

夜视技术

## HgCdTe-IRFPA成像器件光谱响应率标定方法比较与误差分析

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摘要

红外焦平面成像器件的光谱响应率是天基红外遥感的基本物理指标。为了准确应用该项参数去除器件在制造工艺中的不均匀性对产品质量的影响,必须在系统使用之前对其重新标定,获取真实值。总结了目前较为普遍的IRFPA产品光谱响应率标定方法,通过比较选择标准替代法对产品进行标定。根据所得到测量数据,分析了其可能存在的误差,总结了在对IRFPA产品进行标定时应注意的问题。同时提出了一种调整积分时间的方法,以弥补有些波段标定黑体辐射功率过低带来误差过大的缺陷。

关键词 [红外焦平面成像器件](#) [光谱响应率](#) [标定方法](#) [误差来源](#)

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## Error analysis and comparison of spectral responsivity calibration methods for HgCdTe-IRFPA imaging detector

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**Abstract** The spectral responsivity of IRFPA imaging detector is a basic physical parameter for the space infrared remote sensing. In order to use this parameter to eliminate the influence of the non-uniformity on the product quality in the fabrication process, the spectral responsivity of detectors must be calibrated and the real value should be obtained before the systems are put into use. Because of the uncertainty of the calibration data-acquisition methods and the limitation of some calibration methods, the measured value is not accurate. Thus it is very important to select a proper method and to analyze its error. In this paper some methods for calibrating the spectral responsivity of IRFPA detectors were analyzed, and the limitations of the calibration methods available were investigated. The standard substitution method for the products was selected, and the possible errors were analyzed based on the obtained data. Some important issues in the calibration process of IRFPA products were summarized. An integration time adjustment method is put forward to overcome the big error caused by the low radiation rate of calibration blackbody in some wave bands.

**Key words** [IRFPA imaging detector](#) [spectral responsivity](#) [calibration method](#) [error source](#)

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