Abstracts

Polarization Fading in Fiber Interferometric Sensors

D.W. Stowe, D.R. Moore and R.G. Priest. "Polarization Fading in Fiber Interferometric Sensors." 1982 Transactions on Microwave Theory and Techniques 30.10 (Oct. 1982 [T-MTT] (Special Issue on Optical Guided Wave Technology)): 1632-1635.

Mach-Zehnder interferometer sensors fabricated with conventional nonpolarization-preserving fibers are subject to polarization fading caused by temperature variations and minor positional changes in the sensor. For such sensors, we calculate the probability of a given decrease in sensitivity and in signal-to-noise ratio due to fading assuming the polarization of the light in the signal and reference legs is uncorrelated and drifts randomly. The resultant reduction of the signal-to-noise ratio may exceed 10 dB 10 percent of the time and exceed 20 dB more than 2 percent of the time.

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