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2014 Australasian Telecommunication Networks and Applications Conference, ATNAC 2014
 23 January 2015, Article number 7020896, Pages 189-194
 2014 Australasian Telecommunication Networks and Applications Conference, ATNAC 2014; Melbourne; Australia; 26
 November 2014 through 28 November 2014; Category numberCFP1418D-ART; Code 110256

An efficient modulation technique to mitigate nonlinearities in optical OFDM (Conference Paper)

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Abstract

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The optical OFDM (O-OFDM) system is a growing technology for next generation high-speed optical communication. Two types of O-OFDM; CO-OFDM (Coherent-Optical OFDM) and Direct-current-based optical OFDM (DC-OFDM) are discussed. Mach-Zehnder modulators (MZMs) are used in up-converter part of CO-OFDM system to convert the RF signal to optical signal when the light cannot directly modulate for higher speed. The MZM has a cosine behavior with high nonlinear characteristic that affects the system performance. This paper aims to investigate an efficient pulse modulation technique for mitigating nonlinearity effect in the Mach-Zehnder modulator of CO-OFDM system. It also highlights the proposed method, an efficient CO-OFDM system to solve the existing nonlinearity issue. This technique influences positively on OSNR to reduce non linearity over different distances of optical channel and improve the system performance in terms of power consumption and bandwidth efficiency. © 2014 IEEE.

Author keywords

Modulation MZM Nonlinearity Optical orthogonal frequency division multiplexing (O-OFDM) optical transmission

Indexed keywords

Engineering controlled terms: Frequency division multiplexing Frequency modulation Light modulators
 Light transmission Modulation Modulators Optical communication
 Optical fiber communication Telecommunication networks

Bandwidth efficiency
 Mach Zehnder modulator
 Modulation techniques
 MZM
 Nonlinearity
 Nonlinearity effect
 Optical channels
 Optical orthogonal frequency division multiplexing (O-OFDM)

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