

激光技术

强激光与红外光学系统光轴平行性检测方法的探讨

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摘要 介绍3种可测量强激光发射光轴与红外光轴平行性的方法及每种方法的优缺点, 重点研究了利用热靶进行波段转换来测量激光与红外光学系统光轴平行性的方法。该方法是将激光聚焦在热靶上, 使热靶产生热量并发出红外光, 红外光再经过准直进入被测设备的红外光学系统, 从而测量出激光光轴与红外光轴的平行性。热靶材料的选择与激光透过率的确定尤为重要, 该方法中选用酚醛树脂作为热靶材料, 激光的透过率仅为0.5%。通过与远距离目标靶测量法进行比对实验, 发现2种方法得到的测量结果一致, 从而验证了这种方法的可行性与正确性。

关键词 [激光测距](#) [红外传感器](#) [光轴平行性](#) [热靶](#) [波段转换](#)

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Boresight between laser rangefinder and IR sensor

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Abstract In order to boresight the sensors in a multi-spectral electro-optical tracker, three methods for measuring the optical parallelism between laser and infrared sensor were introduced and compared. The boresight method using the thermal target to transform laser wavelength into infrared wavelength were investigated. The investigation shows that the selection of the thermal target and the measurement of laser transmittance are the most important steps. Based on the experiment result, the phenolics was selected as the material for thermal target. Its laser transmittance is only 0.5%. The result obtained by this method conforms with the result obtained by long range target method, its feasibility and validity are proved.

Key words [laser rangefinder](#) [IR sensor](#) [optical boresight](#) [thermal target](#) [spectrum conversion](#)

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