

## 光通信与光信息技术

### 具有抗扰动的全光纤干涉系统及应用

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**摘要:** 为了消除不良扰动对全光纤干涉系统的影响,提出了一种抵抗时变扰动的新方法。采用两路具有恒定相位差的干涉信号,经过简单的信号调理和数学运算,消除单路信号中信号与噪声的比值容易受到光路偏置相位角和调制相位差大小影响的问题,同时改善了信号质量。结果表明,该系统能有效消除扰动噪声,对耦合器的分光比无严格要求,更具实用性。

**关键词:** 传感器技术 抗扰动 双光路平衡差动 信噪比 3×3耦合器

## All optical fiber interferometer system with anti-disturbance and its application

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**Abstract:** In order to eliminate the impact of negative disturbance on the all-optical-fiber interferential system, a new method to resist time-varying disturbance was proposed. There are two routes of interferential signals with a constant phase difference, by means of simple signal modulation and mathematic computation, to avoid the problem that the useful signal to noise ratio in the single-channel signal easily affected by the differences of optical path bias phase angle and modulation phase difference, while improving the quality of signals. Experiments show that the system can effectively eliminate the disturbing noise without strict requirements on coupler prismatic ratio, and is more practical.

**Keywords:** sensor technique anti-disturbance dual optic path balanced difference signal-to-noise ratio 3×3 coupler

收稿日期 2013-03-12 修回日期 2013-04-24 网络版发布日期 2013-09-24

DOI: 10.7510/jgjs.issn.1001-3806.2013.06.020

基金项目:

通讯作者:

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