

本期目录 | 下期目录 | 过刊浏览 | 高级检索
[打印本

页] [关闭]

论文

基于高非线性光纤中四波混频饱和效应的NRZ-DPSK和RZ-DPSK信号幅度再生实验

吴琳,张帆,李力,陈章渊,徐安士

(北京大学 区域光纤通信网与新型光通信系统国家重点实验室,北京 100871)

摘要:

利用高非线性光纤中的四波混频饱和效应,实验展示了42.8 Gbit/s非归零差分相移键控(NRZ-DPSK)信号和归零差分相移键控(RZ-DPSK)信号的全光幅度再生.测量了NRZ-DPSK信号和RZ-DPSK信号经过高非线性光纤的功率传递曲线.在平均输入功率均为16 dBm的条件下,对两种调制格式的再生性能进行了比较.实验结果显示RZ-DPSK信号具有更好的幅度再生性能.

关键词: 差分相移键控 四波混频 光再生

Amplitude Regeneration of NRZ-DPSK and RZ-DPSK Signals Based on Saturation of Four-wave Mixing In Highly Nonlinear Fiber

WU Lin, ZHANG Fan, LI Li, CHEN Zhang-yuan, XU An-shi

(State Key Laboratory of Advanced Optical Communication Systems and Networks, Peking University, Beijing 100871,China)

Abstract:

The all-optical amplitude regeneration of both nonreturn-to-zero differential phase-shift keying (NRZ-DPSK) and return-to-zero DPSK (RZ-DPSK) signals at a bit rate of 42.8 Gbit/s is demonstrated experimentally,utilizing saturation of four-wave

扩展功能

本文信息

- Supporting info
- PDF(1523KB)
- 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

- 差分相移键控
- 四波混频
- 光再生

本文作者相关文章

- 吴琳
- 张帆
- 李力
- 陈章渊
- 徐安士

mixing in a highly nonlinear optical fiber (HNLF). The power transfer curves of the HNLF for both NRZ-DPSK and RZ-DPSK signals are measured. The regenerative performance for both modulation formats are compared at the same average input power of 16 dBm. Experiment results show that the RZ-DPSK signal exhibits better performance of amplitude regeneration.

Keywords: Differential phase-shift keying Four-wave mixing Optical regeneration

收稿日期 2009-10-29 修回日期 2010-01-23 网络版发布日期 2010-05-25

DOI: 10.3788/gzxb20103905.0807

基金项目:

通讯作者: 吴琳

作者简介:

参考文献:

- [1] WINZER P J, ESSIAMBRE R-J. Advanced optical modulation formats [C] . Proceeding of the IEEE, 2006, 94(5): 952-985.
- [2] GNAUCK A H, LIU Xiang, WEI X, et al. Comparison of modulation formats for 42.7-Gb/s single-channel transmission through 1980 km of SSMF [J] . IEEE Photon Tech Lett, 2004, 16(3): 909-911.
- [3] WEI Xing, LIU Xiang. Analysis of intrachannel four-wave mixing in differential phase-shift keying transmission with large dispersion [J] . Opt Lett, 2003,28(23): 2300-2302.
- [4] KIM H, GNAUCK A H. Experimental investigation of the performance limitation of DPSK systems due to nonlinear phase noise [J] . IEEE Photon Tech Lett, 2003, 15(2): 320-322.
- [5] TANG Xian-feng, ZHANG Xiao-guang, Xi Li-xia. Analysis of phase regeneration of DPSK/DQPSK signals based on phase-sensitive amplification [J] . Chin Opt Lett, 2009, 7(5): 380-383.
- [6] SHI Sen, YAN Juan-juan, ZHENG Zheng. All-

optical regeneration techniques of phase-modulated signals [J] . Acta Photonica Sinica, 2009, 38(9): 2310-2313.

[7] STRIEGLER A, SCHMAUSS B. All-optical DPSK signal regeneration based on cross-phase modulation [J] . IEEE Photon Tech Lett, 2004, 16(4): 1083-1085.

[8] MATSUMOTO M. Simultaneous reshaping of OOK and DPSK signals by a fiber-based all-optical regenerator [J] . Opt Express, 2006, 14(4): 1430-1438.

[9] MATSUMOTO M. Performance improvement of phase-shift-keying signal transmission by means of optical limiters using four-wave mixing in fibers [J] . IEEE Journal of Lightwave Tech, 2005, 23(9): 2696-2701.

[10] MATSUMOTO M, SANUKI K. Performance improvement of DPSK signal transmission by a phase-preserving amplitude limiter [J] . Opt Express, 2007, 15(13): 8094-8103.

[11] PEUCHERET C, LORENZEN M, SEOANE J, et al. Amplitude regeneration of RZ-DPSK signals in single-pump fiber-optic parametric amplifiers [J] .