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论文

基于半导体光放大器平行双抽运对OFDM光信号进行全光波长变换性能研究

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摘要：

研究了基于半导体光放大器平行双抽运对光正交频分复用信号进行全光波长变换的系统.信号光源经2Gb/s电信号直接调制后再和双抽运光耦合,经半导体光放大器后,由于四波混频效应而产生新的波长的信号光.实验结果显示,经半导体光放大器四波混频效应后,产生新的波长的信号光将携带OFDM信号且偏振不敏感,转换效率与双抽运光之间的波长间隔,抽运与信号光波长间距,信号光与泵浦光之间的偏振夹角等有关.同时也测量了转换的OFDM信号的功率-误码曲线和接收星座图.

关键词： 光通信技术 正交频分复用 全光波长变换 四波混频 半导体光放大器 双抽运（SOA）

All-optical Wavelength Conversion Based on Parallel Dual-pump Four-wave Mixing in Semiconductor Optical Amplifier for OFDM Optical Signal

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Abstract:

All optical wavelength conversion based on four-wave mixing in a SOA for OFDM optical signal is theoretically and experimentally investigated.2 Gbit/s OFDM is used to modulate directly on the signal lightwave by an external intensity modulator.The modulated signal lightwave and the parallel pumps are coupled and then injected into the SOA for wavelength conversion based on four-wave mixing (FWM).Experimental result shows that the newly converted wavelength sideband carries OFDM signals and its conversion efficiency relates with the wavelength spacing between the pumps,the wavelength spacing and polarization angle between the pumps and signal lightwave.The BER curves and receive constellation are also measured.

Keywords: Optical communication OFDM All-optical wavelength conversion Four wave mixing Semiconductor optical amplifier Dual-pump

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