

成像光学

## 非球面光学零件测量中调整误差消除方法

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**摘要** 针对非球面光学零件测量及测量过程中存在的调整问题, 利用Zygo万能激光干涉仪对非球面光学系统进行了测量, 并对测量过程中非球面光学系统装调不完善而产生的调整误差进行了确认及分离。根据像差与装调误差之间的关系, 采用优化设计方法计算出装调过程中的调整方向及调整量大小, 按照调整方向及调整量大小对非球面光学系统进行了调整。实验结果表明: 该方法重复性较好, 多次试验均得到了较为理想的结果; 通过这种方法可使调整精度达到1/10 波长。

**关键词** [非球面](#) [光学测量](#) [调整误差](#)

**分类号** [TN247](#)

## Elimination method of adjustment error in measurement of aspheric optical elements

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**Abstract** The aberration of aspherical optical systems were measured, analyzed and calculated with Zygo universal laser interferometer, and the adjustment error coursed by adjustment imperfectness of aspherical optical systems was confirmed, so as to solve the problems appearing during the measurement process of aspherical optical elements. The adjusting direction and magnitude in assembly and adjustment process were calculated with a method of optimization design based on the relationship between the aberration and assembling errors, and then the aspherical optical systems were adjusted with the method. The experimental results show that the repeatability of the method is ideal. The typical adjustment accuracy of this method is 1/10 of the wavelength.

**Key words** [aspherical surface](#) [optical measurement](#) [adjusting error](#)

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