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封 面 解 读

相干光通信具有解调多种调制格式的光信号的能力,并取得接近散粒噪声极限的接收灵敏度。本封面以星间激光通信为应用背景,展示了三颗卫星在太空中两两完成双工的相干光通信的场景,而卫星周围的星座图展示了不同调制格式的相干接收。该多体制兼容相干接收机进一步打破了体制不同带来的不便,为全球互联贡献了一份力量。

封 底 解 读

封底展示了利用激光主动照明放置在远端的合作目标反射膜来实现折返路径大气相干长度测量的原理。封面左下角是相干长度测试仪,包括跟踪架、光学成像系统和共架激光器。从激光器发射的激光束照明复杂地形下位于远处的反射膜目标,而反射膜将光束按照近原光路返回,位于发射端的成像系统接收返回光并计算出大气相干长度。右下角展示了激光远场光斑质心游走的路径,利用大口径望远镜系统对主动照明信标光斑进行成像,可以实现基于差分像运动和基于光束漂移的两种方法测量大气相干长度。所构建的测量系统为复杂地形下的长程单端光学湍流遥测和回波成像的激光大气传输远场光斑特性探究提供了一种新手段。

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