



中国光学工程学会会刊

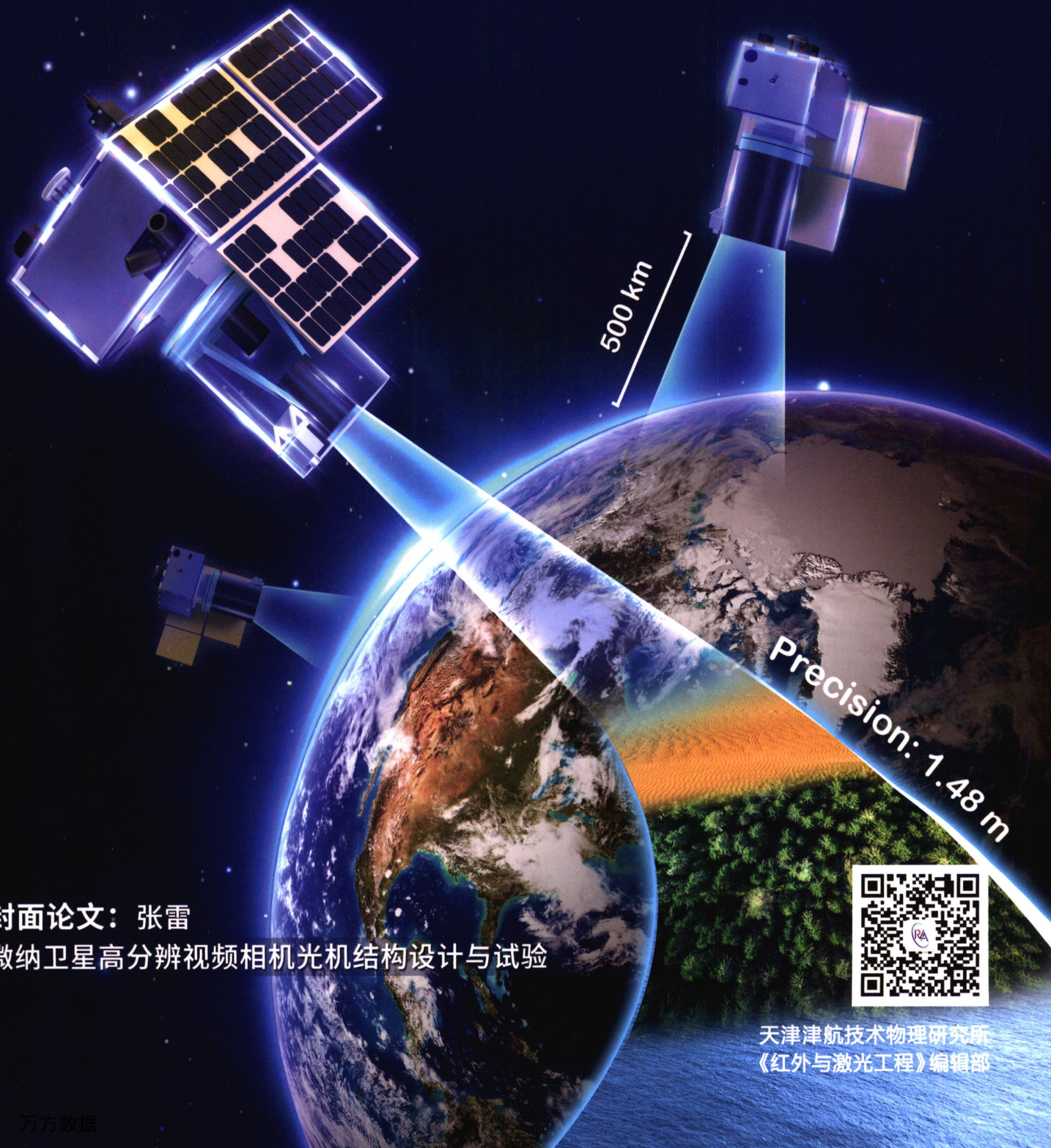


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# 红外与激光工程

INFRARED AND LASER ENGINEERING

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封面论文：张雷  
微纳卫星高分辨视频相机光机结构与试验



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《红外与激光工程》编辑部

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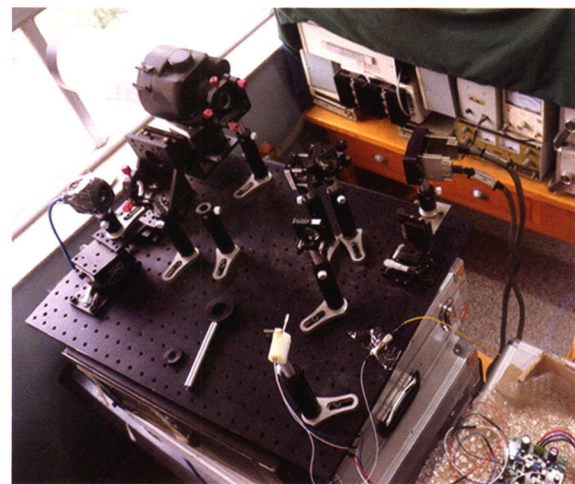
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## 无线激光综合业务通信机

- [1]通信距离可根据应用需求在500米, 1500米, 2千米, 3千米, 5千米, 10千米之间定制;
- [2]误码率 $<10^{-9}$  (各种天气情况下1200米实测);
- [3]电话业务模块可以灵活配置为点对点内线通话, 也可以配置为市话交换转接通话; 最多可配置150门电话;
- [4]视频模块可以根据需求实现单路, 4路, 8路, 16路, 32路视频监控信号的承载传输;
- [5]数据通信模块可以根据需求定制为10M/100M/1000M以太网;
- [6]电话业务模块, 视频模块或者数据模块可根据需求自由组合配置。



## 相干光通信自适应光学波前校正系统

由于大气湍流所引起的波前实时畸变, 使得自由空间相干光通信系统的通信性能下降。采用自适应光学技术对湍流所引起的波前畸变进行修正, 以提高相干光通信的通信质量。由波前传感器、变形镜和PC组成的自适应光学波前校正系统, 对大气湍流所引起的波前相位畸变进行实时闭环校正, 已应用于实际的自由空间相干光通信系统。自适应光学系统闭环后波前相位误差峰谷值(PV)小于 $0.13\lambda$ , 均方根值(RMS)小于 $0.026\lambda$ 。

## 基于轨道角动量的激光通信系统

携带轨道角动量(Oribital Angular Momentum, OAM)的涡旋光束以一种新的复用方式出现, 与时分复用、码分复用、频分复用等复用方式类似, 为解决FSO中速率和信道容量问题提供一种技术手段。为了实现OAM复用通信, 本课题组对相应的关键技术进行了探索与研究: 携带OAM高质量涡旋光束的产生、信道编码与调制、自由空间传输特性、自适应光学畸变波前校正以及接收端光束的分离和检测等。这些研究成果为OAM复用通信系统的搭建提供了良好的理论和实验基础。

万方数据

