

In-fiber Fabry Perot interferometer with narrow interference fringes for enhanced sensitivity in elastic wave detection

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ABSTRACT

In this work, we have demonstrated using a pair of in-fiber Fabry-Perot interferometer (FPI) with matched Bragg wavelength and free spectral range (FSR) for elastic wave detection based on matched filter interrogation configuration. The cavity lengths of the FPI structures are deliberately made long to achieve small FSR to enhance their sensitivity to elastic wave pressure. It is found that the sensitivity of sensor to elastic wave pressure is linearly proportional to the FPI cavity length. This finding is in agreement with the theoretical analysis.

KEYWORDS

Fiber Bragg grating; Fabry-Perot interferometer; Matched filter interrogation

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