

Polarization Effects in Modern Optical Communication

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Abstract: *In optical fiber communications the polarization effect has become an increasingly important issue, especially as data rates exceed 100 Gbit/s. The main impairments from polarization are PMD, PDL, and SOP fluctuations; these will be reviewed along with the compensation techniques developed to overcome each of these impairments. Coherent detection with DSP has changed how the optical community has approached the problem of polarization, making it possible to do Pol-Mux transmission and doubling spectral efficiency. In addition to these two sets of impairment-related problems, free space optical (FSO) links are also subject to a different set of polarization-related problems caused by atmosphere turbulence. Still, there continues to be open research questions on issues regarding fast transients, non-linear phenomena, and automated monitoring.*

Keywords: polarization mode dispersion, polarization-dependent loss, coherent detection, digital signal processing, polarization multiplexing