Simulation Analysis of Wavelength/Time/Space Codes Using CSRZ and DPSK-RZ Formats for Fiber-Optic CDMA Systems

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Abstract : In this paper, comparative analysis is carried out to study the performance of wavelength/time/space optical CDMA codes using two well-known formats; those are CSRZ and DPSK-RZ using RSoft's OptSIM. The analysis is carried out under the real-like scenario considering the presence of various non-linear effects such as XPM, SPM, SRS, SBS and FWM. Fiber dispersion and the multiple access interference are also considered. The codes used in this analysis are 3-D wavelength/time/space codes. These are converted into 2-D wavelength-time codes so that their requirement of space couplers and fiber ribbons is eliminated. Under the conditions simulated, this is found that CSRZ performs better than DPSK-RZ for fiber-optic CDMA applications.
Keywords : Optical CDMA, Multiple access interference (MAI), CSRZ, DPSK-RZ
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