



Earth's global tomography with the use of vibrating sources

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The paper considers the possibility of the use of artificial vibrating high-power sources for global tomography of the Earth. The analysis of the results of the works carried out in USA, Russia and Japan of vibrating sources application for sounding of the Earth's crust and the upper mantle is executed. The most powerful today 100 - ton seismic vibrators allow us to record vibrating signals at the distances of 400-1000 km in various modes of radiation. Results of the vibroseismic researches of the Earth's crust structure and monitoring its stress state executed in the Siberian branch of the Russian Academy of Science are submitted. Estimates of the vibroseismic signals amplitudes and the required vibrating sources power for recording at the teleseismic distances are received. The principles of the construction of super-power vibrators, problems of the creation of resonant oscillatory systems and problems of their precise control are analyzed. Variants of constructions of super-power vibrating sources with the force of 1-10 thousand tons for the operation on continents and in the sea are offered. The worldwide super-power vibrating sources network for realization global tomography of the Earth is proposed. Possible research problems of the Earth's global tomography are considered. One of them is the study the medium movement in internal areas of the Earth and, in particular, rotation of the Earth core.