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

Rahman, M.T., Abdullah, A., Alam, M.K., Jamil, M.S., Islam, M.R., Abdullah, K.
Department of Electrical and Computer Engineering, International Islamic University Malaysia, KL, Malaysia

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

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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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