



International Journal on Recent Researches In Science, Engineering & Technology

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Research Paper

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ISSN (Print) : 2347-6729
ISSN (Online) : 2348-3105

Volume 1, Issue 11,
Nov. 2013

DIIF IF :1.46
SJIF IF: 1.329

Design of Asymmetric Multi length Polarized Optical Orthogonal Codes

Mishra

Abstract - It has been observed from literature that code Division Multiple Access (CDMA) based techniques is an interesting alternative to various traffic types of multimedia applications with highly variable performance targets on optical fiber networks. Multilength optical orthogonal codes are designed to simultaneously support multimedia services in Fiber optic code division multiple access (FOCDMA) networks . However, existing optical orthogonal codes (OOCS) are limited to either single class or multiclass. They suffer from a disadvantage that it may lead to heavy congestion in the network. This paper investigates the generation of suitable codes support multi rate traffic. Concentrating on the OOCS, a generation based on the concept polarization shift keying is presented. Asymmetric polarized -OOC is introduced , which is proposed as an extension to the OOCs and multiclass OOCs in order to allow more concurrent users to the network. In polarized- OOC the state of polarization (SOP) of the pulses are rotated arbitrarily to two orthogonal SOPs. Cardinality is shown to be two times that of the conventional multilength OOC .The generated code is shown to have good auto correlation and cross correlation properties.