

## 论文

### 有分压电阻和e偏振非相干背景光辐照的光折变晶体中非相干耦合空间孤子对

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摘要:

为了得到光折变晶体中非相干耦合空间孤子对统一理论的结果, 基于单光子光折变空间光孤子的基本理论模型, 建立了稳态条件下有分压电阻和e偏振非相干均匀背景光辐照的单光子光伏光折变晶体中非相干耦合空间孤子对理论. 研究表明: 这种孤子对是由两束偏振方向和波长都相同的互不相干光束耦合形成的, 孤子对两光束都能在晶体中稳定传播; 当分压电阻、e偏振背景光、外加电场和光伏场取不同值时, 可获得14种光折变非相干耦合空间孤子对. 本文的结果对完善和充实光折变空间孤子理论体系有重要意义.

关键词: 非线性光学 光折变效应 空间孤子对 分压电阻 e偏振背景光

### Incoherently Coupled Spatial Soliton Pairs in Photorefractive Crystals Illuminated by E-polarized Incoherent Uniform Back-ground Irradiation with a Divider Resistance

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Abstract:

In order to study the universal theory of incoherently coupled spatial soliton pairs in photorefractive crystals, the theory of incoherently coupled soliton pairs based on the one-photon photorefractive effect is established in one-photon photovoltaic photorefractive crystals illuminated by e-polarized incoherent uniform back-ground irradiation with a divider resistance under steady-state conditions. The numerical results show that these soliton pairs can be established by two carrier beams which share the same polarization, wavelength and are mutually incoherent. When these incoherent coupled soliton pairs propagate together, two components can propagate stably in photorefractive crystal. The 14 kinds of incoherently coupled spatial soliton pairs can be obtained from this theory by adjusting the value of the divider resistance, e-polarized back-ground irradiation, the biased electric field and photovoltaic electric field. The proposed studies have great significance to the photorefractive spatial soliton theory system.

Keywords: Nonlinear optics Photorefractive effect Spatial soliton pairs Divider resistance e-polarized back-ground irradiation

收稿日期 2012-01-31 修回日期 2012-04-17 网络版发布日期

DOI: 10.3788/gzxb20124108.0991



基金项目:

山西省自然科学基金(No.2011011003-2)资助

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