Strain Measurement in a Mach-Zehnder Fiber Interferometer using Data Dependent System Method

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Abstract

A fiber-optic strain measurement technique based on data dependent system (DDS) in Mach-Zehnder fiber interferometer is presented. The interferogram recorded from the interferometer has been digitized and characterized by means of an autoregressive model. The phase change due to the measurand has been obtained from the self-coherence function of the interferogram. It would provide the phase distribution and modulation of group delay due to measurand. Results are presented for the applied strain in the range of 170-880 µstrain.
Reference


Index Terms

Computer Science
Data Processing
Key words

interferometer
Mach-Zehnder fiber
dependent system
data-dependent
strain measurement
interference patterns
phase-extraction