

# of an Optical Based Sensor in a Mechanical Seismometer

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In this research, a new optical sensor is used to measure the suspended mass displacement in the seismometer. In the last decades, scientists have used optical interferometer set-up to improve accuracy in displacement measurement. To integrate such optical measurement in a seismometer, all the optical functions, as beam splitter, are integrated in an optical substrate. The only remaining macroscopic elements are the mirror fixed on the suspended mass and the lens to focus the beam on the mirror. The intrinsic noise is below the seismic low noise model all over the bandwidth of interest. To correct the measures from optical defects of the lens or/and the mirror, a correction algorithm is used and allows to reach a coherence of one between the optical measurement and traditional sensors. The results show the accuracy and reliability of such optical sensor integrated in a mechanical seismometer.

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## Promotional text

Successful integration of a low noise optical interferometer in a very broad band seismometer.

## Oral preference format

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