示, 方位最大误差为17", 俯仰最大误差为13"。得到的结果证明了激光角度欺骗内场试验方法的正确性和可行性。

关键词: 激光对抗 激光角度欺骗干扰 内场仿真 精度分析

Precision analysis of indoor simulation system for laser angle deception jam

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Abstract: In consideration of the high experimental demands and higher costs of outdoor experiments for laser-angle-deception jam equipment, the simulation methods and technologies of indoor experiments for laser-angle-deception jam were discussed. A indoor simulation system was constructed in indoor field for detecting the laser-angle-deception jam. By equivalent simulation to the actual environment, the indoor simulation system was established for laser-angle-deception jam weapon detection. The composition and principle of the indoor simulation system were introduced.

Then, the relation of the angle between guided missile and object was specially studied, and the influencing factors were analyzed, including the angle of mirror, the distance of device, the distance between baseline and diffuse reflecting screen. On the basis of this, its precision was analysed. Finally, the angle between guided missile and object was measured by using Leica, and its error was computed to be 17" in azimuth and 13" in elevation as compared to that from a theory. Obtained results prove the feasibility and validity of the indoor simulation system.

Keywords: laser jamming laser-angle-deception Jam Indoor simulation accuracy analysis

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