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光电信息获取与处理

Zernike多项式拟合曲面中拟合精度与采样点数目研究

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摘要：

为了研究采样点数目对由Zernike多项式所拟合的曲面的拟合精度的影响，采用不完全归纳法，取得了采样点与拟合精度之间的数据关系。结果表明：不同的测试函数遵循相同的规律，即采样点数目达到一定数目后，拟合精度随采样点的变化很小。并且，通过计算得到了在较高拟合精度时，采样点数目与Zernike多项式的项数之间的变化规律，实际例子证明了该变化规律的正确性，其对于Zernike多项式拟合曲面具有很好的指导意义。

关键词： 采样点 Zernike多项式 曲面拟合 不完全归纳法

Sampling point number in curved surface fitting with Zernike polynomials

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Abstract:

In order to study the effects of sampling point number on fitting precision when fitting curved surface by Zernike polynomials, the method of inadequate induction was used to obtain the relation between sampling point number and fitting precision. The results show that fitting precision has little change when sampling point number reaches a specific number. The relation between sampling point number and Zernike polynomials term number was obtained by calculation and proved by practical example.

Keywords: sampling point Zernike polynomials curved surface fitting inadequate induction

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