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effects of stability of the atmospheric boundary layer on the propagation of acoustic waves

The experimental data on the amplitude-time parameters p+, p-, t+, t- of the first positive and negative phases of acoustic waves in the atmosphere generated by pulse sources of different nature are analyzed. By comparing these data with the results of numerical simulation of spherical and cylindrical propagation of blast waves in homogeneous atmosphere, the effects of stability of the atmospheric boundary layer (ABL) on the parameters of acoustic signals were found. More than 6300 experimental values of p +, p-, t +, t- were analysed.It was explained for the first time the qualitative and quantitative influence of the stability of the ABL on the parameters of the acoustic waves propagating in the ABL. As a result, the average values of its parameters p +, p-, t + and t- increase by 1 - 2 orders with respect to the case of wave propagation in the unstable or neutral boundary layer of the atmosphere. The approximations of the experimental values of the p- and t- recorded acoustic signal ob-tained in the wide energy ranges of the sources 10(-8) < Q < 10(+10) kg of TNT and the reduced distance 1 < R/Q(1/3) < 4·10(4) m/kg1/3 are given.

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