**Optical Signal Analysis in the Fiber Networks on the basis of Extinction ratio and the Fiber Length**

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**Abstract**

In order to improve the strength of Signal in the fiber network, not only higher quality factor and minimum bit error rate are required but also the role of ER cannot be neglected. Since, only the treatment of linear and nonlinear impairments are not sufficient, there must be a need of degradation of signal leakage through the optical fiber networks related to the extinction ratio. Also, the extinction ratio is the significant parameter to measure the optical signal quality of the transmitter and receiver. Therefore, this research is to investigate that how much the effect of ER on the performance of fiber optic networks based on OptiSystem 17.0 designed with EDFA and DWDM technology.

Keywords: Extinction ratio, Optical modulation amplitude, modulation index, Power penalty