

测试技术

## 提高室外遮蔽物透过率测量精度的一种方法

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**摘要** 在深入了解遮蔽物的特性对军事对抗、环境保护和森林防火等具有重大现实意义的基础上, 针对目前室外测量遮蔽物激光透过率常用方法没有考虑激光脉冲发射能量起伏而导致测量精度低的问题, 设计了一种新的试验方案和数据处理方法。新的试验设计考虑脉冲能量起伏, 在早期设计方案的基础上增加了1个光分束器和1个激光接收机。这样设计的目的是为了得到遮蔽物释放后无法获得没有遮蔽物时测量处接收机所接收的每个激光脉冲的能量, 从而消除脉冲能量起伏对测量精度的影响。提出监测激光脉冲发射能量并用其对远场接收处能量进行反演的数据处理方法, 从而明显改善了透过率测量的精度, 增强了决策的科学性和可靠性。

**关键词** [遮蔽物](#) [激光透过率](#) [能量反演](#) [测量精度](#)

分类号

## An Improved Measurement Technique for Atmospheric Attenuation of Laser Transmittance

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**Abstract** It is understood that the characteristics of the atmospheric attenuation materials (haze, smoke, dust or aerosol) are important factors for applications such as military conflict, environmental protection and prevention of forest fire. However, the current atmospheric attenuation measurement method for laser transmittance could not achieve accurate results because it does not take the fluctuation of the laser pulse energy into account. In order to overcome such problem, a new test scheme and data processing method is designed. To take the laser energy fluctuation into consideration, a beam splitter and a laser receiver are added to the traditional design for monitoring the change of laser energy. Therefore, the emitting energy of the laser pulse is monitored and it can be used for inverse data processing for far field reception energy. Finally, the measurement accuracy of the transmittance is significantly improved and reliable data are provided to decision makers.

**Key words** [atmospheric attenuation material](#) [laser transmittance](#) [energy inverse](#) [measuring accuracy](#)

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