

REGISTRATION OF SUPER SMALL DISPLACEMENTS USING A LASER DEFOMOGRAPH

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Abstract. This article shows the appearance of earthquake precursors of microwaves formed during tectonic changes in the earth's crust. The registration of microwaves was measured by the change in the intensity of the interference of beams reflected from two mirrors installed at different points on the earth.

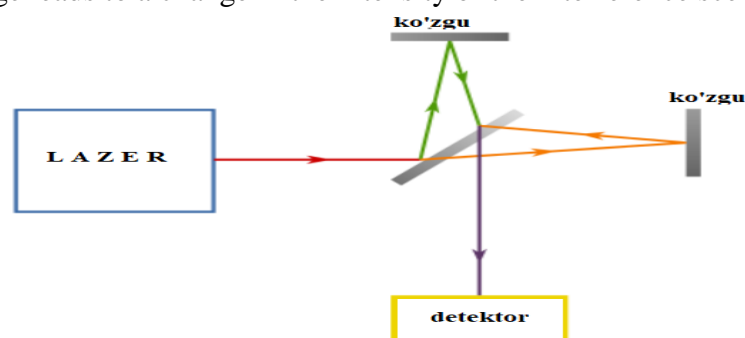
Keywords: microwaves, Michelson interferometry, interference, laser, strain meter, intensity.

It is known that earthquake warning information is obtained through different methods, and their working principle is based on different physical processes. While some rely on recording vibrational waves propagating in the subsurface, others prefer to know by recording radio waves in the ionosphere above seismic zones. It should be said that although the causes of underground tremors have different bases, it is known in science that the process of breaking the deformation stress starts with atomic-molecular breaks and starts with a very small amplitude and frequency.

That is why the method of recording very small vibrations propagating in the underground layer has a special place. Considering that the earlier the vibration can be detected with high precision using laser beam interference, the time interval until the occurrence of the event may be sufficient for warning, any attempts and researches in this regard are always relevant and is considered a state-approved work. Based on the above, in this work, we propose to use an interference-based device using a laser deformograph to create a similar micro-vibration sensing device.

Nowadays, using the achievements of science, it can be easily created in practice. The semiconductor laser deformograph shown in the picture consists of the following parts. Laser, Michelson interferometry, photocell that allows determining the intensity of the interference scene, computer.

It is known in science that before an earthquake, micro-scale waves are propagated. That is, micro-scale displacements occur in the earth's crust. Reflectors attached to the surface of the earth change the path difference of the laser beam as a result of the movements created on the ground. This change leads to a change in the intensity of the interference scene.



The interference pattern creates a changing photocurrent in the photocell (detector). You can get full information about the earthquake using a special program.

Thus, it can be said that the above-mentioned device fully allows recording very small vibrations.

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