

论文

双环掺铒光纤激光器混沌键控保密通信系统理论模型和数值模拟

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摘要

提出双环掺铒光纤激光器混沌键控保密通信系统及理论模型,通过调制泵浦光参数以实现混沌键控保密通信;分析了通过参数调试补偿克服系统参数失配以减小同步误差的方法;模拟了两个单环掺铒光纤激光器激光和一个双环掺铒光纤激光器激光分别在“0”码和“1”码上的混沌同步及其解码,该系统在相空间,在时域和频域都具有很好的保密性能和反破译能力。

关键词 [混沌](#) [同步](#) [保密](#) [通信](#) [双环掺铒光纤激光器](#)

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Theoretical Model and Its Numerical Simulation in Chaos Shift Keying Secure Communication System with Dual-ring Erbium-Doped Fiber Lasers

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Abstract

Chaos shift keying secure communication system with dual-ring erbium-doped fiber laser is presented. The chaos shift keying is realized by modulating parameters of the pump light. A matching method to reduce the synchronization error by modulating the parameters to compensate the system parameter mismatches is numerically studied. Chaotic synchronizations and decoding at "0" and "1" bit, respectively, are numerically simulated between two single-ring erbium-doped fiber lasers and a dual-ring single-mode erbium-doped fiber lasers. The system shows the good ability of robust security and anti-uncoverage in phase-space, time-domain and frequency-domain.

Key words [Chaos](#) [Synchronization](#) [Secure](#) [Communication](#) [Dual-ring erbium-doped fiber laser](#)

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