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new damping system for seismic sensors based on the eddy currents

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This research describes a new damping system for optical seismic sensors that, is based on eddy currents. In the last decade, scientists have been considered optical approaches for readout systems of seismic sensors. So, the use of reliable and high-performance damping systems in this category of seismometers is very important. This has led us to build a damping system based on the eddy currents for a spring-suspended mass whose position is monitored by the moiré technique. To demonstrate this approach, a conventional oscillation system has been used. Also, the proposed damping system consists of a neodymium magnet which is fixed to the suspended mass, and a conductive plate which is fixed to the frame of the oscillator. The magnet and the conductive plate are facing each other with a distance of 0.5 mm. By relative motion between the magnet and the nearby conductive plate, eddy currents have been produced in a way that opposes its creator. Experiments to test this approach have been performed, and the evaluations of the results show that the proposed damping system for optical sensors is quite reliable.

Promotional text

The present study describes a new approach to building a reliable damping system for optical seismic sensors, that is based on eddy currents. The evaluations of the results show that the proposed damping system is quite practical and efficient.

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