Title:	Design and performance analysis of modified two dimensional Golomb code for optical code division multiple access networks
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Abstract:	In this work, a two dimensional (2D) wavelength/time code is developed. The 64 bit 2D code is constructed by a technique based on folding of Golomb rulers referred in this work as modified Golomb code (2D MGC) and the proposed 2D code is generated using Java 8.1 software. The performance of the proposed 2D MGC is evaluated in terms of bit error rate (BER), received signal power, and time domain analysis of multiple users. In this experiment, it is found that the BER increases with multiple numbers of simultaneous users due to multiple access interference. The proposed 2D code yields better network performance in terms of BER compared to that of different existing 2D OCDMA codes. In this work, mathematical analysis is also carried out to prove that the proposed 64 bit code is optimal satisfying auto and cross correlation properties. Furthermore, the complexity analysis of the proposed 64 bit optical code division multiple access (OCDMA) code is analysed. The OCDMA model is validated using the optisystem software. © 2018, Springer Science+Business Media, LLC, part of Springer Nature.
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