

# THE FIRST SEISMIC OBSERVATIONS OF NUCLEAR EXPLOSIONS AND THEIR RESULTS

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**Abstract.** The history, goals and results of the first experiments in studies of the Earth's internal structure with registration of the seismic waves induced by nuclear explosions are considered. The experiments revealed the necessity of using several nuclear explosions along straight line together with detailed systems of seismic observations comprised of many seismic stations. The problems of data interpretation based on multilayer models are discussed. It is concluded that multilayer models for the crystalline Earth's crust of increasing seismic velocity with the depth very often conflict with the primary experimental data. The experimental data which are in a very good agreement with one layer model of the crystalline Earth's crust are presented. The question on reality of the upper mantle fine structure is still open. It is necessary to keep the unique data of seismic registration of the nuclear explosions and re-interpret them in the future with using ancillary information.

**Keywords:** nuclear explosions, seismic registration, first experiments, registration of seismic waves, interpretation, deep seismic sounding, DSS, Earth's crust models.