

基础光学

非偏振光叠加传播及散射势获取的相关讨论

张明辉

安徽大学物理与材料科学学院, 安徽 合肥 230601

摘要:

经典的Stokes理论认为非偏振光叠加仍为非偏振光。以高斯-谢尔模光束为例,表明光场在自由传播的过程中情况并非总是如此。并以此为例,展示Stokes理论的可叠加性原理在描述光场传播过程中的本地行为和全局行为上是有区别的。作为应用示例,讨论了一个与大气和生物组织相关的散射势获取的问题。

关键词: 物理光学 部分相干 部分偏振 自由传播 散射势

Propagation of superposed unpolarized beams and related discussion for acquisition of scattering potentials

ZHANG Ming-hui

School of Physics and Material Science, Anhui University, Hefei 230601, China

Abstract:

Two independent unpolarized light beams can sum up to be one unpolarized light beam based on the classical Stokes theory. However, it's demonstrated that its global validation needs a preliminary requirement. The work was carried out with an example of a Gaussian-Shell beam. An applicable hint was given with the determination of scattering potentials in atmospheric and biological experiments.

Keywords: physical optics partial coherence partial polarization free propagation scattering potential

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通讯作者:

作者简介: 张明辉 (1971 -),湖南常德人,博士,副教授,从事基础光学的教学和研究工作。

作者Email:

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