

论文

利用Fabry-Perot半导体激光器实现混沌光通信波长转换

丁燕青,王云才,王安帮,贺虎成,张明江

太原理工大学理学院物理系

摘要:

本文提出并数值验证了基于交叉增益调制效应的混沌光通信波长转换实现方案。在单向耦合的混沌光通信链路中,利用Fabry-Perot (FP) 半导体激光器内部的交叉增益调制,实现混沌保密通信信道的波长转换。对于给定的FP激光器,当加载信号频率为1.2GHz时,在15nm的波长转换范围都能获得信噪比大于8dB的提取信号。同时发现波长转换前后系统提取信号的信噪比受波长转换间隔和信号频率的影响,但系统的传输速率上限不会因此而降低,仍与无波长转换时相同。

关键词: 混沌光通信 波长转换 半导体激光器 波分复用 混沌光通信 波长转换 半导体激光器 波分复用 optical chaos communication wavelength conversion semiconductor laser wavelength division multiplexing optical chaos communication wavelength conversion semiconductor laser wavelength division multiplexing

All-Optical Wavelength Conversion for Chaotic Optical Communication Using Fabry-Perot Laser

Abstract:

Wavelength conversion for chaotic optical communication based on cross-gain modulation effect is proposed and numerically demonstrated. In an unidirectional coupled link of chaotic optical communication, wavelength conversion of channel of chaotic secure communication was achieved based on cross-gain modulation effect of Fabry-Perot laser. For 1.2GHz message frequency, the wavelength conversion range is 15nm, in which the signal-noise-ratio of recovered message is up to 8dB. Though the SNR of recovered message effected by the wavelength conversion span and the message frequency in such system compared with no wavelength conversion, the upper limit of transmission rates are uniform.

Keywords:

收稿日期 2008-12-15 修回日期 2008-12-16 网络版发布日期 2008-12-30

DOI:

基金项目:

国家自然科学基金资助

通讯作者: 王云才

作者简介:

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(427KB)
- ▶ HTML
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ 混沌光通信
- ▶ 波长转换
- ▶ 半导体激光器
- ▶ 波分复用
- ▶ 混沌光通信
- ▶ 波长转换
- ▶ 半导体激光器
- ▶ 波分复用
- ▶ optical chaos communication
- ▶ wavelength conversion
- ▶ semiconductor laser
- ▶ wavelength division multiplexing
- ▶ optical chaos communication
- ▶ wavelength conversion
- ▶ semiconductor laser
- ▶ wavelength division multiplexing

本文作者相关文章

- ▶ 丁燕青
- ▶ 王云才
- ▶ 王安帮
- ▶ 贺虎成
- ▶ 张明江

参考文献:

本刊中的类似文章

文章评论 (请注意:本站实行文责自负, 请不要发表与学术无关的内容!评论内容不代表本站观点.)

反馈人	<input type="text"/>	邮箱地址	<input type="text"/>
反馈标题	<input type="text"/>	验证码	<input type="text" value="7031"/>
反馈内容	<input type="text"/>		