

# THE RESEARCH OF BLAST- ACOUSTIC FIELDS, GENERATED BY A SYSTEM OF DISTRIBUTED EXPLOSIVES CHARGES

G.Sakovich, A.Vorozhtsov, B.Vorozhtsov, S.Bondarchuk, E.Maksimenko

(IPChET, SB RAS, Altai region, Byisk)

One from perspective directions of developed NLW is the acoustic weapon. In it at present known properties of a sound are used. This sound at certain volume and frequency is capable to call a spectrum of unpleasant feelings, including loss persons bearings, acoustic dazzle and short term blindness. It is interesting and important to solve a physical problem of long-distance shock-wave and acoustic fields arrangement. These fields must satisfy to the certain requirements on intensities, frequency and spatial areas of their distribution. One from ways of such waves generation is blast of distributed in the space explosives charges, weight and initialization time of which are of a system parameters.

In the paper the mathematical model, calculations results and their comparison with obtained experimental data is submitted. The mathematical model is represented by integral 3-D equations of gas dynamics evaluating laws of conservation of mass, momentum, energy and special equations determining change of the detonation and air products mixture thermalphysic characteristics, and also appropriate initial and boundary terms.

The comparison of the experimental and numerical data is made for systems of distributed charges (about tens), when initialization is carried out simultaneously or with some time delay for forming of a necessary shock-wave and acoustic structure. The comparison has shown a good correlation computational and experimental data for acoustic waves both on near points of space, and on removed ones from charges. The amplitudes, times and distribution zones of strong shock waves were compared to known experimental relations and also have shown good conformity. The offered analysis allow to design adequate simulation and optimization of the physical scheme of shock-acoustic waves with established structure generation by a system of distributed explosives charges; the reliability of the approach is confirmed by experimental researches.

Key Words: acoustic weapon, distributed charges, shock-wave, acoustic fields