

Photonic Crystal Fiber Interferometric Force Sensor

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Abstract

A compellingly simple force sensor based on a photonic crystal fiber (PCF) mode interferometer is presented. A mechanical piece with grooves is used to convert the external force in localized pressure on the sensitive part of the interferometer. The localized pressure on the PCF causes attenuation losses to the interfering modes and makes the interference pattern to shrink. The changes of the interference pattern are quantified by means of Fourier transformation. In the sensing architecture here proposed, temperature or power fluctuations of the light source do not affect the measurement.