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Automatic System of E-M Seismometer Calibration Using a Statistical Method by Removing a Step of Current Applied to Signal Coil

The calibration of seismic sensors is a fundamental step in the implementation, the monitoring and the maintenance of seismic stations. The technique of removing a step of current from their signal coil is one of the most used with geophones. However, in some particular circumstances, where the probe is directly placed on the ground surface, a high level of background seismic noise can alter the results provided by this technique. A statistic experimental method of calibrating an electromagnetic seismometer is introduced to overcome this challenge. It is to calculate the mean and the standard deviation of the three important characteristics for the seismometer over a great number of calibrations assumed to be identical. This process is automated in all its stages to simplify the task for the manipulator. An electronic bench and a software program are designed and realized for this purpose. The electronic bench was realized around an electromechanical relay, while the program we have made is realized under LabVIEW platform.
The statistic experimental calibration method based on signal coil excitation with a step of current is very accurate confronted to other methods. We have also studied the effect of different parameters on the results provided.

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