Abstract

Nature–inspired algorithms are the most powerful algorithms for optimization problems. This paper presents a novel optimization channel allocation algorithm inspired by the flash pattern of fireflies that allows suppression of the four–wave mixing (FWM) crosstalk while maintaining channel bandwidth. It is composed of a fractional bandwidth channel allocation algorithm by using the concept of Optimal Golomb ruler (OGR) sequences. The simulation results conclude that the proposed novel optimization algorithm outperforms the other two existing conventional algorithms i. e. Extended Quadratic Congruence (EQC) and Search Algorithm (SA) in terms of the total optical bandwidth.

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Index Terms

Computer Science
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Keywords
Channel Spacing  Optimal Golomb ruler  Firefly Algorithm  Equally and Unequally spaced channel allocation.