

## Sensor Fiber Optic Demodulation



### Overview

This paper presents a method that integrates neural networks with arrayed waveguide gratings (AWGs) for the demodulation of fiber-optic sensors based on the Vernier effect and a novel, to our knowledge, Fabry-Pérot (FP) strain sensor structure. Accurate demodulation of fiber-optic sensors is crucial for real-world engineering applications in monitoring and control. The feasibility of phase demodulation using a coarse spectrum is theoretically analyzed. Based on the coarse spectrum. Some embodiments of the disclosure provide a demodulation system for obtaining phase change parameters by a fiber-optic Fabry Perot sensor.

## Sensor Fiber Optic Demodulation



A fast real-time demodulation method based on the coarsely sampled spectrum is proposed for transient signals of fiber optic extrinsic Fabry-Perot interferometers (EFPI) sensors.



The 1D-CNN architecture for demodulation of fiber optic F-P sensors consists of multiple blocks, an input block, four convolutional blocks, a regression block, and an output block.



The feasibility and superiority of the algorithm were verified through MATLAB simulations and conducted demodulation experiments using fiber optic MEMS Fabry Perot sensors.



Accurate demodulation is essential for a deeper understanding of the physical processes in fiber optic sensing systems, enhancing measurement accuracy, and optimizing system ...



In view of resolution of optical fiber Fabry-Perot (FP) interference sensor, this paper analyses and researches high resolution demodulation algorithms including fast Fourier transform demodulation ...



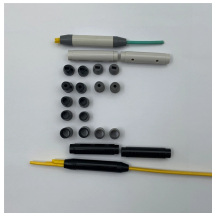
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Demodulation of fiber optic Fabry-Pérot (F-P) acoustic sensors with high sensitivity and a large dynamic range continues to pose significant challenges. In this paper, we propose an advanced phase ...



High Precision Decoupling and Demodulation for Temperature-Strain Measurement of Optical Fiber Fabry-Perot Sensor Published in: Journal of Lightwave Technology ( Volume: 43, Issue: 22, 15 ...



In this manuscript, we proposed a high-speed spectrum demodulation method with a large dynamic range for fiber-optic Fabry-Perot (F-P) sensor based on scanning laser.



In an embodiment, the demodulation system includes a transmitting module, a fiber-optic Fabry Perot sensor, a light splitting module, a filter module, a receiving module, and a processing...

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Website: <https://www.indzawo.co.za>

Email: [sales@indzawo.co.za](mailto:sales@indzawo.co.za)

Phone: +27 71 296 8473

Address: 22 Quantum Street, Midrand, 1685, Gauteng, South Africa

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