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(57) Abstract :

Abstract Title:A System and Method for Multipoint Sensing The present invention proposes and demonstrates a vibration sensor based on fiber modal interferometry technique with high sensitivity over broad frequency range. The proposed sensor enables real time determination of frequency components, and amplitude of dynamic mechanical oscillations of a system. The sensitivity of the proposed sensor can be reconfigured by modifying the interferometer parameters. Besides, the interferometer probes can be integrated in different configurations for remote multipoint vibration sensing and would enable determination of relative phase between vibrating regions. By obtaining the instantaneous phase of the data in case of multipoint sensing using specific numerical methods, the sequence of the frequencies and amplitudes of vibrations at different points along the fiber can be determined. The designed probe is temperature tolerant, immune to electromagnetic interference, light weight, and reconfigurable with respect to the range of operation and sensitivity.

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