Design of spectral amplitude coding optical code-division multiple-access system using random diagonal codes

In this paper we study the use of a new code called Random Diagonal (RD) code for Spectral Amplitude Coding (SAC) optical Code Division Multiple Access (CDMA) networks, RD code is constructed using code level and data level, one of the important properties of this code is that the cross correlation at data level is always zero, which means that Phase intensity Induced Phase (PIIN) is reduced. We find that the performance of the RD code will be better than Modified Frequency Hopping (MFH) and Hadamard code It has been observed through experimental and theoretical simulation that BER for RD code perform significantly better than other codes. Proof -of-principle simulations of encoding with 3 channels, and 10 Gbit/s data transmission have been successfully demonstrated together with Fiber Bragg grating (FBG) decoding scheme for canceling the code level from SAC-signal.